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Lexicalism, periphrasis and implicative morphology¹

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1 Introduction

Several other chapters in this book analyze grammatical phenomena according to the architectural assumptions and constraint-based representational apparatus of lexicalist theories of grammar; in the present chapter, we ask some fundamental questions concerning what it means for a theory to be lexicalist. While critically assessing some consensus beliefs among lexicalists, this exploration will also serve as a corrective to certain pervasive misunderstandings about lexicalism and its limitations as propagated by some of its more vigorous detractors.² In particular, we provide a careful overview of certain lexicalist assumptions concerning the relation between lexical representations, morphology, and syntax, and we propose a lexicalist framework incorporating a much richer conception of morphology than has customarily been assumed in lexicalist theories. According to this conception, periphrasis (multi-word expression) is as much a mode of morphological realization as synthesis is.

In our discussion, we assume the familiar distinction between derivational and inflectional morphology: while principles of derivation define systematic relations between lexemes, principles of inflection define a lexeme's inventory of grammatical words and their phonological realizations; traditionally, an inventory of the latter sort is referred to as an inflectional paradigm. Recently, a number of researchers have argued for the morphological status of periphrasis in the inflectional domain (Ackerman & Stump 2004; Börjars et al. 1997; Börjars & Donohue 2000; Sadler & Spencer 2002; Sells to appear***; Spencer 2001***, 2003; and Stump 2001, 2002, among others, but see Kiparsky 2005 for a dissenting view); by contrast, the incidence of periphrasis in the derivational domain has, so far, received relatively little attention among proponents of word based realizational morphology. Here, we develop a morphological perspective on periphrasis in the inflectional domain, and propose an extension of this perspective into the domain of derivation. We accordingly focus our discussion on two kinds of periphrastic constructions: in the inflectional domain, we focus on compound tense constructions; in the derivational domain, on phrasal verb constructions.

As a preliminary to our discussion, we propose (§2) a simple taxonomy of lexicalist approaches to periphrasis which will enable us to situate our approach within the landscape of alternatives. We then examine some specific instances of the relevant complex predicate constructions, identifying the theoretical problems that they present for standard lexicalist assumptions and developing realizational analyses which resolve

¹ We wish to thank Jeanmarie Rouhler-Willoughby and an anonymous reviewer for helpful discussion.

² Exemplary compedia of this dismissive genre are Marantz 1997, 2001, and Embick & Noyer (2007).

these problems. We begin in the inflectional domain with an account of compound tense constructions (§3), then proceed to the derivational domain with an account of phrasal verb constructions (§4).

2 A taxonomy of lexicalist approaches to periphrasis

In the taxonomy that we propose here, we distinguish among theoretical approaches to periphrasis according to their adherence to the four principles in (1)-(4):

- (1) Principle of morphological integrity³
Syntactic mechanisms neither make reference to a word form's proper subparts nor can they create new word forms in constituent structure.
- (2) Principle of lexical modification⁴
The lexical properties (meaning, argument structure, grammatical function inventories, and case government patterns) associated with a lexeme are fully determined by lexical stipulation together with rules of lexeme derivation and cannot be altered by items of the syntactic context in which a realization of that lexeme appears.
- (3) Principle of morpholexical inflection
The morphosyntactic content associated with a lexeme's realizations is fully determined by lexical stipulation together with rules of inflectional morphology and cannot be altered by items of the syntactic context in which a realization appears.
- (4) Principle of unary expression
In syntax, a lexeme is uniformly expressed as a single morphophonologically integrated and syntactically atomic word form.

According to the principle of morphological integrity in (1), a language's synthetic word forms are fully derived and inflected at the interface of its lexicon and morphological component, independently of the syntactic context in which these word forms are used. Adherence to this principle distinguishes lexicalist theories as a class from nonlexicalist theories. In syntactocentric theories (see Jackendoff 1997, 2002, and Culicover & Jackendoff 2005 for discussion), this principle is rejected: word-internal morphology is modelled with phrase-structure representations in which functional categories (instantiating morphosyntactic properties) exist as independent syntactic nodes to which syntactic operations are presumed to have access. In this way, the structural analysis of both synthetic word forms and periphrastic expressions is assimilated to that of ordinary phrases. It is a central premise of lexicalist theories that grammatical frameworks rejecting principle (1) are neither sufficiently constrained nor capable of capturing the significant grammatical generalizations which we discuss below.

Although the principle of lexical modification in (2), the principle of morpholexical inflection in (3), and the principle of unary expression in (4) all possess a

³ We equate this with the lexical integrity principle of Bresnan & Mchombo (1995).

⁴ This was referred to as the principle of lexical adicity in Ackerman & Webelhuth (1998).

high degree of prima facie plausibility, it is not clear that all three can be maintained in a coherent approach to periphrasis. To see this, it is necessary to consider in some depth the ways in which the phenomenon of periphrasis has been addressed in lexicalist theories.

Both “classical LFG” (Bresnan 1982b) and “classical HPSG” (Pollard and Sag 1987) adhere to the principle of lexical modification in (2). Changes in a verbal lexeme’s meaning, in its argument structure, in its grammatical function assignments, and in the surface case expression of its complements are specified in the lexicon by means of “lexical rules” (effectively, rules of derivation), independently of the syntactic context of that lexeme’s realization;⁵ this is true whether the lexeme in question is realized synthetically or periphrastically.

Consider, for instance, the case of passive constructions. In the theory of Bresnan (1982b), the synthetically expressed passive predicate in the Malayalam example in (5) and the periphrastically expressed passive predicate in the English example in (6) are treated comparably.⁶ Both languages have a passive lexeme BE WORSHIPPED. In the Malayalam example in (5), this lexeme is realized by the single verb form *aaṛaadhikkapeṭṭu*; in the English example in (6), it is realized by the participial form *worshipped*. In both languages, the passive lexeme is related to an active verbal lexeme WORSHIP. The relevant rules of passivization (in our terms, passive derivation) for these languages might be formulated as in (7) and (8). In English, it is additionally specified that the passive participle cooccurs with a form of the auxiliary BE and that the auxiliary and the passive participle participate in a relationship of SUBJ raising: this explains why the SUBJ of the English passive bears a semantic relation to the participle, while also bearing a SUBJ role with respect to the auxiliary.

- (5) *kuṭṭiyaal* *aana* *aaṛaadhikkapeṭṭu*.
 child.INST elephant.NOM worship.PASS.PAST
 ‘The elephant was worshipped by the child.’

- (6) The elephant was worshipped by the child.

⁵The principle of lexical modification entails the requirement of direct syntactic encoding in LFG; Kaplan & Bresnan (1982a: 32) formulate this requirement as follows.

Direct syntactic encoding: No rule of syntax may replace one function name with another.

They characterize the consequent difference between lexical versus syntactic operations as follows (1982a: 32):

“The principle of direct syntactic encoding sharpens the distinction between two classes of rules: rules that change relations are lexical and range over finite sets, while syntactic rules that project onto an infinite set of sentences preserve grammatical relations.”

The principle of lexical modification extends this distinction, entailing that what obtains for grammatical functions also obtains for valence, lexical semantics, and case government.

⁶ The discussion and examples follow Bresnan (1982a). The rule format employed here is also that employed in early LFG. Whereas the rule format for function-changing operations simply stipulates the (re-)assignment of functions to arguments, more recent proposals within LFG lexical-mapping theory provide more principled argument-to-function alignments (see ...***) The old format is useful here for expository purposes.

- (7) Passive derivation in Malayalam
- a. Functional Change: (SUBJ) → ∅ / (INSTR)
(OBJ) → (SUBJ)
- b. Morphological Change: V → V + *appet*
- (8) Passive derivation in English
- a. Functional Change: (SUBJ) → ∅ / (by OBJ)
(OBJ) → (SUBJ)
- b. Morphological Change: V → V_[part]

There were few studies of complex predicates within the specific frameworks assumed by Bresnan (1982b) or Pollard & Sag (1987), and there was little impulse to analyze periphrastic passives as lexically formed complex predicates, particularly since appealing to independently motivated syntactic tools such as SUBJ raising sufficed to provide the appropriate semantic and syntactic effects. Over the years, however, the study of complex predicates (particularly causative predicates) has become a vigorous domain of research. This has led to a reappraisal of the scope of observed lexical effects. Like passive predicates, causative predicates vary cross-linguistically in their realization, appearing sometimes as synthetic forms but elsewhere as periphrastic combinations. Consider these causative predicates from Chichewa (9) and Catalan (10)⁷ Causative formation yields two different types of realization in these languages: a synthetic verb form in Chichewa, and two syntactically independent verbal forms in Catalan.

- (9) Ml̄imi a-ku-lémb-éts-a mkángó ndakatūlo.
I.farmer I.SUBJ-PR-write-CAUS-FV III.lion IX.poem
'The farmer is making the lion write the poem.'

- (10) Els pagesos fa escriure un poema al follet.
the farmers make write a poem to-the elf
'The farmers are making the elf write a poem.'

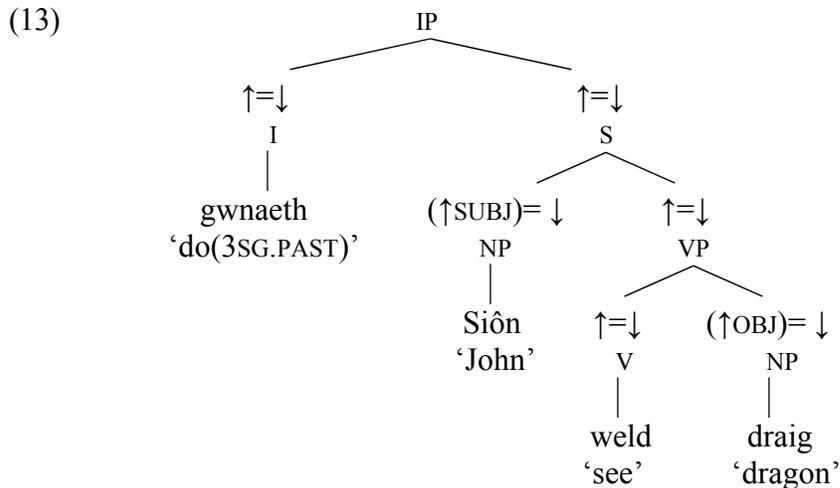
It is commonly observed that cross-linguistically, the changes in lexical properties associated with causative formation are independent of whether the causative predicate is realized synthetically or periphrastically. Given this, some recent approaches to periphrastically expressed complex predicates within the LFG and HPSG frameworks extend the privilege of creating new argument structures from a language's morphological component to its syntax, in direct violation of the principle of lexical modification.⁸ In the case of LFG, Alsina (1993: iv, v, 280) admits "partially specified predicates" whose adicity is only fixed in the syntactic component.⁹

⁷ The examples here follow Alsina (1997), while the representations follow Alsina (1992): the two proposals differ in ways that are irrelevant to the issues under discussion. In particular, whereas functional uniqueness is abandoned and proto-roles are appealed to in the later proposal, functional uniqueness is observed and atomic semantic roles are employed in the earlier proposal. The roman numerals in small caps represent Bantu gender classes.

⁸ Frank (1996) challenges syntactic composition accounts within LFG on the basis of Romance auxiliary selection and reflexivization. We share the intuitions guiding this proposal although we capture relevant effects for the data examined here in a different fashion.

⁹ For a similar view, see Butt (1995), especially Chapter 5.

Contraventions of the principle of morpholexical inflection in (3) have likewise been proposed. In particular, the juxtaposition of auxiliary elements with main predicators has, in recent LFG, been analyzed as a kind of inflection effected by constituent structure.¹² The auxiliary and the main verb are interpreted as constituent structure CO-HEADS contributing complementary (or merely compatible) information to the f(unctional)-structure associated with a single clause nucleus. Thus, in the annotated c-structure of the Welsh sentence ‘John saw the dragon’ (Bresnan 2001), the equations $\uparrow=\downarrow$ indicate heads whose information is pooled into a single f-structure for the clause:



The sentence in (13) is represented as a single clause: the tense and agreement information associated with the auxiliary are contributed to this clause nucleus, while the lexical semantics of the clause is determined by the main predicator, the verb ‘see’. Since the co-heads are syntactically independent elements, the relevant information can only be composed when they co-occur in constituent structure. Though they each bring relevant, unifiable information with them from the lexicon, they are not analyzed as a multi-word lexeme. In particular, certain independent constituent structure elements are analyzed as constituent structure or phrasal co-heads that contribute their combined information to a functional structure associated with a single clause nucleus. In this way, two or more independent categorial elements are construed as constituting a unit at some level of representation, specifically at the functional level. This type of proposal has provided elegant analyses of compound tense constructions and other periphrastic constructions involving auxiliary-like elements. Crucially, the resulting f-structure is not seen as the projection of a single predicative lexeme whose realization happens to require more than one syntactic atom, as it is in the present work: rather it is a composite of information created by the co-occurrence of the co-heads in phrase structure. Co-head analyses of the sort under discussion have been proposed primarily for syntactic constructions containing auxiliaries bearing modal and inflectional (i.e. morphosyntactic)

¹² See K.P. Mohanan (1982), Falk (1984), Ackerman (1984, 1987) for early proposals along these lines and Bresnan & Nordlinger (this volume), Bresnan (2001), Kroeger (1993), King (1995), Sadler (1997), Nordlinger (1998), and Butt et al. (1996), among others, for more recent formalizations of this idea. See also Chapter X of the present volume.

information, and in that sense contravene the principle of morpholexical inflection in (3).¹³

Thus, notwithstanding the *prima facie* plausibility of principles (2) and (3), some proposals in LFG and HPSG effectively reset the boundaries between the applicability of morpholexical and syntactic mechanisms in favor of the syntax. The frameworks in which these proposals are developed must be seen as lexicalist insofar as they adhere to the principle of morphological integrity in (1), but they are less constrained in that they do not strictly adhere to principles (2) and (3), and instead allow the syntax to move into the territory that had once been seen as the province of morphology and the lexicon.

In this connection, it is important to appreciate that the empirical motivation for this relative loss of morpholexical influence is precisely the set of phenomena involving periphrastically expressed predicates. Alsina (1993), Butt (1995), and Hinrichs & Nakazawa (1989, 1994) all motivate the need for the creation of new argument structures in the syntax on the basis of constructions involving a combination of two verbs which jointly define the semantic, functional, and categorial properties of a clause, e.g. a combination of a causative verb and a main verb or a combination of an auxiliary and a main verb.

Although some variants of LFG and HPSG fail to subscribe to principles (2) and (3), these frameworks generally adhere to the principle of unary expression in (4). According to this principle, each realization that a language's morphology defines for a given lexeme functions as a syntactic atom in phrase structure; that is, a lexeme listed in the lexicon belongs to a single lexical category such that whenever one of that lexeme's realizations appears in a syntactic structure, it must be situated at a single terminal node labelled for that category. But this requirement raises an important empirical and theoretical question: if an assemblage of syntactically independent elements behaves as a cohesive content-theoretic unit with respect to its lexical properties (i.e. is associated with a single argument structure or single grammatical function domain), should it be assumed to express a unitary lexical entity or should syntax be assumed to have a role in its composition? The frameworks of LFG and HPSG have been guided by the latter assumption; but if principle (4) is abandoned, as in the realization-based framework that we advocate here, the former alternative becomes a serious option.

On first consideration, the abandonment of principle (4) might appear to open the way to all kinds of unconstrained interactions between morphology and syntax. But abandoning (4) does not, in itself, entail the abandonment of the principle of morphological integrity in (1), according to which a word's proper subparts cannot participate in relations of syntactic movement or coindexation: that is, one can assume that the realizations generated by a language's morphology may consist of one word or many but still assume that the individual words contained in these realizations are opaque to syntactic principles.

Lexicalist linguistic theories, with few exceptions, have tended to assume that derivation and inflection are inherently synthetic in their expression—that both a lexeme's derivatives and the grammatical words constituting its inflectional paradigm are realized by morphophonologically integral units which function as syntactic atoms in phrase structure. This assumption reflects the standard lexicalist perspective concerning

¹³Co-head analyses have also been proposed for mixed category constructions such as gerundial constructions in Bresnan (1997) and Mugane (1996). Malouf (1998) presents arguments against that this type of analysis of mixed categories.

the interaction between the lexicon, morphology, and syntax. A cornerstone of this assumption is the following conception of lexical insertion:

(14) Synthetic realization principle¹⁴

Where lexeme L belongs to category X and σ is a set of morphosyntactic properties associated with L , the realization w of the pairing $\langle L, \sigma \rangle$ is synthetic and w may be inserted as the head of XP .

Because the pieces of periphrastic expressions are demonstrably independent elements in syntax, it has often been unquestioningly assumed that the principles defining their combination are simply the principles of ordinary syntax; that is, the synthesis/periphrasis distinction has been widely assumed to be the sole criterion for deciding whether a construction is defined morphologically or syntactically. This assumption reflects a conceptualization of morphology and a theoretical bias stemming ultimately from American structuralist morphemics. In particular, it has been assumed that morphology is essentially a discipline responsible for the syntagmatic construction of words and that words are compositional concatenations of meaningful elements (morphemes), combined within the lexical component to yield fully derived and inflected word forms. In effect, morphology is a kind of syntax, a “syntax of words” (Selkirk 1982). Treatments of various lexical phenomena within this approach have generally assumed what Stump 2001 calls a LEXICAL-INCREMENTAL conception of morphology: such treatments are LEXICAL by virtue of the assumption that affixes, like stems, possess their own separate representations in the lexicon, and they are INCREMENTAL in that the grammatical properties of a fully inflected word are associated with it only as an effect of its acquiring morphological exponents of those properties. The adoption of this view is by no means necessary given the general architectural assumption of representational modularity (Bresnan 1982b, 2001, Jackendoff 1997, 2002, Culicover and Jackendoff 2005) adopted within non-transformational frameworks: according to this assumption, grammar is a system of independent levels of representation, each comprising its own primitives and rules of organization and all set in principled correspondence with one another.

Adopting this latter conception of grammar design, we argue for an alternative to the morpheme-based conception of morphology ordinarily assumed in both lexicalist and non-lexicalist theories. In particular, we propose a conception of morphology in which both a lexeme’s derivatives and the grammatical words constituting its inflectional paradigm may be realized as synthetic or periphrastic combinations: in fact, the surface exponence of words reflects degrees of fusion/analyticity, embodying a continuum from synthesis to periphrasis. On this view, phrasal predicates have the same morpholexical status as other derivative lexemes, and a lexeme’s compound tense constructions have the same morpholexical status as the synthetically realized members of its paradigm. This type of proposal is consonant with the basic assumptions of Word & Paradigm of morphology. Recently there has been a resurgence of interest in this approach to morphology (Robins 1959; Matthews 1972; Zwicky 1985; Anderson 1992; Aronoff 1994; Beard 1995; Stump 2001, 2005, 2006; Stewart & Stump 2007; Hughes and Ackerman 2002; Ackerman and Malouf 2006; Blevins 2005, 2006; among others). In the

¹⁴ We equate this with the principle of morphological expression of Ackerman & Webelhuth (1998).

terminology of Stump's (2001) taxonomy of morphological theories, what distinguishes this approach from traditional morpheme-based approaches is its premise that a language's inflectional system is *INFERENCEAL* rather than lexical (in the sense that it represents inflectional exponents not as lexically listed elements, but as markings licensed by rules by which one form is deduced from another) and is *REALIZATIONAL* rather than incremental (in the sense that it treats a word's association with a particular set of morphosyntactic properties as a precondition for—not a consequence of—the application of the rule licensing the inflectional exponents of those properties). Thus, we propose a conception of lexical insertion in which the synthetic realization principle in (14) is complemented by the periphrastic realization principle in (15).

(15) Periphrastic realization principle

Where lexeme *L* belongs to category *X*, σ is a set of morphosyntactic properties associated with *L*, and the realization $w_1 w_2$ of the pairing $\langle L, \sigma \rangle$ is periphrastic, w_1 and w_2 may be inserted as the heads of the respective phrases *XP* and *YP*. Language-specific stipulations may require *XP* and *YP* to form a nested constituent [_{XP} X *YP*] or may allow them to be independent and discontinuous from one another.

The treatment of compound tense constructions and phrasal predicates as multi-word lexical constructions has consequences for the fundamental conceptual and architectural assumptions of lexicalist theories: specifically, it requires the development of mechanisms in these frameworks for dealing with lexemes that can be expressed by multiple, sometimes discontinuous, syntactic pieces. Despite the fact that phrasal predicates consist of independent syntactic elements, we argue that they are not a manifestation of syntactic co-headedness (Bresnan 2001), nor of predicate composition in constituent structure (Alsina 1992, 1996), nor of argument merger (Hinrichs & Nakazawa 1994). That is, we challenge the general (but heretofore generally unexamined) assumption that because a periphrastic construction involves syntactically independent constituents, its definition must be an effect of syntactic rather than morphological principles. Indeed, a number of independent criteria make it possible to distinguish *PERIPHRASES* (word combinations defined by principles of morphology) from word combinations whose definition follows from purely syntactic principles. Ackerman & Stump (2004) propose three such criteria:

- If an analytic combination *C* has a featurally intersective distribution, then *C* is a periphrase.
- If the morphosyntactic property set associated with an analytic combination *C* is not the composition of the property sets associated with its parts, then *C* is a periphrase.
- If the morphosyntactic property set associated with an analytic combination *C* has its exponents distributed among *C*'s parts, then *C* is a periphrase.

Detailed analysis of morphological phenomena within formally explicit realizational models demonstrates that periphrasis can be straightforwardly accommodated within such models when construed simply as one of the possible forms

of morphological exponence; moreover, it can be accommodated in a way which respects both the principle of lexical modification in (2) and that of morpholexical inflection in (3) (principles which together might be thought of as constituting the Strong Lexicalist Hypothesis). We thus provide a conceptual alternative to standard lexicalism; this alternative has been referred to as *realization-based lexicalism* (Blevins 2001), since it adopts an inferential-realizational view of morphology. Inferential-realizational approaches to morphology are, in fact, quite consistent with the fundamental assumptions of constraint-based lexicalism, both with respect to general conceptual, design features and in their commitment to comprehensive and rigorous formalization of analyses.

We are now in a position to propose a taxonomy of lexicalist approaches to periphrasis. As we have seen, there is a conceptual tension among principles (2)-(4) (the principle of lexical modification, that of morpholexical inflection, and that of unary expression), a tension that emerges most obviously in the analysis of periphrastically expressed clausal heads. Classical LFG and HPSG maintained all three principles (see line 1 of Table 1) but were unable to provide optimal analyses of these types of heads. Two obvious types of responses to this state of affairs are imaginable and both involve a realignment of the relative privileges of the morphological and syntactic components, albeit in opposite directions. If one considers it of paramount importance to retain strong restrictions on the morphology/lexicon vis-à-vis the syntax, then one is led to create periphrastically expressed clausal heads in the syntax by allowing phrase-structural operations to trespass into the morphological component, which was previously the sole domain responsible for the formation of new argument structures. This leads to the departure from classical lexicalism represented by works such as Alsina (1992, 1997) and Hinrichs & Nakazawa (1989, 1994), which adhere to (4) but to neither (2) nor (3). Accordingly, the morphological component is weakened relative to the syntax in recent LFG and HPSG compared to the classical versions of these theories. (See line 2 of Table 1.)

	(1) Morphological Integrity	(2) Lexical Modification	(3) Morpholexical Inflection	(4) Unary Expression
Classical LFG and HPSG ¹⁵ (Bresnan 1982b; Pollard & Sag 1987)	yes	yes	yes	yes
Some recent views in LFG and HPSG (Alsina 1992, 1997; Hinrichs & Nakazawa 1989, 1994)	yes	no	no	yes
Realization-based Lexicalism	yes	yes	yes	no

TABLE 1. Taxonomy of Lexicalist Approaches

Alternatively, if one considers the principles of lexical modification and morpholexical inflection to be the conceptual heart of lexicalism, then one is more inclined to eliminate the principle of unary expression. (See line 3 of Table 1.) Downgrading this latter principle to the status of a markedness preference strengthens the relative analytical role of the morphological component vis-à-vis the syntax: whereas classical lexicalism appealed to syntax and not morphology to account for the properties of word collocations, we propose that syntax is merely the preferred locus of composition for multi-word combinations, and we extend this option to the morphological component.

Despite their differences, the theories compared in Table 1 are linked by a shared assumption: morphology is privileged over the syntax in that morphological objects are only created in the lexicon: they enter as fully-formed words into syntactic structures. The words thus formed in the lexical component exhibit phonological, morphological, and syntactic cohesiveness, since syntax is not permitted to access the internal structure of word forms. Adoption of this principle classifies all of the lexicalist proposals uniformly and as distinct from theories that permit (or require) morphological and syntactic operations to be intermixed, e.g. many versions of Government & Binding Theory, Distributed Morphology, and others.

Our view is that lexicalism is first and foremost a hypothesis about the correspondence between content-theoretic objects (containing functional-semantic and/or morphosyntactic content) and the forms that realize them.¹⁶ In particular, we maintain that the data from predicates expressed by syntactically independent elements do not warrant abandoning what we regard as the foundational principles of lexicalism, namely the principles of lexical modification and morpholexical inflection. Given this general

¹⁵Although Classical LFG and HPSG are equated with respect to the four principles discussed here, it should be noted that there is an important difference between these theories with respect to an insight that guides our proposal. In particular, LFG has a tradition of distinguishing between functional (what we refer to as information-theoretic) and structural lexicalism. This distinction is appealed to for the explanation of various grammatical phenomena in early work by Simpson (1991) on Warlpiri, Ackerman (1984, 1987) on Hungarian, Vogul and Ostyak, and more recently for the analysis of Japanese complex predicates in Matsumoto (1996), to name the work of only a few researchers. The architectural assumptions of LFG permit one to distinguish between the functional and structural or categorial heads of phrasal domains: most importantly it allows discrepancies between the functional and structural heads of syntactic constructions. As mentioned, this view of distinctive headedness in different informational domains underlies much of the conceptual motivation for the theory of predicates proposed, as well as some of the implementational assumptions discussed in Ackerman & Webelhuth (1998). Moreover, it informs an important development concerning the interaction between phrasal structure and functional structure in much recent work within LFG (see chapter X of the present volume).

¹⁶See Bresnan (to appear***) for an intriguing proposal concerning the relation between content, form, and markedness; also Sells (2001).

perspective on lexicalism, we are led to postulate the following profile of lexicalist principles (corresponding to the last line of Table 1):

- (16) Assumptions of Realization-based Lexicalism
- Only morphological and not syntactic rules can create or analyze morphological words (= the principle of morphological integrity).
 - Only morphological and not syntactic rules can create new argument structures (= the principle of lexical modification).
 - Only morphological and not syntactic rules can associate morphosyntactic content with a lexeme's realizations, whether these be synthetic or periphrastic (= the principle of morpholexical inflection).
 - Lexemes are preferably expressed by single synthetic word forms but can also be expressed by combinations of words; that is, the principle of unary expression is merely a preference principle.

In sum, we have provided a taxonomy of lexicalist approaches and a hypothesis concerning a particular and novel lexicalist strategy responsive to the empirical phenomenon of periphrastically expressed predicates. In the next two sections we turn to some of the properties of compound tense constructions and phrasal predicates in order to develop this hypothesis in concrete terms. As will be seen, an interpretation of lexicalism that accords higher priority to the principles of lexical modification and morpholexical inflection than to the principle of unary expression affords a straightforward resolution of the long-standing challenges posed by periphrastic predicates.

3 Inflectional periphrasis: Compound tenses

The coincidence of synthetic and compound tense constructions is a common phenomenon cross-linguistically. For instance, the morphosyntactic properties associated with tense, mood, and agreement find both synthetic and periphrastic expression in the Slavic languages. A typical instance of this contrast is the expression of future tense in Russian. Aspectually imperfective verbs form their future tense periphrastically, through the combination of an infinitival form with a future-tense form of the auxiliary verb *BYT'* 'be', inflected for the person and number of the subject. In contrast, aspectually perfective verbs form their future tense synthetically; though they are future in reference, their inflectional markings are like those exhibited by an imperfective verb in the present tense. This is illustrated by the Russian verbal lexemes *ZARABOTAT'* 'earn' (perfective) and *ZARABATYVAT'* 'earn' (imperfective) in Table 2; because the third-person singular present cell in the paradigm of *ZARABOTAT'* remains unfilled, this is an instance of what Spencer (2003) calls an UNDEREXHAUSTIVE PARADIGM.

	ZARABOTAT' 'earn' (perfective)	ZARABATYVAT' 'earn' (imperfective)
Infinitive	<i>zarabotat'</i>	<i>zarabatyvat'</i>
Past masculine	<i>zarabotal</i>	<i>zarabatyval</i>
feminine	<i>zarabotala</i>	<i>zarabatyvala</i>
neuter	<i>zarabotalo</i>	<i>zarabatyvalo</i>
Present		<i>zarabatyvaet</i>
Future	<i>zarabotaet</i>	<i>bud'et zarabatyvat'</i>

TABLE 2. Infinitive and third-person singular forms of the Russian verbal lexemes ZARABOTAT' and ZARABATYVAT'

Because the imperfective future is expressed periphrastically, it has often been assumed that it is fundamentally different from the perfective future--that the synthetic forms of the perfective future are defined by the morphology of Russian, while the periphrastic expressions of the imperfective future are simply composed in phrase structure. On the LFG account of King (1995:227), for example, the imperfective future consists of two c-structure heads which pool their separate lexical information into a single f-structure. On this sort of approach, the nonexistence of periphrastic perfective futures such as **bud'et zarabotat'* is attributed to "morphological blocking"¹⁷--that is, such expressions are excluded by virtue of the existence of a synthetic form expressing exactly the same content. In effect, a special mechanism is required to check whether the morphosyntactic information in an f-structure is contributed by co-heads and whether the same information could have been contributed by a synthetic expression. If so, then the former expression is blocked. Thus, syntactic expression appears to be constrained by information that is properly morphological. Within LFG this tension between synthetic and periphrastic expression for morphosyntactic property sets has led to the claim that "syntax competes with morphology."¹⁸ As observed in Ackerman & Stump (2004), this kind of analysis presumes that the morphology of a language must somehow be prevented from associating certain morphosyntactic property sets (in the present case, imperfective future property sets) with verbal lexemes, and that syntactic operations serve to make up for just these missing associations. Unexpected restrictions on the morphosyntactic property sets available for morphological expression are unexpectedly accompanied by compensatory syntactic idiosyncrasies (such as the need for co-heads and the stipulated blocking of syntax by functionally equivalent morphology).

There is an alternative, purely morphological way to view this competition: as synthetic morphological expression competing with periphrastic morphological expression. Three considerations immediately favor such an approach: it allows one to dispense with the otherwise unmotivated device of co-heads; it allows one to dispense with the need to stipulate the blocking of syntax by functionally equivalent morphology; and it allows one to maintain a basic assumption of realizational morphology--that every well-formed morphosyntactic property set is available for morphological realization. In order to entertain this alternative hypothesis, however, one must make the following assumption from Ackerman & Stump (2004):

¹⁷ See Andrews (1990) for a formulation of morphological blocking within LFG.

¹⁸ Spencer (2001)***a or b?*** argues that co-head analyses are untenable in Slavic compound tenses and we refer the reader that source for specific arguments.

- (17) The Periphrastic Realization Hypothesis:
 Inflectional rules that deduce a lexeme's realizations include rules defining periphrastic combinations as well as rules defining synthetic forms.

In this section, we demonstrate the consequences of this hypothesis for the analysis of compound tenses such as the Russian imperfective future. We develop this hypothesis in the context of the realization-based morphological model proposed by Stump (2002, 2006), Ackerman & Stump (2004), and Stewart & Stump (2007); we therefore present a brief discussion of this model (§3.1) before proceeding to the specifics of our analysis of compound tenses (§3.2).

3.1 Content-paradigms and their realization

In the realization-based morphological model assumed here, every lexeme L of category C has an associated CONTENT-PARADIGM: a set of cells each of which consists of the pairing of L with a complete set σ of compatible morphosyntactic properties appropriate to lexemes of category C .¹⁹ For instance, the content-paradigm of the Russian perfective verbal lexeme ZARABOTAT' 'earn' includes cells such as those in (18).

- (18) Past-tense cells in the content-paradigm of the Russian perfective verbal lexeme ZARABOTAT' 'earn'
- a. $\langle \text{ZARABOTAT}', \{\text{singular masculine perfective past}\} \rangle$
 - b. $\langle \text{ZARABOTAT}', \{\text{singular feminine perfective past}\} \rangle$
 - c. $\langle \text{ZARABOTAT}', \{\text{singular neuter perfective past}\} \rangle$
 - d. $\langle \text{ZARABOTAT}', \{\text{plural perfective past}\} \rangle$

Each cell in a lexeme's content paradigm has a realization. In Paradigm Function Morphology (Stump 2001, Stewart & Stump 2007), the relation between cells and their realizations in a language is formulated as a PARADIGM FUNCTION PF: for any cell $\langle L, \sigma \rangle$ in a content paradigm, $\text{PF}(\langle L, \sigma \rangle) = X$ iff X is the realization of $\langle L, \sigma \rangle$. In this way, the definition of a language's inflectional morphology is equated with the definition of its paradigm function.

The definition of a language's paradigm function is a complex matter. In those instances in which the realization of $\langle L, \sigma \rangle$ is irregular, the value of $\text{PF}(\langle L, \sigma \rangle)$ must simply be stipulated in L 's lexical entry. But in instances in which the realization of $\langle L, \sigma \rangle$ conforms to a regular morphological pattern, the evaluation of $\text{PF}(\langle L, \sigma \rangle)$ is determined by productive rules. At least two approaches to the rule-based definition of PF are imaginable. Under the EXPONENCE-BASED approach, the value of $\text{PF}(\langle L, \sigma \rangle)$ is defined as the result of applying to L 's root the sequence of morphological rules appropriate to the realization of $\langle L, \sigma \rangle$. For instance, where $\langle L, \sigma \rangle$ is one of the content-cells in (18), the value of $\text{PF}(\langle L, \sigma \rangle)$ might be defined as the result of applying all of the applicable rules in

¹⁹ The concepts developed here are those of Stump (2002), but with different terminology: Stump's 'syntactic paradigms' are our 'content-paradigms'.

(19a,b) to the root of ZARABOTAT' (yielding the realizations *zarabotal*, *zarabotala*, *zarabotalo*, and *zarabotali* for the respective cells in (18)).

- (19) a. Realize {past ...} through the suffixation of *-l*
 b. Realize {singular feminine past ...} through the suffixation of *-a*
 Realize {singular neuter past ...} through the suffixation of *-o*
 Realize {plural past ...} through the suffixation of *-i*

See Stump 2001 and Stewart & Stump 2007 for extensive discussion of this exponence-based approach to a paradigm function's definition.

Under the alternative, IMPLICATIVE approach, the value of $PF(\langle L, \sigma \rangle)$ is defined in terms of the realization of L's principal parts. The PRINCIPAL PARTS of a lexeme L are a set of cells in L's content paradigm whose realization suffices to determine the realization of all of the remaining cells in L's content paradigm. Thus, suppose that a Russian verb's principal parts include the infinitive cell in its paradigm. In that case, a Russian verb's past-tense realizations might (under the implicative approach) be defined as the result of applying rule (20); an equivalent graphic representation of the implicative rule (20) is given in Table 3. By this rule, the realization *zarabotat'* of the principal part $\langle ZARABOTAT', \{\text{perfective infinitive}\} \rangle$ determines the realizations *zarabotal*, *zarabotala*, *zarabotalo*, *zarabotali* of the four cells listed in (18).

- (20) If $PF(\langle L, \{\text{infinitive ...}\} \rangle) = Xt'$ then $PF(\langle L, \{\text{singular masculine past ...}\} \rangle) = Xl$
 $PF(\langle L, \{\text{singular feminine past ...}\} \rangle) = Xla$
 $PF(\langle L, \{\text{singular neuter past ...}\} \rangle) = Xlo$
 $PF(\langle L, \{\text{plural past ...}\} \rangle) = Xli$

<u>Content cell</u>	<u>Realization</u>
$\langle L, \{\text{infinitive ...}\} \rangle$	Xt'
$\langle L, \{\text{singular masculine past ...}\} \rangle$	Xl
$\langle L, \{\text{singular feminine past ...}\} \rangle$	Xla
$\langle L, \{\text{singular neuter past ...}\} \rangle$	Xlo
$\langle L, \{\text{plural past ...}\} \rangle$	Xli

TABLE 3. Graphic representation of implicative rule (20)

Implicative rules comparable to the one in Table 4 make it possible to deduce a lexeme's entire paradigm from its principal parts. Thus, consider how a Russian verb's remaining finite forms might be defined under the implicative approach. Suppose that a Russian perfective verb's principal parts are the infinitive, first-person singular future, and second-person singular future cells in its paradigm; suppose, likewise, that a Russian imperfective verb's principal parts are the infinitive, first-person singular present, and second-person singular present cells in its paradigm. On those assumptions, the realization of a perfective verb's future-tense paradigm and that of an imperfective verb's present-tense paradigm may be defined by the implicative rules in Table 4. The rules in part A of this table pertain to the realization of verbs belonging to the first conjugation;

those in part B pertain to the realization of verbs belonging to the second conjugation. In the default case, $X' = X$ (as in the case of *p'eku* ‘I bake’, *p'eč'oš'* ‘you (sg.) bake’, *p'ekut* ‘they bake’), but by lexical stipulation, X' may instead equal Y (as in the case of *v'ižu* ‘I see’, *v'id'iš'* ‘you (sg.) see’, *v'id'at* ‘they see’).

A. First conjugation

Content cell	Realization	Examples
a. Principal parts		
$\langle L, \{1st\ singular\ TNS:\alpha\ ASP:\beta\} \rangle$	Xu	<i>čitaju</i> ‘I read’
$\langle L, \{2nd\ singular\ TNS:\alpha\ ASP:\beta\} \rangle$	$Yeš'$	<i>čitaješ'</i>
b. Other cells		
$\langle L, \{3rd\ singular\ TNS:\alpha\ ASP:\beta\} \rangle$	Yet	<i>čitajet</i>
$\langle L, \{1st\ plural\ TNS:\alpha\ ASP:\beta\} \rangle$	Yem	<i>čitajem</i>
$\langle L, \{2nd\ plural\ TNS:\alpha\ ASP:\beta\} \rangle$	$Yet'e$	<i>čitajet'e</i>
$\langle L, \{3rd\ plural\ TNS:\alpha\ ASP:\beta\} \rangle$	$X'ut$	<i>čitajut</i>

B. Second conjugation

Content cell	Realization	Examples
a. Principal parts		
$\langle L, \{1st\ singular\ TNS:\alpha\ ASP:\beta\} \rangle$	Xu	<i>govorju</i> ‘I speak’
$\langle L, \{2nd\ singular\ TNS:\alpha\ ASP:\beta\} \rangle$	$Yiš'$	<i>govoriš'</i>
b. Other cells		
$\langle L, \{3rd\ singular\ TNS:\alpha\ ASP:\beta\} \rangle$	Yit	<i>govorit</i>
$\langle L, \{1st\ plural\ TNS:\alpha\ ASP:\beta\} \rangle$	Yim	<i>govorim</i>
$\langle L, \{2nd\ plural\ TNS:\alpha\ ASP:\beta\} \rangle$	$Yit'e$	<i>govorit'e</i>
$\langle L, \{3rd\ plural\ TNS:\alpha\ ASP:\beta\} \rangle$	$X'at$	<i>govorjat</i>

TABLE 4. Implicative rules for Russian verbal lexemes

For discussion of the assumptions motivating the implicative approach, see Blevins 2005, 2006, Ackerman & Blevins 2006, Finkel & Stump 2006, 2007.

The exponence-based and implicative approaches to the definition of a language’s paradigm function are not theoretically opposed to one another, since they are suited for distinct purposes: the exponence-based approach is better suited for analyses of morphological exponence, while the implicative approach is better suited for analyses of realizational predictability. For precisely this reason, the implicative approach is better suited to account for the incidence of inflectional periphrasis in a lexeme’s paradigm. Accordingly, the analyses that we present here are articulated in an implicative rather than an exponence-based format.

3.2 An implicative approach to compound tenses

A theory of inflectional morphology incorporating implicative rules such as those in Tables 3 and 4 affords an entirely new conception of periphrasis. In particular, we claim that in an instance of periphrasis, the realization of a single content-cell may be the combination of two (or rarely, more) words, each of which individually realizes a distinct content cell. Correspondences of this sort are regulated by implicative rules. Thus, the implicative rule in Table 5 defines the periphrastic realization of future imperfectives in Russian.

Where $\sigma = \{\text{PER}:\alpha \text{ NUM}:\beta \text{ imperfective future}\}$:

Content cell	Realization
$\langle \text{BYT}', \sigma \rangle$	Y
$\langle \text{L}, \{\text{imperfective infinitive}\} \rangle$	Z
$\langle \text{L}, \sigma \rangle$	[Y Z]

TABLE 5. Implicative rule for future imperfectives in Russian

According to the rule in Table 5, the realization of the content-cell in (21) is [*bud'et zarabatyvat'*], where *bud'et* is the realization of the content cell in (22) and *zarabatyvat'* is the realization of the content cell in (23).

- (21) $\langle \text{ZARABATYVAT}', \{3^{\text{rd}} \text{ singular imperfective future}\} \rangle$
 (22) $\langle \text{BYT}', \{3^{\text{rd}} \text{ singular imperfective future}\} \rangle$
 (23) $\langle \text{ZARABATYVAT}', \{\text{imperfective infinitive}\} \rangle$

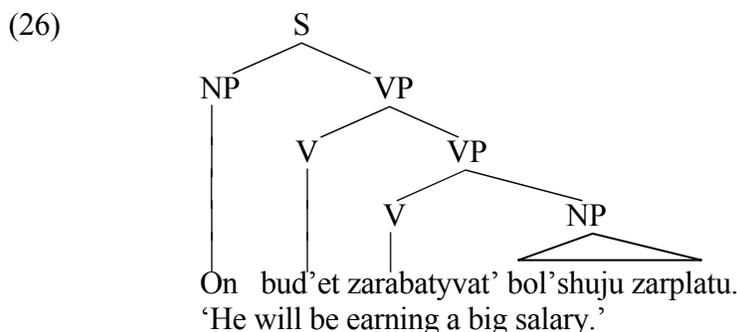
Although the verb *BYT'* in Table 5 is itself inherently imperfective, its future-tense forms are synthetic rather than periphrastic; this peculiarity of *BYT'* is an effect of its principal part specifications, given in (24). Note that the finite principal parts of *BYT'* are future-tense rather than present-tense forms; this distinguishes *BYT'* from other imperfective verbs, whose finite principal parts are instead present-tense forms (as in the case of *ZARABATYVAT'*, whose principal parts are given in (25)). In defining the first- and second-person singular imperfective future realizations of *BYT'*, the principal-part specifications of *BYT'* override the application of the implicative rule in Table 5. Moreover, because the two implicative rules in Table 4.A (unlike the rule in Table 5) make specific reference to a verb's first and second singular forms, these two rules override the latter rule in defining the realization of the remaining forms in the future paradigm of *BYT'*.

- (24) Principal part specifications of the imperfective verbal lexeme *BYT'* 'be'
- PF($\langle \text{BYT}', \{\text{imperfective infinitive}\} \rangle$) = *byt'*
 - PF($\langle \text{BYT}', \{1^{\text{st}} \text{ singular imperfective future}\} \rangle$) = *budu*
 - PF($\langle \text{BYT}', \{2^{\text{nd}} \text{ singular imperfective future}\} \rangle$) = *bud'eš'*
- (25) Principal part specifications of the imperfective verbal lexeme *ZARABATYVAT'* 'earn'
- PF($\langle \text{ZARABATYVAT}', \{\text{imperfective infinitive}\} \rangle$) = *zarabatyvat'*

- b. PF(⟨ZARABATYVAT', {1st singular imperfective present}⟩) = *zarabatyvaju*
 c. PF(⟨ZARABATYVAT', {2nd singular imperfective present}⟩) = *zarabatyvaješ'*

Because the implicative rule in Table 5 is explicitly restricted to imperfectives, it can play no role in the realization of perfective future-tense forms. In this way, the possibility of periphrases such as **bud'et zarabotat'* is excluded in the inflection of the perfective verb ZARABOTAT', and is excluded without appeal to an ad hoc principle of morphological blocking.

The syntactic configuration of morphologically defined periphrases such as [*bud'et zarabatyvat'*] is defined by rules which we here assume to be language-specific; in the case of any periphrase [Y Z] defined by the implicative rule in Table 5, we assume that the verb form Y is the head of [Y Z] and that the verb form Z appears in c-structure as the head of Y's complement, as in (26).



Structures such as (26) highlight an important issue: do the parts of a periphrase appearing in some c-structure participate independently in determining the corresponding f-structure, or do they instead participate as a unit? Suppose, for instance, that the f-structure of (26) is (27): the question is then whether (27) is defined as incorporating both the f-structure of *bud'et* and that of *zarabatyvat'* (i.e. the f-structures associated with the content-cells in (22) and (23)) or as incorporating the f-structure associated with the content-cell in (21) (whose realization is [*bud'et zarabatyvat'*]). In this instance, the question seems unimportant, since the relevant properties of person, number, tense and aspect can be deduced from either (22)/(23) or (21). One might therefore be tempted to conclude that with respect to the determination of f-structure, the parts of a periphrase behave no differently from ordinary syntactic atoms.

(27) f-structure of (26)

PRED	‘earn ⟨SUBJ, OBJ⟩‘										
TENSE	future										
ASPECT	imperfective										
SUBJ	<table style="border-collapse: collapse; margin-left: auto; margin-right: auto;"> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">PRED</td> <td style="padding: 5px;">‘pro’</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">PERS</td> <td style="padding: 5px;">3rd</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">NUM</td> <td style="padding: 5px;">sg</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">GEN</td> <td style="padding: 5px;">masc</td> </tr> <tr> <td style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">PRON</td> <td style="padding: 5px;">pers</td> </tr> </table>	PRED	‘pro’	PERS	3 rd	NUM	sg	GEN	masc	PRON	pers
PRED	‘pro’										
PERS	3 rd										
NUM	sg										
GEN	masc										
PRON	pers										
OBJ	[“bol’shuju zarplatu”]										

But this conclusion would be wrong. Many compound tense constructions in the languages of the world are not amenable to a simple compositional analysis, unless the pieces are opportunistically supplied with precisely the information known to be relevant for the composite construction. Udmurt (a Uralic language of the Permian branch), as analysed in Ackerman & Stump (2004), provides a good illustration. In this language the imperfective past tense is a compound tense used to describe “a protracted or repeated activity occurring in the ... distant past” (Csúcs 1990:51). This tense is realized by the periphrastic combination of a future-tense form (inflected for subject agreement) with the invariant past form *val* of the copula, as in Table 6; compare the future-tense forms in Table 7.

sg.	1	<i>mīno val</i> ‘I used to go (long ago)’
	2	<i>mīnod val</i>
	3	<i>mīnoz val</i>
pl.	1	<i>mīnom(i) val</i>
	2	<i>mīnodī val</i>
	3	<i>mīnozī val</i>

TABLE 6. Affirmative imperfective past-tense realizations of Udmurt MĪNĪ ‘go’
[data from Suihkonen 1995:302²⁰]

sg.	1	<i>mīno</i> ‘I will go’
	2	<i>mīnod</i>
	3	<i>mīnoz</i>
pl.	1	<i>mīnom(i)</i>
	2	<i>mīnodī</i>
	3	<i>mīnozī</i>

TABLE 7. Affirmative future-tense realizations of Udmurt MĪNĪ ‘go’
[data from Csúcs (1988:142)]

²⁰ Though the source for paradigm is Suihkonen (1995), for consistency we utilize the orthography used in various works by Csúcs.

Neither part of an imperfective past-tense periphrase such as [*mīno val*] carries any exponent of an aspectual property such as durativity or habituality; yet, such a property is associated with the verb phrase [_{VP} *mīno val*] as a whole. Moreover, while the finite head of [*mīno val*] is marked for future tense, the periphrase as a whole expresses the distant past tense. This departure from pure compositionality is, we claim, determined by the morphology of Udmurt: the temporal and aspectual properties of the verb phrase [_{VP} *mīno val*] aren't deducible from the individual content-cells in (28), but from the periphrastically realized content-cell in (29).

- (28) a. ⟨MĪNĪ, {1st singular future affirmative}⟩
 b. ⟨COPULA, {past}⟩
 (29) ⟨MĪNĪ, {1st singular imperfective past affirmative}⟩

We therefore propose the following general constraint on f-structure mapping for realizationally defined periphrases.

- (30) PERIPHRASTIC MAPPING CONSTRAINT: Suppose that the realization of a content-cell ⟨L,σ⟩ is a periphrase [Y Z] appearing in some sentence S, that Y is the realization of a content-cell ⟨L',σ'⟩, and that Z is the realization of a content-cell ⟨L'',σ''⟩. In that case, the functional equations that the periphrase [Y Z] contributes to S's f-description are those determined by ⟨L,σ⟩ rather than those determined by ⟨L',σ'⟩ and ⟨L'',σ''⟩ individually.

According to this constraint, the f-description of the Udmurt sentence *Ton mīnod val* 'you (sg.) used to go' must be determined by the content-cell in (29) rather by those in (28). One can imagine various formal accounts of Udmurt f-structure mapping that would satisfy this constraint; for present purposes, however, we refrain from advocating any particular approach, since our objective here is only to argue for the broader conclusion that some such approach is needed.

As the evidence discussed in this section shows, conceiving of periphrasis as one of the available types of inflectional exponence affords an immediate solution to two long-standing problems in the analysis of compound tenses: it accounts for the fact that synthetic expressions of tense participate in blocking relations with periphrastic expressions (as when the principal part specifications in (24) override the rule in Table 5), and does so without recourse to any ad hoc principle of morphological blocking; and it accounts for the fact that a compound tense's morphosyntactic properties are often not the compositional combination of the morphosyntactic properties of its parts. Moreover, it obviates the need to countenance otherwise unmotivated constructs such as co-heads, and it allows one to maintain the assumption that every well-formed morphosyntactic property set is available for morphological realization.

The prevalence of the productive non-compositional inflectional constructions of the sort typified by Udmurt raise an interesting parallelism with lexeme-derivation phenomena, since they evince the semantically non-transparent or semi-idiomatic flavor often associated with the latter. Spencer (200***:283) notes this parallelism in his provocative discussion of Slavic periphrastic tense constructions:

No specific component of the construction is uniquely responsible for expressing the properties that are realized. We are dealing here with constructional idioms, much like phrasal verbs. Just as we don't ask for the meaning contribution of the separate parts of the verb *put up with*, so we don't ascribe meanings to the components of periphrases such as *has left*.

We turn now to an examination of lexeme derivation, specifically, phrasal predicate formation. We propose to account for the incidence of semantic noncompositionality in phrasal predicates in the same way as we have accounted for its incidence in compound tense constructions: by appealing to a distinction between a lexeme's content and the morphological realization of this content as a periphrase.

4 Derivational periphrasis: Phrasal predicates

In this section we focus on the descriptive and theoretical profile of phrasal predicate constructions. Such predicates are attested in numerous genetically and geographically unrelated languages. In all of these languages, a phrasal predicate consisting of a verb V and an accompanying verbal particle or preverb (PV) differs from a predicate consisting of V alone: these differences may include semantic differences as well as differences in grammatical function assignment, in the semantic roles of their arguments, in case-government, or in the surface expression of their complements; in short, they differ with respect to the same sorts of lexical properties as a synthetically derived verb and its base.

In Russian, for example, the lexeme GO AROUND has the stem *obxod-*, the result of prefixing *ob* 'around' to the stem *xod-* of the lexeme GO. The operations of lexeme derivation which relate a basic verbal lexeme such as Russian GO to a complex verbal derivative such as GO AROUND may alter meaning, argument structure, grammatical function inventories, and case government patterns—properties conventionally associated with lexemes in lexicalist theories. Thus, suppose that the basic verbal lexeme GO has its semantic argument "goer", its functional argument "subject", and its categorial argument "NP[nom]" specified in its lexical entry. In that case, the principle of lexical modification makes a very specific restriction about the complex verbal derivative GO AROUND: its semantic arguments "goer" and "obstacle", its functional arguments "subject" and "object", and its categorial arguments "NP[nom]" and "NP[acc]" must either be specified in its lexical entry or must be deducible from the lexical entry of GO by means of a rule of derivation.

The claim of lexical status for Russian prefixed predicates yields the standard expectation that they are possible candidates for category-changing derivational operations. Indeed, they often have clear derivatives, both nominal (31) and adjectival (32):

- (31) *obxod* N 'round' (as in 'make the rounds')
- (32) *obxodnyj* A 'roundabout'

These predicates obey all of the principles mentioned in section 1; they follow the principle of morphological integrity, the principle of lexical modification, the principle of morpholexical inflection, and the principle of unary expression.

As in Russian, Hungarian has predicates in which a preverbal element (PV) modifies certain lexical properties associated with the verbal stem. For example, in (33) we see an instance where the preverb *bele* ‘into’ correlates with an alteration of both the case government pattern and the meaning associated with the verbal stem *szol* ‘speak, say, talk’: whereas *szol* is a one-place predicate, *beleszol* is a two-place predicate which governs the illative case for its oblique complement.

- (33) András beles-zolt a vitába***
 Andrew PV:into-spoke.3SG the dispute.ILL
 ‘Andrew intervened in the dispute.’

Once again, as in Russian, the predicate appears to have a morphological status, serving as a base for derivational processes such as nominalization. In the present instance, the verb *beleszol* ‘intervene’ corresponds to the derived nominal *beleszolás* ‘intervention.’

These obvious parallelisms between the predicates in Russian and Hungarian clearly suggest a uniform analysis as constrained by the principle of lexical modification. On the other hand, there is a property characteristic of Hungarian complex predicates that distinguishes them from their Russian analogs: in Hungarian the preverb and the verb can function as independent elements in phrase structure. This independence is exemplified in (34) where the presence of the sentential negation element *nem* ‘not’ immediately to the left of the verbal stem coincides with the postposing of the preverb:

- (34) András nem szolt bele a vitába***
 Andrew not spoke.3SG PV:into the dispute.ILL
 ‘Andrew didn’t intervene in the dispute.’

Similarly, Estonian contains a class of predicates composed of a PV and a verbal stem.²¹ In (35) the preverb *ära* ‘away’ is associated with the predicate *ära ostma* ‘corrupt, suborn’. This predicate is based on the simple verb stem *ostma* ‘buy, purchase’. In clauses with simple tenses, the preverb appears discontinuous from the verbal stem, typically in final position.

- (35) mees ostab ta sõbra ära***
 man buy.3SG his friend.GEN away
 ‘The man is bribing his friend.’

Predicates consisting of a separable preverb and a verbal stem can serve as bases for derivational operations. The following deverbal adjectival and nominal forms related to *ära ostma* ‘corrupt, suborn’ typify this possibility:

- (36) äraostmatu A ‘incorruptible’
 äraostmatus N ‘incorruptibility’
 äraostetav A ‘venal, corrupt’
 äraostetavus N ‘venality’

²¹See Hasselblatt (1990), Pusztaj (1994), Erelt et al. (1993, 1997), Klaas (1999), and Metslang (in press) on Estonian phrasal predicates.

In summary, the predicates in Russian, Hungarian, and Estonian (i) exhibit lexical property effects (the preverb-verb combination may differ from the verb stem with respect to such properties as argument adicity, semantics, and case government) and (ii) exhibit morphological effects (the preverb-verb combination constitutes a morphological base for the derivational operation of nominalization). On the other hand, Hungarian and Estonian differ from Russian in allowing the preverb and verb to exhibit syntactic independence.²²

Formations whose pieces exhibit this sort of syntactic independence are often referred to as PHRASAL PREDICATES given their periphrastic expression. The existence of phrasal predicates with the profile exhibited by Uralic languages such as Hungarian and Estonian is widespread cross-linguistically and has elicited the following characterization by Watkins for Indo-European (1964: 1037):

PV V compositions constitute “single semantic words”, comparable to simple lexical items; yet they permit *tnesis*, or syntactic separation, suggesting that internal parts are independent syntactic entities.

Nash (1982), in an insightful and neglected article on the cross-linguistic typology of phrasal predicates, proposes parallel representations for phrasal predicates in certain Australian languages and Algonquian languages; the representations which he proposes (which we schematize here as in (37) and (38)) evince a striking parallelism to the Uralic schema in (39).

- (37) Phrasal predicates in Pama-Nyungan (following Hale (1973), Nash (1980) and Simpson (1991) for Warlpiri)

[PREVERB] # [ROOT (with inflections)]

- (38) Phrasal predicates in Algonquian (following Goddard (1979) for Delaware, Dahlstrom (2000) and Phil LeSourd (p. c.) for Fox)

[PREFIX/INITIAL CHANGE-PREVERB(S)] # [ROOT (with inflections)]

- (39) Phrasal predicates in Uralic (following Ackerman (1987) for Hungarian; see below)

[PREVERB] # [ROOT (with inflections)]

According to these schemata, a preverb is separated from a verbal root by a word boundary; the pieces of a preverb-verb combination are therefore available to serve as syntactically independent elements. Even so, they may also function as a single, morphologically integral unit; this is particularly clear in instances in which the preverb-verb combination serves as the base for various types of morphological derivation. Moreover, Nash observes (echoing Watkins) that even when the preverb and the verb

²²For additional evidence concerning the lexical status of German verb-particle combinations, see Stiebels & Wunderlich (1992, 1994) and Stiebels (1996).

root fail to constitute an integrated morphological unit, they in any event embody a single lexicosemantic unit which he refers to as a THEME: [PREVERB ROOT]_{THEME}. We identify Nash's theme with the contentive profile typical of a lexeme: it comprises information about lexical semantics, valence, grammatical functions, and case government--the same type of information associated with ordinary synthetic predicates.

Thus, there is a clear mismatch between the lexical properties of the constructions in (37)-(39) and their formal expression; this mismatch might be schematized as in (40).

(40) The structure of preverb-verb combinations

- a. as a locus of lexical properties and as a base for derivational operations:

[PREVERB ROOT]_{THEME}

- b. in syntax:

[PREVERB] # [ROOT (with inflections)]

This is what led Nash to observe that phrasal predicates constitute an “analytic paradox” with respect to standard assumptions of lexicalism: if the lexicon and its associated morphology are interpreted as the source for word forms employed as syntactic atoms and the syntax as a system for combining and ordering these atoms, then the syntactic separability of preverb-verb combinations conflicts with their status as semantic, lexical and morphological units.

Following recent research within inferential-realizational theories of morphology (e.g. that of Stump 2001), we address the paradox raised by phrasal predicates and the related morphology-syntax interface issue from the perspective of word-formation or lexeme-formation operations within the morphological and lexical components of the grammar. As in Ackerman & Stump (2004), we conceive of the lexicon as that component which has “to do with lexemes” (Aronoff 1994): this follows the tradition of Sapir (1921) and Matthews (1972), among others. Aronoff (1994:11) provides the following characterization of a lexeme:

“...a lexeme is a (potential or actual) member of a major lexical category, having both form and meaning but being neither, and existing outside of any particular syntactic context.”

Following standard lexicalist assumptions, we regard lexemes as entities which possess lexical semantics, lexical category membership, and valence; which associate semantic properties with particular arguments and specify the grammatical function of both semantic and non-semantic arguments; and which impose case-government requirements on these arguments. The lexicon houses members of this class of entities, and is associated with a morphological component which defines complex members of this class.

It is worth noting from the vantage of efforts to provide a theoretical account of such predicates that the particular syntactic behaviors of the independent elements

comprising phrasal predicates vary widely from language to language.²³ As seen throughout this volume, non-transformational theories parcel out grammatical explanation to different interacting components of language and therefore need to posit only empirically supportable phrase structure representations. This differs from transformational or syntactocentric approaches where tree-theoretic objects of an increasingly abstract sort are central for explanation. In this context, the observable variation in surface syntactic behaviors of phrasal predicates across languages (and within language families or geographical groupings as well) makes it extremely unlikely that there is a single, essentially phrase-structural basis for all of these patterns.²⁴

On the other hand, there are clear parallelisms between these predicates in terms of what T. Mohanan (1995) calls *lexicality*. First, they participate in many of the morphological operations which in lexicalist frameworks are non-phrasal by hypothesis, undergoing both derivational and inflectional operations.²⁵ In addition, they exhibit effects that are characteristic of lexical modification, showing the same sort of gradation in one language after another: at one extreme, their lexical properties (their meanings, their valence, and the inventories of grammatical functions and semantic roles that they assign) follow regular and productive patterns; at the opposite extreme, they exhibit a high degree of idiosyncrasy in their lexical properties.

4.1 Phrasal predicates in Hungarian²⁶

Hungarian, like several other Uralic languages (see Honti & Kiefer 2003) contains phrasal predicate constructions in which a syntactically separable preverb combines with a verb form. The basic properties of such constructions have been characterized as follows:

“In verbal constructions the preverb may keep its original adverbial meaning (e.g., *felmegy* ‘go up’, *kimegy* ‘go out’), or have an aspectual meaning (e.g., *megír* ‘write up’, *megcsókol* ‘kiss (once)’), or become part of a non-compositional idiomatic unit with the verb (e.g., *felvág* ‘show off’... - in addition to literal ‘cut up’)” (I. Kenesei et al. (eds.) 1998:329)

“Aktionsart/aspect is an added property of morphologically compound verb constructions introduced by a preverb or affix.” (Kiefer & Ladányi 2000:476)

²³ For a relevant discussion of Caucasian preverbs the reader should consult Harris & Campbell (1995) on Georgian and Hewitt (1989) on Abkhaz. The formulation of the Periphrastic realization principle in (2) is designed to be responsive to empirical differences among languages with respect to the constituency and linearity of exponents.

²⁴ See, however, Szabolcsi & Koopman (2001) for an attempt to provide a syntactocentric treatment of the phrasal predicate constructions of Hungarian and Dutch.

²⁵ Though it will play no role here, there is also a noteworthy parallel diachronic development evident in the formation of all of these predicates cross-linguistically: it is this aspect of the issue that will make it worthwhile to consider certain Caucasian constructions in tandem with the preverbal constructions in Warlpiri, Fox, and Estonian. In effect, following Hyman (1978) and Bybee (1985), the pieces out of which these constructions are made trace a gradient scale of phonological fusion, reflecting a historical development toward morphologization into a single morphophonologically integrated form. This yields the sort of object expected as the default or unmarked realization given the usual interpretation of the principle of morphological integrity.

²⁶ This section on Hungarian derives from Ackerman (2003).

“One can distinguish the following main types of functions concerning the relation between the preverb verb construction and the simple verb without a preverb:

1. The preverb indicates direction of activity;
2. The preverb expresses verbal aspect;
3. The preverb modifies the meaning of the verb;
4. The preverb changes the syntactic roles of the verb;
5. The preverb is a means of verb formation.”

(Soltész 1959:155)

The various functions mentioned by these authors are not necessarily disjunctive, but can be true simultaneously.

The strategy of combining preverbs with verb stems is perhaps the most productive modern means of predicate formation in Hungarian, although constraints on the permissible combinatorics of (classes of) preverbs with particular (classes of) predicates remains an active domain of research.

Among the dozens of variably productive subclasses of Hungarian phrasal predicates, there is an important class of *causal predicates* (Ackerman 1987; Ackerman & Webelhuth 1998) typified by the examples in (41) (adapted from Apreszjan-Páll 1982, Vol. 2:618):

- (41) a. Simple basic predicate:
 A lány majd meg hal (bánatában).
 the girl sometime PV die (sorrow.3SG.INESSIVE)
 ‘The girl will die sometime (in her sorrow).’
- b. Complex causal predicate:
 A lány majd bele hal a bánatába.
 the girl sometime PV die the sorrow.3SG.ILLATIVE
 ‘The girl will die sometime from her sorrow.’
- c. A lány majd a bánatába hal bele.
 the girl sometime the sorrow.3SG.ILLATIVE die PV
 ‘It’s her sorrow that the girl will die from.’

The predicates in (41a) and (41b) systematically differ in their lexical properties (i.e. with respect to lexical semantics, valence, semantic arguments, grammatical functions, and case government); by the principle of lexical modification, these predicates must therefore be seen as lexical units, notwithstanding their periphrastic expression. These essential properties are encapsulated in the schematic lexical representations for *meg hal* and *bele hal* in (42). In particular, whereas the simple predicate in (41a) requires a single argument, the complex predicate in (41b) requires two arguments with its OBL argument designating the cause of the event denoted by the predicate. The preverb in (41b) is separable from the verbal stem under specifiable, language-particular syntactic conditions; (41c) is an instance of this separation.

- (42) a. *meg hal:* (\uparrow PRED) = ‘die \langle (\uparrow SUBJ) \rangle ’
 b. *bele hal:* (\uparrow PRED) = ‘die from \langle (\uparrow SUBJ)(\uparrow OBL_{CAUSE}) \rangle ’
 (\uparrow OBL_{CAUSE} CASE) = illative

Causal predicates comparable to *bele hal* are extremely numerous; some additional examples are those listed in (43).

- (43)
- | | |
|-----------------------|------------------------|
| <i>bele vakul</i> | ‘get blinded by X’ |
| <i>bele un</i> | ‘get bored from X’ |
| <i>bele kábul</i> | ‘get dumbfounded by X’ |
| <i>bele fárad</i> | ‘get tired of X’ |
| <i>bele döglük</i> | ‘die of X’ |
| <i>bele betegedik</i> | ‘get sick of X’ |
| <i>bele bolondul</i> | ‘get/go crazy from X’ |
| <i>bele csömörlik</i> | ‘get disgusted from X’ |
| <i>bele fájdul</i> | ‘get pain from X’ |
| <i>bele izzad</i> | ‘sweat from X’ |
| <i>bele öszül</i> | ‘get grey from X’ |
| <i>bele remeg</i> | ‘tremble out of X’ |
| <i>bele pusztul</i> | ‘perish from X’ |
| <i>bele szédül</i> | ‘get dizzy from X’ |
| <i>bele vénül</i> | ‘get old from X’ |
| <i>bele fullad</i> | ‘suffocate from X’ |

The assumption that phrasal predicates are lexical units leads one to expect that like other syntactically atomic predicates, they should serve as bases for lexeme derivation, notwithstanding their periphrastic surface exponence.

And indeed, phrasal predicates are subject to operations whose effect is to produce synthetic derivatives; for instance, the phrasal predicate *össze*** fér* ‘be compatible with’ gives rise to the synthetic adjectival and nominal derivatives in (44).

- (44)
- | | | |
|----------------------------|-----|-------------------|
| <i>összeférhető</i> | (A) | ‘compatible’ |
| <i>összeférhetőség</i> | (N) | ‘compatibility’ |
| <i>összeférhetetlen</i> | (A) | ‘incompatible’ |
| <i>összeférhetetlenség</i> | (N) | ‘incompatibility’ |

Moreover, there is at least one derivational operation that is actually restricted to phrasal predicates: this is the operation of preverb reduplication, which has the semantic effect of indicating the irregular repetition of the action denoted by a phrasal predicate (Maitinskaia 1959, vol 2: 178; Kiefer 1995/1996:185); the examples in (45) illustrate.

- (45)
- | | | | |
|----|---------------------------|---|--|
| a. | <i>meg áll</i> ‘stop’ | → | <i>meg-meg áll</i> ‘to stop from time to time’ |
| b. | <i>át jön</i> ‘come over’ | → | <i>át-át jön</i> ‘come over from time to time’ |
| c. | <i>be rug</i> ‘get drunk’ | → | <i>be-be rug</i> ‘get drunk from time to time’ |

Like the derivational operations exemplified in (44), preverb reduplication produces a synthetic derivative (Kiefer 1995/1996:187): thus, while a simple preverb is obligatorily postposed under negation, a reduplicated preverb is not accessible to this postposition; the contrast between (46a,b) and (47a,b) illustrates.

- (46) a. Péter át ment a szomszédhoz.
 Peter PV went the neighbor.ALLATIVE
 ‘Peter went over to the neighbor.’
- b. Péter nem ment át a szomszédhoz.
 Peter not went PV the neighbor.ALLATIVE
 ‘Peter didn’t go over to the neighbor.’
- (47) a. Péter át-át ment a szomszédhoz.
 Peter PV-PV went the neighbor.ALLATIVE
 ‘Peter went (occasionally) to the neighbor.’
- b. *Péter nem ment át-át a szomszédhoz.
 Peter not went PV-PV the neighbor.ALLATIVE
- c. *Péter nem át-át ment a szomszédhoz.
 Peter not PV-PV went the neighbor.ALLATIVE

The inability to postpose reduplicated preverbs, as well as the inability of the reduplicated preverb to appear immediately to the right of the negative element (as in (47c)), appears to be a construction-specific behavior of reduplicated-preverb predicates and is quite anomalous in terms of the usual interaction of negation and preverbs within Hungarian grammar. In fact, Kiefer (1995/1996:188) observes that in order to convey clausal negation with reduplicated constructions speakers must engage in circumlocations, as in (48), where a finite reduplicated phrasal predicate heads a clause embedded under a negated matrix clause:

- (48) Nem igaz, hogy Péter át-át ment a szomszédhoz.
 Not true that Peter PV-PV went the neighbor.ALLATIVE
 ‘It’s not true that Peter went (occasionally) to his neighbor.’

4.2 A realizational approach to phrasal predicates

In §3.2, we showed that a theory of morphology incorporating implicative rules affords a simple account of periphrasis which is compatible with the fact that the morphosyntactic content of periphrases isn’t always compositional. This same distinction also makes it possible to reconcile a phrasal predicate’s syntactic complexity with its status as a lexical item.

We have assumed that the realization of a content-cell $\langle L, \sigma \rangle$ may take the form of a periphrase $[Y Z]$, where Y and Z are, individually, the realizations of the distinct

content-cells $\langle L', \sigma' \rangle$ and $\langle L'', \sigma'' \rangle$. In both the Russian and the Udmurt cases considered in §3.2, it is the morphosyntactic property set σ which determines whether the realization of the content-cell $\langle L, \sigma \rangle$ is synthetic or periphrastic; in such instances, periphrasis clearly serves as a kind of inflectional exponence. Logically, however, one might also expect to find instances in which it is the identity of the lexeme L which determines whether the realization of the content-cell $\langle L, \sigma \rangle$ is synthetic or periphrastic; in instances of this latter sort, periphrasis would function not as an expression of inflection, but as an expression of L 's derivation. The Hungarian phrasal predicate construction is, we claim, an instance of exactly this sort.

We shall represent derived lexemes as complex constructs of the form $\langle A, \delta \rangle$. In a construct of this form, A is the index of the lexeme from which $\langle A, \delta \rangle$ derives, and δ specifies the derivational category of $\langle A, \delta \rangle$; for instance, $\langle \text{SOFT}, \text{inchoative} \rangle$ represents the inchoative verbal derivative *SOFTEN* of the lexeme *SOFT*. Similarly, we shall represent endocentric compounds as complex constructs of the form $\langle A, \underline{B} \rangle$ or $\langle \underline{A}, B \rangle$, where A and B are the indices of the constituent lexemes and the index of the compound's head lexeme is underlined; for example, $\langle \text{GINGER}, \underline{\text{BREAD}} \rangle$ represents the compound nominal lexeme *GINGERBREAD* arising from *GINGER* and *BREAD* (and headed by *BREAD*).²⁷ A lexeme represented in this way may, of course, have a nested structure, e.g. $\langle \langle \text{GINGER}, \underline{\text{BREAD}} \rangle, \underline{\text{MAN}} \rangle$. Though the semantics of a complex lexeme can often be determined compositionally, nothing requires that this be the case; for instance, we assume that $\langle \text{UNDER}, \underline{\text{STAND}} \rangle$ is simply listed as having the meaning 'comprehend'.

Concomitantly with the introduction of this mode of representation for complex lexemes, we now generalize the notion of realization: so far, we have been assuming that in the inflectional domain, content-cells have realizations; a cell's realization is usually a word. We now additionally assume that in the domain of derivation and compounding, lexemes have realizations; a lexeme's realization is usually a root. Moreover, just as the realization of a content-cell may, in the inflectional domain, be determined by an implicative rule (e.g. those in Tables 3-5), we now assume that in the domain of derivation and compounding, the realization of a lexeme may likewise be determined by an implicative rule. For illustration, consider the Hungarian lexeme *OLVAS* 'read'. This lexeme is realized by the root *olvas*, and in accordance with the implicative rule in (49), the realization of *OLVAS* by the root *olvas* implies the realization of the derivative lexeme $\langle \text{OLVAS}, \text{causative} \rangle$ 'cause to read' by the root *olvastat*.

(49) Implicative rule defining causative roots in *-tat*:

If the verbal lexeme L is realized by the root X , then $\langle L, \text{causative} \rangle$ is realized by the root $Xtat$.

In § 3, we argued that in the inflectional domain, cells are sometimes realized by periphrases rather than by individual words; in the same way, we now assume that in the domain of derivation and compounding, lexemes are sometimes realized by periphrases rather than by individual roots. In order to distinguish periphrases which realize cells from those which realize lexemes, we shall refer to the former as *WORD PERIPHRASES* and

²⁷ The fact that the head of $\langle A, \underline{B} \rangle$ happens in this case to be its right-hand element we take to be a language-specific fact about English (contra Williams 1981), since morphological left-headedness is attested bountifully across languages.

to the latter as ROOT PERIPHRASES. For instance, the compound verbal lexeme ⟨FEL, OLVAS⟩ ‘read aloud’ is realized by either the synthetic root *felolvas* or the root periphrase [*fel olvas*], in accordance with the implicative rule in (50). As far as the functioning of the morphology is concerned, we assume that the two realizations introduced by (50) are simply in free variation.

- (50) Compound root formation:
 If the preverb PV and the verbal lexeme L are realized by the respective roots X and Y,
 then ⟨PV, L⟩ is realized either by the synthetic root XY (= Concat(X,Y))
 or by the root periphrase [X Y] (= Juxtap(X,Y)).

Cross-linguistically, headed lexemes such as ⟨FEL, OLVAS⟩ very often inflect through the inflection of their head. Stump (2001:96ff) argues that this phenomenon of inflectional head-marking is the effect of a universal principle, the head-application principle; for present purposes, we formulate this principle as in (51).

- (51) The head-application principle (Stump 2001)
 Where the lexemes L and ⟨...L...⟩ have Y and M(X,Y) as their respective roots (for some word-to-word operation M), if the realization of the content-cell ⟨L,σ⟩ is W, then the realization of the content-cell ⟨⟨...L...⟩,σ⟩ is M(X,W).

On the assumption that the operations of concatenation (Concat) and juxtaposition (Juxtap) in (50) are word-to-word operations,²⁸ the head-application principle regulates the inflection of Hungarian verbal lexemes such as ⟨FEL, OLVAS⟩: according to (51), if the realization of the content-cell ⟨OLVAS, {1st sg present definite}⟩ is *olvasom*, then the realization of the content-cell ⟨⟨FEL, OLVAS⟩, {1st sg present definite}⟩ is either Concat(*fel, olvasom*) (= *felolvasom*) or Juxtap(*fel, olvasom*) (= [*fel olvasom*]). Thus, the head-application principle accounts for the apparent mismatch (or “bracketing paradox”) between the form of the word periphrase [*fel olvasom*] (the combination of *fel* with the present-tense word form *olvasom*) and its meaning (the application of a tense operator to the meaning of ⟨FEL, OLVAS⟩).

Under the most general interpretation of the head-application principle (Stump 2001:260), the metalinguistic variable σ in (51) may range over derivational categories as well as over morphosyntactic property sets; under this interpretation, (51) applies in the domain of derivation and compounding as well as that of inflection. On this assumption, (49), (50), and (51) together entail that if the lexeme ⟨L, causative⟩ has root Y, then the lexeme ⟨⟨PV, L⟩, causative⟩ may have either Concat(X,Y) or Juxtap(X,Y) as its root; for instance, because the lexeme ⟨OLVAS, causative⟩ has root *olvastat* and the lexeme ⟨FEL, OLVAS⟩ has either Concat(*fel, olvas*) (= *felolvas*) or Juxtap(*fel, olvas*) (= [*fel olvas*]) as its root, it follows from (51) that the lexeme ⟨⟨FEL, OLVAS⟩, causative⟩ may have either Concat(*fel, olvastat*) (= *felolvastat*) or Juxtap(*fel, olvastat*) (= [*fel olvastat*]) as its root. Thus, the head-application principle also accounts for the apparent mismatch between the

²⁸ A word-to-word operation is a category-preserving operation having one suboperation in the set of roots and another in the set of words; cf. Stump (2001:116ff).

form of the root periphrase [*fel olvastat*] (the combination of *fel* with the causative root *olvastat*) and its meaning (the application of a causative operator to the meaning of ⟨FEL, OLVAS⟩).

As this example shows, our analysis entails that Hungarian verbal lexemes such as ⟨FEL, OLVAS⟩ participate in both inflectional head-marking and derivational head-marking; that is, the cells in the content paradigm of ⟨FEL, OLVAS⟩ are realized both by words such as *felolvasom* and by word periphrases such as [*fel olvasom*], and the causative derivative ⟨⟨FEL, OLVAS⟩, causative⟩ is realized both by the root *felolvastat* and by the root periphrase [*fel olvastat*]. These consequences are schematized in Table 5.

Lexeme	Root	Sample content cell	Realization of sample content cell
OLVAS 'read'	<i>olvas</i>	$\langle \text{OLVAS}, \{1 \text{ sg present definite} \} \rangle$	<u>olvasom</u>
$\langle \langle \text{FEL}, \text{OLVAS} \rangle$ 'read aloud'	either Concat(<i>fel, olvas</i>) (= <i>felolvas</i>) or Juxtap(<i>fel, olvasom</i>) (= [<i>fel olvasom</i>])	$\langle \langle \text{FEL}, \text{OLVAS} \rangle, \{1 \text{ sg present definite} \} \rangle$	either Concat(<i>fel, olvasom</i>) (= <i>felolvasom</i>) or Juxtap(<i>fel, olvasom</i>) (= [<i>fel olvasom</i>])
$\langle \text{OLVAS, causative} \rangle$ 'cause to read'	<u>olvas_{at}</u>	$\langle \langle \text{OLVAS, causative} \rangle, \{1 \text{ sg present definite} \} \rangle$	<u>olvas_{atom}</u>
$\langle \langle \text{FEL}, \text{OLVAS} \rangle, \text{causative} \rangle$ 'cause to read aloud'	either Concat(<i>fel, olvas_{at}</i>) (= <i>felolvas_{at}</i>) or Juxtap(<i>fel, olvas_{at}</i>) (= [<i>fel olvas_{at}</i>])	$\langle \langle \langle \text{FEL}, \text{OLVAS} \rangle, \text{causative} \rangle, \{1 \text{ sg present definite} \} \rangle$	either Concat(<i>fel, olvas_{atom}</i>) (= <i>felolvas_{atom}</i>) or Juxtap(<i>fel, olvas_{atom}</i>) (= [<i>fel olvas_{atom}</i>])

N. B.: The notation $X \dashrightarrow Y \leftarrow Z$ means: By the head-application principle, Y follows from X and Z.

TABLE 8. The role of the head-application principle in the inflectional and derivational realization of four Hungarian verbs

In §3.2, we showed that conceiving of periphrasis as a type of inflectional exponence makes it possible to resolve two long-standing problems in the analysis of compound tenses: it accounts for the fact that synthetic expressions of tense participate in blocking relations with periphrastic expressions (as when the principal part specifications in (24) override the implicative rule in Table 5), and does so without recourse to any ad hoc principle of morphological blocking; and it accounts for the fact that a compound tense's morphosyntactic properties are often not the compositional combination of the morphosyntactic properties of its parts. In the present section, we have extended this morphological conception of periphrasis into the domain of lexeme derivation: by regarding periphrasis as one of the possible marks of lexeme derivation, we can now maintain a lexicalist theory of grammar that is fully compatible with the principle of lexical modification. In a theory of this sort, a phrasal predicate's f-structure is not determined by the postulation of co-heads, nor by predicate composition in constituent structure, nor by argument merger, but is instead directly determined by the lexicon: for instance, the f-structural contrast between the intransitive predicate *meg hal* 'die' in (52a) and the transitive predicate *bele hal* 'die from X' in (52b) is directly determined by the entries of the lexemes ⟨MEG, HAL⟩ and ⟨BELE, HAL⟩, whose relatedness is mediated by a rule of lexeme derivation that is not distinct in character from the rule of derivation by which the synthetically expressed lexemes OLVAS 'read' and ⟨OLVAS, causative⟩ are related.

5 Conclusions

In this chapter we have presented a wide array of empirical data from a domain widely represented across languages, namely that of periphrastic predicates (including compound tense constructions in the inflectional domain and phrasal verb constructions in the domain of derivation and compounding). We have identified certain challenges which these periphrastic predicates raise for the sorts of lexicalist proposals presented in this book. In recognition of these challenges we have outlined an alternative lexicalist proposal and shown, in schematic fashion, how this conception of lexicalism can provide a treatment for compound tense constructions which can be naturally extended to account for phrasal verb constructions as well. This alternative focuses on the distinction between the grammatical word as manifest in content paradigms and its surface realization as represented in form paradigms. Throughout we have formulated our analyses in terms of realization rules responsible for the constructing surface word forms. However, there is another dimension of this sort of morphological approach that we have neglected, namely, the patterns of relatedness among surface word forms themselves that become evident when words are interpreted as being parts of paradigms: that is, this type of proposal naturally leads to a conception of morphology in which surface word forms and the patterns they participate in, i.e., the system of cells they occupy in paradigms, are as worthy theoretical objects as the rules that construct each separate (class of) word form. This dimension of analysis is presently the focus of recent research by (Ackerman & Blevins 2006, Ackerman & Malouf 2006, Finkel & Stump 2006a, 2006b, Blevins 2005, 2006, among others.) Acknowledging that there are directions that cannot be discussed here, we hope that the phenomena presented and the proposals which we have developed

for them will provoke what appears to be a necessary reconceptualization of certain commonly-held lexicalist assumptions concerning the nature of morphology and its consequences for viable views about the interaction between the lexicon, morphology, and syntactic expression.

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