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The Status of the Morpheme in Georgian Verbal Morphology¹

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1 Introduction

There are at least three traditional, widespread approaches to inflectional morphology: item and arrangement (IA) (Lieber 1992), item and process (IP) (Steele 2002), and stem and paradigm (SP) (Stump 2001, Anderson 1992). In addition, some models combine features of more than one type (such as Distributed Morphology, Halle and Marantz 1994). The differences between the three approaches have to do with representing individual words, parts of words (morphemes), and patterns of inflections (paradigms). All of these approaches have tried to analyze Georgian as an example of a complex morphological system; thus, Georgian has been used as a kind of benchmark for theories of morphology. The goal of this paper is twofold: to compare existing approaches and to provide a satisfactory analysis of Georgian verbal morphology.

The Georgian morphological system is complex and relatively unusual typologically. As will be shown below, morpheme-based accounts of it have been forced to make arbitrary decisions in order to account for the particular combinations of morphemes in each word form. Ideally, however, a morphological description should not have to make unmotivated decisions. Instead, I propose a word-based approach where the smallest meaningful unit is a word, not necessarily a morpheme. This approach, I will argue, resolves the analytical challenges presented by Georgian, and is in line with current psycholinguistic evidence.

I will use the Word-and-Paradigm (WP) approach (Matthews 1991, Blevins 2003) which is based on pedagogical grammars and operates with whole words and example paradigms. This meta-theory is necessarily an idealization of storage and pattern extraction mechanisms employed by actual speakers; thus, the proposed morphological analysis is meant to be maximally compatible with what is known about language use and acquisition, but not to represent the mental

¹ I would like to thank Jim Blevins, Andreas Kathol, and Alice Harris for their detailed, insightful comments. I am grateful to Shorena Kurtsikidze and Vakhtang Chikovani for sharing their language with me. All errors are my sole responsibility.

lexicon of any particular speaker. In what follows, matters of principle will be distinguished from matters of convenience².

The main difficulty that Georgian presents for traditional approaches is as follows. Any attempt to assign separate meanings to individual morphs leads to very abstract or very ambiguous meanings. In a sense, the meaning of a word is not straightforwardly composed from the meanings of its constituent parts. The meaning of the form determines the particular combination of parts, in contrast with other possible combinations. Thus, knowing what one wants to say guides the selection of the morphs, without necessarily attributing meaning to those morphs. This general property is manifested in several ways, to be exemplified below. Traditional approaches which assume meaningful morphemes have been forced to make arbitrary decisions in various parts of the paradigms. Instead, an analysis that takes words as minimal units can do a much better job. In the words of Matthews (1991:204, speaking of the much more familiar Greek and Latin),

Many linguists tend to boggle at such systems. They seem complicated, while agglutinating systems seem so simple. They may even seem perverse. Why should a language have rules which obscure the identity and function of its minimal elements?

An apologist for ancient grammar would answer that these elements are fictions. They are created by the modern method; and, if we foist them on a flecational system, we are bound to describe it as an agglutinating system that has somehow gone wrong. In the ancient model the primary insight is not that words can be split into roots and formatives, but that they can be located in paradigms. They are not composed of simple parts, but are themselves the parts within a complex whole. In that way, we discover different kinds of relation and, perhaps, a different kind of simplicity.

This paper argues for a top-down, rather than bottom-up, approach, where the larger constructions determine the combination of morphs (form elements) for each word, and where the meaning of each word is not necessarily directly composed from the meanings of the parts³. Entire words are stored, organized into example paradigms. Each paradigm cell represents an abstraction; it is a mini-construction which combines semantic properties (tense, agreement) with form properties (a combination of stem and affixes). Morphological generalizations lie in the strength of example paradigms and are reinforced by the frequency of individual verbs and verb types. No abstract rules are necessary in this model, apart from the generalizations extracted on the basis of individual examples. It is important here to make the distinction between units of storage (words) and units of analysis (words or morphs), or between storage and representation for the purposes of linguistic analysis. This kind of analysis avoids stipulations to resolve slot competition or to determine the order of rule application.

² The model should be general enough to be applicable to languages other than Georgian, as well. Nothing in the suggested mechanisms of storage and pattern extraction is language-specific, but rather relies on what is known about acquisition in general.

³ This approach is in line with a view of syntax espoused by Construction Grammar (Kay and Fillmore 1999, Goldberg 1995).

The rest of the paper provides an overview of the Georgian verbal system and examines the problems that it causes for traditional approaches. The striking feature of the verb is that larger constructions (such as tense) determine the combination of subparts (morphs) for a given form, but most individual morphs do not determine larger constructions. In what follows, I will describe several sets of such morphs: the pronominal agreement markers (Section 3), preverbs (Section 4), and versionizers (Section 5). For each set, I examine the difficulties that arise for a morphemic analysis, and suggest a word-based alternative that avoids those difficulties. Section 6 concludes and provides some further discussion.

2 The organization of the Georgian verb

The Georgian verb can reflect (agree with) the subject, the object, and in some cases the indirect object or the recipient (beneficiary). The verb can also be marked for other parameters, including causative, tense and aspect. The agreement markers marking various arguments fit into slots before or after the stem, and they compete for these slots. Thus the verb can be morphologically very complex.

To further complicate the matter, the same set of affixes can mark agreement with the syntactic subject or object, depending on the verb and the tense of the verb. Nominal arguments (subject, object, and indirect object) of a verb show up in different cases depending on the grammatical class and the tense of the verb. Thus, the syntactic properties of a verb can also play a role in its morphology, and the relation between syntactic and morphological properties is not always straightforward.

In general, the structure of a Georgian verb appears to follow the template in (1). Not all of the parts of the template show up in all forms of a verb, but when they do show up, the order is always the same. As mentioned above, one of the main difficulties will be assigning meanings to individual morphemes; however, for expository convenience morphemic glosses will be used where possible.

- (1) preverb+AGR1+theme Vowel+stem+thematic suffix + tense/aspect + AGR2
(Cf. Hewitt 1995)

A preverb marks contrasts in aspect and tense. There are several preverbs, and they are lexically associated with the verbs; a semantic connection is no longer transparent. The theme vowel is used to indicate the relationship between subject and indirect object in some situations, but is "high-jacked" to mark other contrasts elsewhere. The thematic suffix, like the preverb, is lexically associated with the verb, and for the most part marks inflectional class.

3 Pronominal agreement markers

Traditionally, agreement markers in Georgian are divided into several sets. For the sake of convenience, I will use the standard terminology. Each set includes values for slots AGR1 and AGR2. For the uninverted verbs, the Set A markers

indicate subject agreement, and Set B markers indicate object agreement. These sets will make it easier to talk about cases where the association between verbal agreement and syntactic arguments is different.

Set A:

	Singular	Plural
1	v-	v- -t
2	-	- -t
3	-s/-a/-o	-an/en/es/nen ⁴

Set B:

	Singular	Plural
1	m-	gv-
2	g-	g- -t
3	-h/s ⁵	-h/s -t ⁶

3.1 Slot competition in the pre-stem position

I will first look at regular agreement marking for Transitive verbs. An example of a present-tense paradigm follows.

(2) Forms of the verb “to draw” in the present tense:

Subj	OBJECT				
	1SG	1PL	2SG	2PL	3
1SG	--	--	g-xat'av	g-xat'av-t	v-xat'av
1PL	--	--	g-xat'av-t	g-xat'av-t	v-xat'av-t
2SG	m-xat'av	gv-xat'av	--	--	xat'av
2PL	m-xat'av-t	gv-xat'av-t	--	--	xat'av-t
3SG	m-xat'av-s	gv-xat'av-s	g-xat'av-s	g-xat'av-t	xat'av-s
3PL	m-xat'av-en	gv-xat'av-en	g-xat'av-en	g-xat'av-en	xat'av-en

From the pre-stem elements in chart in (2), it can be seen that *m-* indicates 1sgObj agreement, *gv-* indicates 1PIObj agreement, and *g-* indicates 2Sg and 2PIObj agreement. On the other hand, *v-* indicates 1Sg or 1PISubj agreement. Thus, the AGR1 slot does not seem to correspond to a particular morphosyntactic property or argument. It sometimes expresses properties of the subject, sometimes of the object. In a theory that aims to derive forms based on morphosyntactic properties, how does one organize the rules in order to get the correct derivation? The generalization here seems to be that the slot AGR1 expresses object properties for 1st and 2nd person objects, and subject properties otherwise. A theory that aims to make the rules “fall out” right would be forced to stipulate that the object properties for certain kinds of objects supersede the subject properties. That is, in fact, what one sees in the literature.

⁴ The alternation between different 3rd person subject markers is conditioned phonologically in some cases, lexically and syntactically in others (i.e. different variants are chosen for different tenses).

⁵ The alternation between *h-* and *s-* is phonologically conditioned. The alternation between the zero-allomorph and *h/s* is a bit more complicated, and I will not discuss it here.

⁶ Not all verb types mark number distinctions for 3rd person objects, i.e. 3Sg and 3Pl obj forms are often the same.

Anderson (1992) organizes his rules in such a way that rules realizing direct object agreement apply before those realizing subject agreement. This arrangement of rules and rule blocks produces the correct results; however, the decision of which rules are placed in which blocks is not motivated by external (synchronic) factors.

Similarly, Stump (2001) resolves the problem by making the realization rules for agreement apply in a particular order. Rather than assigning rules to rule blocks, however, rules can apply in expanded or unexpanded form, and the expanded rules (being more specific than non-expanded rules) apply first. Thus, the *g-* prefixation rule applies in expanded form, but the *v-* prefixation rule applies in non-expanded form. This distinction results in the correct forms being produced; however, there does not seem to be any motivation for this distinction other than to get the correct forms.

3.2 Slot competition in the post-stem position

The post-stem slot AGR2 often indicates subject properties. Looking now at the post-stem elements in table (2), one notices the following. Starting from the bottom row, the marker *-en* seems to indicate 3pl subjects; the marker *-s* seems to indicate 3sg subjects in all cases but one. The marker *-t* consistently marks 1Pl and 2Pl subjects. However, the same marker *-t* that marked plurality of 1st or 2nd person subject markers, also sometime shows up with 1st or 2nd person *singular* subjects. Whenever that happens, the object has to be plural. In the paradigm in (2), three forms are exactly the same, yet they mark four different combinations of subject and object properties (1PlSubj/2SgObj, 1PlSubj/2PlObj, 1SgSubj/2PlObj, 3SgSubj/2PlObj). This homophony is not specific to a particular verb, but rather is systematic in the language.

The problem, again, is that the AGR2 slot is not associated with a particular morphosyntactic property or argument. The morph *-t* is especially problematic. One possibility is that it simply marks plurality of any argument, subject or object. However, there are forms with a plural argument that do not have *-t*: for example, the 2SgSubj, 1PlObj *gv-xat'av* has a plural object. But the form *gv-xat'av-t* already exists; it means 2PlSubj, 1PlObj; so adding *-t* onto the former would make it identical to the latter. On the other hand, the 2SgSubj, 1PlObj form is already distinguished from its 1SgObj counterpart *m-xat'av* by a different prefix. Thus, in a sense, the appearance of *-t* marks contrast, and not simply plurality. This is where morphemic analyses are unsatisfactory. Halle and Marantz (1994) postulate a *-t* insertion rule wherever there is a plural argument, and a *-t* deletion rule for the circumstances where *-t* is expected but does not appear. Stump (2001) posits three different morphemes *-t*; however, there is no historical or synchronic evidence for positing different morphemes. Neither approach seems

⁷ For some verbs, a stem alternation occurs in 3rd person subject forms, reducing the homophony to only three forms. However, the AGR1 and AGR2 slots are still filled the same way for those verbs.

very plausible as an actual strategy employed by a language user, as they are forced to make arbitrary decisions.

The problems with slots AGR1 and AGR2 are only problems if we try to assign individual meaning to each slot or each morph that appears in those slots. If, however, we operate with entire words and compare related word forms, it does not matter what each individual part of the word means, as long as the forms are different. This approach does not need to make arbitrary decisions regarding the number of *t*'s.

Carmack (1997) suggests that instead of associating morphemes with morphosyntactic properties, a morphosyntactic property is associated with a *verb frame* (a kind of circumfix, the combination of AGR1 and AGR2 slots). E.g. 1Pl Subj/3 Obj is marked by the verb frame *v_____t*, 3Pl Subj /1Sg Obj is marked by the verb frame *m_____en*, etc. I borrow his terminology here. However, it should be emphasized that the frames have no ontological status but are only abstractions from entire stored words; that is, I am *not* arguing for agreement as a set of circumfixes instead of prefixes and suffixes.

Each cell in a paradigm can be seen as a construction which combines meaning properties (such as 1SG Subject, 2PL Object, Present tense) with a set of formal properties (AGR1 morph, AGR2 morph, stem, etc.) In that sense, the "frames" in Carmack's sense are simply formal parts of these constructions, which also include other morphs. The view of cells as mini-constructions permits non-compositional combinations of morphs, but allows some morphs to be compositionally transparent, as well. In this analysis, slot competition is no longer an issue because for each cell in the paradigm, it is already known which parts are to be used. This may seem unsatisfactory because it does not *explain* why the morph *g-* overrides the morph *v-*. While that is a very important question and should be addressed, I believe that such explanations must be diachronic (see Harris 1985) and are not part of the synchronic grammar that speakers possess.

3.3 System of verbal tenses (screeves) and Inversion

So far we have looked only at the present tense. The Georgian verbal tenses (called *screeves*, from the Georgian *mc'k'rivi* meaning 'row') are organized into three series based on the syntactic realization of the nominal arguments (case marking) and the morphological realization of the verb forms. Not all verbs have forms in all three series, and the syntactic realization of nominal arguments in each series depends on the particular verb class. However, for all verbs all *screeves* within a series have the same syntactic arguments and the same agreement patterns.

3.3.1 Series I:

The First Series is historically the imperfective series. Case marking in this series is Nom/Dat for all verbs except verbs with lexical Inversion (see Section 3.3.3).

Example:

- (3) k'ac-i dzay'l-s xat'- av- s
man-NOM dog-DAT draw-T.S.-AGR2
"The man draws / is drawing the dog." (Present)

3.3.2 Series II:

The Second Series, historically perfective, includes the Aorist Indicative and the Aorist Subjunctive screeves.

The case marking in this Series in the modern language appears to be based on the active/stative distinction: active subjects are marked by the ergative case, while non-active subjects are marked by the Nominative case (see Harris 1985). Example (PV stands for preverb):

- (4) k'ac-ma dzay'l-i da- xat'- a
man-ERG dog-NOM PV-draw-AGR2
"The man drew the dog." (Aorist Indicative)

Comparing verb forms in Series I and Series II, there does not seem to be a specific morpheme that signals a difference in tense⁸. The preverb marks perfectivity and also appears in Future tense (which is part of Series I). The morphs in AGR1 are exactly the same for both Series. The only difference is the absence of the thematic suffix in Series II and different AGR2 morphs for 3rd person subjects. However, the thematic suffix also disappears in certain Series III forms (see next section), and the morphs in AGR2 mark verbal agreement - i.e. there isn't one morpheme that appears in all of the Series II forms. So it seems that the only way one can tell that these forms belong to Series II is by contrasting them with forms in Series I: the presence vs. absence of the thematic suffix in conjunction with the choice of an AGR2 morph. This comparison between whole words is a very natural operation for language learners, and provides further evidence for a word-based approach.

The AGR1 morphs are the same in Series I and II. The distribution of *-t* in AGR2 is also the same. However, the AGR2 morphs associated with 3sg and 3pl subjects are different. Thus the meaning of those morphs has to combine the tense/aspect and morphosyntactic properties of the subject. Alternatively, the "verb frames" that involve 3rd person subjects are less general than frames for other verb forms: they are specific to tense/aspect and are thus less semantically transparent.

The distribution of AGR1 and AGR2 markers in the Series II is in (5).

⁸ This problem has gone largely unnoticed in previous analyses.

(5) Forms of the verb “to draw” in the Aorist Indicative tense:

Subj	OBJECT				
	1SG	1PL	2SG	2PL	3
1SG	--	--	da-g-xat'- e	da-g-xat'-e- t	da-v-xat'-e
1PL	--	--	da-g-xat'- e-t	da-g-xat'-e- t	da-v-xat'-e- t
2SG	da-m-xat'-e	da-gv-xat'-e	--	--	da-xat'-e
2PL	da-m-xat'-e-t	da-gv-xat'-e-t	--	--	da-xat'-e-t
3SG	da-m-xat'-a	da-gv-xat'-a	da-g-xat'- a	da-g-xat'-a- t	da-xat'-a
3PL	da-m-xat'-es	da-gv-xat'-es	da-g-xat'- es	da-g-xat'-es	da-xat'-es

Another issue for traditional approaches is whether to analyze the post-stem vowel in Series II as part of the AGR2 slot or as part of the stem. If it is part of the stem, then separate stem alternations would have to be learned for each Series, as well as for different subject properties. If it is part of the AGR2 slot, then it appears that in cases where *-t* shows up, the slot contains two morphemes, not just one. In the analysis proposed here, the vowel is a part of the word form and is learned along with the rest of the form. It does not need a separate ontological status, and thus it does not matter whether or not it is considered part of the stem. Rather, the constructions where this vowel appears license it as part of the form.

3.3.3 Series III: Inversion

The Third Series includes the Perfect (also known as the First Evidential or First Resultant) and the Pluperfect (also known as the Second Evidential or Second Resultant). The main difference between this series and the other two is the ‘evidential’ or ‘apparent’ connotation: the speaker was not present during the time of the event, and thus takes no responsibility for what is being said. In Series III, the subject and object agreement markers seem to be reversed, as in (6).⁹

(6) Forms of the verb ‘to draw’ in the 1st resultant tense (Series III)

OBJ	SUBJECT		
	1SG	1PL	2SG
1SG	--	--	da-g-i-xat'av-var
1PL	--	--	da-g-i-xat'av-var-t
2SG	da-m-i-xat'av-xar	da-gv-i-xat'av-xar	--
2PL	da-m-i-xat'av-xar-t	da-gv-i-xat'av-xar-t	--
3	da-m-i-xat'av-s	da-gv-i-xat'av-s	da-g-i-xat'av-s

⁹ Notice that the table is organized differently: subject properties appear in columns, and object properties appear in rows.

OBJ	SUBJECT		
	2PL	3SG	3PL
1SG	da-g-i-xat'av-var-t	da-v-u-xat'av-var	
1PL	da-g-i-xat'av-var-t	da-v-u-xat'av-var-t	
2SG	--	da-u-xat'av-xar	
2PL	--	da-u-xat'av-xar-t	
3	da-g-i-xat'av-t	da-u-xat'av-s	da-u-xat'av-t

In Series I and II, it was possible to assign specific meanings to the AGR1 morphs *m-*, *g-*, *gv-*, and *v-*. However, as Series III shows, that meaning does not hold in all cases. The morphs *m-*, *g-*, and *gv-* mark properties of the object in Series I and II, but properties of the subject in Series III for transitive verbs. Conversely, the morph *v-* marks properties of the subject in Series I and II but properties of the object in Series III. Again, constructional paradigm cells (verb frames) which combine subject / object properties with the tense / aspect properties are needed. The Inversion in Series III is not random: it corresponds to a change in the syntactic valence of a verb. The Inversion construction is similar to a passive, although the exact change in the semantic roles played by the subject and the object is unclear.

- (7) k'ac-s dzayl-i t'urme da-u- xat'- av- s
 man-DAT dog-NOM apparently PV-T.V-draw-T.S.-AGR2
 "The man has apparently drawn the dog." (1Res)

The association between agreement markers and person/number properties remains constant in Inversion, but the mapping onto syntactic argument structure is reversed. Thus, Inversion is essentially a problem of linking semantic roles (such as Agent, Patient, Perceiver, and Stimulus) to syntactic arguments (Subject and Object) and can be resolved if one adopts a level of argument structure which is separate from the level of semantic roles. This split has been adopted in HPSG, LFG, and Relational Grammar, and is not a problem for a morphological description. For the Georgian case, any association between agreement markers and person/number properties can be deterministic, but the linking to syntactic arguments is dependent on the series and/or verb type.

4 Preverbs

As mentioned above, certain distinctions in the Georgian tense system are marked by preverbs. Most verbs have a preverb lexically associated with them, although there is also a group of verbs that do not have preverbs. In Series I, tenses without preverbs are Present Indicative, Past Continuous, and 1st Subjunctive. Adding preverbs to these forms produces forms of Future, Past Frequentative (used in conditional constructions), and Future Subjunctive, respectively. The preverbed forms systematically differ from their preverb-less

counterparts in aspect (Holisky 1981). However, aspectual differences alone do not account for the differences in tense. Examples in (8) demonstrate the present and future screeves which differ by a preverb.

- (8) a) surat-s **xat'av-s**
 picture-DAT draw.3sgSubj.Pres
 'He draws / is drawing a picture' (*Present*)
- b) surat-s **da-xat'av-s**
 picture-DAT draw.3sgSubj.Fut
 'He will draw a picture' (*Future*)

The preverbs are also used in all Series II and all Series III tenses. Most of these forms do not have preverb-less equivalents.

The particular tense construction determines whether or not a preverb will be used, and the choice of preverb is lexically determined. A constructional view of tenses avoids the problem of having to assign meaning to the preverbs, or expecting preverb meanings to account for tense meanings: the presence of a preverb is determined by the tense construction, but the meaning of the preverb does not need to be combined with the meaning of the rest of the form to get the meaning of the whole.

5 Versionizers

Indirect object (or beneficiary) agreement is realized in Georgian by the so-called "version vowels" which appear between the AGR1 slot and the stem. For most transitive verbs where a beneficiary argument is semantically plausible, the version vowel is used to mark agreement in Series I and II. The vowel *-i-* indicates that the beneficiary is 1st or 2nd person, i.e. a conversation participant, or identical with a 3rd person subject (so-called "subjective version") (9), *-a-* is neutral version (10), and *-u-* marks that the beneficiary is a 3rd person different from the subject ("objective version") (11).

- (9) saxl-s v-i-šeneb
 house-DAT build.1sgSubj.Pres
 'I build / am building a house *for myself*.'
- (10) saxl-s v-a-šeneb
 house-DAT build.1sgSubj.Pres
 'I build / am building a house (beneficiary not specified).'
- (11) saxl-s amxanag-s v-u-šeneb
 house-DAT friend-DAT build.1sgSubj.Pres
 'I build / am building a house *for a friend*.'

However, in Series III, the version vowel no longer marks IO agreement. Instead, the vowel in that slot becomes a screeve marker: the vowel *-i-* appears in 1st and 2nd person subject forms of the 1st Resultant, *-u-* appears in 3rd person forms of 1st Resultant, and the vowel *-e-* consistently appears in all forms of the 2nd Resultant. The beneficiary in these tenses appears in a postposition phrase. In the following 1st Resultant form, the thematic vowel *-i-* appears where the beneficiary is 3rd person.

- (12) saxl-i a-m-i-šeneb-ia
house-NOM build.1sgSubj.1Res
'I have (apparently) built a house (beneficiary not specified).'

For this class of verbs, the versionizer is the only morph which distinguishes 1st Resultant forms from corresponding 2nd Resultant forms. Without getting into the detailed analysis of the versionizers, the key point for this paper is that the versionizer can only be given meaning within the context of a particular tense. Thus, again, the bigger construction (tense) determines which smaller parts (morphs) will be used.

6 Conclusion and Further Remarks

From a preliminary examination of the Georgian data, it seems clear that a morphemic approach is not ideal. It is very difficult to assign meaning to individual morphemes, and where such assignment is possible, the decisions that have to be made are in many cases arbitrary.

Analyzing entire words seems to be a better approach. Entire "verb frames" can be associated with combinations of agreement and tense/aspect properties. Such an approach eliminates the need to assign meaning to individual morphemes. It also avoids stipulations regarding slot competition. The idea of verb frames also circumvents the problem of splitting words into morphemes and assigning parts of the verb to agreement slots of parts of the stem. Thus what I am suggesting is not an alternative segmentation of the forms, but a very different way of looking at the issues, in which segmentation is not a primary concern.

In general, systems in which the meaning of a word is not strictly composed of the meaning of its constituent morphemes are not uncommon. In such systems, the combination of the morphs determines the meaning of a form because it stands in contrast to other possible combinations of morphs. A word-based model would be well-suited to represent such systems. Such a model should be made compatible with evidence from language acquisition and results of other psycholinguistic testing.

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