Verbal number driven suppletion in Georgian

Jordan Chark

This paper provides an account of allomorphy in the domain of verbal number in Georgian (Kartvelian). Cross-linguistically, verbal number is often associated with either suppletion, reduplication, or a combination of the two (Veselinova 2006). Georgian has two morphological devices in this domain: stem-suppletion and the preverb *da-* (Makharoblidze 2018). I argue for three separate but interrelated claims: (i) Georgian exhibits genuine, structurally constrained root suppletion, supporting a late insertion view contra Borer (2014); (ii) Bobaljik & Harley (2017)'s generalization that all intransitive verbs which supplete for number are unaccusatives can be upheld; (iii) a unified analysis for root suppletion and the preverb *da-* is possible.

1. Introduction

Suppletion has figured prominently in the debate pertaining to locality conditions for triggers and targets of contextual allomorphy within Distributed Morphology (henceforth DM) (Halle & Marantz 1993). The present paper draws on data from Georgian (Kartvelian) to bear on this debate. It will be argued that cases of root suppletion for verbal number in the language are instances of genuine contextual allomorphy, not an agreement phenomenon. Suppletion, as opposed to agreement, is identifiable by means of blocking effects, which indicates that there is competition for insertion between Vocabulary Items (henceforth VI) conditioned by morphosyntactic or phonological features (Harley 2014b). The present analysis expands beyond cases of root suppletion to the *da-* preverb alternation. This prefix is conditioned by the same type of plurality responsible for root suppletion, which is associated with a particular structural position: that of the affected argument (the subject of intransitives and the object of transitives). In (1), the two exponents of the root $\sqrt{}$KILL are *k'al* and *khots* in the context of singular and plural direct objects respectively. The suppletive alternation is obligatory (Harris 1981). Note also that *mglebi* 'wolves' fails to trigger plural object agreement; formal number marking in Georgian is sensitive to an animacy hierarchy (in that inanimate DPs are formally marked sin-

Proceedings of ConSOLE XXVII, 2019, 17–37
https://www.universiteitleiden.nl/en/events/series/sole

gular; ibid.). This restriction does not apply to arguments which condition suppletion. That these overlap and may not be valued identically thus suggests that phi-featural marking and suppletive allomorphy are distinct phenomena.

(1) a. mgel-i mo-v-**k'al**-i
wolf-NOM PV-1SG-kill.SG-3SG
'I killed the wolf.'

b. mgl-eb-i da-v-**khots**-e
wolf-PL-NOM PV-1SG-kill.PL-3SG
'I killed the wolves.' (Harris 1981:199)[1]

The preverb *da-* may combine with a number of roots, in which it exhibits a paradigmatic alternation with other preverbs such as *ga-*. This is illustrated by the minimal pair in (2), where the singular noun *p'uri* 'bread' selects for *ga-* and its plural counterpart *p'urebi* 'loaves of bread' requires *da-*.

(2) a. kal-ma p'ur-i ga-mo-a-tskh-o
woman-ERG bread-NOM PV-PV-V-bake-RM
'The woman baked a loaf of bread.'

b. kal-ma p'ur-eb-i da-a-tskh-o
woman-ERG bread-PL-NOM PV-V-bake-RM
'The woman baked several loaves of bread.' (Makharoblidze 2012:60)

Additionally, *da-* has iterative readings as exemplified in (3a), which are adequately classed as being a type of verbal event plurality. This reading may be contrasted with the preverb-less form in (3b).

(3) a. da-k'otsn-i-s
PV-kiss-TH-3SG
'Somebody kisses one person many times.'
'Somebody kisses many people at once.'

b. k'otsn-i-s
kiss-TH-3SG
'Somebody kisses someone.' (Tuite 1998:66)

The analysis presented here exploits these distributional commonalities and advances the view that *da-* and root suppletion are conditioned by the same functional projection. Harris (1981:295) observes that these two morphological strategies seem to be sensitive to the same features and structural configuration; she writes that 'an adequate grammar of Georgian must include a rule that accounts for the occurrence of da- with plural direct objects. The same rule will account for the use of da- with plural subjects of inactive intransitives.'

More broadly, this paper shows that Georgian does not constitute a counterexample to Bobaljik & Harley (2017)'s generalization, which states that all intransitive verbs which suppplete for participant-number cross-linguistically are unaccusatives. Bobaljik & Harley (2017) show that Hiaki, an Uto-Aztecan language, exhibits a class of verbs which have root-suppletion

[1]The stems involved in the alternation are in bold.

for the number of their internal argument. The distribution in Georgian is analogous to Hiaki. In (4), we see that √KILL in Hiaki may surface with the VIs *mea* with a singular internal argument and *sua* with a plural internal argument.

(4) a. Aapo / Vempo uka koowi-ta mea-k.
3SG / 3PL DEF.SG pig-ACC.SG kill.SG-PRF
'He/They killed the pig.'

b. Aapo / Vempo ume kowi-m sua-k.
3SG / 3PL DEF.PL pig-PL kill.PL-PRF
'He/They killed the pig.' (Bobaljik & Harley 2017:9)

Bobaljik & Harley (2017) conclude that these verbs do not pose problems for two of the most prominent accounts of locality within DM (Embick 2013; Bobaljik 2012) because, in the case of the intransitives, independent language-specific syntactic diagnostics reveal that they are all unaccusative. Bobaljik (2012) posits that the relevant structural domain for suppletive alternations is that of the maximal projection. If the suppletion-triggering argument is base-generated as the sister of the root, it is indeed sufficiently local. Were the trigger for suppletion a genuine external argument (originating in the specifier of VoiceP), operating under the assumption that the derivation proceeds in a bottom-up cyclic fashion from the root outwardly, *v*P would render the external argument too far from the root to condition its phonological realization. Other accounts also rule out such an interaction: on Embick (2013)'s analysis, a *v*P constitutes a *cyclic* head which would trigger spell out of its sister including the root, meaning it would already have phonological form by the time the external argument is merged. Whether VIs may be sensitive to morpho-syntactic or morpho-phonological features closer to or further away from the root, otherwise known as the issue of *directionality* is also a matter of debate which will be discussed in more detail later on in the paper.

The paper is structured as follows. Sections 1.1 and 1.2 will respectively present the assumptions I make about Georgian morphosyntax with regards to the structure of the verbal complex and lay out the theoretical mechanisms underlying locality constraints in DM. Section 2 introduces the data from Georgian: in Section 2.2, it is shown that all intransitive verbs which exhibit number driven suppletion are unaccusatives; in Sections 2.3 and 2.4, I present arguments against an agreement-based account of the data and in favour of structurally conditioned contextual allomorphy. In Section 2.5, the preverb *da-* is discussed as an overt exponent sensitive to verbal and event plurality. In Section 3, I provide an analysis building on Thornton (2018), exploiting the insight that suppletion and reduplication overlap in their distribution, both of which can be accounted for by positing a low (*v*P-internal) number node.

1.1. Georgian: morphosyntactic preliminaries

This subsection serves to motivate the assumptions made about the shape of the verbal complex in Georgian, drawing primarily on discussions in McGinnis (2016) and Lomashvili (2011). The necessary theoretical background pertaining to locality and directionality in DM is then provided in Section 1.2.

Georgian is a Kartvelian language spoken by 3.7 million people natively, primarily in Georgia, where it serves as the country's official language (see Hewitt 1995; Aronson 1990; Harris

1981 for general information on its morphosyntax). Georgian exhibits relatively free word order, but SOV can be considered the most unmarked, and it is also worth mentioning that Georgian is a pro-drop language. Case marking is split-ergative: patterns of marking are dependent both on lexical properties of the verb in addition to aspect. In traditional Georgian grammar, the term *screeve* is used, which refers to patterns of TAM marking, much like the term 'conjugation' has traditionally been used for many European languages (those patterns which differ only in person and number). Georgian has ten screeves altogether, made up of four conjugational classes and three series of inflection; screeves are classified according to inflectional series. Each series has different patterns of case marking (we will return to this point in Section 2 in terms of diagnostics for unaccusativity).

Georgian is a highly agglutinating language, verbs can consist of a large number of morphemes (as many as 21; Cherchi 1999:18). The shape of the verbal complex is often conceived of in a templatic fashion, seeing as the order of morphemes is fixed to some extent. The order of the first three morphemes prior to the root in the Georgian verbal complex is pre-determined, whereas post-root a number of affixes can be right-adjoined. Below is a schematic template of the Georgian verb, based on Makharoblidze (2018:163). Not all of these morphemes are always present, but their order is always subject to the same constraints.

(5) **1.** Preverbs **2.** Prefixal nominal marker **3.** Version marker **4.** Verb root **5.** Passive marker **6.** Thematic suffix **7.** Causative marker **8.** Imperfective marker **9.** Mood/row marker **10.** Auxiliary verb **11.** Suffixal nominal marker **12.** Plural person marker

In (6), we see that the first morpheme to be linearized is the preverb which may be separated from the root by two other morphemes, *-gv-* marks first person and *-a-* is a *version* morpheme which is tied to transitivity.

(6) da-gv-a-ts'er-in-eb
PV-1PL-V-write-CAUS-TH
'You will get us to write them.' (Hewitt 1995:118)

I make the standard assumption that the verb raises cyclically through functional projections upwards through Asp to the T domain.

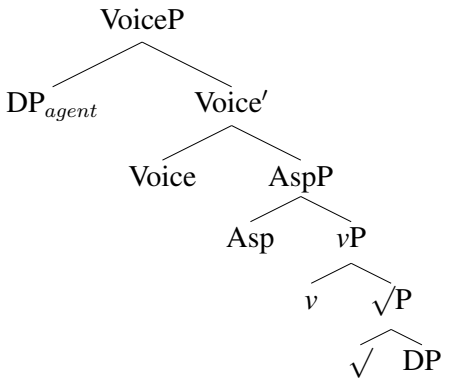
The first templatic position in the Georgian verb phrase is occupied by a preverb, which prototypically conveys directional and aspectual meaning. I preliminarily assume that this morpheme is cliticized from a structurally low position, *v*P-internally. The second slot marks person agreement, originating in T, while the third templatic position is occupied by a transitivizing or version morpheme which corresponds to *v*. Causatives and applicatives may have a variety of exponents depending on their featural content and syntactic context. In addition, I take it that external arguments are introduced by Voice (Kratzer 1996), in the specifier of VoiceP. Roots are category-neutral and as such, verb phrases are derived from a root and category-defining *v* head. Like the direct object of transitives, unaccusative themes and patients are base-generated as internal arguments of the root; this is based on the well-established assumption that unaccusatives are structurally intransitives which lack a projected external argument (Embick & Halle 2004).

I follow Lomashvili (2011) in assuming that the linear order of affixes in Georgian can be pre-determined and may not necessarily always correspond to the order of feature-checking in syntax, though Baker (1985)'s Mirror Principle is expected to be derived from head movement

in most cases.[2]

The basic structure I assume for the verbal complex is displayed in (7), CP and TP domains left out for expository purposes.

(7)



Compared to its verbal morphology, Georgian nominal morphology is relatively straightforward. Georgian has no grammatical gender, however there are seven cases. Morphological case marking is uniform in the nominal domain with a single morpheme for all nouns and nominal plurality is marked with the regular infix *-eb-* which is placed between the root and case markers.

1.2. Locality and directionality in Distributed Morphology

This analysis is carried out within the DM framework (Halle & Marantz 1993). As the name implies, DM takes morphological realization to be "distributed" in the syntax: it is 'syntax all the way down' (Bobaljik 2015). In this section, I begin by laying out the primary assumptions which are made about the architecture of grammar in DM. Next, I focus on the most influential generalizations which have been put forth with regards to two interrelated parameters of contextual allomorphy: locality (Embick 2010; Bobaljik 2012) and directionality (Carstairs 1987; Bobaljik 2000).

Insertion of VIs into terminal nodes takes place after syntactic operations have left us with complex heads (via head movement), with feature bundles distributed onto terminal nodes. This is also referred to as *late insertion* (Harley 2014b), because morphemes with phonological structure are not inserted until after the derivation has occurred. Crucially, it is a matter of debate whether late insertion can apply to roots. Phonological operations may take place after vocabulary insertion in accordance with language-specific well-formedness constraints (Halle & Marantz 1993).

In DM, roots are category-neutral and only become verbs, nouns, etc. upon the addition of a category defining head (i.e. *v* or *n*) (Halle & Marantz 1993). Crucial to the analysis here is the notion of phase domains and cyclicity in syntax. I take it to be uncontroversial that there are locality domains which act as barriers to morphosyntactic and phonological interactions. Embick (2010) has formalized this notion in DM and posits that it is these category-defining

[2]I refer the reader to Noyer (1997), who argues that morphemes may be idiosyncratically determined to surface as prefixes or suffixes depending on their featural makeup.

heads which constitute the relevant phase boundaries. Hence, category-defining heads trigger spell out of their sister during vocabulary insertion.

DM derivations also make use of the Subset Principle (see e.g. Halle 1997 for a standard formulation) which states that when multiple VIs compete for insertion, the most featurally specific one wins out. A key insight of the DM research programme is that underspecification of VI-rules derives systematic syncretisms (Halle & Marantz 1994). From a learnability perspective, this is also crucial, as it prevents the interpretation of identical morphemes as accidental homophony (Embick 2013:156). Homophonous exponents ought to then be well motivated from a syntactic and semantic point of view language-internally.

Derivations in DM proceed as follows. Syntactic operations take place prior to Vocabulary Insertion. Head movement leaves us with complex heads–word formation in DM falls out from the syntactic structure, more precisely, words are complex heads formed by means of cyclic movement operations in the syntax. Movement of the root to the category defining head *v* triggers VI of its complement in accordance with phase cyclicity and assuming VI occurs from the root outwardly (Bobaljik 2000).

Crucial to any analysis of contextual allomorphy are two types of constraints: Locality and directionality. First, locality: how close do the trigger and target of allomorphy have to be structurally? Bobaljik (2012) claims that suppletion must obey strict locality: the trigger for suppletion and the root must be located within the same X^0; maximal phrasal projections render the relationship sufficiently non-local.

Bobaljik (2012)'s generalization is based on very robust empirical observations, for instance the split between periphrastic and suppletive constructions, the latter not being capable of conditioning root suppletion. Where a phrasal projection intervenes, as is the case with T in the construction *did go*, T is not able to condition suppletion on *go*. Conversely, if T and the root end up in the same m-word via head movement, the suppletive form is available, *went*, this is his Root Suppletion Generalization (Bobaljik 2012:90) shown in (8).

(8) α...]X0 ...β
$^{*}\alpha$...]XP...β

This requires the trigger of suppletion to be structurally low: located within the same phrasal projection as the root. Positing constraints on allomorphic triggers in terms of linear adjacency has also played a significant role in DM theorizing insofar as it has good empirical coverage. There are varying viewpoints regarding the type of adjacency relevant for suppletion, namely whether it is structural or linear; I refer the reader to Embick (2010) for a discussion of these issues.

In addition to locality, there is the matter of what directionality constraints hold between the trigger and target. Allomorphy can be considered inwardly sensitive when it takes into consideration material which is more inwardly embedded in the structure and outwardly sensitive when it can "see" a trigger in the other direction (Bobaljik 2000; Carstairs 1987). The fundamental question is: can allomorphy make reference to morphemes which have their phonological form already? This falls out from the notion of 'rewriting': morpho-syntactic feature bundles are overwritten by the phonological exponents themselves over the course of derivation. Bobaljik (2000) argues convincingly that inwardly sensitive allomorphy may only be sensitive to morpho-phonological material, i.e. phonological form. On the other hand, morpho-syntactic features may trigger allomorphy of an element lower in the syntactic structure.

Having touched on the relevant theoretical mechanisms and constraints on locality and directionality of allomorphic selection, in the following Section 2, data from Georgian will be presented. I will argue that Georgian has root suppletion only for internal arguments, using case marking as a diagnostic for unaccusativity in the case of suppletive intransitives. These data points indeed constitute cases of suppletion (defined in terms of competition for insertion) which patterns differently from phi-featural agreement for person and number. It follows from the theoretical assumptions made here that the locus of such agreement (in the T domain) is not sufficiently close to affect the phonological form of the root due to intervening cyclic heads, most notably the verbalizer/transitivizer *v* head. Evidence will be presented to advance the theoretical claim that roots are subject to late insertion.

2. Georgian data

In this section, I present the relevant data from Georgian.[3] It is shown that these are best characterized as contextual allomorphy as opposed to agreement. Drawing on diagnostics from Harley (2014a), and contra Borer (2014), there is sufficient evidence that in cases where we find stem alternations, we are dealing with the same verb.

2.1. List of suppletive verbs

The following five intransitive verbs supplete for the plurality of their subject (see Hillery 2013:139 and Aronson 1990:406-407).[4]

Table 1: Suppletive intransitives in Georgian

$\sqrt{}$	SG	PL
$\sqrt{}$GROW	**b**	**skh**
$\sqrt{}$FALL	**vard**	**tsviv**
$\sqrt{}$BE.SITTING	**zi**	**skhed**
$\sqrt{}$DIE	**k'vd**	**khots**
$\sqrt{}$SIT.DOWN	**jd**	**skhd**

(9) a. v-zi-v-ar
1P-be.sitting-1P-AUX.SG
'I am sitting.'

b. v-skhed-v-art
1P-be.sitting-1P-AUX.PL
'We are sitting.'[5] (Hewitt 1995:454)

[3]Georgian sentences without a citation are due to Levan Songhulashvili and Aziko Petriashvili, native speaker consultants.

[4]Georgian also has suppletion for animacy and tense, indeed, in some cases extending to multiple suppletion for the same root (e.g. animacy and tense for the verb 'bring'; Harris 1981:18-20); I leave an analysis for further work.

[5]Note multiple exponence for person in this example, *v* being a first person clitic.

(10) a. potl-eb-i da-tsviv-da
leaf-PL-NOM PV-fall.PL-AOR.3P
'The leaves fell.'

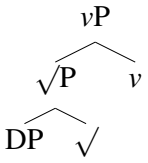
b. *potl-eb-i da-vard-da
leaf-PL-NOM PV-fall.SG-AOR.3P
Intended: 'The leaves fell.'

c. potol-i chamo-vard-da
leaf-NOM PV-fall.SG-AOR.3P
'The leaf fell.'[6]

There are, additionally, a number of transitive verbs which supplete for the plurality of the direct object (see Aronson 1990:406 for a list and Lomashvili 2019 for more discussion).[7]

2.2. Diagnostics for unaccusativity

If it can reliably be shown that all of the intransitive verbs which exhibit suppletion for their subject are unaccusatives, and hence originate structurally as internal arguments, there is no problem for the generalizations put forth by Bobaljik (2012) and Embick (2010). In such a case, the trigger and target of suppletion are then in a maximally local relationship: no maximal projection intervenes and they are within the same cycle. On the other hand, true external arguments (base generated in SpecVoiceP) do not fulfill these requirements and are not visible to the root prior to the latter being realized phonologically, the barrier in this case being the cyclic *v* head.[8] A complex unaccusative head derived via head movement is illustrated in (11):

(11)


Harris (1981) provides some robust diagnostics for identifying unaccusative verbs in Georgian (what she terms 'inactive intransitives'). Namely, in Series II (Aorist), there is a case-marking split between unergative and unaccusative predicates. The subject of unergatives patterns with that of agentive transitives and is marked ERG, whereas the subject of unaccusatives is marked NOM.[9] Looking at the verbs in question, the prediction that they are all unaccusative is borne out with this language-specific diagnostic. The examples in (12) and (13) illustrate that the

[6]The attentive reader may have noticed the use of the preverb *chamo* in the (c) example with the singular *potoli* 'leaf'. My Georgian consultants inform me that *chamo* is more natural in the singular as it emphasizes the direction of the falling.

[7]Tellingly, when these are passivized, it is the derived subject which controls suppletion.

[8]It is necessary to look carefully at what sorts of unaccusatives are implicated, as it has been argued that change-of-state verbs have a differing argument structure from prototypical unaccusatives, and that they merge their subject in Spec*v*P or higher (Cuervo 2003) All of the verbs here are prototypical unaccusatives: motion and stance or caused motion and stance verbs. Unergatives and unaccusatives in Georgian may primarily be distinguished along aspectual lines (Holisky 1981).

[9]Some agentive inactive intransitives (in Harris' terminology) may also have ergative subject marking for some speakers (Harris 1981:270-273).

subject of $\sqrt{}$SIT.DOWN and $\sqrt{}$FALL is marked nominative (with the affix *-i*) which suggests that it originates as the internal argument.

(12) bavshv-eb-i da-skhd-nen
child-PL-NOM PV-sit.down.PL-AOR.3PL
'The children sat down.'

(13) potl-eb-i da-tsviv-da
leaf-PL-NOM PV-fall.PL-3PL
'The leaves fell.'

2.3. Against an agreement based account

A number of criteria may serve to distinguish between verbal plurality and agreement for number. The data points to phi-featural agreement being sensitive to surface relations, whereas interpretable number agreement is subject to deep relations (Weisser 2019). Weisser (2019) shows that allomorphy is not about features, but (structural or linear) positions. For one, allomorphy exhibits divergent behaviour from agreement language-internally (e.g. ERG patterning of suppletion across-the-board). Paradigms of allomorphic alternations are comparatively limited in terms of the number of allomorphic forms selected for. Allomorphy and agreement may and often do, overlap.

Firstly, looking at suppletive transitives, the number features responsible for conditioning suppletion are those of the internal argument as opposed to an agentive external argument (i.e. in SpecVoiceP), in contrast with phi-featural agreement which is exponed separately (the affixes *-o* and *-a*).

(14) a. burt-i gada-a-gd-o
ball-NOM PV-V-throw.SG-AOR.3SG
'He threw the ball.'

b. burt-eb-i gada-a-qar-a
ball-PL-NOM PV-V-throw.PL-AOR.3SG
'He threw the balls.' (Wier 2011:69)

Secondly, while quantifiers and pluralia tantum nouns in Georgian demand singular formal agreement marking, they may condition the presence of the plural exponent with this class of verbs.[10] It is clear that we are dealing with separate exponents for these features in (15) where a pluralia tantum DP *ri* 'people' displays singular agreement marking alongside suppletion for the plural allomorph for $\sqrt{}$SIT.DOWN.[11]

(15) r-i ese romel-i sxed-s mta-sa mas
people-NOM this which-NOM be.sitting.PL-3SG mountain-DAT DEF
'These people who are sitting on the mountain.' (Tuite 1998:68)

[10]Some speakers of Georgian use plural agreement with quantifiers, perhaps due to influence from Russian (Hillery 2013:169).

[11]Example from Old Georgian though this generalization still stands for the modern language.

The minimal pair in (16) shows that the quantifier *qvela* 'all' selects for the plural root *q'r* 'throw.PL' as opposed to *gd* 'throw.SG'.

(16) a. qvela did-i kva zhnel-i-a
all.NOM big-NOM stone.NOM hard-NOM-3SG.be
gada-sa-q'r-el-ad
PV-FUT.PART-throw.PL-PART-ADV
'All the big stones are hard to throw.'

b. *qvela did-i kva zhnel-i-a
all.NOM big-NOM stone.NOM hard-NOM-3SG.be
gada-sa-gd-el-ad
PV-FUT.PART-throw.SG-PART-ADV
Intended: 'All the big stones are hard to throw.' (Wier 2011:50)

Thirdly, in contexts where higher functional projections are not present, suppletion can still be conditioned. In nominalizations, either a singular or plural exponent may be used depending on what is presupposed about the context.

(17) a. da-vard-na
PV-fall.SG-MAS.NOM
'Falling' (of a singular entity)

b. da-tsviv-na
PV-fall.PL-MAS.NOM
'Falling' (of a plurality) (Hewitt 1995:482)

Finally, as pointed out by Lomashvili (2019), applicative constructions are an additional diagnostic which points in favour of a non-agreement approach; the suppletive alternation between *qar* 'throw.PL' and *gd* 'throw.SG' is conditioned by the internal argument *satamasho* 'toy', as opposed to the external argument which is marked ergative and agrees with the verb formally.

(18) a. Laura-m bavshv-s satamasho gada-u-gd-o
Laura-ERG kid-DAT toy PV-V-throw.SG-AOR.3SG
'Laura threw away the toy for the kid.'

b. Laura-m bavshv-eb-s satamasho gada-u-gd-o
Laura-ERG kid-PL-DAT toy PV-V-throw.SG-AOR.3SG
'Laura threw away the toy for the kids.'

c. mshobl-eb-ma bavshv-s satamasho-eb-i gada-u-q'ar-es
Parent-PL-ERG kid-DAT toy-PL-NOM PV-V-throw.PL-AOR.3PL
'Parents threw away the toy for the kid.'

d. Laura-m bavshv-s satamasho-eb-i gada-u-q'ar-a
Laura-ERG kid-DAT toy-PL-NOM PV-V-throw.PL-AOR.3SG
'Laura threw away the toys for the kid.' (Lomashvili 2019:40)

Taken together, the data in Sections 2.2 and 2.3 demonstrate that it would be misguided not to treat these instances of suppletion as a genuine case of the phenomenon, as opposed to conceiving of the data in terms of agreement associated with higher functional projections. In Section

2.4, additional diagnostics are presented in order to advance this claim, more specifically I argue against the view that late insertion, and consequently, genuine root suppletion, do not exist. This hinges on whether different phonological realizations of a verb can actually be considered to be belonging to the same root.

2.4. In favour of late insertion

Verbs which select for plural arguments, such as the English *gather* and *massacre* have been written off in the literature as semantic alternations (Corbett 2000; Borer 2014). What these authors call lexico-semantic alternations are in their view independent lexical items with restricted uses to plural affected arguments. If we take the verb *gather* as an example, it is not clear what its singular counterpart would be; the necessity of a general paradigmatic contrast is stressed in order to count as 'true' suppletion. As opposed to paradigmatic alternations, it is a matter of lexical selection due to semantic requirements; these are separate lexical entries (Borer 2014). In this section, I argue that the Georgian data support a late insertion view of root suppletion. That is, genuine suppletion exists and roots are subject to individuation in narrow syntax (see Harley 2014b and Haugen & Siddiqi 2013 for discussion on the debate surrounding the status of roots and late insertion).

Evidence for this comes from elsewhere in Georgian morphosyntax. I adopt the three diagnostics below as indicative of true suppletion from Harley (2014a). Firstly, suppletion in Georgian is subject to strict locality conditions, as has been robustly established for contextual allomorphy cross-linguistically, speaker intuition is "categorical" in nature. In (19), replacing the plural stem *tsviv* with the singular stem *vard* renders it clearly ungrammatical, not along the lines of the effect which would be expected with the type of plural-selecting verbs mentioned above.[12] Singular and plural suppletive stems are in true complementary distribution, they compete for insertion.

(19) a. potl-eb-i da-tsviv-da
leaf-PL-NOM PV-fall.PL-AOR.3PL
'The leaves fell.'

b. *potl-eb-i da-vard-da
leaf-PL-NOM PV-fall.SG-AOR.3PL
Intended: 'The leaves fell.'

The second pertinent diagnostic is behaviour under ellipsis. Were these alternating stems really two lexical items which are subject to contextual insertion constraints due to their semantics, it would not be expected that identity is retained when elided (cf. *#The women gathered but the man did not*). The ellided conjunct in (20b) selects for the singular stem *-jd-* as shown in (20a) and is nonetheless completely grammatical.

(20) a. bavshv-eb-i da-skhd-nen magram ara qali da-jd-a
child-PL-NOM PV-sit.down-PL-AOR.3PL but NEG woman PV-sit.PL-AOR.3SG
'The children sat down, but the woman did not sit down.'

[12] It is nonetheless worth mentioning that some (especially younger) speakers of Georgian may use plural verb agreement with a singular root, however this is considered a deviation from linguistic norms (Hillery 2013)

b. mxolod bavshv-eb-i da-skhd-nen magram ara qali
only child-PL-NOM PV-sit.down-PL-AOR.3PL but NEG woman
'Only the children sat down, but not the woman.'

The minimal pair in (21) illustrates this for $\sqrt{}$KILL.

(21) a. chven mkholod mgel-i mo-v-k'al-it magram ara chit'i
1PL only wolf-NOM PV-V-kill.SG-AOR.1PL but NEG bird
'We only killed the wolf, but not the bird.'

b. chven mkholod mgl-eb-i da-v-khots-et magram ara chit'i
1PL only wolf-PL-NOM PV-V-kill.PL-AOR.1PL but NEG bird
'We only killed the wolves, but not the bird.'

The third diagnostic is focal contrast. Depending on what is presupposed from the context, it is possible to use either allomorph and have focal contrast by suppletion alone, suggesting again that we are not dealing with what could be considered separate lexical items. Note that an example like (22) is different than the exchange *Who was killed - You mean, who was massacred?*, but rather analogous to *Who will go on the trip? - You mean, who went on the trip?* where what is focused is solely the issue of the plurality (Harley 2014a).

(22) vin i-skhd-a ik'
who V-sit.down.PL.AOR-3PL there
'Who was sitting down there?' (Plurality presupposed)

To wrap up this section, it is worth pointing out that suppletive verbs in Georgian do not seem like good candidates for a light-verb analysis. They have meanings which appear to be more encyclopaedic than anything else. Indeed, in a theory where the distinction is made between lexical and functional morphemes, the latter lacking a category-defining head, instances of apparent root suppletion can be explained away on these grounds (Embick & Halle 2005 pursue such an account for the English *go/went* alternation).

2.5. An overt exponent for verbal and event plurality

Cross-linguistically, verbal and event number is often associated with either suppletion, reduplication, or both within a single language (Veselinova 2006; Thornton 2018). In Georgian, the preverb *da-* (at least, in those cases where it forms a paradigmatic opposition to *ga-*) displays similar ergative patterning to cases of suppletion whereby it may mark plurality of the direct object in transitives or of the subject in intransitives (Makharoblidze 2012) as shown in (23) where *da-* is licensed in the presence of the plural NP *k'abebi* 'dresses', alternating with *ga-* in the singular. Georgian only has two possibilities for overtly expressing the plurality of a direct object for the third person (Makharoblidze 2012:60): with the addition of *da-* or stem suppletion.[13]

(23) a. man k'ab-eb-i da-pin-a
3SG dress-PL-NOM PV-hang-RM
'He/she hung the dresses on the line.'

[13]Old Georgian had the suffix *-en* which served this purpose, see Harris (1982:296).

b. man ga-pin-a k'aba
3SG PV-hang-RM dress.NOM
'He/she hung a dress on the line.' (Makharoblidze 2012:60)

Harbour (2016) points out the striking commonalities in distribution and function between Georgian preverbs and reduplication cross-linguistically. Reduplication clusters around verbal and event plurality interpretations. In addition to giving rise to participant-plurality readings, *da-* combines with a number of roots (150 or more; Vogt 1971:175) to express event plurality. Event plurality is a general term which includes iterative readings as exemplified in (24), where the events of kissing and selling are pluralized.

(24) a. da-k'otsn-i-s
PV-kiss-TH-3SG
'Somebody kisses one person many times.'
'Somebody kisses many people at once.'

b. da-q'id-i-s
PV-sell-TH-3SG
'Somebody sells many things.'
'Somebody goes around selling things.'

In (25), attention is drawn to the repetition of the motions of sliding and flying in various directions.

(25) a. da-srial-eb-s
PV-slide-TH-3SG
'Somebody slides back and forth.'

b. da-čxvl-et'-s
PV-fly-TH-3SG
'Somebody/something flies around.'

Compare these to examples from Niuean (Thornton 2018:393), where reduplication overlaps with suppletion and exhibits a similar range of meanings from participant plurality in (26) and (27) to iterativity in (28). In (26), we see a suppletive alternation for participant-number, where *fano* 'go.SG' is the singular and *ō* 'go.PL' is the plural VI.

(26) a. To fano a au
FUT go.SG ABS 1SG
'I will go.'

b. To ō a tautolu
FUT go.PL ABS 1PL.INC
'We will go.' (Haji-Abdolhosseini et al. 2018:476)

In (27) and (28), stem reduplication serves to mark iterativity.

(27) a. Ne hoko mai a Sione
PST arrive there ABS Sione
'Sione arrived there.'

b. Ne ho hoko mai a laua
PST arrive ∼PL there ABS 3PL
'They arrived there.' (Haji-Abdolhosseini et al. 2018:476)

(28) a. Ne noko e ia e gutuhala
PST knock ABS she ABS door
'She knocked on the door (probably once but not necessarily).'

b. Ne noko noko e ia e gutuhala
PST knock ∼ITER ABS she ABS door
'She knocked on the door (many times).' (Haji-Abdolhosseini et al. 2018:483)

In the previous section, we have seen evidence for providing a unified treatment of stem-suppletion and the preverb *da-*. Despite being affixal, *da-* patterns with suppletion as a morphological device to express verbal number. This is a tendency language-internally and cross-linguistically; Thornton (2018) discusses further data from Hiaki and Kosati, in which habitual and iterative events also overlap with participant number and are exponed via reduplication as well as suppletion.

3. Towards an analysis

3.1. Suppletion

Verbal plurality is often connected with lexical aspect/Aktionsart. Dressler (1968:51) subsumes iterative, distributive, durative and intensive readings under this category, which all relate to intrinsic properties of the verb's semantics. Indeed, the verbs which show suppletion in Georgian form a natural class in terms of their lexical semantics in that they are all telic. This is to be expected considering Bobaljik & Harley (2017)'s generalization that only internal arguments are local enough to condition suppletion. Under the view that lexical aspectual semantics are mapped isomorphically in the syntax, all such verbs obligatorily project an internal argument.

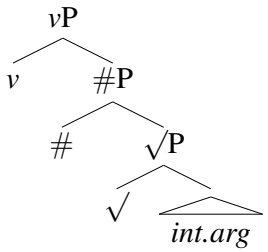
My analysis builds on this commonality between the overt exponent of verbal and event plurality *da-* and suppletive forms. I follow Thornton (2018) who posits a *v*P-internal number node which may bear a [+PL] feature and is sufficiently local to the root to trigger suppletion, while still upholding Bobaljik (2012)'s generalization of strict locality (no intervening XP).

Thornton (2018) examines the analogous distribution of reduplication and suppletion cross-linguistically and proceeds to propose a verb-internal node responsible either for triggering suppletion or surfacing as reduplication. In this way, it gives a uniform account for verbal and event number taking them to be associated with the same functional projection. Under Thornton (2018), the number node values its features by looking into its c-command domain and finding the closest argument using the mechanism of Wurmbrand (2011)'s *Reverse Agree*, which states that 'a feature F: on a head α is valued by a feature F: val on β, iff':

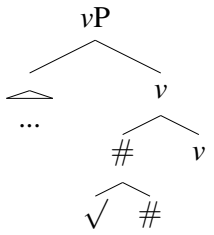
(29) i. β c-commands α
ii. There is no γ with a valued interpretable feature F such that γ commands α and is c- commanded by β
iii. α is accessible to β (Wurmbrand 2011:3)

Let us now look at a sample derivation for a case of suppletion. To the left, we see the syntactic structure prior to head movement. Recall Embick (2010)'s phase cyclicity criterion: cyclic heads (in this case, *v*) trigger the spell out of their sister. We end up with (31), which shows the morphological structure derived by cyclic head movement, which mediates between syntax and PF.

(30)



(31)



We can conceive of the following VIs in (32). In accordance with the Subset Principle, the most specific item gets inserted, which in the presence of a plural feature on the number node is the second entry.

(32) √FALL ↔ vard / ____
√FALL ↔ tsviv /____ [#, +AUG]

Recall that nominals which are formally singular trigger the realization of plural VIs. Taking this into account, as well as parallel behavior with pluralia tantum nouns such as the compound *da-dzma* 'sister-brother', it seems reasonable to posit an [+/- augmented] feature in the sense of Harbour (2014). Wier (2011) emphasizes that the conditioning root suppletion is most accurately characterized as being sensitive to a scale of individuation, mass-like entities being un-individuated though formally singular.

3.2. Da-

Next, how do we account for *da-*? Where does it enter the derivation? One potential analysis would be to posit that *da-* is the exponent of this number node. However, that would fail to take into account that this is far from the only use of an exponent with this phonological form.

Any morphological theory must be careful not to posit non-systematic patterns of homophony, that is, arbitrary syncretisms, predicated on the notion that VIs are underspecified in terms of the feature bundles they expone; cf. Müller (2005:236)'s **Syncretism Principle**: Identity of form implies identity of function.

Georgian preverbs are notoriously difficult to categorize and it is well out of the scope of this paper to do so adequately. Preverbs may convey temporal, aspectual and directional information and are typically analyzed as being an exponent of Asp (Lomashvili 2011). Preverbs contribute directional meaning with verbs of motion and aspectual meaning with non-motion verbs. In addition, they may change verbal valency introducing arguments and/or adjuncts, as in (33). Svenonius (2004) argues for a distinction between two types of preverbs in Slavic, which have properties ranging from idiosyncratic (non-compositionally predictable) and highly derivational to transparently compositional and inflectional (see Makharoblidze 2018 for a detailed overview of how preverbs function in Georgian). This is relevant for our purposes see-

ing as the parallels between preverbs in Slavic languages and those in Georgian are manifold (Tomelleri & Gäumann 2015). This distinction can analysed as being a result of the height at which preverbs merge, according to Svenonius (2004), which is reflected in properties such as idiomaticity (see also Travis 2010 on outer and inner aspectual projections).

(33) a. a-a-šen-a
PV-V-build-TH.3SG
'He/she built it.'

b. mo-a-šen-a
PV-V-build-TH.3SG
'He/she built upon it.' (Makharoblidze 2018:170)

In (34), we see that combining the stem *k'itxv* 'read' with various preverbs results in meanings which are on a spectrum of idiomaticity. Spatial preverbs such as *mo-* may also combine with more idiosyncratic ones like *ga-* as shown in (34c).

(34) a. c'a-k'itxv-a
PV-read-INF
'To read'

b. da-k'itxv-a
PV-read-INF
'To interrogate'

c. ga-mo-k'itxv-a
PV-PV-read-INF
'To examine' (Makharoblidze 2018:168)

Harbour (2016) notes that directional meanings and viewpoint aspect as well as Aktionsart are both tied to paths where the locative meaning can be grammaticalized to convey perfectivity. All verbs in Georgian which display an opposition between the presence and absence of a preverb are telic accomplishment predicates; in the aorist, the preverb form necessarily results in a completion reading (Nash 1995). Due to this and other aspectual properties, researchers have characterised preverbs as making the featural contribution of [+telic] (Nash 2017).[14]

A further primary generalization to be made regarding the function of preverbs in Georgian morphosyntax is that they are present in a variety of environments where inflectional morphology originating from higher projections, such as causatives, applicatives, person/number clitics, may be omitted, as is the case in *masdars* (nominalisations) (McGinnis, p.c.) Taking this into consideration, I propose that *da-* and *ga-* are exponents of an (Inner)Asp head, following Travis (2010) and others who associate lexical aspect with a functional head structurally lower than viewpoint aspect.[15]

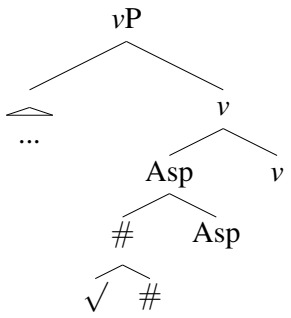
I propose that the preverb cliticizes onto the left edge, merging *v*P internally. Below, we see the complex head derived here as a result of head movement.[16]

[14]I also assume that the Georgian verbal complex may have multiple aspectual projections, McGinnis (2016) utilises stacked AspPs to explain contextual allomorphy of the thematic suffix.

[15]There is a connection to be drawn between iterativity and telicity; semantically speaking, telic verbs denote countable events (as opposed to processes or states.) and have the structure of atomic join semilattices like nominal count nouns, where the minimal verbal events are atomic (Bach 1986).

[16]Head movement is not the sole way to build the verbal complex in DM, m-merger would be another option.

(35)



This leaves us with a directionality problem, however: inwards sensitivity for morphosyntactic features ought to be impossible (Bobaljik 2000). The Asp head has to be sensitive to the [+AUG] feature on #. For this to work, it must be posited that inwards-sensitivity to phonological form suffices to condition root suppletion. In order for this to be compatible with the directionality constraint proposed in Bobaljik (2000), we would have to concede that this preverb alternation applies to an 'idiosyncratic' class of verbs. Referring only to phonological identity may however not be possible here, on the grounds that there are a number of potential preverb allomorphs for most roots. Whether or not this is possible depends, in principle, on the richness of phonological representations and how they may be referenced during vocabulary insertion.
We may solve this by appealing to the post-syntactic operation of Fusion (Halle & Marantz 1993). Seeing as head movement in syntax leaves the number node linearly adjacent to (low)Asp, these nodes are then able to join into a single node. The fused #/Asp node is exponed as *da-* only if the root node contains a *da-*/*ga-* alternating stem, in accordance with the VI rules in (36). On this analysis, Bobaljik (2012)'s locality constraint of an XP can be upheld.

(36) # / ASP[+telic, +AUG] ↔ *da-* / ____ [√HANG, √BAKE...]
/ ASP[+telic] ↔ *ga-* /____ [√HANG, √BAKE...]

Alternatively, we may pursue an account whereby inwards sensitivity to syntactic features is indeed possible. This would allow us to do away with positing Fusion of NumP and (low)Asp. Gribanova & Harizanov (2017) argue that allomorphy can be inwards sensitive for gender and number based on data from Russian and Bulgarian in the nominal domain and claim that D may simultaneously be sensitive to phonological as well as syntactic features on the root.

In summary, it may well be possible to relax some of the assumptions about directionality, though doing so does require a re-thinking of how 'rewriting' occurs. In any case, under the account that I have proposed above, strict locality and cyclicity conditions can be maintained. Inwards-sensitivity also does not pose a problem in the first place for Embick (2010)'s theory, according to which it is linear concatenation that matters. Indeed, the relevant nodes and the root are linearly concatenated within the same spell out domain.

4. Conclusion and implications

In this paper, a number of claims have been made which have broader theoretical implications for theories of directionality and locality in contextual allomorphy.

Firstly, suppletion for participant and verbal number in Georgian is genuine suppletion, there is competition for insertion and the roots in question are encyclopaedic in nature rather than

4. Conclusion and implications

In this paper, a number of claims have been made which have broader theoretical implications for theories of directionality and locality in contextual allomorphy.

Firstly, suppletion for participant and verbal number in Georgian is genuine suppletion, there is competition for insertion and the roots in question are encyclopaedic in nature rather than functional (f-morphemes) contra Embick & Halle (2005). This can be seen, for instance, by means of identity under ellipsis.

Secondly, I provide further support for a *v*P internal node for verbal number, building on Thornton (2018). There is evidence that phi-featural agreement and suppletion/verbal number are sensitive to separate features.

Thirdly, while Bobaljik (2000)'s directionality constraints are upheld in instances of root suppletion, the preverb *da-* is a potential counterexample with regards to inwards-sensitivity to morphosyntactic features, it needs to exhibit sensitivity to the root beyond its phonological identity.

Further research is needed to evaluate the patterns of contextual allomorphy within the Georgian verbal complex from a DM perspective, as the name betrays, it is indeed *complex* and offers fruitful testing ground for theories of locality and directionality; Georgian has instances of root suppletion for aspect, tense, animacy, and honorifics (Harris 1982; Tuite 1998). Lomashvili (2019) provides an analysis of stem suppletion conditioned by number and TAM (tense and mood) marking utilising the notion of *Node Sprouting* (Choi & Harley 2019).[17] While Lomashvili (2019) does not provide an account of plural *da-*, her analysis is conceptually similar to mine and makes, it seems, similar empirical predictions. However, the analyses differ in terms of more conceptual considerations as to whether number should be treated as a functional projection or an insertion of a dissociated morpheme at PF (this is the definition of *Sprouting*). Her analysis of suppletion for TAM marking suggests, interestingly, that Bobaljik (2012)'s locality constraint of a maximal projection ought to be relaxed in light of the Georgian data. The facts can however be accounted for on standard notions of cyclic heads as phase barriers as in Embick (2010).

In conclusion, the facts from Georgian add to a growing data set which demonstrates that agreement and contextual allomorphy ought not be conflated (cf. Weisser 2019).

Acknowledgements

I would like to thank Levan Songhulashvili and Aziko Petriashvili for Georgian judgements, the audience at ConSOLE for their feedback, and Doreen Georgi for her encouragement. Special thanks to Kim Fuellenbach for her comments on an earlier draft of this paper which improved it considerably.

[17]This article was published after ConSOLE XXVII took place and was unknown to the author until very recently.

Abbreviations

ABS	Absolutive
ADV	Adverbial
AOR	Aorist
AUG	Augmented
AUX	Auxiliary
CAUS	Causative
DAT	Dative
DM	Distributed Morphology
ERG	Ergative
INC	Inclusive
INF	Infinitive Suffix
ITER	Iterative
MAS	Masdar (Nominalization)
NEG	Negation
NOM	Nominative
P	Person
PART	Participle
PF	Phonological Form
PL	Plural
PST	Past
PRF	Perfective
PV	Preverb
RED	Reduplication
RM	Row Marker
SG	Singular
TAM	Tense and Aspect Marking
TH	Thematic Suffix
V	Version Vowel
VI	Vocabulary Item

A note on transliteration

Seeing as Georgian is normally written in its own, Mkhedruli script, one must always make concessions with transliteration. Most Georgian characters have fairly straightforward correspondences to Latin script and are hence transliterated in a rather uniform manner across works. I have adapted transcription from elsewhere to be uniform here. It is important to know that I use apostrophes to represent ejectives, distinguishing k' from k, for instance.

Jordan Chark
University of Potsdam
chark@uni-potsdam.de

References

Aronson, H. (1990). *Georgian: a reading grammar*, Slavica, Bloomington, IN.
Bach, E. (1986). The algebra of events. *Linguistics and Philosophy* 9, pp. 5–16.
Baker, M. (1985). The mirror principle and morphosyntactic explanation. *Linguistic Inquiry* 16:3, pp. 373–415.
Bobaljik, J. (2000). The ins and outs of contextual allomorphy. Grohmann, K. & C. Struijke (eds.), *University of Maryland Working Papers in Linguistics 10*, University of Maryland, Department of Linguistics, pp. 35–71.
Bobaljik, J. (2012). *Universals in comparative morphology: Suppletion, superlatives, and the structure of words.*, MIT Press, Cambridge.
Bobaljik, J. (2015). Distributed morphology. [Ms]. http://bobaljik.uconn.edu/papers/DMORE.pdf.
Bobaljik, J. & H. Harley (2017). Suppletion is local: Evidence from Hiaki. H. Newell, G. P., M. Noonan & L. Travis (eds.), *The Structure of words at the interfaces*, Oxford University Press, Oxford.
Borer, H. (2014). Wherefore roots? *Theoretical Linguistics* 40, pp. 343–359.
Carstairs, A. (1987). *Allomorphy in inflexion*. Croom Helm, London.

Cherchi, M. (1999). *Georgian*. Lincom Europa, Munich, Newcastle.
Choi, J. & H. Harley (2019). Locality domains and morphological rules: Phases, heads, node-sprouting, and suppletion in Korean honorification. *Natural Language and Linguistic Theory* 37:4, pp. 111–176.
Cuervo, C. (2003). Datives at large. [PhD thesis]. MIT. http://www.ai.mit.edu/projects/dm/theses/cuervo03.pdf.
Dressler, W. (1968). Studien zur verbalen Pluralität. *Phil.-hist. Klasse. Sitzungsberichte*, Österreichische Akademie der Wissenschaften, Vienna.
Embick, D. (2010). *Localism vs. globalism in morphology and phonology*. MIT Press, Cambridge.
Embick, D. (2013). Phase cycles, phi-cycles, and phonological (in)activity. [Ms]. http://www.ling.upenn.edu/embick/ph-cycle-sept.pdf.
Embick, D. & M. Halle (2004). Unaccusative syntax and verbal alternations. Alexiadou, A., E. Anagnostopoulou & M. Everaert (eds.), *The unaccusativity puzzle*, John Benjamins, Amsterdam, pp. 137–158.
Embick, D. & M. Halle (2005). On the status of stems in morphological theory. Geerts, v. G. I., T. & H. Jacobs (eds.), *Romance languages and linguistic theory*, John Benjamins, Amsterdam, pp. 59–88.
Gribanova, V. & B. Harizanov (2017). Locality and directionality in inward-sensitive allomorphy: Russian and Bulgarian. Vera Gribanova, S. S. S. (ed.), *The morphosyntax-phonology connection: locality and directionality at the interface*, Oxford Scholarship Online, Oxford.
Haji-Abdolhosseini, M., D. Massam & K. Oda (2018). Number and events: Verbal reduplication in niuean. *Oceanic Linguistics* 41:2, pp. 163–183.
Halle, M. (1997). Distributed Morphology: Impoverishment and fission. Bruening, B., Y. Kang & M. McGinnis (eds.), *PF: Papers at the interface*, Oxford University Press, Cambridge, MA, pp. 425–250.
Halle, M. & A. Marantz (1993). Distributed Morphology and the pieces of inflection. *The view from building 20, MIT Working Papers in Linguistics*, MIT Press, Cambridge, pp. 111–176.
Halle, M. & A. Marantz (1994). Some key features of Distributed Morphology. *MIT Working Papers in Linguistics* 21, pp. 111–176.
Harbour, D. (2014). Paucity, abundance, and the theory of number. *Language* 90:1, pp. 185–229.
Harbour, D. (2016). Georgian preverbs: Reduplicative semantics without reduplication. Paper presented at South Caucasian Chalk Circle, Paris, September 22-24. http://paris2016.mariapolinsky.com/wp-content/uploads/2015/11/Harbour.pdf.
Harley, H. (2014a). Hiaki verbal number suppletion really is suppletion. Paper presented at Roots IV, New York University, April 24. https://wp.nyu.edu/roots4/wp-content/uploads/sites/1403/2015/07/harley.pdf.
Harley, H. (2014b). On the identity of roots. *Theoretical Linguistics* 40:3-4, pp. 225–276.
Harris, A. C. (1981). *Georgian syntax: A study in Relational Grammar*. Cambridge University Press, Cambridge.
Harris, A. C. (1982). Georgian and the unaccusative hypothesis. *Language* 58:2, pp. 290–306.
Haugen, J. & D. Siddiqi (2013). Roots and the derivation. *Linguistic Inquiry* 44:3, pp. 493–517.
Hewitt, B. G. (1995). *Georgian: a structural reference grammar*. John Benjamins, Amsterdam.
Hillery, P. (2013). The Georgian language: An outline and grammatical summary. [Ms]. http://www.armazi.demon.co.uk/georgian/.
Holisky, D.-A. (1981). *Aspect and Georgian medial verbs*. Caravan Books, Delmar, NY.
Kratzer, A. (1996). Severing the external argument from its verb. Rooryck, J. & L. Zaring (eds.), *Phrase structure and the lexicon*, Kluwer Academic Publishers, Dordrecht, pp. 111–176.
Lomashvili, L. (2011). *Complex predicates: The syntax-morphology interface*. John Benjamins, Amsterdam.
Lomashvili, L. (2019). Root suppletion and the theory of allomorphic locality. *World Journal of English Languge* 9:1, pp. 34–48.
Makharoblidze, T. (2012). *The Georgian verb*. Lincom Europa, Munich, Newcastle.
Makharoblidze, T. (2018). On Georgian preverbs. *Open Linguistics* 4, pp. 163–183.
McGinnis, M. (2016). The morphosyntax of thematic suffixes in [g]eorgian. Paper presented at South Caucasian Chalk Circle, Paris, September 22-24. http://paris2016.mariapolinsky.com/wp-content/uploads/2015/11/McGinnis ThemSuf.pdf.
Müller, G. (2005). Syncretism and iconicity in Icelandic noun declensions: A Distributed Morphology approach. *Yearbook of Morphology 2004*, Springer, pp. 229–271.
Nash, L. (1995). Portée argumentale et marquage casuel dans les langues sov et dans les langues ergatives: l'éxemple du géorgien. [PhD thesis]. Université de Paris VIII.
Nash, L. (2017). The structural source of split ergativity and ergative case in Georgian. Coon, J., D. Massam & L. Travis (eds.), *Oxford Handbook of Ergativity*, Oxford University Press, Oxford.
Noyer, R. (1997). *Features, positions and affixes in autonomous morphological structure*, Garland Publishing, New

York.
Svenonius, P. (2004). Slavic prefixes inside and outside VP. *Nordlyd* 32:2, pp. 111–176.
Thornton, A. (2018). Plural verbs, participant number, and agree. Bennett, W., L. Hracs & D. R. Storoshenko (eds.), *Proceedings of the West Coast Conference on Formal Linguistics 35*, Cascadilla Proceedings Project, Sommerville, MA, pp. 306–311.
Tomelleri, V. & M. T. Gäumann (2015). Aspectual pairs in Georgian: [s]ome questions. *STUF* 68:1, pp. 49–85.
Travis, L. (2010). *Inner aspect: The articulation of VP*. Springer, Dordrecht.
Tuite, K. (1998). Kartvelian morphosyntax: Number agreement and morphosyntactic orientation in the South Caucasian languages. [PhD thesis]. Université de Montréal.
Veselinova, L. (2006). *Suppletion in verb paradigms*. John Benjamins, Amsterdam.
Vogt, H. (1971). *Grammaire de la langue géorgienne*. Universitetsforlaget, Oslo.
Weisser, P. (2019). Telling allomorphy from agreement. *Glossa: A Journal of General Linguistics* 4:1.
Wier, T. (2011). Georgian morphosyntax and feature hierarchies in natural language. [PhD thesis]. University of Chicago. https://ling.auf.net/lingbuzz/002030.
Wurmbrand, S. (2011). On agree and merge. [Ms]. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.470.4778rep=rep1type=pdf.