Where does *that* fit in? Morphological variation and reanalysis in Georgian placeholder verbs

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Abstract: The placeholder verb construction, which has emerged relatively recently in colloquial Georgian, offers a unique case study of grammaticization in progress: the emergence of a structurally innovative type of verb within a language whose verbal morphology is already quite complex. Derived from reanalysis of the event-anaphoric verb phrase "do that", placeholder verbs exhibit morphological variability which is quite uncharacteristic for the language. We advance a few structural analyses to account for this variation, differing primarily in how the demonstrative pronoun "that" has been reanalyzed: as an incorporated theme; as a functional head of an extant category; as a novel functional head; or a sort of anaphor for a subword morphological constituent. Each analysis accounts for a different subset of the attested patterns, so we hypothesize that multiple grammars of the construction coexist across speakers. Theoretically, this is reasonable state of affairs, since the reanalyzed demonstrative has no unambiguous structural analogue in the standard Georgian verb. Empirically, evidence for the multiple-grammars hypothesis comes from a morphological acceptability study. Participants cluster into two major groups, whose judgement patterns correspond well to predictions of the extant-functional-head and morphological-anaphor analyses. We speculate on why our participants seem not to instantiate the other proposed placeholder-verb grammars, suggesting certain language-specific and language-general analytical biases relevant to the acquisition of this emergent construction.

Keywords: placeholder words; agreement; reanalysis; morphological variation; event anaphora

1. Introduction

The placeholder verb construction emerging in contemporary colloquial Georgian (Amiridze 2010) combines a demonstrative pronoun (*imas* 'that:DAT' — always a distal demonstrative, and usually in the dative case) with a morphologically irregular and semantically bleached verb (*kʰna* 'do:NMLZ').[1] Attested

[1]Georgian data are given in IPA transcription. Uncited data points reflect the second author's native intuitions. Glossing abbreviations: AGR 'agreement inflection', APPL 'applicative', AOR 'aorist [i.e. perfective past]', AUX 'auxiliary', DAT 'dative', DEM 'distal demonstrative', DO 'direct object', ERG 'ergative', EVID 'evidential', GEN 'genitive', IMP 'imperfect [imperfective past]', IMPF 'imperfective aspect', INCH 'inchoative', INFL 'inflection', IO 'indirect object', NACT 'nonactive [passive or unaccusative]', NEG 'negative', NMLZ 'deverbal nominalization [citation form for verbs]' NOM 'nominative', NPST 'nonpast', OBJ 'object', PERF 'perfect [past evidential]', PFV 'perfective', PL 'plural', PRES 'present [imperfective nonpast]', PST 'past', PTC 'participle', PVB 'preverb (with directional/spacial meaning given in subscript italics)', REFL 'reflexive preradical vowel *i*-', SG 'singular', SBJ 'subject', SUP 'supine', THM 'thematic suffix', TR 'monotransitive preradical vowel *a*-', X:Y 'further decomposition of morphemes expressing X and Y is possible', X+Y 'X and Y are compounded / head-adjoined' 1/2/3 'first/second/third person'

since the 1920s, placeholder verbs (PHV) have a few typical functions: as euphemisms, to avoid using certain verbs; as event anaphors, to refer deictically to contextually salient actions; and as syntactic stand-ins for verbs that allude speakers during lexical access. We translate them with the calque *thatdo* (1a). The diachronic connection between PHVs and the event-anaphoric verb phrase (EAVP) "do that" (1b) is quite clear. Indeed the two constructions are generally interchangeable, and in some contexts they will be identical in form except for the orthographic/phonological word boundary (as below).

(1) Euphemism context: The speaker wishes to avoid using a vulgarity.
Deixis context: The speaker is pointing to participants in an unfamiliar or unlexified action.
Tip-of-the-tongue context: The speaker fails to summon a low-frequency verb.

a. Placeholder verb (PHV)
ʃen =ʦʰ ***imasʃvrebodi***
2SG =too **placeholder_verb:IMP:2SG**
'You were thatdoing too'

b. Event-anaphoric verb phrase (EAVP)
ʃen =ʦʰ ***imas*** ***ʃvrebodi***
2SG =too **that:DAT** **do:IMP:2SG**
'You were doing that too'

But the morphosyntactic behavior of PHVs clearly sets them apart from EAVPs, demonstrating an important degree of grammatical reanalysis away from that collocation. Most strikingly, PHVs exhibit a pattern of morphological variation that is totally unique in the language. There are four major variants, differentiated by the presence and position of certain inflectional prefixes. The *simple PHV* — as in example (2); also (1a) — consists of just the demonstrative prefix *imas-* 'DEM' and an inflected form of the verb *kʰna* 'do:NMLZ'; agreement prefixes like *v-* '1SBJ' will always come between these two elements.

(2) Simple PHV
*imas- **v-** kʰen -i*
DEM- **1SBJ-** do -PST.1/2
'I thatdid (*pro*$_3$)', i.e. 'I thatdid' [intending an intransitive verb] or 'I thatdid *pro*$_3$' [intending a monotransitive verb]

Simple PHVs contrast with *complex PHVs*, which additionally bear a preverb morpheme. Preverbs are a class of about fifteen prefixes that express directed motion and/or perfective aspect; which one a verb takes is generally lexically specified (Makharoblidze 2018). In principle any preverb can combine with a PHV, as long as it matches the one that would appear on the intended verb (Amiridze 2010:77). And, just

in case the preverb is copied, the position of agreement prefixes is variable: they can appear inside the demonstrative (3a), outside it (3b), or doubled on either side (3c).

(3) a. <u>Complex PHV, Inner agreement</u>

da- imas- ***v-*** *k^{h}en -i*

PVB$_{about}$- DEM- **1SBJ-** do -PST.1/2

b. <u>Complex PHV, Outer agreement</u>

da- ***v-*** *imas- k^{h}en -i*

PVB$_{about}$- **1SBJ-** DEM- do -PST.1/2

c. <u>Complex PHV, Doubled agreement</u>

da- ***v-*** *imas-* ***v-*** *k^{h}en -i*

PVB$_{about}$- **1SBJ-** DEM- **1SBJ-** do -PST.1/2

All: 'I thatdid (*pro*$_3$)' [Intending a verb with PVB *da-*]

The PHV construction presents several theoretical puzzles. Prefixal *imas-* 'DEM' does not obviously correspond to any extant structural position in the Georgian verb. Thus, a profound analytical ambiguity faces the learner when reanalyzing the EAVP as a single word. The morphological variation of PHVs is also totally unique in the language. When it comes to preverbs, which play such a central lexical and inflectional role in the language, there is generally no flexibility as to whether and which one will appear on a verb. Likewise, agreement prefixes in normal verbs have a rigid position; doubled agreement prefixes per se are not unusual in Georgian (Harris 2017:159–161), but in the contexts where it occurs, that doubling is obligatory.

Tackling these puzzles, the rest of this article has the following structure. Section 2 compares the morphosyntax of EAVPs and PHVs, illustrating that some important steps of grammatical innovation have taken place. Section 3 advances four theoretical analyses, making precise different representational consequences of that innovation. They boil down to just how prefix *imas-* 'DEM' has been reanalyzed: as an incorporated theme of the lexical verb *k^{h}na* 'do:NMLZ'; as a novel instance of an extant functional category (namely, a preverb); as an instance of a totally new functional head, unique to the construction; or as a kind of morphological anaphor, a dummy inserted to support remnants of a subword ellipsis operation. In Section 4, these analyses are evaluated in light of a morphological acceptability study on PHVs. Aggregated results show that, on average, simple PHVs are most acceptable (2), and that complex PHVs with outer prefixal agreement are the least (3b). Considering variation across participants, a clustering analysis finds evidence of two coherent acceptability patterns: evidence that multiple grammars for the construction (corresponding well to the novel-preverb and morphological-dummy analyses) coexist across the population. We discuss why it might be that these two PHVs grammars are represented in our study,

speculating on language-general and Georgian-specific analytical biases. Section 5 concludes with a summary of findings.

2. Evidence of reanalysis and innovation

PHVs' roots in EAVPs are apparent, but it is also clear that they have undergone morphosyntactic reanalysis. Prefixal *imas-* 'DEM' exhibits few properties of syntactically independent direct objects, if any. First of all, it is frozen in position, obligatorily preceding the stem of the verb *kʰna* 'do:NMLZ' (4a), crucially inside of negation particles (4b). In contrast, in an EAVP, the syntactically independent demonstrative pronoun can freely scramble (5a) — just as any direct object can in this language, where word order is quite flexible (Skopeteas et al. 2009) — as long as it does not come between negation and the verb (5b).

(4) PHV: *imas-* 'DEM' must be prefixed to the verb

a. {*imas-*} *ʃvrebodi* {*-*imas*}
{DEM-} do:IMP:2SG {*-DEM}
"You were thatdoing"

b. {**imas-*} ***ar*** {*imas-*} *ʃvrebodi*
{*DEM-} **NEG** {DEM-} do:IMP:2SG
"You weren't thatdoing"

(5) EAVP: OV and VO orders are both possible, but not NegOV

a. {*imas*} *ʃvrebodi* {*imas*}
{DEM:DAT} do:IMP:2SG {DEM:DAT}
"You were doing that"

b. {*imas*} ***ar*** {**imas*} *ʃvrebodi*
{DEM:DAT} **NEG** {*DEM:DAT} do:IMP:2SG
"You weren't doing that"

Second, prefixal *imas-* 'DEM' is also (mostly) frozen in form. Georgian is a split-ergative language (Harris 1981, 1985; Nash 2017), where case marking on core arguments is dependent on tense[2] and finiteness. In about half of the tenses (including the present, imperfect, future, and conditional), syntactically independent direct objects are in the so-called dative case (6a); in the other half (the aorist, optative, perfect, and pluperfect), direct objects are nominative (6b).

[2] We use the term 'tense' as a shorthand for "inflectional tense–aspect–mood category", also referred to in the Kartvelological literature as 'screeve' (Boeder 2005:29). For example, the aorist tense/screeve is a realis perfective past. Shared morphology across tense/screeve paradigms motivates more general glosses like 'PST' for suffixes like *-e/i* 'PST.1/2'.

(6) Case marking of direct objects shifts across tenses

a. ***imas*** {*ʃvrebi*, *ʃvrebodi*, *izam*, *izamdi*}
DEM:DAT {do:PRES:2SG, do:IMP:2SG, do:FUT:2SG, do:COND:2SG}
"You {are doing, were doing, will do, would do} **that [DAT]**"

b. ***is(a)*** {*kʰeni*, *kʰna,* *gikʰnia,* *gekʰna*}
DEM.NOM {do:AOR:2SG, do:OPT:2SG, do:PERF:2SG, do:PLU:2SG}
"You {did, may/should do, (must) have done, had done} **that [NOM]**"

The PHV's prefixal demonstrative does not participate in this tense-sensitive case shift (Amiridze 2010:82).[3] It takes the dative form, *imas-* 'DEM:DAT', even in tenses which would call for a nominative direct object (7b).

(7) Prefixal *imas-* 'DEM' does not shift form for finite PHVs

a. ***imas-****ʃvrebi*, ***imas-****ʃvrebodi*, ***imas-****izam*, ***imas-****izamdi*
DEM-do:PRES:2SG, **DEM-**do:IMP:2SG, **DEM-**do:FUT:2SG, **DEM-**do:COND:2SG
"You are thatdoing, were thatdoing, will thatdo, would thatdo"

b. ***imas-****kʰeni*, ***imas-****kʰna*, ***imas-****gikʰnia*, ***imas-****izamdi*
DEM-do:AOR:2SG, **DEM-**do:OPT:2SG, **DEM-**do:PERF:2SG, **DEM-**do:PLU:2SG
"You thatdid, may/must thatdo, (must) have thatdone, had thatdone"

Also relevant is case marking in nonfinite clauses, including nominalizations. In general, these deverbal forms take genitive-marked direct objects (8). As for nonfinite PHVs, there appears to be interspeaker variation: the majority of speakers we consulted prefer the genitive form of the demonstrative prefix (9a), but some prefer the dative form (9b).

(8) Direct objects of nonfinite verbs are obligatorily genitive

imis *kʰna*
DEM:GEN do:NMLZ:NOM
"(the act of) doing **that [GEN]**"

(9) For nonfinite PHVs, the preferred case form of the demonstrative prefix varies

a. %***imis-*** *kʰna*
DEM:GEN- do:NMLZ:NOM

[3] At least not obligatorily. For PHVs the second group of tenses, the nominative-case form of the prefixal demonstrative (e.g. ?***is(a)-****kʰeni* 'you thatdid') seems to be a marginal possibility, though consultants generally prefer the dative forms given in (7b).

b. %***imas-*** *kʰna*

DEM:DAT- do:NMLZ:NOM

Both: "(the act of) thatdoing"

A final compelling piece of evidence for syntactic reanalysis is the argument structure of PHVs. Suppose that that the intended verb is monotransitive, like (10). Here the theme argument of the intended verb is diagnosable as a direct object, since it is inflected nominative in this tense, the aorist.

(10) *pʰot'o* *da- v- a- laikʰ -e.*

picture:NOM PVB$_{about}$- 1SBJ- TR- like -PST.1/2

"I liked the photo [i.e. on social media]"

Either the EAVP or the PHV construction can be used to avoid using that verb. (This particular verb is illustrative because, as a recent loan word from English, speakers are likely to be unfamiliar with an interlocutor's use of it.) However, if the speaker also wishes to include the theme argument of the intended verb, the two constructions will express it differently. In the EAVP, the event-anaphoric demonstrative pronoun is already the verb's syntactic direct object, so the extra argument can only be expressed as a syntactic indirect object (11). Indirect-objecthood here is diagnosable by the dative case in this tense, and the appearance of applicative morphology (*u-* '3DAT') on the verb.

(11) *me =ʦʰ* ***pʰot'o -s*** *is* *v-* ***u-*** *kʰen -i.*

1SG =too **picture -DAT** DEM.NOM 1SBJ- **3DAT-** do -PST.1/2

"I also did that [DO, NOM] **to the picture [IO, DAT]**"

In contrast, when the intended verb's theme is included in the PHV construction, it must be the clause's syntactic direct object (12). PHVs can be applicativized, but only if the intended verb is also applicativized.[4]

(12) *me =ʦʰ* ***pʰot'o*** *imas- v- kʰen -i.*

1SG =too **picture:NOM** DEM- 1SBJ- do -PST.1/2

"I also thatdid **the picture [DO, NOM]**"

[4] As a general rule, if the intended verb is active (i.e. transitive, ditransitive/applicativized, or unergative), the PHV construction will mirror that argument structure, as diagnosed by case marking and verbal agreement morphology; arguments of the PHV will have the same thematic interpretation as they do in the intended clause. However, if the intended verb is nonactive (i.e. a passive, anticausative, or psych verb), it is often not clear to speakers how to form the corresponding PHV (cf. Amiridze 2010:71–79). There might be a morphological explanation for this fact: as an independent verb, *kʰna* 'do:NMLZ' has a defective paradigm, lacking nonactive forms. Or, there could be a semantic explanation: perhaps PHVs, even if they do not synchronically contain this verb, still inherit some important part of its lexical semantics. A parallel to EAVPs in English is worth keeping in mind: "I did that" is typically infelicitous if the intended verb is nonagentive and/or stative (e.g. "I resembled her"). Future semantic fieldwork on Georgian EAVPs and PHVs will be necessary to untangle these issues.

In sum, PHVs have clearly different syntax from EAVPs, demonstrating reanalysis of *imas* 'DEM:DAT' from a phrasal argument to some kind of affix. There are also several important morphological differences between the constructions. Most obvious is the option for a PHV to bear a preverb morpheme. Georgian preverbs have two major semantic functions: to express directed motion, or perfective aspect (Boeder 2005:32–34; Makharoblidze 2018). There are about fifteen common preverbs. Verbs of motion, like *svla* 'go:NMLZ', freely alternate between the preverbs to express direction of that motion (13); this is the case in all tenses, including imperfective ones. For verbs that do not express motion, preverbs are only found in perfective tenses. Which preverb will appear is lexically specified, and the same root might even combine with different ones to express radically different lexical meanings (14).

(13) Directional preverbs

a- *v- di -odi*, ***ʧʰa-*** *v- di -odi*,
PVB$_{up}$- 1SBJ- go.IMPF -NACT:IMP:PST.1/2, **PVB$_{down}$-** 1SBJ- go.IMPF -NACT:IMP:PST.1/2,
ʃe- *v- di -odi*, ***ga-*** *v- di -odi*
PVB$_{in}$- 1SBJ- go.IMPF -NACT:IMP:PST.1/2, **PVB$_{out}$-** 1SBJ- go.IMPF -NACT:IMP:PST.1/2
"I was going up, going down, going in, going out"

(14) Aspectual–lexical preverbs

a- *va- g -e,* ***ʦ'a-*** *va- g -e,*
PVB$_{up}$- 1:TR- build -PST.1/2, **PVB$_{away}$-** 1:TR- lose -PST.1/2,
mo- *vi- g -e,* ***ga-*** *vi- g -e*
PVB$_{up}$- 1:REFL- win -PST.1/2, **PVB$_{away}$-** 1:REFL- understand -PST.1/2
"I built/established *pro*$_3$, I lost (*pro*$_3$), I won (*pro*$_3$), I understood (*pro*$_3$)"

Some verbs do not combine with preverbs at all: the lexical verb *kʰna* 'do:NMLZ' is an example. (It expresses perfective aspect instead through root suppletion, as is apparent in (6).) Therefore, by virtue of bearing a preverb at all, complex PHVs demonstrate another step of grammatical innovation beyond the EAVP. Which preverb will appear on a complex PHV is not arbitrary: it will always be (in a descriptive sense) copied from the intended verb (Amiridze 2010:77). Note that it is never necessary to copy the intended verb's preverb; the simple version of the PHV is always an option (15b) — indeed for many speakers that is the preferred option (see Section 4). But when a preverb is included, it must match that of the intended verb (15c).

(15) a. Intended verb
gamo- *akʰliaves*
PVB$_{out:hither}$- stupefy:AOR:3PL
"They stupefied *pro*$_3$"

b. Licit PHVs: without preverb, or with the same preverb as the intended verb

imas- kʰnes ~ ***gamo-** imas- kʰnes*

DEM- do:AOR:3PL **PVB*out:hither*-** DEM- do:AOR:3PL

Both: "They thatdid pro_3"

c. Illicit complex PHVs: any mismatched preverb

***a-** imas- kʰnes*, ***tʃʰa-** imaskʰnes*, ***ga-** imaskʰnes*, etc.

PVB*up*- DEM- do:AOR:3PL, **PVB*down*-** thatdo:AOR:3PL, **PVB*out*-** thatdo:AOR:3PL

The nature of the preverb copying relation, and why it should give rise to variation in the position of agreement prefixes, will be a key topic of Section 3. But before shifting focus, we note a few other ways in which the morphology of PHVs innovates on the independent verb *kʰna* 'do:NMLZ' and EAVPs. The first observation has to do with the formation of certain tenses, especially the future. PHVs can inherit all of the irregularities of *kʰna* 'do:NMLZ', including its suppletive future root (16a). The allomorphy of this verb is quite unusual; most Georgian verbs form their future tense agglutinatively, with a so-called thematic suffix, and different inflectional classes of verbs are associated with different thematic suffixes (for a full description, see Shanidze 1980 [1953], Aronson 1990, Hewitt 1995). For PHVs, another possibility for the future is to use the default root, √*kʰ(e)n*, in combination with either the thematic suffix *-i* 'THM' (16b), or *-eb* 'THM' (16c). The former is probably an analogy with the verb *ʃekʰmna* 'create:NMLZ', whose root is a cognate of *kʰna* 'do:NMLZ'. The latter thematic suffix is the default one. These innovative, non-suppletive strategies for forming different tenses are not always accepted, and judgements seem to improve when the PHV has a preverb. But, insofar as they are available, such forms are further evidence of grammatical reanalysis in the PHV construction.

(16) Future-tense forms of PHVs and related verbs

a. *da- imas- i- **zam** -en*

PVB*about*- DEM- REFL- **do.FUT** -NPST.3PL

"They will thatdo (pro_3)"

cf. *i- **zam** -en*

REFL- **do.FUT** -NPST.3PL

"They will do pro_3"

b. %*da- imas- **kʰn -i** -an*

PVB*about*- DEM- do -THM -NPST.3PL

"They will thatdo (pro_3)"

cf. *ʃe- kʰmn **-i** -an*

PVB*in*- create **-THM** -NPST.3PL

"They will create pro_3"

c. %*da- imas- **kʰn -eb** -en*

PVB*about*- DEM- **do -THM** -NPST.3PL

"They will thatdo (pro_3)"

cf. *gamo- a- kʰliav **-eb** -en*

PVB*out:hith*- TR- stupefy **-THM** -NPST.3PL

"They will stupefy pro_3"

Finally, we note one more dimension of morphological variability in PHVs: the shape and position of morphemes known as preradical vowels. These elements appear in a structural position between agreement prefixes and the root. As the following data points illustrate (17), whether and which vowel appears depends on the verb's inflectional class, tense, and argument structure (cf. Nash 2021).

(17) ***v-*** *tʰamaʃ -ob* ~ ***v- i-*** *tʰamaʃ -e* ~ ***v- a-*** *tʰamaʃ -e*
1SBJ- play -THM **1SBJ- REFL-** play -PST.1/2 **1SBJ- TR-** play -PST.1/2
"I will play" "I played" "I made *pro*$_3$ [DO] play"

~ ***v- e-*** *tʰamaʃ -e* ~ ***v- u-*** *tʰamaʃ -eb -ivar*
1SBJ- APPL- play -PST.1/2 **1SBJ- 3DAT-** play -THM -PERF:1
"I played with *pro*$_3$ [IO]" "*pro*$_3$ [DAT.SUBJ] must have made me play"

Here it suffices to note the following. For monotransitive verbs, the default preradical vowel is *a-* 'TR' (it appears, for instance, in recent loan words: (10)). Many transitive verbs, though, diverge from this default. Importantly, *kʰna* 'do:NMLZ' never takes *a-* 'TR': in some tenses it will have no preradical vowel, and in others it will have *i-* 'REFL' (18).

(18) ***v-*** *kʰen -i* ~ ***v- i-*** *z -am*
1SBJ- do.DFLT -PST.1/2 **1SBJ- REFL-** do.FUT -THM
"I did it [AOR]" "I will do it [FUT]"

As for the PHV, when substituting a monotransitive verb it will inherit the irregular preradical vowel behavior of *kʰna* 'do:NMLZ' — but only at the inner position of prefixal inflection, between *imas-* 'DEM' and the stem. At the outer position, between a copied preverb and *imas-* 'DEM', there will either be no preradical vowel, or the default transitive *a-* 'TR'.[5]

[5] Agreement with first- and second-person objects behaves in an unusual way for PHVs. For regular transitive verbs, note that preradical vowels distinguish direct- (i) and indirect-object agreement (ii). When a PHV takes a first- or second-person direct object (iii), the outer prefixal position can have the expected monotransitive preradical vowel *a-* 'TR' — but, somewhat mysteriously, at the inner prefixal position, the preferred preradical vowel is *i-* 'IO', normally associated with indirect object agreement. This may have something to do with the fact that the independent verb *kʰna* 'do:NMLZ' cannot felicitously take first- or second-person direct objects (*#mkʰnes* "they did me"). Note that, if the PHV substitutes an applied/ditransitive verb, in either position there will be a preradical vowel that unambiguously registers indirect object agreement (iv).

(i) *gamo-* ***m- a-*** *kʰliav -es*
PVB*out:hither*- **1OBJ- TR-** stupefy -PST.3PL
"They stupefied **me [DO]**"

(ii) *gamo-* ***m- i-*** *kʰliav -es*
PVB*out:hither*- **1OBJ- IO-** stupefy -PST.3PL
"They stupefied *pro*$_3$ **for/on me [IO]**"

(iii) *gamo-* ***m- (a-)*** *imas-* ***m- (i-)*** *kʰn -es*
PVB*out:hither*- **1OBJ- (TR-)** DEM- **1OBJ- (IO-)** do -PST.3PL
"They thatdid **me [DO]**" [Intending the monotransitive verb in (i)]

(19) Preradical vowels for lexical 'do' and complex PHVs

a.	***v-* (**a-**)** *k^{h}en -i*	~	*da-* ***v-* (*a-*)** *imas-* ***v-* (**a-**)** *k^{h}en -i*
	1SBJ- (*TR-) do -PST.1/2		PVB- **1SBJ- (TR-)** DEM- **1SBJ- (*TR-)** do -PST.1/2
	"I did *pro*$_3$"		"I thatdid *pro*$_3$" [intending a verb with PVB *da-*]
b.	***v-* *(*i-*)** *zam*	~	*da-* ***v-* (*a-*)** *imas-* ***v-* *(*i-*)** *zam*
	1SBJ- *(REFL-) do.FUT		PVB- **1SBJ- (TR-)** DEM- **1SBJ- *(REFL-)** do.FUT
	"I will do *pro*$_3$"		"I will thatdo *pro*$_3$" [intending a verb with PVB *da-*]

The PHV construction is a remarkably intricate case study of morphosyntactic innovation and reanalysis, in a language whose morphosyntax is already quite complex. The key descriptive generalizations presented in this section are summarized below.

(20) Syntactic and morphological differences between PHVs and EAVPs

a. Prefixal *imas-* 'DEM' is in a fixed position; it cannot scramble like an independent direct object, and it appears inside of negation.

b. Prefixal *imas-* 'DEM' does not shift in case across tenses and clause types, like independent direct objects do.

c. PHVs express the theme of the intended verb as a syntactic direct object; in EAVPs, it must be an applied indirect object.

d. PHVs can optionally copy the preverb of the intended verb. Doing so allows for prefixal inflection to appear in a position outside *imas-* 'DEM'.

e. In PHVs, irregular stem allomorphy is inherited from independent *k^{h}na* 'do:NMLZ', though some morphological innovations are attested, especially for complex PHVs.

f. In PHVs, preradical vowels behave as they do for *k^{h}na* 'do:NMLZ' at the inner prefixal position (inside *imas-* 'DEM'), but have different behavior at the outer position (between a copied preverb and *imas-* 'DEM').

3. Analytical possibilities

This section explores a space of theoretical analyses that account for the unique properties of Georgian PHVs. We focus on the four major morphological variants, repeated here. They are distinguished by the presence of a preverb copied from the intended verb, and the position of prefixal agreement: the simple PHV (21); the complex/inner PHV (22); the complex/outer PHV (23); and the complex/doubled PHV (24).

(iv) *gamo-* ***m-* *(*i-*)** *imas-* ***m-* *(*i-*)** *k^{h}n -es*
PVB$_{out:hither}$- **1OBJ- *(IO-)** DEM- **1OBJ- *(IO-)** do -PST.3PL
"They thatdid *pro*$_3$ **for/on me [IO]**" [Intending the ditransitive verb in (ii)]

(21) Simple/inner PHV

imas- v- k^{h}en -i

DEM- 1SBJ- do -PST.1/2

"I thatdid *pro*$_3$" [Intending a monotransitive verb]

(22) Complex/inner PHV

da- imas- v- k^{h}en -i

PVB$_{about}$- DEM- 1SBJ- do -PST.1/2

"I thatdid *pro*$_3$" [Intending a monotransitive verb with PVB *da-*]

(23) Complex/outer PHV

da- v- imas- k^{h}en -i

PVB$_{about}$- 1SBJ- DEM- do -PST.1/2

"I thatdid *pro*$_3$" [Intending a monotransitive verb with PVB *da-*]

(24) Complex/doubled PHV

da- v- imas- v- k^{h}en -i

PVB$_{about}$- 1SBJ- DEM- 1SBJ- do -PST.1/2

"I thatdid *pro*$_3$" [Intending a monotransitive verb with PVB *da-*]

An ideal theory of PHVs should, with minimal novel theoretical machinery, be able to explain why these four options are possible, while other logical configurations of morphemes are not. Two specific ungrammatical variants will be particularly important to keep in mind: a simple (perverbless) PHV where prefixal agreement appears outside of *imas-* 'DEM' (25); and a complex (preverb-copying) one where *imas-* 'DEM' is the outermost prefix (26).

(25) Impossible: Simple PHV with outer (or doubled) agreement

**v- imas-* (*v-*) *k^{h}en -i*

1SBJ- DEM- (1SBJ-) do -PST.1/2

(26) Impossible: Demonstrative prefix outside of copied preverb

**imas- da- v- k^{h}en -i*

DEM- PVB$_{about}$- 1SBJ- do -PST.1/2

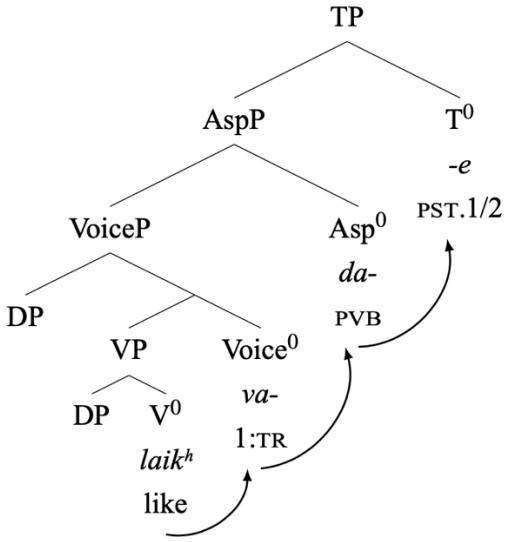
As a theoretical starting point, we adopt an interpretive postsyntactic theory of morphology like Distributed Morphology (Halle & Marantz 1993, et seq.), in which the linear order of morphemes straightforwardly reflects hierarchical relations between the syntactic terminals that they spell out. Georgian

verbal morphology is quite complex, and so here we must abstract away from many of the finer details. We identify four major structural positions, segmented off in the following verb.[6]

(27) *da- va- laik^{h} -e*
PVB$_{about}$- 1:TR- like -PST.1/2
"I liked *pro*$_3$ (on social media)"

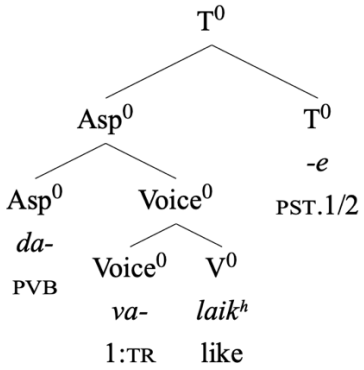
Innermost is the verb root, which we identify as V^0. We take suffixes to be exponents of T^0, since they generally express combinations of tense features and agreement with the subject's phi-features. As for the agreement prefixes, their behavior is well studied (for an overview, see Foley 2022), and the consensus is that they expone the head that introduces the external argument (Béjar 2007, Béjar & Rezac 2011, et seq): here labeled $Voice^0$. Finally, we assume that preverbs expone a high Asp^0, merged between VoiceP and TP (following e.g. Lomashvili 2011, Nash 2017). Thus, we represent the syntactic structure of the finite clause containing a verb like (27) as in (28a). We assume that the verb word itself is the spell out of a complex head like (28b), produced by an operation like head movement.

(28) a. Standard clausal structure for Georgian



[6] It is often possible to segment off more morphemes than these four structural positions can account for (for example, both the consonantal agreement prefix *v-* '1SBJ' and the preradical vowel *a-* 'TR'). To accommodate a more granular morphological analysis, it will be necessary to posit some combination of head adjunction, extra functional heads merged along the clausal spine, or postsyntactic fission operations (Noyer 1997). Articulating a more exhaustive theory of Georgian verbal morphology is beyond this scope of this paper, but we occasionally flag analytical choices that interact crucially with particular representational assumptions.

b. Complex head spelled out by the verb word



The following subsections lay out four analyses of PHVs, from most conservative to most innovative vis-à-vis the EAVP construction. The first casts prefixal *imas-* 'DEM' as, at some level of representation, a phrasal complement of the verb *kʰna* 'do:NMLZ', the two elements fused together by a novel incorporation operation (Section 3.1). Then we consider the possibility that *imas-* 'DEM' has been reanalyzed as an extant (Section 3.2) or novel (Section 3.3) functional head along the clausal spine. Finally we articulate an analysis of PHVs involving ellipsis of a subword constituent corresponding to the intended verb, replaced by a morphological dummy exponed as *imas-* 'DEM' (Section 3.4).

3.1 DEM as incorporated theme

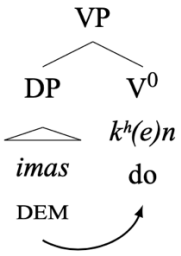
Given the evident diachronic connection between PHVs and EAVPs, one obvious possibility for a synchronic analysis is to unify the constructions at some level of representation. Suppose that in either case the demonstrative element is initially merged as the phrasal complement of the verb root *kʰ(e)n* 'do', an ordinary internal argument. At this point, if nothing special occurs, the rest of the clause will be constructed as normal, resulting in an EAVP. An applied argument, morphosyntactically an indirect object, may be added to the structure to convey the theme of the intended event (cf. (11)).

Alternatively, a special incorporation operation can apply, fusing together the demonstrative and verb into a complex head to create the PHV (a possibility first suggested by Amiridze 2010:82). The precise mechanism involved might be head movement (Baker 1988, 2009) or M-Merger (Marantz 1988, Embick & Noyer 2001). A pseudo-incorporation analysis (following Massam 2001) is also conceivable: here the PHV's prefixal *imas-* 'DEM' would be a phrasal argument that remains in situ, whereas other arguments obligatorily evacuate the extended verb phrase (e.g. for case licensing).[7] A third possibility is that the root

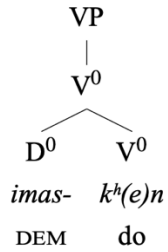
[7] Something like a pseudo-incorporation analysis might also account for a phenomenon known as tmesis, attested in in Old Georgian and Svan (Boeder 1994, Boeder 2005:32, Margiani 2016). There, certain pronouns and other functional elements can appear inside of preverbs, folded into the verb complex (note that these will be case-licensed like non-tmetic arguments). Deriving PHVs from tmesis seems unlikely, though, since it has not been a grammatical possibility in Georgian since the late thirteenth century (Wier 2022).

imas- 'DEM' is simply adjoined to the verb root, by a compounding operation rather than incorporation per se. But whatever syntactic operations are involved in creating a PHV, they must be able to feed the licensing of a new morphosyntactic direct object, corresponding semantically to the theme of the intended event (cf. (12)). A derivation of PHVs involving incorporation is illustrated below.

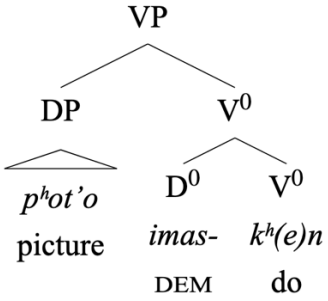
(29) a. A demonstrative pronoun is merged with V^0, then undergoes incorporation



b. The output is a complex V^0, the PHV

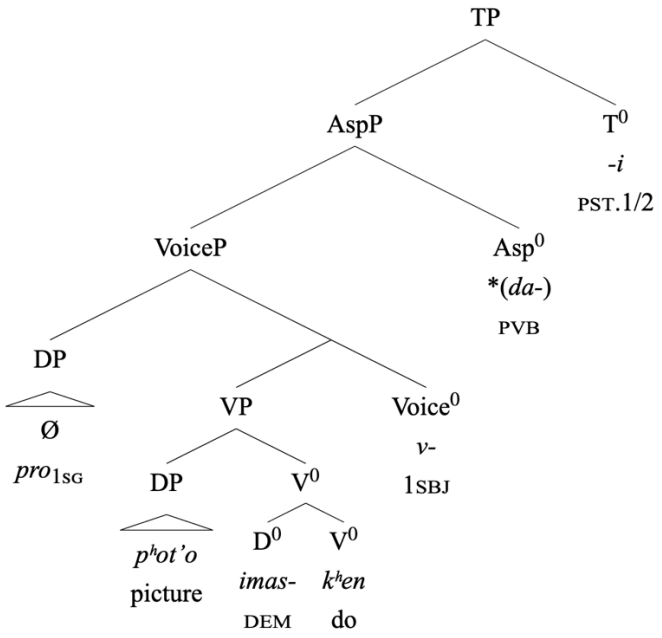


c. Another internal argument can be merged with the PHV

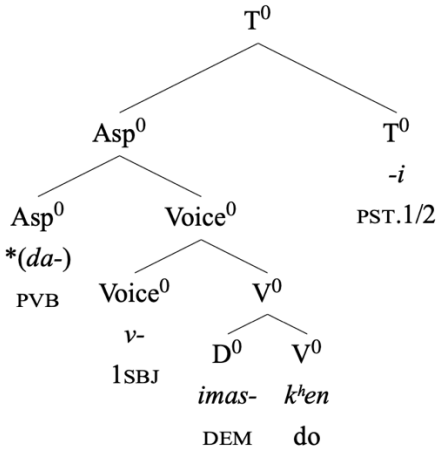


(i) *ar =ʦʰa ʃe- **raj-** gi- raʦʰχ -i -es, ametʰu…*
NEG =too PVB*in*- **what:NOM-** 2:IO- consider -PERF -PL namely_that
"There is also something you all have not considered, namely that…"
(Old Georgian, adapted from Boeder 1994:451)

d. The rest of the clause is built



e. The complex head containing the PHV is spelled out



What is appealing about this analytical approach is that it directly captures the connection between the PHV and EAVP constructions. Positing a shared level of syntactic representation offers an avenue to a unified compositional semantics for the two constructions (insofar as one is motivated — an open empirical question is the extent to which the two constructions are interpreted alike). However, incorporation cannot explain much about the morphological variability of PHVs. If the verb and demonstrative form a constituent very low in the verb phrase, all inflection should appear outside of those elements: much like the structure of compound verbs (30), which have two lexical roots inside prefixal agreement and preverbs (Kalandadze 1979).

(30) Standard compound verbs

a. *ve-* [*tʰan* + *χm*] *-eb -i*
1:APPL- [together + voice] -THM -NPST.NACT.1/2
'I agreed with pro_{3IO}'

b. *ga- va-* [*did* + *gul*] *-eb -di*
PVB_{out}- 1:TR- [big + heart] -THM -IMP:PST.1/2
'I would make pro_3 arrogant'

This morphological configuration is possible for PHVs: it corresponds to the complex type with outer agreement (23). But recall that the outer position of prefixal agreement is only available when the PHV copies the intended verb's preverb (25). There is no obvious reason why the incorporation operation would necessitate this aspectual morpheme. And, setting aside the possibility of a powerful postsyntactic operation capable of reordering morphemes, there is no way to capture grammatical variants with prefixal agreement in the inner position (21, 22, 24).

Note also that the incorporation operation here would be unique to the PHV construction, only triggered when *kʰ(e)n* 'do' takes *imas* 'DEM' as its complement. Arguably a sui generis operation is appropriate, given the construction's sui generis properties. However, there is some theoretical tension in positing an incorporation operation that must exist alongside another very similar operation in Georgian, independently necessary to account for a more productive construction: nonfinite theme–verb compounds (Amiridze 2010:82). Like PHVs, these are words comprising a verb stem and a nominal root interpreted as its theme (31). However they differ from PHVs in a few key ways. First, the nominal theme appears in a different structural position than prefixal *imas-* 'DEM', at the left edge of the word rather than slotted inside the preverb (31a,b). Second, the nominal theme is combined with the verb in these compounds as a bare root, uninflected for case, rather in the dative form like *imas-* 'DEM'. Third, whereas PHVs readily appear with finite inflection (tense and agreement), verb–theme compounds are limited to nonfinite deverbal forms like participles. Finite paraphrases of the compounds must express the theme as a syntactically independent direct object (31c,d).

(31) Theme incorporation outside of PHVs has very different properties

a. [*χel*] + [*da- ban -il -i*]
[hand] + [PVB_{about}- bathe -PPTC -NOM]
'with clean hands; always in the clear'

b. **da-* [*χel* + *ban*] *-il -i*
PVB_{about}- [hand + bathe] -PPTC -NOM
Attempted: 'with clean hands; always in the clear'

c. *[*χel*] + [*da- vi- ban -e*]
[hand] + [PVB$_{about}$- 1:REFL- bathe -PST.1/2]
Attempted: 'I handwashed'

d. *χel -i* *da- vi- ban -e*
hand -NOM PVB$_{about}$- 1:REFL- bathe -PST.1/2
'I washed my hands'

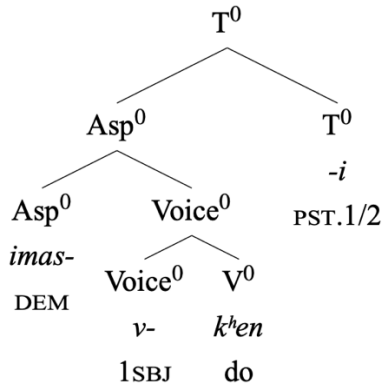
In sum, an incorporation analysis correctly predicts the existence of complex PHVs with outer prefixal agreement (23), and correctly rules out the possibility of the demonstrative appearing outside of preverbs (26). However, it undergenerates PHVs with any kind of inner agreement (21, 22, 24), and overgenerates simple PHVs with outer agreement (25) modulo an unexplanatory morphological stipulation.

3.2 DEM as an extant functional head

Instead of positing a shared level of representation between PHVs and EAVPs, another possibility is that prefixal *imas-* 'DEM' has been reanalyzed as lexical item totally distinct from the independent demonstrative pronoun *imas* 'DEM:DAT'. Supposing the learner is not compelled to posit a totally novel functional category for this element, there are three major extant categories along the clausal spine that it could be assimilated into: Voice^0, Asp^0, and T^0. Since exponents of T^0 are always linearized as suffixes, the prefixal position of *imas-* 'DEM' eliminates that as a possibility. Voice^0 is also a problematic candidate, for syntactic reasons. Nonfinite verb forms in Georgian, including nominalizations (8), are morphosyntactically impoverished (Harris 1981): they distinguish perfective and imperfective aspect (by the presence or absence of a preverb), but do not make tense distinctions; they do not distinguish active or nonactive forms, and are incompatible with applicative morphology; they do not display any kind of phi-agreement; and they cannot license DPs in the core cases (nominative, dative, and ergative), instead expressing arguments as either genitive possessors or as PPs. We take this as evidence that nonfinite verbs altogether lack Voice^0 (and also T^0). Yet, PHVs readily take nonfinite forms (9). Therefore we conclude that *imas-* 'DEM' cannot be analyzed as Voice^0.

The remaining possibility is that *imas-* 'DEM' is reanalyzed as a novel exponent of Asp^0: that is, as a novel preverb. This offers a very straightforward analysis of simple PHVs (21), where *imas-* 'DEM' appears in the same position a preverb would for a normal verb. The following structure illustrates.

(32) Prefixal *imas-* as a novel preverb (exponent of Asp^0)



To derive complex PHVs, which additionally bear the preverb lexically associated with the intended verb, it seems reasonable to posit head adjunction at Asp^0. This is arguably independently necessary in Georgian to account for compound preverbs: combinations of an atomic preverb and *mo-* 'PVB*hither*'. For verbs where preverbs express directed motion, simple and compound preverbs express, respectively, motion away from and towards the deictic center (33a,b). For verbs were preverbs express perfective aspect, it might simply be lexically specified what kind of preverb there is (33c).

(33) Simple and compound preverbs in standard verbs

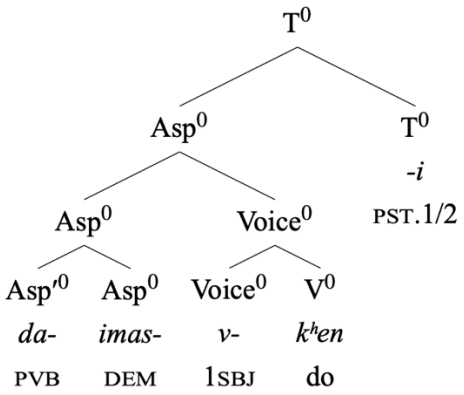
a. ***a-*** *vidnen* ~ **[*a* + *mo*]-** *vidnen*
PVB*up*- go:AOR.3PL **[PVB*up* + PVB*hither*]-** go:AOR.3PL
'They went up [away from here]' ~ 'They came up [towards here]'

b. ***ʃe-*** *it'anes* ~ **[*ʃe* + *mo*]-** *it'anes*
PVB*in*- take:AOR.3PL **[PVB*in* + PVB*hither*]-** take:AOR.3PL
'They took *pro*$_3$ in [thither]' ~ 'They brought *pro*$_3$ in [hither]'

c. ***a-*** *ages* ~ **[*a* + *mo*]-** *ages*
PVB*up*- build:AOR.3PL **[PVB*up* + PVB*hither*]-** throw_over:AOR.3PL
'They built/established *pro*$_3$' ~ 'They threw *pro*$_3$ (e.g. blanket) over *pro*$_3$ (bed/floor)'

Thus, a complex PHV with inner agreement could have the following structure (34). It probably must be stipulated that *imas-* 'DEM' is linearized after the intended verb's preverb, since there are no obvious principles of head adjunction in Georgian that would rule out the other order (26). Note also that identifying *imas-* 'DEM' as Asp^0 also predicts that this morpheme should only appear outside of prefixal agreement, undergenerating two types of complex PHVs (23, 24).

(34) Complex/inner PHVs analyzed with novel compound preverbs



3.3 DEM as a novel functional head

Suppose now that learners reanalyze prefixal *imas-* 'DEM' as a totally new functional head F^0, which is found only in the PHV construction. (Or, learners might now posit F^0 in all extended verbal projections, assuming that it has a null exponent in every context except the PHV.) The reanalyzed EAVP string "that + *do*" is in principle compatible with a structure where this new FP dominates any functional projection above VoiceP. In fact, FP could even be analyzed lower than VoiceP, if the learner is not exposed to any reanalyzable string that contains prefixal agreement (the exponent of $Voice^0$) — that is, if their crucial input comprises only monotransitive or intransitive PHVs with second- or third-person subjects, like the following.

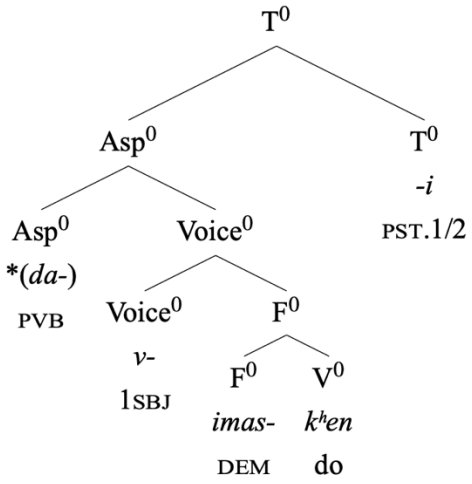
(35) Maximally ambiguous input, without prefixal inflection

imas- Ø- kʰen -i,	*imas- Ø- kʰn -a*,	*imas- Ø- kʰn -es*
DEM- 2/3SBJ- do -PST.1/2,	DEM- 2/3SBJ- do -PST.3SG,	DEM- 2/3SBJ- do -PST.3PL
'You thatdid'	'*pro*$_{3SG}$ thatdid'	'They thatdid'

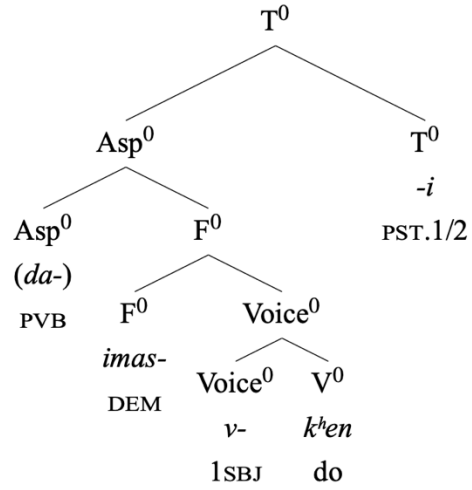
The structural position of FP that the learner has posited will be disambiguated when the PHV must be inflected with prefixal agreement: given a first-person subject, for instance. If the functional head is posited to be in the lowest possible position, just below VoiceP, *imas-* 'DEM' would be linearized inside of prefixal agreement (36a): that corresponds to an attested PHV variant, just in case the intended verb's preverb is copied ((23); cf. ungrammatical (25)). If the learner posits FP just above VoiceP, the prefixal agreement will be inside of *imas-* 'DEM' (36b): deriving both the simple (21) and complex/inner variants (22), assuming the insertion of a copied preverb is free. FP could even be higher, above AspP (36c). That is another way to derive the simple variant (21) — but given FP that high, it would be necessary to stipulate restrictions on the spell out of Asp^0, since *imas-* 'DEM' must be inside of copied preverbs (26).

(36) Prefixal *imas-* 'DEM' as a novel functional head, with variable position

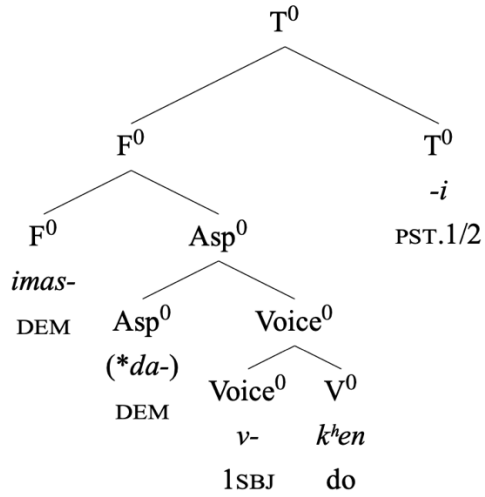
a.



b.



c.



The main merit to this analytical approach is that morphological variation in the PHV construction corresponds straightforwardly to variation in the underlying syntactic structure — structural variation which

is expected given the analytical ambiguity of the reanalyzed EAVP string. (Compare, for instance, Han et al. 2007 on variable grammars of negation in Korean compatible with verb-final word order.) However, this analysis offers little explanation for why the position of prefixal agreement depends on the presence of a copied preverb. Complex PHVs must entail some additional grammatical innovation beyond the reanalysis of *imas* 'DEM'; EAVPs themselves cannot copy preverbs. If that innovation is simply the option to spell out Asp^0 with a pragmatically suitable preverb, there is a priori no reason to expect that spell out operation to be necessary if F^0 is below $Voice^0$ (36a) and impossible if F^0 is above Asp^0 (36c).

There are also theoretical puzzles with interpreting *imas-* 'DEM' as a novel functional head. Across languages, it is generally assumed that lexical items of the same category will have identical extended projections. Yet the PHV construction is the only corner of the language where it is necessary to posit FP (or at least an overt exponent of it). Furthermore, functional projections are generally associated with morphosyntactic features that condition some dimension of inflection. Prefixal *imas-* 'DEM', though, appears in every form of the PHV; it seems to contribute core lexical semantic information, not features associated with argument structure or tense–aspect–mood. Insofar as this element is a novel functional category, it is a noncanonical one.

3.4 DEM as a morphological dummy

A fourth analytical possibility we consider involves two major leaps of grammatical reanalysis. First is to posit syntactic coordination below the word level for PHVs. Arguably, this grammatical option is independently necessary in Georgian to account for a certain type of compound verb exhibiting suspended affixation. The second leap is the reanalysis of *imas-* 'DEM' into a morphological dummy, inserted to take the place of an elided constituent within the complex word containing the stem of the intended verb. This would be a very novel analytical option to arrive at in the context of Georgian, but cases of subword anaphora or ellipsis resembling this have been reported in a several unrelated languages (Compton & Pittman 2010, Comrie & Zamponi 2022).

As a starting point, consider a class of 'truncated compound verbs' in Georgian, which have been noted for their multiple exponence of prefixal agreement (Amiridze 2010:85, Harris 2017:75–76). Descriptively, these compounds combine two verbs, inflected identically, into a single word (orthographically hyphenated); the lefthand verb is stripped of all suffixes but retains its prefixes. The two verbs often share the same root, but differ in preverbs: one expressing motion thither and the other motion hither. Example (37a) is very typical, a verb of motion expressing literal back-and-forth motion; (37b) is a metaphorical extension of this, expressing a thorough, exhaustively performed event. Also possible are truncated compounds combining two different roots (37c); the result is a sort of verbal dvandva, with meaning paraphrasable as a coordination like "VP_1 and VP_2".

(37) Truncated compound verbs

a. [*mi- vi- ar*] + [*mo- vi- ar*] *-e*
[PVB*thither*- 1:REFL- go] + [PVB*hither*- 1:REFL- go] -PST.1/2
'I went/traveled round and about, back and forth'

b. [*gada- va- tʰvalier*] + [*gadmo- va- tʰvalier*] *-eb -di*
[PVB*across*- 1:TR- look] + [PVB*across:hither*- 1:TR- look] -THM -IMP:PST.1/2
'I would give *pro*$_3$ a thorough examination; would look *pro*$_3$ from beginning to end and back'

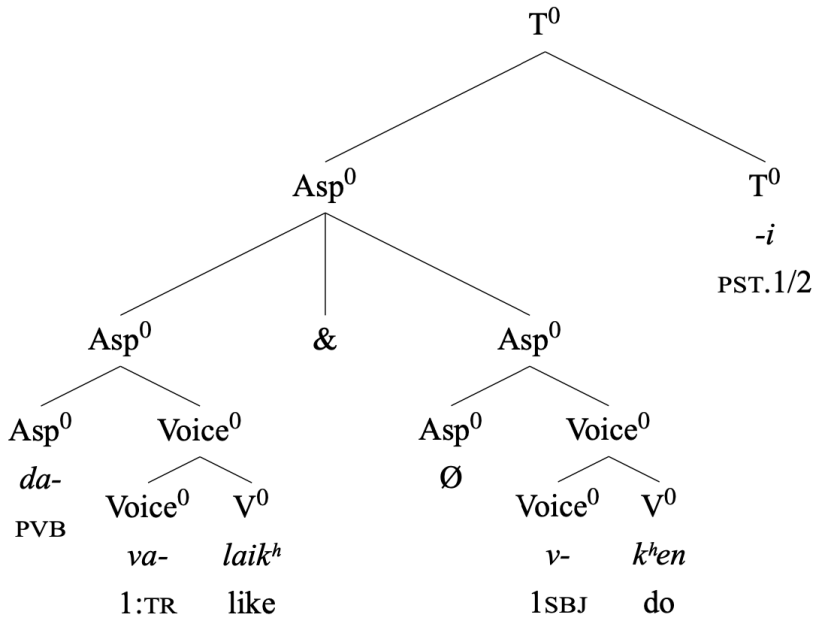
c. [*vi- ʁvatsʼ*] + [*vi- ʃrom*] *-eb -di*
[1:REFL- strive] + [1:REFL- work] -THM -IMP:PST.1/2
'I would strive and toil (for the public good)'

While a thorough investigation and analysis of truncated compounds is beyond the scope of this paper, we assume that they involve coordination at the AspP level, and the suspended affixes are exponents of a single T^0 scoping over the coordinate structure.[8] We also assume that head movement operates in such a way to produce a complex head mirroring the coordinated phrases.

Let us suppose that PHVs have the syntactic structure of truncated compounds (38), with the intended verb (e.g. (27)) on the lefthand side of the coordination, and the verb *kʰ(e)n* 'do' on the right. Of course, the main function of this novel construction is to avoid using the intended verb root. We propose that, when spelled out, a constituent within the lefthand coordinate of the complex head containing the intended verb root will be obligatorily elided. Prefixal *imas-* 'DEM' is then inserted as a sort of morphological dummy, taking the place of the elided subword. In other words, its function parallels that of dummy *do* in English, inserted when verb-phrase ellipsis leaves behind no other host for T^0 (Bresnan 1976, Sag 1976, et seq).

[8] This is similar to, for instance, Kornfilt's (2000, 2012) analysis of suspended affixation in Turkish. Keeping in mind that suspended affixation may not be a unified phenomenon crosslinguistically (e.g. Erschler 2018), there are some clear differences between Georgian truncated compounds and more typical cases of coordinated verbs with suspended affixation in languages like Turkish. For instance, the lefthand truncated verb in Georgian will typically not correspond to any phonologically independent form, whereas suspended affixation in other languages often must leave behind a form utterable in isolation. It also seems that truncated compound verbs in Georgian must share all arguments, whereas suspended verbs in other languages might have different ones; perhaps the arguments of Georgian truncated compounds undergo obligatory across-the-board movement.

(38) Underlying truncated compound structure for the PHV, intending the verb in (27)

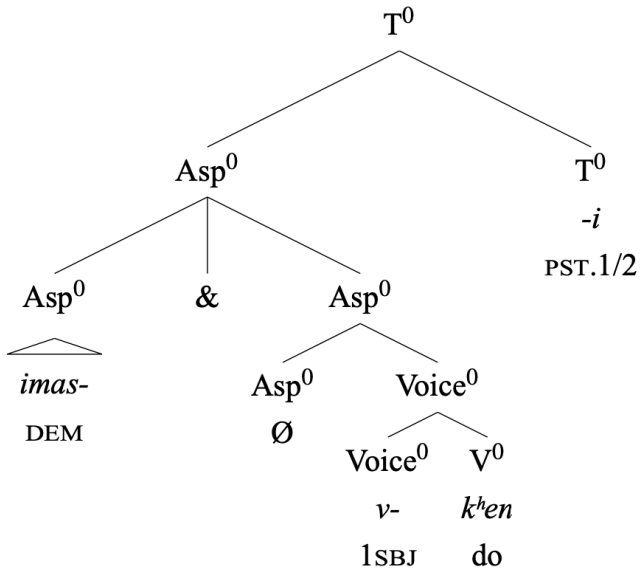


A major advantage to this analysis is its empirical coverage. Most major variants of the PHV can be accounted for, simply by assuming that ellipsis can target different sized constituents within the coordinated complex head: replacing Asp^0 derives the simple variant (39a); replacing $Voice^0$, the complex/inner variant (39b); and replacing V^0, the complex/doubled variant (39c).[9] Indeed this is the only analytical approach that readily accounts for the possibility of doubling prefixal agreement in PHVs. If *imas-* 'DEM' is analyzed as a functional head (Section 3.2 or 3.3), one could stipulate that it is optionally also a phi-probe, one that functions identically to $Voice^0$. But just why learners would posit that, just in case the PHV also copies the intended verb's preverb, is mysterious. Note also that there is no danger of overgenerating simple PHVs with outer agreement (25), or complex PHVs with inside preverbs (26). The only significant empirical shortcoming is the undergeneration of complex/outer PHVs (23), since the righthand coordinate containing *kʰ(e)n* 'do' should include $Voice^0$ (exponed as the inner agreement prefix) if the lefthand coordinate includes Asp^0 (exponed as the copied preverb).

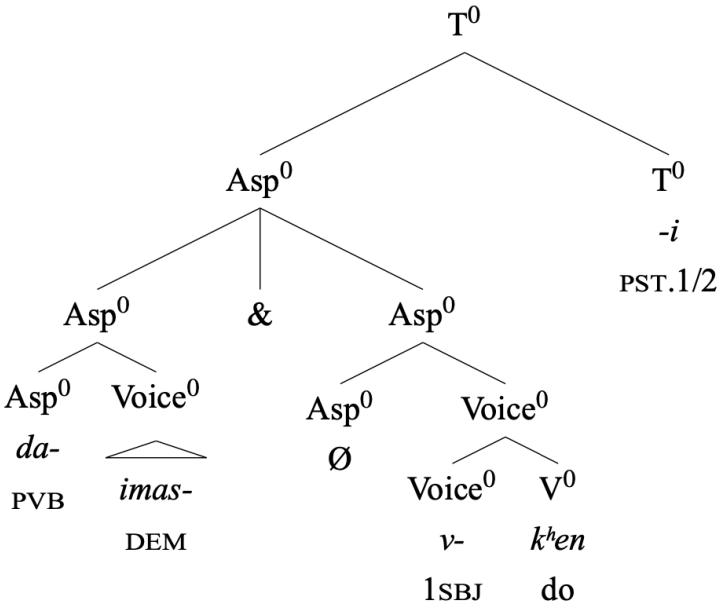
[9] The figure in (39c) includes the transitive preradical vowel *a-* in the outer agreement position, maintaining maximal parallelism with the intended verb in the lefthand coordinate of (38). As described in Section 2, preradical vowels here are possible, and often preferred, but not obligatory: *da-va-imas-v-kʰen-i* exists alongside *da-v-imas-v-kʰen-i* (19a). We suggest two ways to account for this variability. First, one could maintain the clausal structure adopted here and posit a postsyntactic fission operation that breaks $Voice^0$ into two heads, exponed by *v-* '1SBJ' and *a-* 'TR' respectively; fission would be obligatory if the context of the exponed root, and optional in a PHV if the maximal V^0 is elided. Second, one could posit an extra syntactic projection just below VoiceP, whose head is exponed by the preradical vowel — call that VowelP. Subword ellipsis targeting the maximal V^0 would leave terminal $Vowel^0$ exponable by *a-* 'TR', whereas subword ellipsis of the maximal $Vowel^0$ would prevent a preradical vowel from appear in the outer position.

(39) Deriving PHV variants by replacing different sized constituents with *imas-* 'DEM'

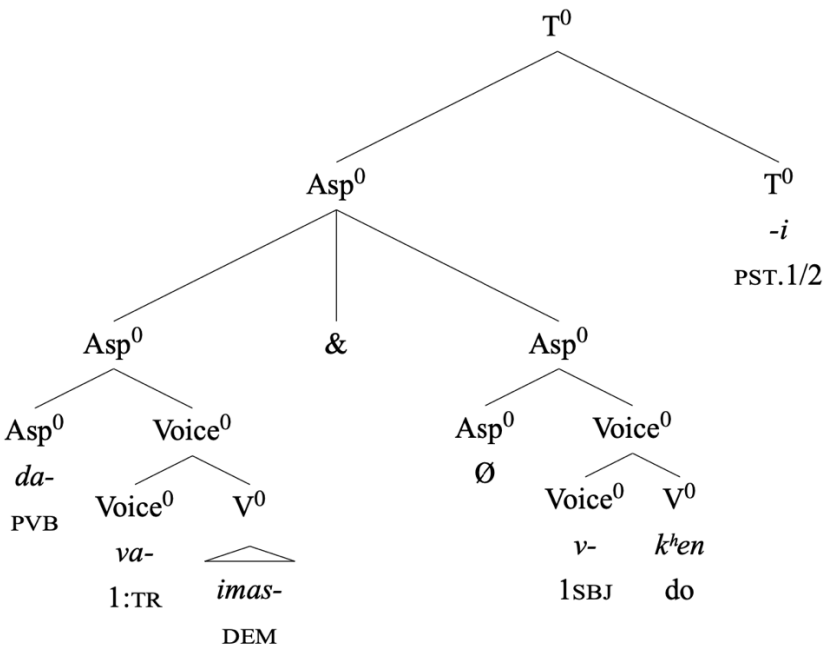
a.



b.



c.



Here there is also nothing very mysterious about the fact that PHVs can copy the intended verb's preverb, since PHVs under this analysis literally contain the intended verb. "Copying" here is just ellipsis of a subconstituent of that verb word lower than Asp^0. In the analytical approaches discussed above (Sections 3.1–3.3), complex PHVs are derived from by spelling out Asp^0 in the construction as a preverb, constrained presumably by a pragmatic matching condition sensitive to the form of the intended verb. And, as noted previously, it may be necessary to stipulate other arbitrary constraints on preverb merger to avoid overgenerating certain morphological forms.

So there are considerable empirical advantages to this analysis, but it also presents some theoretical questions. When reanalyzing EAVPs into the new PHV construction, why would learners have recruited the structure of truncated compounds, a relatively obscure corner of the language? There is no clear semantic parallel: PHVs do not seem to be interpreted as dvandvas, coordinative compounds of the intended verb and the lexical verb *kʰna* 'do:NMLZ' (i.e. "*I thatdid the picture*" ≠ "*I liked and did the picture*"). Nor is there a clear morphological parallel. A hallmark of truncated compounds is doubled prefixal agreement, but there is only a single agreement prefix in an EAVP.

A solution to this puzzle may lie in a tension between the general syntax–semantics of placeholder phenomena, and the specific architecture of the Georgian verb. Let us suppose that placeholder words are demonstrative anaphors for linguistic expressions (Cheung 2015), and they substitute for syntactic constituents. The linguistic expressions relevant for Georgian PHVs would be morphs that distinguish verbal lexical items: the verb root (V^0) and the preverb (Asp^0). These happen not to form a syntactic

constituent, and are often discontinuous in finite verbs, potentially separated by an agreement prefix and/or preradical vowel (exponents of Voice^0).

We suggest that the truncated compound structure offers a compromise between one pressure to omit lexically contentful material (at V^0 and Asp^0), and another to express obligatory inflectional features (at Voice^0). From a functional perspective, it will always be a useful option to omit both the root and the preverb. In tip-of-the-tongue states, it is likely that not even the first segments of the intended verb, corresponding to the preverb, can be summoned; and in euphemism/cipher contexts, it may be pragmatically undesirable to include the preverb as a cue to the intended lexical item. So, being able to elide the maximal Asp^0 dominating the intended verb's root and preverb is crucial. Yet doing so will also elide the exponent of Voice^0, which is often the crucial disambiguator to certain morphosyntactic distinctions (like first-person vs. second-person subject agreement, or monotransitive vs. ditransitive argument structure). The truncated compound structure solves this problem, since the verb *do* in the righthand conjunct will be able to host those obligatory inflectional features at Voice^0 and T^0.[10]

4. Individual variation in PHV acceptability

The previous section explores four morphosyntactic analyses of Georgian PHVs, where prefixal *imas-* 'DEM' has been reanalyzed as an incorporated theme, an extant functional head, a novel functional head, or a kind of morphological anaphor. The following table summarizes the empirical coverage of these analyses, focusing on the four major attested PHV variants (21–24), and two notable ungrammatical variants (25, 26).

[10] There is another element in standard Georgian verbs which arguably has a similar function: the suffixal/enclitic copula found in certain forms like (i). Lomashvili and Harley (2011) analyze this element as a last-resort auxiliary verb that expresses features on T^0. Crucially for them, it offers another site for prefixal agreement to appear.

(i) ***gi-*** *q'var* -[***v-*** *ar*]
2:IO- love -[**1SBJ-** AUX.PRES]
"You (*gi-*...) love me (…*v-*)"

Note an important difference between this suffixal copula and the verb *kʰna* 'do:NMLZ' in PHVs. As the above example shows, the lexical verb and the suffixal auxiliary can agree with different arguments. (Specifically, the lexical verb can agree with dative arguments, like the second-person experiencer subject, while the auxiliary cannot agree with dative arguments.) In PHVs with doubled prefixal agreement, mismatches like this are impossible. For instance, if a PHV has a second-person dative argument, both sites of agreement must track it (ii).

(ii) *da-* ***gi-*** *imas-* ***gi-*** *kʰen -i*
PVB*about*- **2:IO-** DEM- **2:IO-** do -PST.1/2
"I thatdid *pro*$_3$ **for/on you (*gi-…gi-*)**"

~ ***da-** **gi-** imas- **v-** kʰen -i*
PVB*about*- **2:IO-** DEM- **1SBJ-** do -PST.1/2
Attempted: "**I (…*v-*)** thatdid *pro*$_3$ **for/on you (*gi-…*)**"

	Incorporation (Section 3.1)	**Novel Preverb** (Section 3.2)	**Novel F^0** (Section 3.3)	**Morph. dummy** (Section 3.4)
Simple PHV, Inner Agr (21) *imas- v- k^{h}eni* DEM- AGR- STEM	✗	✓	✓	✓
Complex, Inner Agr (22) *da- imas- v- k^{h}eni* PVB- DEM- AGR- STEM	✗	✓	✓	✓
Complex, Outer Agr (23) *da- v- imas- k^{h}eni* PVB- AGR- DEM- STEM	✓	✗	✓	✗
Complex, Doubled Agr (24) *da- v- imas- v- k^{h}eni* PVB- AGR- DEM- AGR- STEM	✗	✗	✗	✓
***Simple, Outer Agr (25)** **v- imas- k^{h}eni* AGR- DEM- STEM	✗	✓	✗	✓
***Dem before Pvb (26)** **imas- da- v- k^{h}eni* DEM- PVB- AGR- STEM	✓	✗	✗	✓

Table 1: Summary of empirical coverage for four analyses of the PHV construction. ✓ = correct prediction; ✗ = incorrect prediction (undergeneration of attested form, or overgeneration of unattested form).

No one proposal accounts for all of the key generalizations. However, this is a nonstandard, relatively recent grammatical innovation, one still crystalizing in the contemporary language. There is considerable analytical ambiguity facing a learner reinterpreting the EAVP, so it would not be surprising that individuals have internalized PHVs in different ways: one person reanalyzing *imas-* 'DEM' as an incorporated theme, another as a novel functional head, etc. Individual variation — which is clearly evident in corpus research (Amiridze 2010, under review) and elicitation with native speakers — offers another way to evaluate the analyses of PHVs above. The columns of Table 1 are predicted patterns of acceptability: we expect some individuals to accept only the complex/outer variant (these would correspond to the Incorporation grammar), some to reject only the complex/doubled variant (the Novel F^0 grammar), etc. But we do not expect a group of individuals that, for instance, accepts only simple and complex/outer PHVs,

since we have not identified a theoretical analysis that generates those variants to the exclusion of the others. The rest of this section reports a morphological acceptability study quantifying individual variation in the PHV construction, to help better understand which grammars learners are likely to arrive at.

4.1 Morphological acceptability study

4.1.1 Materials

32 itemsets were constructed, comprising an intended verb with first-person subject agreement paired with each of the four major PHV variants. A sample itemset follows. An additional 160 similar items served as fillers.[11]

(40) Intended verb

gada- v- ri -et^h

PVB$_{across}$- 1SBJ- madden -PST.1/2:PL

"We drove *pro*$_3$ mad"

a. Simple PHV

imas- v- k^{h}en -it^h

DEM- 1SBJ- do -PST.1/2:PL

b. Complex/inner PHV

gada- imas- v- k^{h}en -it^h

PVB$_{across}$- DEM- 1SBJ- do -PST.1/2:PL

c. Complex/outer PHV

gada- v- imas- k^{h}en -it^h

PVB$_{across}$- 1SBJ- DEM- do -PST.1/2:PL

d. Complex/doubled PHV

gada- v- imas- v- k^{h}en -it^h

PVB$_{across}$- 1SBJ- DEM- 1SBJ- do -PST.1/2:PL

All: "We thatdid *pro*$_3$"

4.1.2 Procedure

The study was split into two experimental sessions. Each session comprised five blocks, alternating between a judgement task rating the acceptability of placeholder verbs, and a second distractor task concerning a different morphological construction. Target itemsets were distributed into six lists, corresponding to the

[11] Many of these fillers were designed as itemsets for other experiments on PHVs, run in parallel and testing the effect of other morphological variables. We do not report the results of these experiments here.

six placeholder-judgement task blocks of the two sessions. The order of those blocks was the same for all participants. Table 2 summarizes. Each participant saw only one version of each itemset, distributed according to the Latin Square method.

Session 1		**Session 2**	
Block 1	Placeholder task (32 trials)	Block 1	Placeholder task (32 trials)
Block 2	Distractor task (24 trials)	Block 2	Distractor task (24 trials)
Block 3	Placeholder task (32 trials)	Block 3	Placeholder task (32 trials)
Block 4	Distractor task (24 trials)	Block 4	Distractor task (24 trials)
Block 5	Placeholder task (32 trials)	Block 5	Placeholder task (32 trials)

Table 2: Summary of the structure of the experimental sessions

The placeholder task elicited an acceptability judgment along a five-point Likert scale. Every trial gave a standard verb paired with a placeholder verb. Participants were instructed to imagine that they were trying to avoid using the standard verb, as if playing a language game. Their task was to rate how appropriate the given placeholder verb would be to replace that intended verb. Figure 1 illustrates with a trial mock-up.

Experimental trial mock-up	
ნაგულისხმევი ზმნა: **მოვატყუებ**	Intended verb: ***mo= va- t'q'u -eb*** PVB_{hither}= 1:TR- deceive -THM 'I will deceive pro_3'
ჩამნაცვლებელი ზმნა: **მოიმასვიზამ**	Placeholder verb: ***mo= imas- vi- z -am*** PVB_{hith}= DEM- 1:REFL- do.FUT- THM 'I will thatdo pro_3'
1 – 2 – 3 – 4 – 5 (ძალიან ცუდი) (ძალიან კარგი)	1 – 2 – 3 – 4 – 5 (very bad) (very good)

Figure 1: Mock-up of a trial in the acceptability task as it appeared in Georgian (left), with an English translation/gloss (right)

This experiment was conducted remotely, hosted online via PCIbex (Zehr & Schwartz 2018). Before starting either experimental session, participants gave consent, supplied demographic information (including age, gender, and city of residence), read instructions, and completed three practice items to familiarize themselves with the Likert-scale methodology. Participants were given a chance to take a break

after each distractor block. Upon completion of the experimental sessions, a few optional debriefing questions appeared.

4.1.3 Participants

65 native Georgian speakers residing across Georgia were recruited for participation. They all took Session 1, and 36 of them later took Session 2. Participants were paid 25 GEL for each session they completed.

4.1.4 Analysis

Data from two participants whose average response times were very short (<1000 ms) were entirely excluded from analysis. All observations with latencies more than 3 standard deviations away from the global average were also excluded.

The remaining raw rating data were analyzed using ordinal linear models with probit link functions, using the *clmm* function of the R package *ordinal* (Christensen 2015). Following Schad et al. (2020), conditions were sum-coded with a scheme that tested the following hypotheses: (H1) the acceptability of simple placeholder verbs (40a) would be significantly different than that of complex ones (40b,c,d); (H2) acceptability of complex PHVs with agreement in the inner position (40b,d) would be significantly different than that of complex PHVs without agreement in the inner position (40c); (H3) acceptability of complex PHVs with agreement in the outer position (40c,d) would be significantly different than that of complex PHVs without agreement in the outer position (40b). The maximally complex model, with by-participant and by-item slopes and intercepts, converged. Post-hoc pairwise comparisons were performed with the *emmeans* package (Lenth 2024), using the Tukey adjustment method.

4.2 Results

Proportion of responses across the Likert scale and *z*-transformed ratings are reported in Figure 2.[12] Visual inspection of results suggests that simple PHVs are the most acceptable (largest proportion of 4 and 5 ratings; highest *z*-scores); complex/inner and complex/doubled PHVs are of intermediate acceptability; and complex/outer PHVs are the least acceptable.

[12] Applying the *z*-transformation to acceptability data is a standard way to abstract away from individual participants' scale biases — i.e., the idiosyncratic ways in which they map acceptability judgements to Likert-scale categories (Schütze & Sprouse 2014). For each participant, $z = 0$ corresponds to their average rating across the experiment, and $z = +1$ or -1 to an item rated one standard deviation above (more acceptable than) or below (less acceptable than) that average.

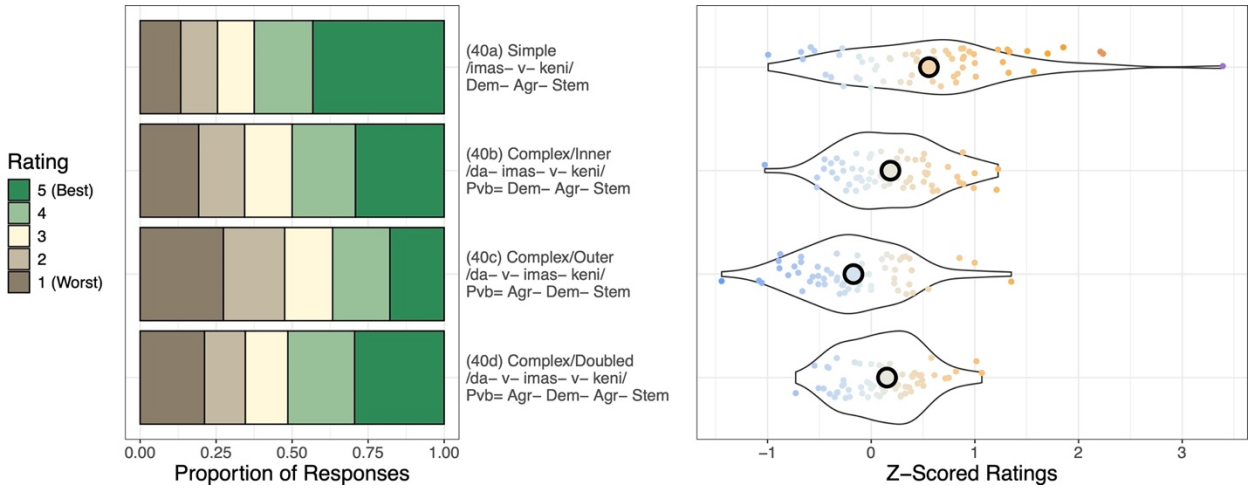


Figure 2: Results of an acceptability experiment comparing the four major kinds of placeholder verbs (40a–d). The lefthand plot reports proportions of Likert-scale responses. The righthand plot gives *z*-scored ratings; small dots are by-participant mean *z*-scores, and large dots are the mean of these.

Ordinal modeling finds evidence to support H1 (PHVs without preverbs are more acceptable than ones with preverbs; Est. = 0.73, SE = 0.14, $z = 5.0$, $p < 0.001$), H2 (complex PHVs without inner agreement are less acceptable than ones with it; Est. = 0.43, SE = 0.12, $z = 3.7$, $p < 0.001$), and H3 (complex PHVs with outer agreement are less acceptable than ones without it; Est. = 0.27, SE = 0.092, $z = 3.0$, $p < 0.01$). Post-hoc pairwise comparison of the complex/inner (40b) and complex/doubled (40d) conditions finds no significant acceptability difference (Est. 0.072, SE = 0.11, $z = 0.64$, $p = 0.92$). These findings lend credence to the visually apparent patterns noted above: in terms of acceptability, simple variants (40a; e.g. *imas-v-k^{h}eni*) > complex/inner (40b; *da-imas-v-k^{h}eni*) ≈ complex/doubled (40d; *da-v-imas-v-k^{h}eni*) > complex/outer (40c; *da-v-imas-k^{h}eni*).

4.3 Clustering analysis

As discussed above, it is likely that multiple grammars of the PHV construction coexist across Georgian speakers. These should correspond to coherent patterns of acceptability responses to the four major PHV variants across participants in the present study. To help identify such patterns, we conducted an exploratory *k*-means clustering analysis on by-participant *z*-scores, using the R package *NbClust* (Charrad et al. 2014). *K*-means clustering is a technique that partitions data points into a specified number of groups, maximized for internal similarity (for more details about the algorithm and its applications in describing linguistic variation, see e.g. Burnett et al. 2024). Absent top-down predictions for the number of clusters to specify, a

range of mathematical metrics are used to identify the optimal number bottom-up.[13] For our data, the optimal number of clusters of participants was calculated to be two.

Figure 3 shows by-participant *z*-scores of those two groups, labeled Cluster A (comprising 43 participants) and Cluster B (20 participants); Table 3 reports a demographic breakdown. Visually inspecting the average ratings, a few patterns are apparent. Participants in Cluster A rated complex/doubled (40d) and simple PHVs (40a) the best, while complex/outer PHVs (40c) were the worst; this is qualitatively similar to the acceptability patterns of the data in aggregate (Figure 2). As for Cluster B, these participants strongly preferred simple PHVs (40a), but also accepted complex/inner PHVs (40b) to some extent. In fact, the skew of *z*-scores for this group indicates that they rated most items in the experiment as quite unacceptable, only rating simple PHVs with values near the top of the Likert scale. Among the demographic variables we collected from participants, none obviously correlates with the clusters.

[13] While Section 3 describes four families of analyses of the PHV construction, we do not expect a priori that all of these grammars will manifest across the participants of this study, nor that other analytical possibilities will not.

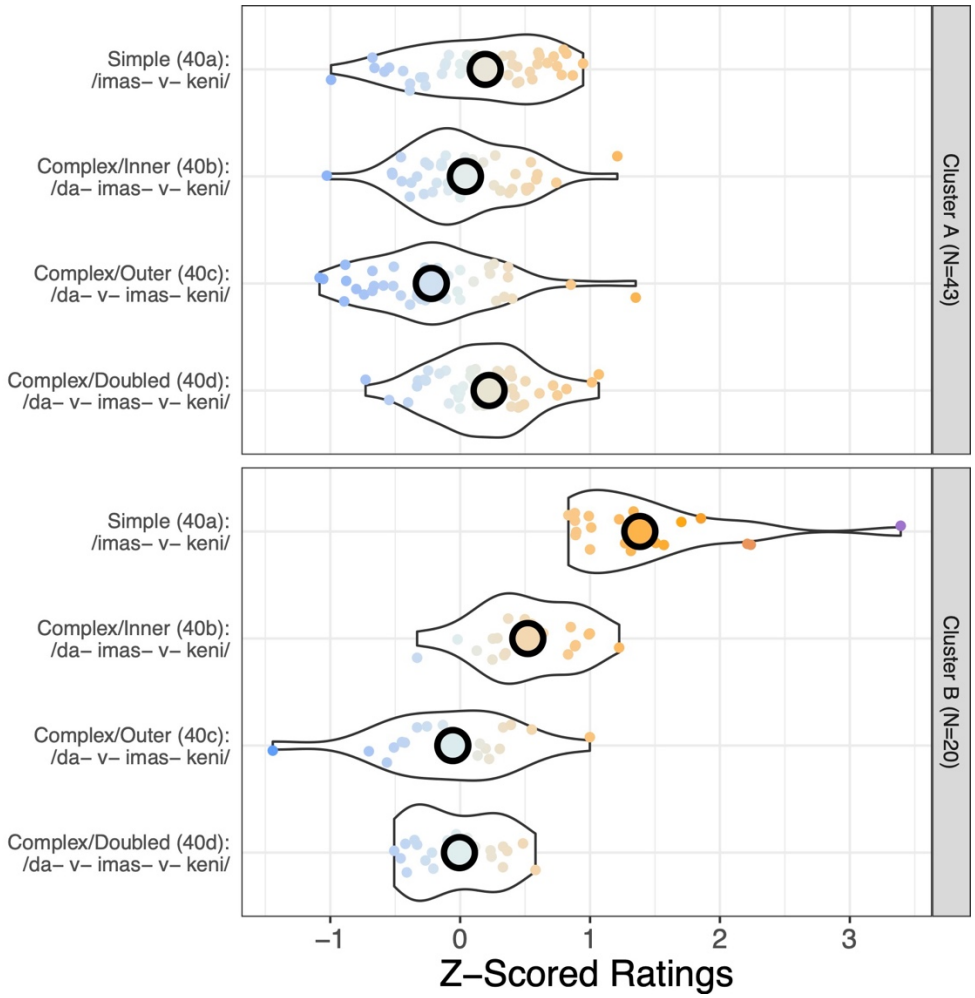


Figure 3: By-participant *z*-scored acceptability ratings across the four major PHV variants. Participants are partitioned into two groups (Cluster A, Cluster B) by a *k*-means clustering analysis.

	N_{Part}	Mean Age (years)	Gender		Reported city of residence			
			Female	Male	in Western Georgia	Tbilisi	in Eastern Georgia	n/a
Cluster A	43	32.3	36	7	5	29	5	4
Cluster B	20	33.4	14	6	2	12	4	1

Table 3: Demographic breakdown of the two-way clustering analysis. Reported are the number of participants in each cluster, the mean age of the clusters, the gender split, and a coarse-grained geographic split. A few participants did not report their city of residence.

4.4 Discussion

An acceptability study on Georgian PHVs offers a few important insights into the morphological variation observed for this construction. The clearest finding is that simple PHVs are generally more acceptable than complex PHVs. This is a significant effect when analyzing the ratings data in aggregate, and an exploratory

k-means clustering analysis suggests that this effect is driven particularly by a group of participants (Cluster B) who mostly only accept simple PHVs. From the perspective of language change, this acceptability asymmetry is unsurprising. The simple PHV is the variant superficially closest to the EAVP. The only grammatical innovations necessary for its development are those that account for the fixed position and form of *imas*- 'DEM', and the argument structure of the PHV. Complex PHVs additionally require an innovative mechanism (or mechanisms) to account for preverb copying and the variable position of prefixal inflection. Presumably these extra steps of innovation do not come for free, so it is likely there are speakers who have acquired the simple PHV variant, but not the complex ones.

Among the analytical proposals in Section 3, which offer a foothold for understanding the acceptability advantage of simple PHVs? The Incorporation (Section 3.1) and Novel Functional Head (Section 3.3) grammars offer little explanation here: the former cannot derive attested forms of simple PHVs at all, and the latter must stipulate restrictions on preverb copying based on the hierarchical position of F^0 (spelled out by *imas*- 'DEM'). The Novel Preverb grammar (Section 3.2) is more promising. If *imas*- 'DEM' is reanalyzed as an exponent of Asp^0 (i.e. as a preverb), the simple PHV variant is derived straightforwardly (32); the complex/inner variant can also be derived if the grammar additionally allows for the intended verb's preverb to be adjoined to Asp^0 (34). If that adjunction mechanism is acquired more rarely, or if it comes with a nontrivial processing cost, then the acceptability advantage for simple PHVs follows. There is also some explanatory power in the Morphological Dummy grammar (Section 3.4), whereby *imas*- 'DEM' is reanalyzed as an element inserted when some or all of the intended verb is elided. Under this account, the simple PHV variant corresponds to the largest possible ellipsis site (39a), and complex variants correspond to smaller elided constituents (39b,c). Perhaps a constraint like Max Elide (Merchant 2008) penalizes those derivations where morphological ellipsis is not as big as it could be, hence the acceptability disadvantage of complex PHVs.

A second important finding of our acceptability study has to do with the relative acceptability of complex PHVs. On aggregate, the complex/inner and complex/doubled variants are more acceptable than the complex/outer one. This pattern seems to especially reflect the judgements of participants in Cluster A; those in Cluster B seem to accept only the complex/inner variant, insofar as they accept any complex PHV. This is evidence against the Incorporation analysis, which can only account for the complex/outer variant, and evidence for the Novel Preverb analysis, which can only account for PHVs with inner prefixal agreement. The Novel Functional Head analysis can derive both complex/outer and complex/inner PHVs, depending on the position of F^0 (36). But, as discussed in Section 3.3, speakers would only posit the lowest position for F^0 (giving rise to the complex/outer variant; (36a)) if their input is maximally ambiguous: if they are only exposed to PHVs without any prefixal inflection (35). So, this theory offers some explanation

for the acceptability disadvantage of complex/outer PHVs, since the stars would have to align for learners to posit a structure that would derive that variant.

However, the relative acceptability of complex PHVs best supports the Morphological Dummy analysis. That grammar is unable to derive the (quite unacceptable) complex/outer variant, and it is the only one that can derive the (rather acceptable) complex/doubled variant. Recall that this analysis captures different PHV variation by permitting a morphological ellipsis operation to target different sized subword constituents. Extending the logic of Max Elide discussed above, then the medium-sized ellipsis site (deriving complex/inner PHVs; 39b) should be relatively more acceptable than the smallest-sized site (deriving complex/doubled ones; 39c). This prediction is not borne out in the aggregate analysis, since those two variants are rated about the same over all. Perhaps the acceptability penalty for minor (39b) rather than major (39c) violation of Max Elide is not detectable given this experimental procedure, or perhaps Max Elide gives rise to categorically rather gradient acceptability penalties. Note, though, that participants in Cluster B seem to rate the complex/inner variant somewhat better than the complex/doubled variant. One way to interpret this is to suppose that Cluster A and Cluster B both correspond to the Morphological Dummy grammar, but participants in Cluster B have a different weight for Max Elide — such that non-maximal elided constituents in the PHV construction precipitously decrease acceptability. Entertaining this possibility, though, requires us to grapple with two fundamental loci of interspeaker variability simultaneously: variation in competence (the internalized formal representation of the PHV construction), and also variation in performance (the principles of morphosyntactic processing that map PHV representations onto acceptability judgements). Indeed both sets of parameters might exist, but the evidence here does not compel us to articulate both types of theories at once.

The third key finding of our study is evidence from a *k*-means clustering analysis that multiple grammars of the PHV construction coexist across speakers. Given the discussion above, we hypothesize that speakers in Cluster A have adopted the Morphological Dummy analysis, and those in Cluster B have adopted the Novel Preverb analysis. Interspeaker variation per se is not surprising here, given the analytical ambiguities that face Georgian speakers acquiring this construction. But why might it be that the participants of this study seem to represent just two of the four proposed grammars? We can only speculate, keeping in mind that a sample of about 60 speakers is unlikely to be representative of the whole Georgian-speaking population. But we suspect that both language-general and language-specific learning biases might tip the scales in favor of the Morphological Dummy and Novel Preverb grammars. As discussed in Section 3.3, the Novel Functional Head analysis requires positing a functional projection to accommodate *imas-* 'DEM' — and that novel F^0 is noncanonical insofar as it contributes core lexical semantic content to the PHV construction, rather than inflectional features orthogonal to the lexical item. Perhaps a language-general bias against such functional projections makes this grammar an unlikely one to be acquired. As for

the Incorporation analysis, Section 3.1 points out a potential tension in positing a novel incorporation operation for the PHV which has quite different properties from an independent, productive incorporation operation that gives rise to nonfinite theme–verb compounds (31). Perhaps observing that the PHV construction has very different syntactic and semantic properties from theme–verb compounds dissuades Georgian speakers from adopting a different incorporation operation. As for the Novel Preverb and Morphological Dummy analyses, both coopt existing structures in the language: respectively, the normal architecture for verbs with atomic and compound preverbs (32, 34), and that of truncated compounds (37–39). Thus, while these analytical options might still necessitate innovative grammatical operations and rules of interpretation to accommodate PHVs, they at least do not require novel morphosyntactic structures.

5. Conclusion

The placeholder verb construction, emerging in colloquial Georgian, is notable case study of morphosyntactic change and variation. It involves the reanalysis of an event-anaphoric verb phrase (literally "do that") into a single word (roughly "thatdo"), one with structural properties that are altogether novel in the language. We have articulated four representational theories of the placeholder verb construction, each corresponding to a different way of reanalyzing the erstwhile demonstrative pronoun *imas* 'DEM': as an incorporated internal argument of the lexical verb *kʰna* 'do:NMLZ', as a novel exponent of an existing functional head (Asp^0), as the exponent of an entirely novel functional head, or as a kind of morphological anaphor substituting a subword constituent. Each analytical approach offers different empirical coverage for the remarkable morphological variation found in placeholder verbs, characterized by the position and number of inflectional prefixes which behave invariably in every other Georgian verb. Results of an acceptability experiment show that this is not per se free variation: on aggregate, certain morphological variants are more acceptable than others. Moreover, an exploratory clustering analysis finds evidence that speakers fall into two groups, with coherently different judgement patterns. We interpret this as evidence that, at least currently, there is no single grammar of the placeholder verb construction. Rather, individuals faced with analytically ambiguous input have made different representational assumptions to accommodate it, and therefore accept different morphological variants to different degrees. The judgement clusters identified correspond well to the two proposed analyses that repurpose existing grammatical structures. This suggests that learners of innovative morphosyntactic patterns are biased against positing radically novel structures, if possible.

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