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

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Abstract: This paper describes grammatical properties of the placeholder verb construction in colloquial Georgian, reporting results of an acceptability study and discussing implications for theories of agreement and allomorphy. Placeholder verbs are derived from the VP "do that", but their morphosyntax shows that those elements have undergone reanalysis into a single verb with unique properties. Because the incorporated demonstrative pronoun has no clear structural analogue in standard verbs, placeholders exhibit unique morphological patterns: most notably, inflectional prefixes can appear on either or both sides of the demonstrative, with individuals prefering one or another variant. Comparing the patterns to ones firmly established in the language, we hypothesize that speakers recruit structures from different corners of Georgian in reanalyzing "do that" into the placeholder verb. This variation is a snapshot of grammaticization in progress — the emergence of a structurally innovative verb type within a language whose verbal morphology is already quite complex.

1. Overview

The placeholder verb construction emerging in contemporary colloquial Georgian (Amiridze 2010) combines a demonstrative pronoun (always distal and in the dative case: /imas/ "that.DAT") with a morphologically irregular semantically light verb (/kʰmna/ "do:NMLZ"). Placeholder verbs have a few typical uses: 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" (1).

(1) *Euphemism context: The speaker wishes to avoid saying a vulgar word*
Deixis context: The speaker is pointing to a person engaging in some unfamiliar/unlexified action
Tip-of-the-tongue context: The speaker fails to summon a low-frequency word

ʃen =tsʰ **imasʃvrebodi**[1]
2SG =too **placeholder_verb:IMP:2SG**
"You **were thatdoing** too"

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[1] Note that colons are used in glosses when further morphological decomposition is possible, but not expositorily necessary. We also add spaces between affixes and clitic boundaries for legibility. Abbreviations: ABS "absolute", AGR "agreement inflection", APPL "applicative", AOR "aorist", AUX "auxiliary", CM "class marker", DAT "dative", DEM "distal demonstrative", DFLT "default", DO "direct object", ERG "ergative", EVID "evidential", GEN "genitive", IMP "imperfect (imperfective past)", INCH "inchoative", IO "indirect object", IRREG "irregular", LV "lightverb", NACT "nonactive (passive or anticausative)", NEG "negative", NOM "nominative", NPST "nonpast", OBJ "object", PERF "perfect (≈ past evidential)", PFV "perfective", PL "plural", PRES "present (imperfective nonpast)", PRIV "privative participle", PST "past", PTC "participle", PVB "preverb (directional meaning given in subscript italics)", QUOT "quotative", REFL "reflexive preradical vowel", SG "singular", SBJ "subject", THM "themative suffix", TR "monotransitive preradical vowel", 1/2/3 "first/second/third person"

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The morphosyntactic behavior of placeholder verbs is quite colorful. Well attested are four major morphological variants, diagnosed by the presence and relative position of certain inflectional prefixes. The *simple placeholder verb* (1, 2) consists of just the demonstrative and the verb *do*; inflectional prefixes come between. This configuration parallels the behavior of a small, archaic light-verb construction.

(2)   *Simple placeholder verb, Inner agreement*

imas- v- kʰen -i   cf.   [dzal] + [mi- dz -s]

DEM- 1SBJ- do -PST.1/2   [power] + [1:IO- LV$_{have}$ -NPST.3SG]

"I thatdid" or "I thatdid 3RD (=him/her/it/them)"   "It is possible for me; I am capable of it"

Contrasting with simple placeholders are *complex placeholder verbs* (3–5), which have preverbs: morphemes that express aspectual and directional meanings (Makharoblidze 2018). Unlike simple ones, complex placeholders permit some degree of variation in prefixal inflection, with prefixes potentially appearing inside the demonstrative (3), outside it (4), or on either side (5). None of these morphological patterns is unattested in Georgian, but what is unusual is observing them all as inflectional variants of the same lexical item.

(3)   *Complex placeholder, Inner agreement*

ga= imas- **v-** kʰen -i   cf.   ga= [**v-** tsʰur -av]

PVB$_{out}$= DEM- **1SBJ-** do -PST.1/2   PVB$_{out}$= [**1SBJ-** swim -THM]

"I thatdid" or "I thatdid 3RD"   "I will swim out"

(4)   *Complex placeholder, Outer agreement*

ga= **v-** imas- kʰen -i   cf.   ga= **va-** [gul + gril] -e

PVB$_{out}$= **1SBJ-** DEM- do -PST.1/2   PVB$_{out}$= **1:TR-** [heart + cool] -PST.1/2

"I thatdid (3RD)"   "I made 3RD indifferent"

(5)   *Complex placeholder, Doubled agreement*

ga= **v-** imas- **v-** kʰen -i   cf.   ga= **v-** rbi =[**v-** ar]

PVB$_{out}$= **1SBJ-** DEM- **1SBJ-** do -PST.1/2   PVB$_{out}$= **1SBJ-** run:PRES =[**1SBJ-** be.PRES]

"I thatdid (3RD)"   "I am running out"

                                  cf.   [ga= **va-** kʰan] + [gamo= **va-** kʰan] -e

                                     [PVB$_{out}$= **1:TR-** swing] +

                                            [PVB$_{out:hith}$= **1:TR-** swing] -PST.1/2

                                    "I swung 3RD back and forth"

We hesitate to call these free variants: individuals usually express preferences, and an acceptability study finds a three-way contrast. As Figure 1 summarizes, a given simple placeholder verb (2) is generally more acceptable than any variant with a preverb. Among the complex placeholder verbs, variants with outside prefixal agreement (4) are generally worse than the other types (3, 5).
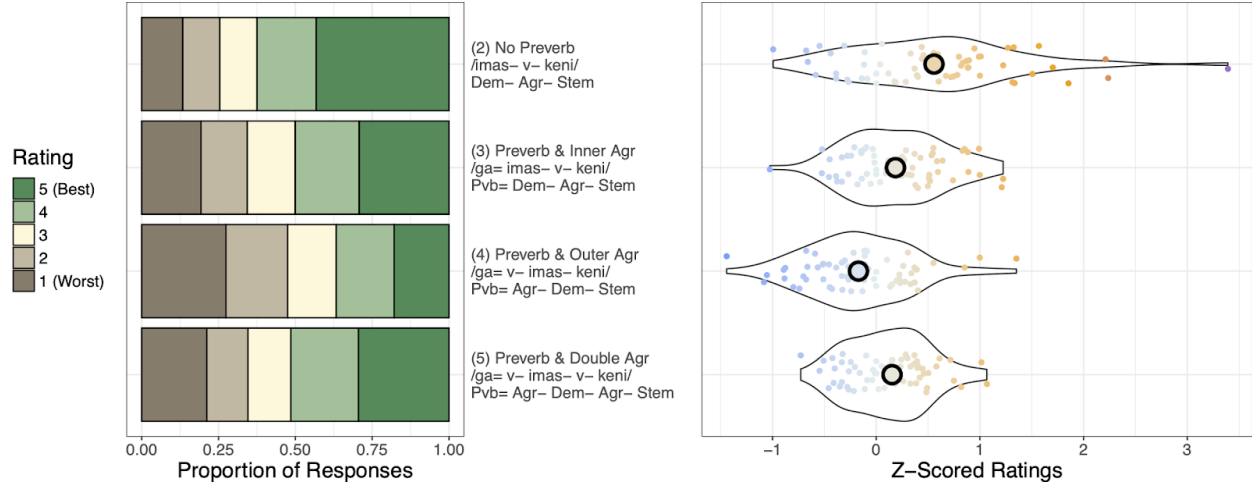
Figure 1: Results of an acceptability experiment comparing the four major kinds of placeholder verbs (2–5). The lefthand plot reports proportions of Likert-scale responses. The righthand plot gives z-scored ratings; small dots are by-participant mean z-scores, and large dots are the mean of these. See the Appendix for statistical tests.

The first goal of this paper is to describe grammatical properties of placeholder verbs (Sections 2), with special reference to some of the more obscure morphosyntactic phenomena in Georgian and its language family that parallel the behavior of simple (Section 3) and complex placeholders (Section 4). The second is to speculate on just why we observe the subtle acceptability contrasts that we do, and what that might tell us about theories of morphology in Georgian and beyond (Section 5). Details about an acceptability study are given in an Appendix.

2. Key syntactic facts

Georgian is a weakly head-final SOV language with scrambling, null pronouns, rich verbal agreement, and split-ergative case marking (Harris 1981). If not for the lack of an orthographic word break, a simple placeholder verb can be identical to the VP *do that* (6a), and indeed that collocation is compatible with the same contexts as the placeholder-verb construction. However, the syntactically independent demonstrative direct object may scramble around other major constituents (6a vs. 6b; see Skopeteas et al. 2009 on Georgian's flexible word order). It will also be inflected either dative or nominative (6c), according to the language's split-ergative case system (Harris 1985, Nash 2017). Finally, another event participant – generally the undergoer of the referent event – can be expressed in this VP as an applied indirect object (6d).

(6)   *Behavior of the VP "do that"*
        a.   ʃen =tsʰ   imas   ʃvrebodi[2]
              2SG =too   DEM.DAT   do:IMP:2SG
              "You were doing that too" [SOV order]

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[2] The verb glossed here as *do* has several suppletive roots: /ʃvr/, /z/, /kʰ(e)n/. Another verb with the root /q'(a)(v)/, glossed LV*do*, has a very similar meaning. The subtle semantic and syntactic differences between "do" and "LV*do*" deserve more investigation.

b. ʃen =tsʰ ʃvrebodi imas
2SG =too do:IMP:2SG DEM.DAT
"You were doing that too" [SVO order]

c. ʃen =tsʰ is kʰeni
2SG =too DEM.NOM do:AOR:2SG
"You did that too"

d. mezobel -s is ukʰeni (*or* …uq'avi)
neighbor -DAT DEM.NOM do:AOR:2SG>3IO LV$_{do}$:AOR:2SG>3IO
"You did that [DO] to the neighbor [IO]"

In placeholder verbs, the demonstrative element must appear before the verbal stem (7a vs. 7b). In tenses which would trigger nominative-case direct objects, the demonstrative remains in its dative form (7c vs. 7d). And an undergoer argument will be syntactically a direct object, as diagnosed by its case marking and the placeholder verb's argument-structure inflection (7e).

(7) *Corresponding behavior of placeholder verbs*
a. ʃen =tsʰ imas- ʃvrebodi
2SG =too DEM:DAT- do:IMP:2SG
"You were thatdoing too"

b. * ʃen =tsʰ ʃvrebodi -imas
2SG =too do:IMP:2SG -DEM:DAT
Attempted: "You were thatdoing too"

c. ʃen =tsʰ imas- kʰeni
2SG =too DEM:DAT- do:AOR:2SG
"You thatdid too"

d. * ʃen =tsʰ is(a)- kʰeni
2SG =too DEM:NOM- do:AOR:2SG
Attempted: "You did that too"

e. mezobel -i imas- kʰeni
neighbor -NOM DEM- do:AOR:2SG
"You thatdid the neighbor [DO]"

In principle, placeholder verbs can substitute an intended verb with any argument structure — for example, an applied ditransitive. In this case, there is a strong preference to inflect the placeholder verb with the appropriate argument-structure morphology — e.g., the applicative prefix /u-/ "3IO" (8b).

(8) a. *Baseline sentence with intended ditransitive verb*
msaχiob -ma   ekʰim -s   **gamo= u- kʰliav -a**   bavʃv -i
actor -ERG   doctor -DAT   **PVB**$_{out:hith}$**= 3IO- stupefy -PST.3SG**   child -NOM
"The actor **stupefied** the child [DO] on/for the doctor [IO]"

   b. *Corresponding sentence with morphologically ditransitive placeholder verb*
msaχiob -ma   ekʰim -s   **imas- u- kʰn -a**   bavʃv -i
actor -ERG   doctor -DAT   **DEM- 3IO- do -PST.3SG**   child -NOM
"The actor **thatdid** the child [DO] on/for the doctor [IO]"

   c. *Corresponding sentence with morphologically monotransitive placeholder verb*
*? msaχiob -ma   ekʰim -s   **imas- kʰn -a**   bavʃv -i
   actor -ERG   doctor -DAT   **DEM- do -PST.3SG**   child -NOM
   "The actor **thatdid** the child [DO] on/for the doctor [IO]"

As for passive and anticausative verbs (Gérardin 2016), speakers are generally more hesitant to use the placeholder-verb construction. This is probably due to the fact that that the verb /kʰmna/ "do" on its own lacks passive forms. It is possible to get around this paradigm gap by analogizing from the language's two productive morphological anticausative alternations, involving the prefix /i-/ "REFL" (9b) or the suffix /-d/ "INCH" (9c). However, such forms are not clearly more acceptable than the default 'monotransitive' form of the placeholder verb (9d).

(9) a. *Baseline sentence with an intended passive verb*
bavʃv -i   **gamo= kʰliav -d -a**
child -NOM   **PVB**$_{out:hith}$**= stupefy -INCH -PST.3SG**
"The child **was/got stupefied**"

   b. *Corresponding sentence with a passive placeholder verb in /i-/ "REFL"*
?? bavʃv -i   **imas- i- kʰn -a**
   child -NOM   **DEM- REFL- do -PST.3SG**
   "The child **was/got thatdone**"

   c. *Corresponding sentence with a passive placeholder verb in /-d/ "INCH"*
?? bavʃv -i   **imas- kʰn -d -a**
   child -NOM   **DEM- do -INCH -PST.3SG**
   "The child **was/got thatdone**"

   d. *Corresponding sentence with a monotransitive placeholder verb*
?? bavʃv -i   **imas- kʰn -a**
   child -NOM   **DEM- do -PST.3SG**
   "The child **was/got thatdone**; **thatdid**"

In sum, the syntactic properties of placeholder verbs shows that they are distinct from the VP "do that", having undergone some kind of reanalysis into a new lexical item.

3. Simple placeholder verbs

This section compares the morphological behavior of simple placeholder verbs to patterns which are firmly established in grammar of modern literary Georgian: standard verbs (Section 3.1); light-verb compounds (Section 3.2); verbs derived from compound nouns (Section 3.3); and theme-incorporating nonfinite verbs (Section 3.4).

3.1 Standard verbs and preverbs

The morphology of standard verbs in modern literary Georgian is well described and analyzed (Shanidze 1980, Aronson 1990, Hewitt 1995, Tuite 1998). Finite verbs are inflected for tense–aspect–mood–evidentiality ('tense'), argument structure, and phi-features of the subject or object. That inflection is expressed with combinations of affixes concatenated to the verb stem. Suffixes, like /-s/ "NPST.3SG", can express combinations of tense and agreement features, and display complex allomorphy conditioned by verb class and argument structure; there are also many stem-forming suffixes like /-av/ "THM". Prefixes, like /v-/ "1SBJ", express person agreement; there may also be a 'preradical vowel' determined by verb class, argument structure, and/or tense.

(10) *Person inflection is conveyed by prefixes and suffixes*

/**v-** naχ -av/	~	/naχ -av/	~	/naχ -av **-s**/
1SBJ- see -THM		see -THM		see -THM **-NPST.3SG**
"I will see 3RD"		"You will see 3RD"		"3SG will see 3RD"

(11) *Preradical vowels can change across tense and argument structure*

/**v-** tʰamaʃ -ob/	~	/**v- i-** tʰamaʃ -e/	~	/**v- e-** tʰamaʃ -e/
1SBJ- play -THM		**1SBJ- REFL-** play -PST.1/2		**1SBJ- APPL-** play -PST.1/2
"I am playing"		"I played"		"I played with 3RD"

Many verbs have preverbs: proclitic morphemes that express perfective aspect, direction of motion, and/or lexical semantic distinctions (Makharoblidze 2018). Preverbs are similar in function to Slavic aspectual prefixes (Babko-Malaya 2003, Svenonius 2004) and Germanic particles (den Dikken 1995, Dehé 2002). The preverb will always appear first within a verb, outside of any prefixal morphology. In general, verbal lexical items are associated uniquely and unpredictably with particular preverbs; indeed, the same root in combination with different preverbs can have radically different meanings.

(12) *Lexical items with the same root but different preverbs*

    a.   /**mo**= vi- g -e/
           PVB$_{hith}$= 1:REFL- win -PST.1/2
           "I won (3RD)"

    b.   /**ga**= vi- g -e/
           PVB$_{out}$= 1:REFL- understand -PST.1/2
           "I understood (3RD)"

c. /**ts'a**= va- g -e/
    PVB_{off}= 1:TR- lose -PST.1/2
    "I lost (3RD [game])"

d. /**a**= va- g -e/
    PVB_{up}= 1:TR- build -PST.1/2
    "I built 3RD; I created/established 3RD"   (Rayfield 2006)

One conceivable structural analysis of simple placeholder verbs is that the demonstrative has been reanalyzed as a novel preverb, unique to this verb. Given the strict leftmost position of preverbs in general, this would straightforwardly explain why prefixal inflection cannot appear outside of the demonstrative element.

(13) a. imas= **v**- kʰen -i   (cf. da= **v**- dʒekʰ -i)
          DEM= **1SBJ-** do -PST.1/2   PVB_{dflt}= **1SBJ-** sit -PST.1/2
          "I thatdid"   "I sat down"

      b. * **v**- imas= kʰen -i   (cf. * **v**- da= dʒekʰ -i)
          1SBJ- DEM= do -PST.1/2   **1SBJ-** PVB_{dflt}= sit -PST.1/2

      c. * **v**- imas= **v**- kʰen -i   (cf. * **v**- da= **v**- dʒekʰ -i)
          1SBJ- DEM= **1SBJ-** do -PST.1/2   **1SBJ-** PVB_{dflt}= **1SBJ-** sit -PST.1/2

Insofar as /imas/ "DEM" is a preverb, it would not be a typical one. Generally, preverbs express perfective aspect; in verbs of motion, they appear in all tenses and express direction. The placeholder verb's demonstrative, though, does not express directed motion, yet it appears even in imperfective tenses (e.g., the imperfect: 7a). There is a small minority of verbs with non-directional preverbs that appear in all tenses (14), so we cannot totally discount the preverb analysis of /imas/; there may be speakers who have internalized the construction this way.

(14) a. **mo**= m- ts'on -s
          PVB_{hith}= 1OBJ- like -NPST.3SG
          "I like it" [present tense, imperfective]

      b. **aʁ**= v- ts'er
          PVB_{up}= 1SBJ- describe
          "I describe 3RD" [present, imperfective] *or* "I will describe 3RD" [future, perfective]

3.2 Light-verb compounds

Since placeholder verbs are derived from the VP "do that", a tempting analysis for them would involve some kind of compounding or incorporation. There are a few types of these in standard Georgian (Kalandadze 1979), surveyed in the following sections.

As alluded to in Section 1, simple placeholder verbs most closely resemble a very small class of compound verbs which combine the uninflected stem of a noun or adjective with a fully inflected lightverb (15). This class is archaic and not productive in modern Georgian.

(15) a.   dzal + mi- dz -s   (cf.   dzal -i)
           power + 1:IO- LV$_{have}$ -NPST.3SG   power -NOM
           "It's possible for me; I'm capable of it"   "strength, power, force"

      b.   tsʰχad + v- q' -opʰ   (cf.   tsʰχad -i)
           clear + 1SBJ- LV$_{do}$ -THM   clear -NOM
           "I make it clear, confirm it, demonstrate it"   "clear, obvious, evident"

      c.   ʃeuratsʰχ + h- q'av -i[3]   (cf.   ʃe= u- ratsʰχ -i)
           lowly + 3IO- LV$_{do}$.AOR -PST.1/2   PVB$_{in}$= PRIV- deem -NOM
           "You insulted s.b. [IO]"   "humble, lowly; unfit [to plead]"
                                                                           (Rayfield 2006)

Note the prefixal inflection comes between the heavy and light elements of these verbs, just as it comes between the demonstrative and verb stem in placeholders.

3.3 Verbalized compound nouns and adjectives

There is another class of compound verbs in Georgian, one more vibrant in the contemporary language, which has different characteristics: the righthand member of these compounds are typically not verb stems; the prefixal inflection always appears outside the lefthand member of the compound; the lefthand member can appear in the genitive case, not just in its uninflected stem form. These verbs all seem to be derived from some independent compound noun or adjective.

(16) a.   vi- [gul -is + χm] -e   (cf.   gulis + χma)
           1:REFL- [heart -GEN + voice] -PST.1/2   heart:GEN + voice.NOM
           "I had 3RD in mind, implied/assumed 3RD,   "reason, mind, wits, wisdom, sense"
           meant to say 3RD"

      b.   ve- [tʰan + χm] -eb -i   (cf.   tʰana + χma)
           1:APPL- [together + voice] -THM -NPST.NACT.1/2 together + voice.NOM
           "I agree with 3RD [IO]"   "in agreement [adj., adv.]"

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[3] For some speakers, this verb has been reanalyzed into a noncompound verb with the root /ratsʰχq'/ or /rats'q'/. (Orthographic equivalents of both are readily attested.) In this case, the etymon's derivational prefix /u-/, a formant of the privative participle, is reanalyzed as the inflectional preradical vowel /u-/ "3IO" (i), registering indirect-object agreement. The conservative and innovative parses of this verb have conspicuously different forms in certain agreement contexts (ii vs. iii).

(i)   /ʃe= u- rats'χ' -opʰ/   (ii) /ʃe= mi- rats'χ' -opʰ/   (iii) /ʃeuratsʰχ + m- q' -opʰ/
      PVB$_{in}$= 3IO- insult -THM   PVB$_{in}$= 1:IO- insult -THM   lowly + 1OBJ- LV$_{do}$ -THM
      "You will insult 3RD [IO]"   "You will insult me [IO]"   "You will insult me [IO]"

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c. va- [gul + gril] -eb   (cf. gul + gril -i)
   1:TR- [heart + cool] -THM   heart + cool -NOM
   "I make 3RD [DO] indifferent"   "unsympathetic, indifferent"

d. v- [gul + gril] -d -eb -i
   1SBJ- [heart + cool] -INCH -THM -NPST.NACT.1/2
   "I'm becoming indifferent"   (Rayfield 2006)

Though compound verbs of this type are plentiful in the standard language, it does not seem that speakers have borrowed their structure for simple placeholder verbs, given the differences in prefix placement.

3.4 Nonfinite theme-incorporation compounds

Another type of compound well attested in Georgian involves something comparable to theme-incorporation. This is relevant to placeholder verbs, since their demonstrative element is at least historically the direct object of the verb *do* (cf. 6). However, these theme-incorporation compounds only appear in nonfinite forms, generally participles (17). Theme-incorporation is not possible for finite verbs; equivalent clauses — whether they have compositional or idiomatic meanings — must express the theme as an independent direct object (18)

(17) a. [χel] + [da= ban -il -i]
          [hand] + [PVB$_{dflt}$= bathe -PTC -NOM]
          "with clean hands [adj., n.]"; figuratively "sb who is always in the clear"

      b. [χel -is] + [mo= m- ts'er -i]
          [hand -GEN] + [PVB$_{hith}$= APTC- write -NOM]
          "signatory"

      c. [χel] + [ga= u- ndzrev -el -i]
          [hand] + [PVB$_{out}$= PRIV- stir,move -PTC -NOM]
          "not lifting a finger, inert"   (Rayfield 2006)

(18) a. χel -i   da= vi- ban -e   (cf. * χel+davibane)
          hand -NOM   PVB$_{dflt}$= 1:REFL- bathe -PST.1/2
          "I washed my hands"

      b. χel -i   mo= va- ts'er-e   (cf. * χel+movats'ere)
          hand -NOM   PVB$_{hith}$= 1:LOC- write -PST.1/2
          "I signed (up to) 3RD [IO]"

      c. χel -i =tsʰ   ar   ga= mi- ndzrev -ia   (cf. * ar χel+gamindzrevia)
          hand -NOM =too   NEG   PVB$_{out}$= 1:IO- stir,move -PERF.3
          "I didn't lift a finger"

It seems unlikely, then, that placeholder verbs are derived synchronically from some kind of incorporation operation (e.g., syntactic head movement; Baker 1988, 2009).

4. Complex placeholder verbs

The previous subsections compared simple placeholder verbs to a few types of compounds in Georgian, suggesting that speakers have reanalyzed the VP "do that" as a sort of archaic light-verb construction, or perhaps grammaticized the demonstrative into a novel preverb. This section turns to complex placeholder verbs: those that bear a standard directional/lexical preverb in addition to the demonstrative. Complex placeholders are even more innovative than simple ones; some speakers reject them altogether. As previewed above (3–5), complex placeholder verbs are morphologically volatile: much variation is observed concerning the position and shape of their prefixal inflection. This section expands on those observations, connecting them to superficially similar patterns in Georgian.

4.1 Preverbs on placeholders

Complex placeholder verbs are those that bear a preverb morpheme. For speakers who accept complex placeholders at all, they are generally a marked option: a simple placeholder can always replace a complex one. But, if the placeholder does bear a preverb, it must be the one lexically associated with the intended verb.

(19) *Intended verb*   *Corresponding complex placeholder verb*

    a. **gamo=** akʰliaves   ∼   **gamo=** imaskʰnes   (cf. # **da=** imaskʰnes)
        PVB$_{out:hith}$= stupefy:AOR:3PL   **PVB**$_{out:hith}$= placeholder:AOR:3PL
        "They stupefied 3RD"   "They thatdid 3RD"

    b. **da=** akʰenseles   ∼   **da=** imaskʰnes   (cf. # **gamo=** imaskʰnes)
        PVB$_{dflt}$= cancel:AOR:3PL   **PVB**$_{dflt}$= placeholder:AOR:3PL
        "They canceled 3RD (socially)"   "They thatdid 3RD"

One analytically possibility is that a complex placeholder verb in some sense contains its intended counterpart, whose stem and inflection is obligatorily elided (20). This copying/deletion mechanism would be unique to the placeholder verb construction — though it resembles a type of truncated compound verb described below (Section 4.3).

(20) [$_V$ [$_V$ **gamo=** ~~akʰliaves~~] + [$_V$ imaskʰnes]]

Another possibility is that preverbs on their own can be freely added to the placeholder verb. From this perspective, the matching requirement would be a pragmatic one: add only a preverb that felicitously suggests the verb being avoided (21).

(21) *Context: Intending* /gamoakʰliaves/ "they stupefied 3RD"
    a.   [imaskʰnes]

b. [**gamo=**] + [imaskʰnes]

c. # [**da=**] + [imaskʰnes], etc.

We lean towards the latter analysis, if only because it may also help explain a subtle adverbial use of preverbs, which is semi-productive in standard verbs. As described above, most verbs have lexically specified preverbs. But, to a certain extent, it is possible to replace the lexical preverb with another one that contributes some nuanced meaning (Aronson 1990: 440–441; Hewitt 1995: 162–169). For example /da=/ "PVB$_{dflt}$" expresses something like pluractionality; /gada=/ "PVB$_{across}$" expresses repetition; /ʃe=/ "PVB$_{in}$" expresses something like 'a little bit' (22). So perhaps the grammar already permits the alternation of preverbs for derivational or pragmatic purposes.

(22) a. **ga=** tʰenda   ~   **ʃe=** tʰenda
      PVB$_{out}$= dawn:AOR:3SG   PVB$_{in}$= dawn:AOR:3SG
      "Day broke"   "Day started breaking a bit"

   b. **ga=** ʃra   ~   **ʃe=** ʃra
      PVB$_{out}$= dry:AOR:3SG   PVB$_{in}$= dry:AOR:3SG
      "3SG dried up"   "3SG dried a bit"

   c. **da=** tʰvra   ~   **ʃe=** tʰvra
      PVB$_{out}$= get_drunk:AOR:3SG   PVB$_{in}$= get_drunk:AOR:3SG
      "3SG got drunk"   "3SG got a bit drunk"   Hewitt (1995: 162)

4.2 Prefixal variation in complex placeholders

However complex placeholder verbs end up with preverbs, what is particularly remarkable is they exhibit morphological variation not possible in simple placeholders. Examples 23–25 repeat the observation that agreement prefixes can appear on either or both sides of the demonstrative. Perhaps the most remarkable variant is the one with doubled prefixal agreement (25); it is the focus of the next subsection (4.3).

(23) ga= imas- **v-** kʰen -i
      PVB$_{out}$= DEM- **1SBJ-** do -PST.1/2
      "I thatdid (3RD)" (Intending a verb with PVB /ga=/)

(24) ga= **v-** imas- kʰen -i
      PVB$_{out}$= **1SBJ-** DEM- do -PST.1/2
      "I thatdid (3RD)" (Intending a verb with PVB /ga=/)

(25) ga= **v-** imas- **v-** kʰen -i
      PVB$_{out}$= **1SBJ-** DEM- **1SBJ-** do -PST.1/2
      "I thatdid (3RD)" (Intending a verb with PVB /ga=/)

Complex placeholder verbs with inside agreement (23) appear to be simple placeholders to which a preverb is simply added at the normal verb-peripheral position. We note that the linear order preverb–

demonstrative–agreement resembles tmesis: a phenomenon attested in Old Georgian in which certain pronouns and grammatical particles are folded into the verb word. Those tmetic elements would also appear between the preverb and agreement prefixes, as in the following example (26). But since tmesis probably died out in spoken Georgian in the late 13th century (Wier 2022), it does not seem likely that the position of the demonstrative in contemporary Georgian placeholder verbs is established through this grammatical process.[4]

(26) ar =tsʰa ∫e= **raj**- gi- ratsʰχ -i -es, rametʰu…
 NEG =too PVB$_{in}$= **something**- 2:IO- consider -PERF -PL namely_that
 "There is also one thing you all have not considered, namely that…"
<div align="right">Old Georgian (Boeder 1994: 451; glosses and transcription adapted)</div>

As for the outer agreement pattern (24), that would be the configuration expected if the complex placeholder had the structure of a typical compound verb (Section 3.3). Yet the outer-agreement variant is in fact the least acceptable version (Figure 1), suggesting that relatively few speakers have adopted a compound-verb parse for the complex placeholder verb.

Finally, we note interactions between the position and form of prefixal inflection in placeholders. As noted in Section 3.1, prefixal inflection may include preradical vowels that express argument structure. The default vowel for monotransitive verbs is /a-/ "TR". This preradical vowel is not found in any form of the verb *do* (e.g., /v-kʰen-i/ "I did it" vs. */va-kʰen-i/). When a placeholder verb substitutes a transitive verb, though, /a-/ "TR" may appear in the outer agreement position (27, 28). Our acceptability study finds that transitive placeholder with outer preradical vowels are just as acceptable as versions without the vowels (Figure 2).

(27) ga= **va**- imas- kʰen -i
 PVB$_{out}$= **1:TR**- DEM- do -PST.1/2
 "I thatdid 3RD" (Intending a verb with PVB /ga=/)

(28) ga= **va**- imas- **v**- kʰen -i
 PVB$_{out}$= **1:TR**- DEM- **1SBJ**- do -PST.1/2
 "I thatdid 3RD" (Intending a verb with PVB /ga=/)

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[4] Something like tmesis is still found today in the South Caucasian language Svan (Boeder 2005:32), though there the structure of verbs is a bit different, with outer and then inner preverbs preceding agreement prefixes. The tmetic elements appear between the outer and inner preverbs, and are not structurally adjacent to agreement (Margiani 2016). There is nothing like prefixal-agreement doubling in Georgian placeholders documented in Svan.
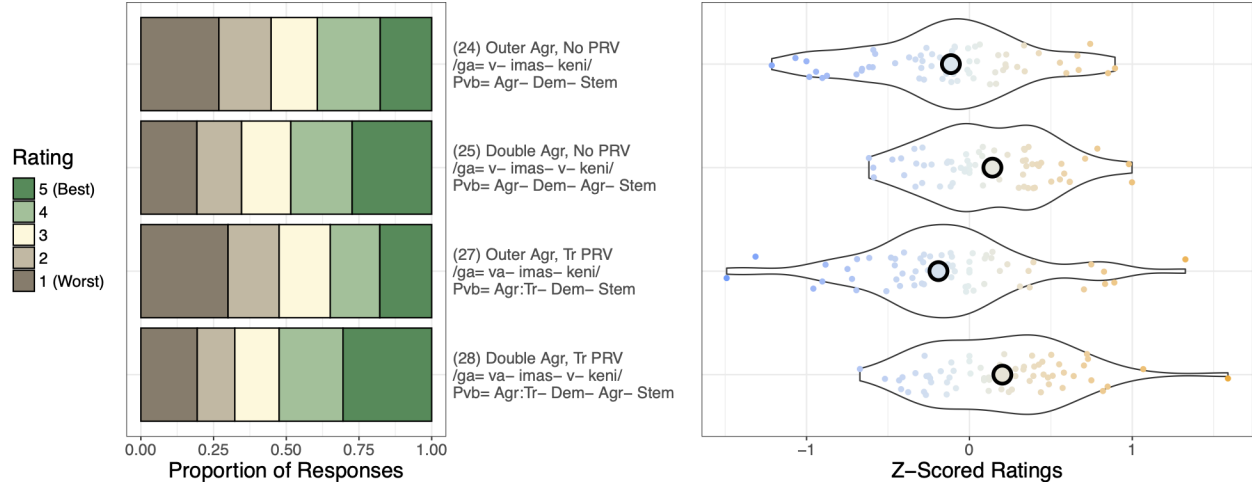
Figure 2: Results of an acceptability experiment comparing placeholder verbs with and without the transitive preradical vowel /a-/ (24, 25, 27, 28). The lefthand plot reports proportions of Likert-scale responses. The righthand plot gives z-scored ratings; small dots are by-participant mean z-scores, and large dots are the mean of these. See the Appendix for statistical tests.

It is not possible to include the preradical vowel in the inner prefixal position, whatever other morphemes are included in the placeholder verb (29). We interpret this as an effect of a locality constraint on allomorphy (Siegel 1978, et seq). Since the verb root *do* triggers the nondefault null preradical vowel, it follows that prefixal inflection exponed adjacent to this root in should also lack a preradical vowel. The fact that the default transitive vowel /a-/ can appear farther away from the root *do*, in the outer prefix position (27, 28), indicates some degree of structural distance between these positions.

(29) * (ga=) (**v-** (**a-**)) imas- **va-** kʰen -i
        (PVB$_{out}$=) (**1SBJ-** (**TR-**)) DEM- **1:TR-** do -PST.1/2
        Attempted: "I thatdid 3RD" (Intending a verb with PVB /ga=/)

4.3 Other cases of doubled agreement

This subsection compares the morphological variant of the placeholder with doubled prefixal inflection (25) to other cases of double agreement in standard Georgian verbs. There are a few contexts where verbs obligatorily bear two sets of agreement prefixes: the present-tense forms of certain intransitives (30a) and psych verbs (30b), and the perfect-tense forms of all verbs, including transitives (30c) and anticausatives (30d). These forms all involve an incorporated present-tense form of the copula /q'opʰna/ "be:NMLZ", glossed here as an enclitic. That copula has been analyzed as a dummy auxiliary root hosting agreement necessary for morphological wellformedness in certain contexts (Nash 1994, Lomashvili & Harley 2014).

(30) *Prefix doubling due to dummy auxiliary "be"*
    a. **v-** zi =[**v-** ar]
        1SBJ- sit.PRES =[**1SBJ-** be.PRES]
        "I am sitting"

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b. **v-** u- q'var =[**v-** ar]
   1SBJ- 3IO- love =[**1SBJ-** be.PRES]
   "3RD loves me"

c. gamo= **v-** u- kʰliav -eb -i =[**v-** ar]
   PVB*out:hith*= **1SBJ-** 3IO- stupefy -THM -PERF =[**1SBJ-** be.PRES]
   "3RD has (apparently) stupefied me"

d. gamo= **v-** kʰliav -eb -ul =[**v-** ar]
   PVB*out:hith*= **1SBJ-** love -THM -PPTC =[**1SBJ-** be.PRES]
   "I have (apparently) been stupefied"

A possible analysis of double-agreement placeholders involves a structural analogy to these forms. Perhaps speakers who use these forms have reanalyzed demonstrative /imas/ as the root of the placeholder verb, and the verb *do* as a sort of novel dummy auxiliary. What remains unexplained in this account is why dummy *do* is necessary in all tenses for the placeholder verb, and why this structure is only possible when the placeholder has a preverb.

(31) *Parse of the placeholder involving a dummy auxiliary verb 'do'*
   ga= **v-** imas =[**v-** kʰen -i]
   PVB*out*= **1SBJ-** ROOT =[**1SBJ-** AUX*do* -PST.1/2]
   "I thatdid (3RD)" (Intending a verb with PVB /ga=/)

There is another construction that has obligatory prefix doubling: a class of compound verbs (cf. Amiridze 2010, Harris 2017) which exhibit something akin to suspended affixation (e.g., in Turkish: Lewis 1967, Orgun 1995). These truncated compounds can involve the same root with different preverbs together expressing back-and-forth or roundabout motion (32a,b), or two distinct roots forming a verbal dvandva (32c). In either case, the first member of the compound is stripped of all suffixes.

(32) *Truncated compound verbs*
   a. [mi= **vi-** ar] + [mo= **vi-** ar] -e   (cf. miviare ~ moviare)
      [PVB*thith*= 1:REFL- go] + [PVB*hith*= 1:REFL- go] -PST.1/2   go:AOR:1SG ~ come:AOR:1SG
      "I went/traveled round and about, back and forth"   "I went" ~ "I came"

   b. [gada= **va-** tʰvalier] + [gadmo= **va-** tʰvalier] -e   (cf. gadavatʰvaliere)
      [PVB*acrs*= **1:TR-** look] + [PVB*acrs:hith*= **1:TR-** look] -PST.1/2   look_over:AOR:1SG
      "I gave 3RD a thorough examination"   "I looked 3RD over"

   c. [**vi-** ʁvats'] + [**vi-** ʃrom] -e   (cf. viʁvats'e ~ viʃrome)
      [**1:REFL-** strive] + [**1:REFL-** work] -PST.1/2   strive:AOR:1SG ~ work:AOR:1SG
      "I strove and toiled (for public good)"   "I strove" ~ "I toiled"

                                                               (Rayfield 2006)

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It could be that some speakers have analyzed the placeholder construction as a kind of truncated compound. Again /imas/ "DEM" would be reanalyzed a verb root, here the root of the first member of the compound (33). Like the dummy auxiliary analysis (31), this accounts for the linear order of morphemes, but it does not explain why doubled agreement is only possible for complex placeholders. It also semantically atypical for a truncated compound: the placeholder does not express back-and-forth motion, nor does its meaning seem compositionally to be a dvandva like "I thatted and did it".

(33) *Parse of the placeholder as a truncated compound*
       [ga= **v-** imas] + [**v-** kʰen] -i
       [PVB*out*= **1SBJ-** ROOT] + [**1SBJ-** do] -PST.1/2
       "I thatdid (3RD)" (Intending a verb with PVB /ga=/)

4.4 Local-person objects agreement

A final curiosity of complex placeholders is the behavior of first- and second-person object agreement. Typically, verbs distinguish direct- and indirect-object agreement with the addition (34a) or alternation (34b) of preradical vowels.

(34) a.   da= **m-** mal -a   ~   da= **mi-** mal -a
           PVB*dflt*= **1OBJ-** hide -PST.3SG   PVB*out:hith*= **1OBJ:IO-** hide -PST.3SG
           "3SG hid **me [DO]**"   "3SG hid 3RD **for/on/from me [IO]**"

      b.   gamo= **ma-** kʰliav -a   ~   gamo= **mi-** kʰliav -a
           PVB*out:hith*= **1OBJ:TR-** stupefy -PST.3SG   PVB*out:hith*= **1OBJ:IO-** stupefy -PST.3SG
           "3SG stupefied **me [DO]**"   "3SG stupefied 3RD **for/on me [IO]**"

When substituting a verb with a first or second person object, there is a preference for inner agreement prefixes with the preradical vowel typically associated with indirect object agreement — even if the first/second argument is syntactically direct object of the placeholder verb (35). A mismatch between inner and outer agreement is even possible, with outer inflection including the monotransitive (i.e., direct-object indexing) vowel /a-/ "TR" (36). Table 1 summarizes the logical combinations of inner and outer prefixal inflection with various preradical vowels, indicating what types of objects they can register. Figure 3 report relevant results from the acceptability study.

(35) ga= imas- **mi-** kʰn -a
       PVB*out*= DEM- **1OBJ:IO-** do -PST.3SG
       "3RD thatdid **me [DO]**" (Intending a verb with PVB /ga=/)

(36) ga= **ma-** imas- **mi-** kʰn -a
       PVB*out*= **1OBJ:TR-** DEM- **1OBJ:IO-** do -PST.3SG
       "3RD thatdid **me [DO]**" (Intending a verb with PVB /ga=/)

	No Inner Agr	Inner Agr = /m-/ "1OBJ"	Inner Agr = /ma-/ "1OBJ:TR"	Inner Agr = /mi-/ "1OBJ:IO"
No Outer Agr	—	?da=imas-m-kʰna [1DO only]	*?da=imas-ma-kʰna [1DO only]	da=imas-mi-kʰna [either 1DO or 1IO]
Outer Agr = /m-/ "1OBJ"	da=m-imas-kʰna [1DO only]	?da=m-imas-m-kʰna [1DO only]	*?da=m-imas-ma-kʰna [1DO only]	da=m-imas-mi-kʰna [1DO only]
Outer Agr = /ma-/ "1:TR"	da=ma-imas-kʰna [1DO only]	?da=ma-imas-m-kʰna [1DO only]	*?da=ma-imas-ma-kʰna [1DO only]	da=ma-imas-mi-kʰna [1DO only]
Outer Agr = /mi-/ "1:IO"	da=mi-imas-kʰna [1IO only]	*da=mi-imas-m-kʰna	*da=mi-imas-ma-kʰna	da=mi-imas-mi-kʰna [1IO only]

Table 1: Summary of prefixal first/second person object agreement possibilities for complex preverbs
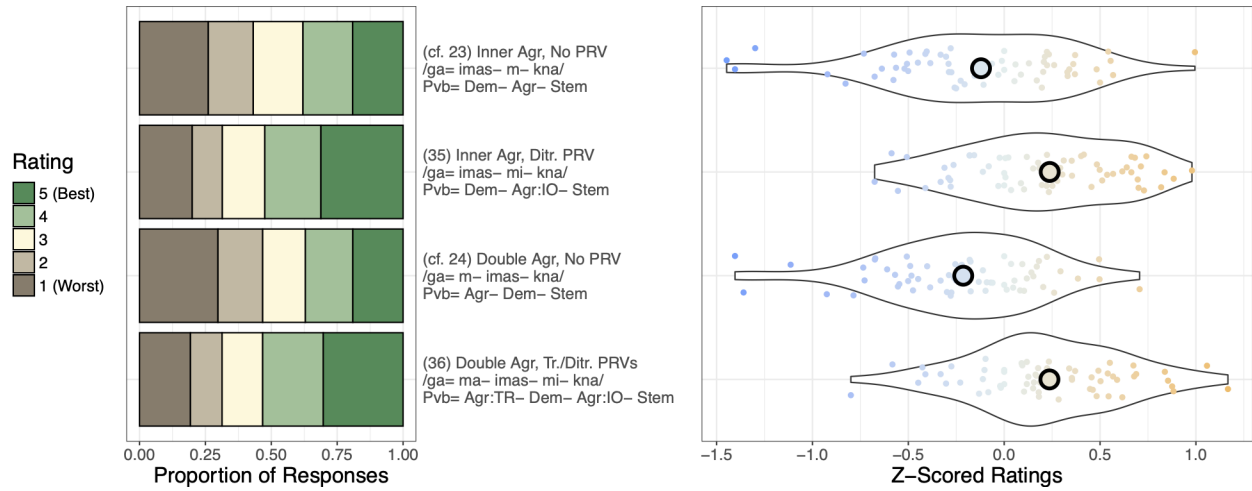

Figure 3: Results of an acceptability experiment comparing placeholder verbs with various types of first- and second-person object agreement. The lefthand plot reports proportions of Likert-scale responses. The righthand plot gives z-scored ratings; small dots are by-participant mean z-scores, and large dots are the mean of these. See the Appendix for statistical tests.

We hypothesize that the behavior of first/second object agreement is another consequence of morphological locality. The bare verb *do* is infelicitous with first- and second-person direct objects (e.g., #/m-kʰna/ "3SG did me [DO]"), but it can readily take first/second indirect objects with the appropriate IO-registering preradical vowel (e.g., /mi-kʰna/ "3SG did it to me [IO]"). Even though the themes of placeholder verbs are bona fide direct objects (7e), perhaps the local morphological string /…m-kʰn…/ "…1OBJ-do…" within a placeholder still degrades acceptability.

Note also that there are a small number of verbs whose direct objects control quirky indirect-object agreement (37); the placeholder verb seems to be another one of them — though unlike *let in* and *search for*, quirky agreement in placeholders is limited to direct objects that are first or second person.

(37) *Standard monotransitive verbs with quirky indirect-object agreement*

    a.   ʃe= **gvi-** ʃv -es   p'ropʰesor -eb **-i**
        PVB$_{in}$= **1PL:IO-** let -PST.3PL   professor -PL **-NOM**
        "They let us professors [DO] in"

    b.   **gve-** dzeb -es   p'ropʰesor -eb **-i**
        1PL:APPL- search -PST.3PL   professor -PL **-NOM**
        "They searched for us professors [DO]"

5. Theoretical ramifications

Distilling nearly every complexity of Georgian morphology into a single word, the placeholder verb construction is ripe for theoretical analysis. Our goals for this paper are primarily descriptive, contextualizing the patterns in ways that may inspire future formal research. A challenge is the remarkable morphological variation found in the placeholder construction: it may be that each variant corresponds to a radically different structure, with individuals having grammaticized placeholder verbs in different ways. This section briefly summarizes the relevance of the construction to theories of South Caucasian agreement (5.1) and language-general constraints on allomorphy (5.2).

5.1 South Caucasian agreement

The agreement systems of Georgian and the other South Caucasian languages have attracted much theoretical attention, from a number of morphological and syntactic perspectives (e.g., Anderson 1992; Nash-Haran 1992; Halle & Marantz 1993; Béjar 2003; Béjar & Rezac 2009; Demirok 2013; Lomashvili & Harley 2014; Foley 2017; Blix 2020; Thivierge 2021; Bondarenko & Zompì, to appear). The general consensus is that South-Caucasian prefixal inflection expones the head of the functional projection introducing the external argument (i.e., Voice, in the sense of Kratzer 1996). A better understanding of the syntax the various types of compound verbs in Georgian (Sections 3.1, 3.2, 3.3, 4.3) is necessary to evaluate this analysis for placeholder verbs. Prima facie, the double agreement pattern is challenging to account for if prefixes are the reflex of a single probe on Voice; analytical analogies to dummy auxiliaries (31) and truncated compounds (33) are therefore appealing.

It is worth emphasizing that nothing like the double agreement pattern of Georgian complex placeholder verbs is found in other South Caucasian languages. Even in Megrelian — which has innovated several structural positions in its verbs between the preverb and agreement prefixes (Rostovtsev-Popiel 2021), in a way conceivably analogous to the new structural position of /imas/ "DEM" — there will only be one agreement prefix.

(38)   …ko- me- **r-** č -an -t =i =a…
        PFV- PVB- **2IO-** give -THM -PL =EVID =QUOT
        "we will give you all 3RD"   Megrelian (Rostovtsev-Popiel 2021; glosses adapted)

The double-agreement pattern bears a certain resemblance to the kind of exuberant exponence — using Harris's (2009, 2017) term — of noun-class agreement seen in certain Northeast Caucasian languages like Batsbi (39). Whether exuberant exponence indicates the presence of multiple phi-probes all interacting with the same argument, or a postsyntactic copying operation resembling concord, it is worth considering whether double-agreeing placeholder verbs instantiate it too.

(39) **y-** ox **-y** -o **-y** -an^w k'ab
      CM- rip **-CM** -PRES **-CM** -EVID   dress(y/y).ABS
      "Evidently she is ripping the dress"   Batsbi (Harris 2017: 2)

5.2 Adjacency and structural locality in allomorphy

In Sections 4.2 and 4.4, we noted effects on the shape of prefixal inflection due plausibly to adjacency with the root *do*. In contemporary morphological theory (e.g., Embick 2010), allomorphy dependencies are strictly constrained by linear and/or structural adjacency. The structure of placeholder verbs remains somewhat mysterious, but we might use this theoretical perspective to help triangulate it. The bare verb *do* in Georgian is highly irregular; for instance, it forms the perfect tense without a thematic suffix (40a), unlike regular transitive verbs (40b).

(40) a. u- k^{h}n **-Ø** -i =a
          3IO- do **-Ø** -PERF =be.PRES
          "3SG has (apparently) done it"

      b. gamo= u- k^{h}liav **-eb** -i =a
          PVB$_{out:hith}$= 3IO- stupefy **-THM** -PERF =be.PRES
          "3SG has (apparently) stupefied 3RD"

Assume that the shape of the verb stem (e.g., whether it bears a thematic suffix in this tense) is determined by locality to a functional head like T. If the position of the inflectional prefixes in placeholder verbs diagnoses different structural constituencies, then it may be possible to disrupt this irregular allomorphy dependency between the root and T.

Part of our acceptability study tested just this hypothesis, comparing forms with inner and outer agreement that either had the irregular suffixal allomorphy expected for the verb *do* (e.g., 41a,b) or disrupted, retreat-to-default forms (41c,d).

(41) a. ga= imas- **u-** k^{h}n -i =a
          PVB$_{out}$= DEM- **3IO-** do -PERF =be.PRES

      b. ga= **u-** imas- k^{h}n -i =a
          PVB$_{out}$= **3IO-** DEM- do -PERF =be.PRES

      c. ga= imas- **u-** k^{h}n **-eb** -i =a
          PVB$_{out}$= DEM- **3IO-** do **-THM** -PERF =be.PRES

d. ga= **u-** imas- kʰn **-eb** -i =a
    PVB*out*= **3IO-** DEM- do **-THM** -PERF =be.PRES
    All hypothetical forms for: "3SG has (apparently) thatdone (3RD)" (Intending a verb with PVB /ga=/)

Figure 4 shows that there is an acceptability penalty for not using the expected irregular suffixal allomorphs, but that penalty is even worse when the placeholder has inner prefixal agreement (41c). This suggests that T and the root *do* are structurally closer to each other in placeholder verbs with inner agreement, more stringently enforcing their irregular allomorphy dependency.
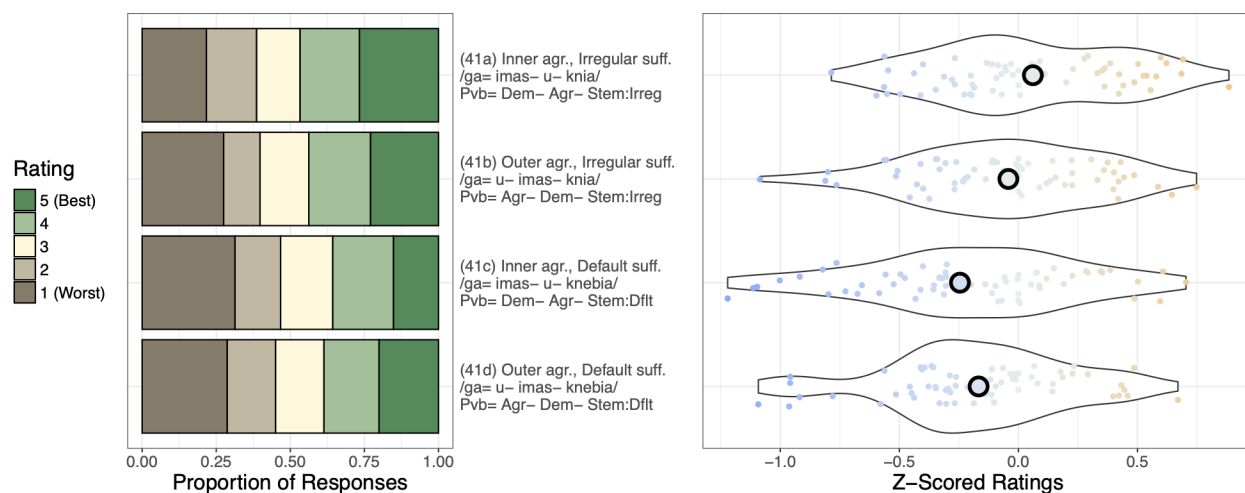

Figure 4: Results of an acceptability experiment investigating the interaction of prefixal agreement position and suffixal allomophy (41a–d). The lefthand plot reports proportions of Likert-scale responses. The righthand plot gives z-scored ratings; small dots are by-participant mean z-scores, and large dots are the mean of these. See the Appendix for statistical tests.

An acceptability study on its own cannot diagnose the formal structure of a peculiar construction like the Georgian placeholder verb. However, given an explicit theory of how how possible exponents of different structures should influence acceptability, subtle contrasts like this can help tease apart analytical hypotheses. We think this is a promising future direction for investigating not just placeholders, but also a wide range of morphological puzzles crosslinguistically.

6. Conclusion

Placeholder verbs in exhibit complex morphological patterns, even relative to Georgian's baseline morphological complexity. Since this nonstandard, colloquial construction shows so much inter-speaker variation, we believe its abstract structure is also in flux. The VP "do that" could been reanalyzed in a number of ways, with the demonstrative and light-verb elements in configurations attested in a range of standard verb-types, and those structures are only disambiguated in morphological contexts that require certain inflectional prefixes. This is a notable case study in structural reanalysis that deserves more descriptive and theoretical attention.

Appendix: Acceptability study

Throughout this paper, results of an acceptability study (Figures 1–4) have supplemented judgements from the second author and other native-speaker linguists consulted on this project. This appendix provides more details about that study.

Materials

A total of 192 itemsets were the stimuli for the study. They made up nine subexperiments, each with a four-condition design manipulating some combination of morphological factors of interest. These subexperiments served as each other's fillers. We describe and report four of them here.

Subexperiment 1 comprised 32 itemsets, each a minimal quartet of a simple placeholder verb (cf. 2) and the three major types of complex placeholders (cf. 3–5; 23–25). A sample itemset follows.

(42) *Intended verb: Transitive, with first-person subject agreement prefix*
    gada= v- riet^h
    PVB$_{acrs}$= 1SBJ- drive_mad:AOR:AGR
    "We drove 3RD mad"

    a. *Simple placeholder verb (no preverb), Inner agreement*
        imas- **v-** k^{h}enit^h
        DEM- **1SBJ-** do:AOR:AGR

    b. *Complex placeholder (with preverb), Inner agreement*
        gada= imas- **v-** k^{h}enit^h
        PVB$_{acrs}$= DEM- **1SBJ-** do:AOR:AGR

    c. *Complex placeholder (with preverb), Outer agreement*
        gada= **v-** imas- k^{h}enit^h
        PVB$_{acrs}$= **1SBJ-** DEM- do:AOR:AGR

    d. *Complex placeholder (with preverb), Double agreement*
        gada= **v-** imas- **v-** k^{h}enit^h
        PVB$_{acrs}$= **1SBJ-** DEM- **1SBJ-** do:AOR:AGR

Subexperiment 2 comprised 32 itemsets, each with a 2×2 design manipulating position of prefixal subject agreement (outer, doubled) and presence or absence of the transitive preradical vowel /a-/ in the outer position.

(43) *Intended verb: Transitive, with first-person subject agreement prefix*
ʃe= va- mk'etʰ
PVB*in*= 1:TR- adorn:AOR:AGR
"We adorned 3RD"

    a. *Outer agreement, No preradical vowel*
       ʃe= **v-** imas- kʰenitʰ
       PVB*in*= **1SBJ-** DEM- do:AOR:AGR

    b. *Double agreement, No preradical vowel*
       ʃe= **v-** imas- **v-** kʰenitʰ
       PVB*in*= **1SBJ-** DEM- **1SBJ-** do:AOR:AGR

    c. *Outer agreement, Outer preradical vowel*
       ʃe= **va-** imas- kʰenitʰ
       PVB*in*= **1:TR-** DEM- do:AOR:AGR

    d. *Double agreement, Outer preradical vowel*
       ʃe= **va-** imas- **v-** kʰenitʰ
       PVB*in*= **1:TR-** DEM- **1SBJ-** do:AOR:AGR

Subexperiment 3 comprised 32 itemsets, each with a 2×2 design manipulating position of prefixal object agreement (inner, doubled), and presence or absence of preradical vowels.

(44) *Intended verb: Transitive, with first- or second-person direct-object agreement prefix*
ʃe= g- dzaritʰ
PVB*in*= 2OBJ- shake:AOR:AGR
"We stirred/shook you up"

    a. *Inner agreement, No preradical vowel*
       ʃe= imas- **g-** kʰenitʰ
       PVB*in*= DEM- **2OBJ-** do:AOR:AGR

    b. *Inner agreement, IO-agreement inner preradical vowel*
       ʃe= imas- **gi-** kʰenitʰ
       PVB*in*= DEM- **2:IO-** do:AOR:AGR

    c. *Double agreement, No preradical vowels*
       ʃe= **g-** imas- **g-** kʰenitʰ
       PVB*in*= **2OBJ-** DEM- **2OBJ-** do:AOR:AGR

    d. *Double agreement, Outer DO-agr PRV and inner IO-agr PRV*
       ʃe= **ga-** imas- **gi-** kʰenitʰ
       PVB*in*= **2:TR-** DEM- **2:IO-** do:AOR:AGR

Subexperiment 4 comprised 40 itemsets, each with a 2×2 design manipulating position of prefixal subject agreement (inner, outer) and allomorphy of suffixal inflection (irregular suffixes, those associated with the bare verb *do*; or retreat-to-default suffixes, associated with regular transitive verbs). Several types of allomorphy patterns were used across the itemsets; the following sample illustrates with the perfect tense formed with (regular) or without (irregular) the thematic suffix /-eb/ "THM" (see discussion in Section 5.2).

(45) *Intended verb: Transitive perfect*
      ar   da= u- martsʰχebia
      NEG   PVB$_{dflt}$= 3IO- shake:PERF.DFLT:AGR
      "3SG didn't defeat 3RD"

    a. *Inner agreement, Expected irregular suffixal allomorphy*
        ar   da= imas- **u- kʰnia**
        NEG   PVB$_{in}$= DEM- **3IO-** do:PERF.**IRREG**:AGR

    b. *Outer agreement, Expected irregular suffixal allomorphy*
        ar   da= **u-** imas- **kʰnia**
        NEG   PVB$_{in}$= **3IO-** DEM- do:PERF.**IRREG**:AGR

    c. *Inner agreement, Retreat-to-default suffixal allomorphy*
        ar   da= imas- **u- kʰnebia**
        NEG   PVB$_{in}$= DEM- **3IO-** do:PERF.**DFLT**:AGR

    d. *Outer agreement, Retreat-to-default suffixal allomorphy*
        ar   da= **u-** imas- **kʰnebia**
        NEG   PVB$_{in}$= **3IO-** DEM- do:PERF.**DFLT**:AGR

Procedure

Given the large number of stimuli, 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, for variety, forced-choice task judging morphophonological acceptability of possible truncated compound verbs (cf. 32). Itemsets from the nine substudies were evenly distributed into six lists, corresponding to the six placeholder-judgement task blocks of the two sessions. Table 2 summarizes. Each participant saw only one version of each itemset, distributed by the Latin Square method.

The placeholder task elicited an acceptability judgment using a five-point Likert scale. Every trial gave a standard verb and a placeholder verb. Participants were instructed to imagine that they were trying to avoid using the standard verb, as if playing a game. Their task was to rate how appropriate the given placeholder verb would be to replace that intended verb. Figure 5 illustrates with a trial mock-up.

The experiment was conducted remotely, via PCIbex (Zehr & Schwartz 2018). Before starting either experimental session, participants gave consent, supplied demographic information, read instructions, and

tried three practice items to familiarize themselves with the Likert-scale task. Participants were given a chance to take a break after each truncation-task block. Upon completion of the experimental sessions, a few optional debriefing questions about the difficulty of the tasks and nature of the stimuli appeared.

Session A		Session B	
Block 1	Placeholder task (32 trials)	Block 1	Placeholder task (32 trials)
Block 2	Truncation task (24 trials)	Block 2	Truncation task (24 trials)
Block 3	Placeholder task (32 trials)	Block 3	Placeholder task (32 trials)
Block 4	Truncation task (24 trials)	Block 4	Truncation task (24 trials)
Block 5	Placeholder task (32 trials)	Block 5	Placeholder task (32 trials)

Table 2: Summary of experimental-session structure

Experimental trial mock-up	
ნაგულისხმევი ზმნა: **მოვატყუებ**	Intended Verb: **/mo= va- t'q'ueb/** PVB$_{hith}$= **1:TR- deceive:FUT** "I will deceive 3RD"
ჩამნაცვლებელი ზმნა: **მოიმასვიზამ**	Placeholder Verb: **/mo= imas- v- izam/** PART$_{hith}$= **DEM- 1SBJ- do:FUT** "I will thatdo 3RD"
1 – 2 – 3 – 4 – 5 (ძალიან (ძალიან ცუდი) კარგი)	**1 – 2 – 3 – 4 – 5** (very (very bad) good)

Figure 5: Mock-up of a trial in the acceptability task as it appeared in Georgian (left), with an English translation (right).

Participants

64 native Georgian speakers residing in Georgia were recruited for participation. All of them took Session A; 36 of them later took Session B. Data from two of these participants was excluded from analysis for average response times which were very short (<1000ms).

Analysis

Rating data were analyzed using ordinal mixed-effect models with probit link functions, using the *clmm* function of the R package *ordinal* (Christensen 2015). By-participant and by-item random slopes and intercepts were omitted.

Given the nonfactorial design of Subexperiment 1, conditions were sum-coded in the following way: F1 contrasted the simple placeholder verb (42a; +3/4) to the mean of the complex placeholders (4b,c,d; each –1/4); F2 was Helmert coded, with F2a comparing the mean of the conditions with inner agreement only (42a,b) to the condition with double agreement (42d), and F2 comparing the condition with outer agreement only (42c) to the condition with double agreement (42d). Contrasts for Subexperiment 2 were sum-coded: F3 contrasted conditions with outer agreement (43a,c; –1/2) to conditions with double agreement (43b,d; +1/2), and F4 contrasted conditions without preradical vowels (4a,b; +1/2) to those with them (43c,d; –1/2). Contrasts for Subexperiment 3 were sum-coded: F5 contrasted conditions with inner agreement (44a,b; +1/2) to those with double agreement (44c,d; –1/2), and F6 contrasted conditions without preradical vowels (44a,c; +1/2) to those with them (44b,d; –1/2). Contrasts for Subexperiment 4 were sum-coded: F7 contrasted conditions with irregular suffixal morphology (45a,b; +1/2) to those with default suffixes (45c,d; –1/2), and F8 contrasted conditions with inner agreement (45a,c; +1/2) to those with outer agreement (45b,d; –1/2).

Results

Proportion of responses and z-transformed ratings are reported above, in Figures 1–4.

For Subexperiment 1 (42; Figure 1), ordinal modeling found significant main effects of F1 (Est. = 0.44, SE = 0.082, z = 5.4, $p < 0.001$), F2a (Est. = 0.39, SE = 0.10, z = 3.7, $p < 0.001$), and F2b (Est. = 0.68, SE = 0.10, z = 6.3, $p < 0.001$). This indicates that simple placeholder verbs are reliably more acceptable than complex ones, that double-agreement placeholders are less acceptable than those with inner agreement only, and that double-agreement placeholders are more acceptable than those with outer agreement only.

For Subexperiment 2 (43; Figure 2), there was a main effect of F3 (Est. = 0.45, SE = 0.057, z = 7.8, $p < 0.001$) and a marginal F3–F4 interaction (Est. = –0.20, SE = 0.11, z = –1.7, p = 0.077). This indicates that conditions with doubled agreement were reliably more acceptable than those with outer agreement, and that outer-agreement placeholders with preradical vowels were marginally worse than those without them.

For Subexperiment 3 (44; Figure 3), there was a main effect of F5 (Est. = –0.51, SE = 0.058, z = –8.7, $p < 0.001$). This indicates that, for placeholder verbs with first- or second-person objects, preradical vowels reliably increase acceptability relative to versions with no preradical vowels.

For Subexperiment 4 (45; Figure 4), there was a significant main effect of F7 (Est. = 0.28, SE = 0.051, z = 5.5, $p < 0.001$) and a significant F7–F8 interaction (Est. = 0.31, SE = 0.10, z = 3.0, $p < 0.01$). This indicates that placeholder verbs with expected irregular suffixal allomorphy are reliably more acceptable than those with retreat-to-default suffixal allomorphy, and that the cost of default suffixes is reliably worse for inner-agreement placeholders than outer-agreement ones.

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