

# An Algorithm Defining the Choices of Case Shift and Verb Concord Patterns in Georgian

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**Abstract.** Georgian has a developed Case System and two types of Verb Agreement Affixes showing the person and number of arguments: the V-type and the M-type. Traditionally they are qualified, consequently, as Subject and Object markers, but there are some “exceptions”: Sometimes S-markers (res. V-type prefixes) represent Object and, vice versa, O-markers (res. M-type prefixes) represent Subject. Based on a formal, functional, and semantic analysis of the main alignment patterns in Georgian, we suggest a new interpretation of the issue. It seems more adequate to analyse verb concord markers without any functional or semantic qualification, purely by their correlation with the arguments cases. The main semantic feature, which seems to be decisive for defining the choice of various patterns, is whether the argument's 'Will' is included or not in the situation/event. Based on the feature 'Will', we formulate and generalize hierarchically organized algorithmic rules, which reflect the process of linguistic structuring of events and mirror the cognitive background of grammatical structures.

Keywords: Georgian, morphosyntax, case shift, verb concord patterns, algorithmic rules in grammar, cognitive interpretation of grammar rules.

## I. The Georgian Data: Posing the Problem

The Georgian verb is polypersonal: the verb form shows the Subject as well as the Object:

*m - c'er - s* ('S/he writes me')

DO.1-write-S.3

The developed case system distinguishes the character of the arguments and correlates to the person markers given in the verb forms [1,10]. Various case and verb concord patterns, defined by the Tense-Aspect-Mood (TAM) categories, reflect semantically and/or functionally different morphosyntactic structures. There are the following different patterns [3]:

1. The I/II personal pronouns *me* (I), *shen* (you-sing.), *chven* (we), *tkven* (you-pl) never add case markers, they are always unmarked.

2. All other nouns show three main case patterns [2]:

(a) **NOM-(DAT)** – I series Tense-Aspect-Mood (TAM) forms: present, imperfect, present subjunctive, future, conditional, future subjunctive

*k'ac-i* *cxovrobs* ('The man-NOM lives')

*k'ac-i surat-s* *xat'av* ('The man-NOM paints a picture-DAT')

*k'ac-i* *c'evs* ('The man-NOM lies')

(b) **ERG-(NOM)** – II series TAM forms: aorist, aorist subjunctive

*k'ac-ma* *icxovra* ('The man-ERG lived')

*k'ac-ma surat-i daxat'a* ('The man-ERG painted a picture-NOM')

*k'ac-i* *ic'va* ('The man-NOM lay')

(c) **DAT-(NOM)** – III series TAM forms: perfect, pluperfect, perfect subjunctive

*k'ac-s ucxovria* ('The man-DAT has lived')

*k'ac-s surat-i dauxat'av* ('The man-DAT has painted a picture-NOM')

*k'ac-i c'olila* ('The man-NOM has lain')

These morphosyntactic patterns prove the existence of the I/II versus III formal dichotomy in Georgian [1]: the I/II-person subsystem does not distinguish the functions and/or semantic roles of the nouns, since S, DO, IO (or Ag, P, Ad(dressee)) are all unmarked: They do not distinguish Cases at all. For the III-person subsystem in I series TAM forms, S is always Nominative: *-i*(after consonants)//*zero*(after vowels), and O in Dative (*-s*). Thus, it shows the Nominative alignment, while II and III series show the Ergative system: S.3 of the transitive (and intransitive-dynamic-atelic) verbs in the II series appears with a special, Ergative, case represented by the suffix *-ma*(after consonants)//*-m*(after vowels); and in III series, with the Dative suffix *-s*. All other nouns (S-intransitive and O-transitive) are Nominative.

The nouns trigger definite patterns of verb concord. The Georgian Language has two types of verb person affixes, the V-type and the M-type:

	V-type		M-type		
	sing.	pl.	sing.	pl.	
I	v-	v- -t	m-	gv-	
II	-	-t	g-	g-	-t
III	-s,-a,-o	-n,-en,-an, -nen,-es	h-,s-,ø- ø-	h-,s-,ø-	(-t) ø-

Traditionally, the V-type affixes are considered subject markers, while the M-type – object markers [10]. Note, however, that this is not always the case: In the perfect forms and with affective verbs the subject appears with the M-type and the object with the V-type: *da-m-i-ceria* ('It seems, I have written this'), *m-shia* ('I am hungry'), *m-eshinia* ('I am afraid'), *m-civa* ('I am cold'), *m-edzineba* ('I want to sleep'), *m-inda* ('I want') and others. For that reason, most Georgian scholars qualify these forms as "inversive" ones [4,8]. Such "exceptional" cases lead us to reanalyse the data to find some semantic or functional feature according to which the description of the forms would be more adequate – in one-to-one correspondence.

In general, it seems better to analyse these markers without any functional qualification (for the theoretical backgrounds see [5,6,9]), simply by their relation to cases:

1. Noun in the Dative always triggers the M-type affixes
2. Noun in the Ergative always triggers the V-type affixes
3. Noun in the Nominative triggers either
  - (a) V-type (if there is no Ergative linked with the verb),
  - (b) M-type (in case there is an Ergative linked with the verb),
  - (c) Zero (if both Ergative and Dative appear in the construction).

The V-type affixes are obligatory and they should be formally presented in the verb forms even when the corresponding argument is an "undefined, uncertain" one. (This happens with some affective verbs with undefined, unobjective Stimuli, e.g. *I am cold*, *I am hungry*, *I am angry*, etc.)

Based on the rules above, we can reveal the following generalization:

*From the point of the V-type affixes triggering, there are the following hierarchical relations: Ergative (always) > Nominative (sometimes) > Dative (never).*

Since in Georgian, there is only one slot for the verb person prefixes, some "competition" in marking takes place. This happens when both I and II persons (which according to the verb triggering are structurally equal to III persons) are the verb arguments. During such a case, the hierarchically weaker case wins:

1. I/II Nominative and I/II Dative → I/II Dative
2. I/II Ergative and I/II Dative → I/II Dative
3. I/II Ergative and I/II Nominative → I/II Nominative

In case there is no competitive situation (this happens mostly when I/II meets III), both markers will be present, and polypersonal verb forms arise.

## II. Semantic and/or Functional Interpretation of the Data

Semantically the Dative case and, consequently, the M-type affixes represent Addressee (res. the Indirect Object), Experiencer (res. the Subject of the affective verbs), Agent (res. the Subject in III series TAM forms), and Patient (res. the Direct Object in I series TAM forms). The Ergative case and the V-type affixes show Agent (res. the Subject of transitive and intransitive-dynamic-atelic verbs in II series TAM forms). The Nominative represents the most complex situation. Nominative triggering the V-type affixes marks Agent (res. the Subject in I series TAM forms), but also Patient (res. the Subject of intransitive verbs and the Direct Object of transitive verbs in III series TAM forms). The Nominative, which triggers the M-type affixes, corresponds to a patient (res. The Direct Object in II series TAM forms). Such complex and polyfunctional interpretations clarified that the syntactic functions or semantic roles are not sufficient for the simple, one-to-one analysis.

## III. A Cognitive Approach

A cognitive approach to analysing the peculiarities of affective verbs gives a possibility to discover the main semantic feature, which is important for distinguishing the specificity of affective verbs' Experiencer-Subjects.

The constructions of affective verbs differ from the canonical ones of the same languages. As a rule, they are characteristic of the predicates with the specific semantics: (a) Possession/Existence, (b) Psychological state, (c) Physiological state, (d) Visual/Auditory perception, (e) Modal state

(can/may/must) [11]. The main and common feature for the subjects of these predicates (res. affective verbs) is that they do not act according to their “Will”, or “Volition” and do not “Control” their own “action” – feelings, emotions, perceptions; they represent “Involuntary” S. Therefore, the S of affective verbs is far from the prototypical ones, which control their actions and act voluntarily, according to their will. In the majority of languages, such deviation from the prototype is represented by the marked, non-canonical linguistic structures. In these structures, S instead of the canonical form (Nominative – for Nom./Acc. languages, or Ergative – for Erg./Abs. languages) stands in marked, Dative (or any other oblique – Gen., Acc., Inst.) case.

In Georgian, alongside this generalization, affective verbs built non-canonical constructions and according to the universal tendency, S stands in Dative case and, consequently, triggers the M-type person markers in the verb form:

*me*     *m - i q'var - s*     *deda*     ('I love the mother')  
 I.DAT 1.DAT-love-3.NOM     mother.NOM

Similar, so-called ‘inversive’ constructions arise in III series TAM forms – Perfect, Pluperfect, and Perfect Subjunctive. Georgian Perfect demonstrates the additional semantic nuances: ‘apparently’, ‘it seems’, ‘probably’, ‘it turns out’. These TAM forms represent the following aspectual situation. The speaker sees the result of the action, s/he does not pay any attention to Ag (or s/he is not sure, or s/he does not actually know, or s/he merely forgets, who was the Agent of the action, etc.), but because of the presented result (Patient), s/he says what ‘apparently’ happened; e.g. *dauxat'avs* (‘It seems that s/he has painted’), *ucxovria* (‘Apparently s/he has lived’), *dac'olila* (‘It turns out that s/he has lain’) and so on. Thus, Georgian perfect represents the situation when it is not underlined, or actualized whether Ag (res. Subject) acted according to its ‘Will, Volition’, or without its ‘Will, Volition’.

It seems more effective to analyse the verb markers and the cases based on the above-mentioned semantic feature – an argument’s “Will”, which has double formal representation: the definite cases for the verb arguments and definite patterns for the verb concord.

The Ergative case marks the argument whose ‘Will’ is included in the situation or event. The Dative case marks the argument whose ‘Will’ is not included in the situation or event (or it is not relevant, actual to give information about the argument's ‘Will’). The Nominative case is contextually the most sensitive and restricted. As a marker of P (an inactive argument forced, undergoer, non-volitional, low in potency, etc.), it factually marks that the argument's ‘Will’ is a priori fully excluded during the linguistic structuring of events and, thus, the feature ‘Will’ is redundant for it. The ‘Will’ is decisive for defining Semantic Roles as it unifies their characterization based on only one semantic feature: 1. –[W] → Addressee, Experiencer; +[W] → Agent; 0 → Patient.

The feature ‘Will’ plays an important role in choosing the alignment patterns and defines the appearance of either the M- or the V-type markers:

- I. The argument whose will is not included in the situation/event (or it is not actualized whether its will is included or not) triggers the M-type affixes. (Semantically such are Addressee, Experiencer, and Non-Actualized-Agent);
- II. The argument, which acts according to its ‘will’, triggers the V-type affixes (such as Ag);
- III. The argument whose ‘will’ is cognitively irrelevant to the situation/event (such as P), triggers
  - a. the V-type, if it is *the only* argument linked with the verb (P);
  - b. the V-type, if another argument’s ‘will’ is not included in the situation (There are different possibilities of roles combinations: P-Ad, or P-Exp, or P-unactAg);
  - c. the M-type, if another argument’s ‘will’ is included in the situation (res. P-Ag);
  - d. zero, if both (+[W] and –[W]) arguments are linked with the verb (res. P, Ag, Ad).

The rules function as hierarchically organized decisions of choosing the morphosyntactic patterns: I>II>IIIa>IIIb>IIIc>IIId. As a result, various morphological verb forms arise.

Examples: The form *m-iqvar-s* ‘I love s/he’ is a result of the following derivational processes: The Exp. (I) is the semantic role, which does not control own feelings raised by the Stimulus (s/he) “acting” involuntarily, without will. Thus, according to I-rule, it is marked in the verb form by the M-type marker *m-*. The next argument can be qualified as P (the argument, whose ‘will’ is excluded, cognitively unmarked, and redundant), and, consequently, according to IIIb-rule, it is represented by the V-type marker *-s*. Thus, the form *m-i-q'var-s* is structuralized by the rules I>III.b: First, the M-type marker appears (according to I-rule), and, after, the V-type marker *-s* appears (according to rule III.b). Forms – *v-xat'av* (‘I paint it’) or *m-xatav* (‘You paint me’) – are derived by the rules: II>IIIc; and so on: *m-civ-a* (I(Exp)-cold-it(St), ‘I am cold’) – I>II; *m-xat'av-s* (I(P)-paint-(S)he(Ag), ‘(S)he paints

thme') – I>IIIc; *v-xat'av* (I(Ag)-paint-her/him(P), 'I paint him') – II>IIIc; *v-0-u-xat'av* (I(Ag)-him/her(Ad)-paint, 'I paint it to her/him') – I>II>IIIc; *cxovrob-s* (live-s/he(Ag), 'S/he lives') – II; *ixat'eb-a* (paint.Passive-it(P), 'It is painted') – IIIa.

#### IV. An algorithm

It is possible to reinterpret and represent the whole process as an algorithmic rule, which describes the dynamicity of decisive choices of appropriate formal morphosyntactic structures – as the case alignment paradigms, so the verb concord patterns.

ArSF	CASE	VERB CONCORD
I. –[W]	→ Dative	→ M-type
II. +[W]	→ 1. Ergative / if a verb form is in II series TAM forms → 2. Nominative	} → V-type
III. zero	→ 1. Nominative / if it is the only argument linked with a verb 2. If another argument has been defined by the rules I and/or II as	
	(a) Dative (–[W]) → Nominative	} → M-type
	(b) Ergative (+[W]) → Nominative	
	(c) Nominative (+[W]) → Dative	
	3. If there are two more arguments (+[W] and –[W]) linked with a verb	} → Zero
	(a) → Dative (in I series TAM forms)	
	(b) → Nominative	

The algorithm is hierarchically organized: I > (II.1 > II.2) > (III.1 > III.2.(a) > III.2.(b) > III.2.(c) > III.3.(a) > III.3.(b))

#### V. Conclusions

The algorithm reflects the dynamic process of linguistic structuring of situations, or events. The cognitive background of the process is simple:

*Participants of a situation/event differ in accordance with their 'Will', which is either included or not included (or a priori excluded) in the situation/event, and step-by-step the respective cognitively appropriate conventional formal model is chosen.*

We suppose that such description and interpretation of the Georgian data has more explanatory content and plays an important role in understanding a grammar's cognitive background [7].

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