

# GEORGIAN AGREEMENT WITHOUT EXTRINSIC ORDERING

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## Abstract

Accounts of Georgian morphological agreement marking on verbs have been frustrated by systematic deviations from regular morphemic behavior (co-occurrence restrictions and the so-called ‘inversion’ construction). A theory of inflection which does not assume the morpheme (e.g. Paradigm Function Morphology (PFM; Stump 1991, 1993, 2001)) permits the ready formal expression of some recalcitrant aspects of the distribution of agreement markers, but not all. By expanding the database somewhat and by capitalizing on independently motivated resources available within PFM, an approach is put forward here which shows the Georgian facts to fully respect rule ordering based wholly on proper subset exclusion (PFM’s *Pāṇinian Determinism Hypothesis*), without resorting to extrinsically imposed stipulations.

## 1. Introduction

Agreement marking in Georgian has raised a number of analytical questions for morphologists and syntacticians. The distribution of two major sets of agreement markers casts doubt on an analysis of the markers in terms of sign-like morphemic units.

Morphemes can be defined as minimal units of form that may be associated with meaning in a language. Morpheme-based theories of morphology traditionally emphasize

the sign-like qualities of these units, and claims are encountered that both free and bound morphemes are listed in the lexicon, albeit with different subcategorization restrictions (e.g., Selkirk 1982). It follows from a theory of meaningful pieces that morphologically complex words may be built up out of discrete morphemes, and perhaps exhaustively so. For this reason, morphosemantic mismatches, i.e. relations other than one-to-one between form and meaning (Stump 1991), are challenges to morphemic theory.

Georgian presents two clear mismatches which run contrary to a morphemic assessment of agreement marking. One is the so-called ‘inversion’ construction (Harris 1981, 1984; cf. Hewitt 1983), in which markers more usually associated with logical objects are, under certain conditions, systematically used to mark logical subjects (see Tables in section 2). The other mismatch is the disjunctive relation which apparently exists between certain pairs of markers (Anderson 1986), such that although multiple markers are semantically motivated in a given verb, only a subset of these markers may appear.

The structure of this paper is the following: section 2 presents example paradigms from Georgian conjugation classes and subclasses, in the interest of presenting the distribution of the different sets of argument markers where only one argument is present. This is followed by a critical presentation of recent accounts of the phenomenon. Section 3 builds on this discussion by describing the marker co-occurrence patterns. Notable accounts of the disjunctivity are summarized. Section 4 recasts portions of a recent treatment of Georgian disjunctivity in Paradigm Function Morphology (PFM, Stump 2001), and the conclusion is drawn that Stump incorporates a weakening assumption—the introduction of *expansion schemata*—that is not required given the broader data set considered here. An alternative PFM analysis is offered in section 5, holding more closely to independently motivated assumptions already present in the theory without expansion schemata. This analysis draws on the ‘inversion’ facts as well as the disjunctivity facts, and thereby provides a more integrated account of Georgian agreement. Section 6 presents conclusions and a summary.

## 2. The ‘Inversion’ Construction

Georgian is traditionally described as having four conjugations. Within certain of these conjugations, subclassifications may be made on the basis of inflectional behavior. Differences in semantic and valence also pattern broadly with the conjugation classification, and so there is strong motivation, both formal and functional, for these classes.

- (1) Georgian conjugation classes: semantic characteristics (Cherchi 1999:16-17)
- |         |                                                                |
|---------|----------------------------------------------------------------|
| Class 1 | generally transitive (e.g., ‘do’, ‘complete’, ‘see’, ‘kill’)   |
| Class 2 | generally intransitive or passive (e.g., ‘be written’, ‘die’)  |
| Class 3 | atelic activities (e.g., ‘sing’, ‘cry’, ‘dance’, ‘swim’)       |
| Class 4 | emotions, perceptions, states, possession (e.g., ‘be ashamed’) |

Classes 3 and 4 are by and large formally homogeneous, and so will be exemplified with

one paradigm each. Class 1 may be divided into ‘strong’ (1*s*) and ‘weak’ (1*w*) paradigms, based on the presence of a phonologically reduced stem alternant in Series I (i.e., Present and Future tense) forms. Class 2, on the other hand, has three clear subcategories, here called 2*i*, 2*d*, and 2*x*, which differ more substantially in their affixal morphology. A full account of Georgian verb morphology is beyond the scope of this paper, but the following examples give some indication of the patterning of the argument markers in the different conjugations.

To simplify matters slightly, it will be seen that for the most part, ‘inversion’ involves a choice in the set of argument markers between the following (a dash indicates the lack of overt exponence):

(2)	1sg.	2sg.	3sg.	1pl.	2pl.	3pl.
“ <i>v</i> -set”	<i>v</i> -	—	- <i>s</i>	<i>v</i> -...- <i>t</i>	- <i>t</i>	- <i>en</i>
“ <i>m</i> -set”	<i>m</i> -	<i>g</i> -	—	<i>gv</i> -	<i>g</i> -...- <i>t</i>	—

It will be seen that there is more going on than this, especially in the case of 3rd person marking, but the markers as given in (2) are sufficient to describe the conditions under which ‘inversion’ obtains. This conditioning may be described as follows:

- (3) The *m*-set of markers is used to realize the logical subject iff
- (i) the verb lexeme belongs to the fourth conjugation, or
  - (ii) (a) the verb lexeme belongs to the first or third conjugation, and
    - (b) the verb form is Evidential<sup>1</sup>, i.e., “Apparently, s.o. (has) VERB-ed”.

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<sup>1</sup> See the Appendix for the full set of morphosyntactic features and the permissible values of each.

Indicative		Subjunctive
Non-past	Past	
<i>Present</i>	<i>Imperfect</i>	<i>Present Subjunctive</i>
<b>vakete<b>b</b></b>	<b>vakete<b>b</b>di</b>	<b>vakete<b>b</b>de</b>
<b>akete<b>b</b></b>	<b>akete<b>b</b>di</b>	<b>akete<b>b</b>de</b>
<b>akete<b>bs</b></b>	<b>akete<b>b</b>da</b>	<b>akete<b>b</b>des</b>
<b>vakete<b>bt</b></b>	<b>vakete<b>b</b>dit</b>	<b>vakete<b>b</b>det</b>
<b>akete<b>bt</b></b>	<b>akete<b>b</b>dit</b>	<b>akete<b>b</b>det</b>
<b>akete<b>ben</b></b>	<b>akete<b>b</b>dn<b>en</b></b>	<b>akete<b>b</b>dn<b>en</b></b>
<i>Future</i>	<i>Conditional</i>	<i>Future Subjunctive</i>
<b>gavakete<b>b</b></b>	<b>gavakete<b>b</b>di</b>	<b>gavakete<b>b</b>de</b>
<b>gaakete<b>b</b></b>	<b>gaakete<b>b</b>di</b>	<b>gaakete<b>b</b>de</b>
<b>gaakete<b>bs</b></b>	<b>gaakete<b>b</b>da</b>	<b>gaakete<b>b</b>des</b>
<b>gavakete<b>bt</b></b>	<b>gavakete<b>b</b>dit</b>	<b>gavakete<b>b</b>det</b>
<b>gaakete<b>bt</b></b>	<b>gaakete<b>b</b>dit</b>	<b>gaakete<b>b</b>det</b>
<b>gaakete<b>ben</b></b>	<b>gaakete<b>b</b>dn<b>en</b></b>	<b>gaakete<b>b</b>dn<b>en</b></b>
	<i>Aorist</i>	<i>Optative (Aorist Subj.)</i>
	<b>gavakete</b>	<b>gavaketo</b>
	<b>gaakete</b>	<b>gaaketo</b>
	<b>gaaketa</b>	<b>gaaketos</b>
	<b>gavaketet</b>	<b>gavaketot</b>
	<b>gaaketet</b>	<b>gaaketot</b>
	<b>gaaketes</b>	<b>gaaketon</b>
	<i>Evidential Indicative</i>	<i>Evidential Subjunctive</i>
	<b>gamikete<b>bia</b></b>	<b>gameketa</b>
	<b>gagikete<b>bia</b></b>	<b>gageketa</b>
	<b>gaukete<b>bia</b></b>	<b>gaketa</b>
	<b>gagvikete<b>bia</b></b>	<b>gagveketa</b>
	<b>gagikete<b>biat</b></b>	<b>gageketat</b>
	<b>gaukete<b>biat</b></b>	<b>gaketat</b>

TABLE 1  
*Class I Strong*  
*ket 'do'*

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Indicative		Subjunctive
Non-past	Past	
<i>Present</i>	<i>Imperfect</i>	<i>Present Subjunctive</i>
<b>všli</b>	<b>všlidi</b>	<b>všlide</b>
<b>šli</b>	<b>šlidi</b>	<b>šlide</b>
<b>šlis</b>	<b>šlida</b>	<b>šlides</b>
<b>všlit</b>	<b>všlidiť</b>	<b>všlidet</b>
<b>šlit</b>	<b>šlidiť</b>	<b>šlidet</b>
<b>šlian</b>	<b>šlidnen</b>	<b>šlidnen</b>
<i>Future</i>	<i>Conditional</i>	<i>Future Subjunctive</i>
<b>gavšli</b>	<b>gavšlidi</b>	<b>gavšlide</b>
<b>gašli</b>	<b>gašlidi</b>	<b>gašlide</b>
<b>gašlis</b>	<b>gašlida</b>	<b>gašlides</b>
<b>gavšlit</b>	<b>gavšlidiť</b>	<b>gavšlidet</b>
<b>gašlit</b>	<b>gašlidiť</b>	<b>gašlidet</b>
<b>gašlian</b>	<b>gašlidnen</b>	<b>gašlidnen</b>
TABLE 2 <i>Class I Weak</i> <i>šal</i> 'hear'	<i>Aorist</i>	<i>Optative (Aorist Subj.)</i>
	<b>gavšale</b>	<b>gavšalo</b>
	<b>gašale</b>	<b>gašalo</b>
	<b>gašala</b>	<b>gašalos</b>
	<b>gavšalet</b>	<b>gavšalot</b>
	<b>gašalet</b>	<b>gašalot</b>
	<b>gašales</b>	<b>gašalon</b>
	<i>Evidential Indicative</i>	<i>Evidential Subjunctive</i>
	<b>gamišlia</b>	<b>gamešala</b>
	<b>gagišlia</b>	<b>gagešala</b>
	<b>gaušlia</b>	<b>gaešala</b>
	<b>gagvišlia</b>	<b>gagvešala</b>
	<b>gagišliat</b>	<b>gagešalat</b>
	<b>gaušliat</b>	<b>gaešalat</b>

Indicative		Subjunctive
Non-past	Past	
<i>Present</i>	<i>Imperfect</i>	<i>Present Subjunctive</i>
vixatebi	vixatebodi	vixatebode
ixatebi	ixatebodi	ixatebode
ixateba	ixateboda	ixatebodes
vixatebit	vixatebodit	vixatebodet
ixatebit	ixatebodit	ixatebodet
ixatebian	ixatebodnen	ixatebodnen
<i>Future</i>	<i>Conditional</i>	<i>Future Subjunctive</i>
gamovixatebi	gamovixatebodi	gamovixatebode
gamoixatebi	gamoixatebodi	gamoixatebode
gamoixateba	gamoixateboda	gamoixatebodes
gamovixatebit	gamovixatebodit	gamovixatebodet
gamoixatebit	gamoixatebodit	gamoixatebodet
gamoixatebian	gamoixatebodnen	gamoixatebodnen
	<i>Aorist</i>	<i>Optative (Aorist Subj.)</i>
	gamovixate	gamovixato
	gamoixate	gamoixato
	gamoixata	gamoixatos
	gamovixatet	gamovixatot
	gamoixatet	gamoixatot
	gamoixatnen	gamoixaton
	<i>Evidential Indicative</i>	<i>Evidential Subjunctive</i>
	gamovxatulvar	gamovxatuliqavi
	gamoxatulxar	gamoxatuliqavi
	gamoxatula	gamoxatuliqo
	gamovxatulvart	gamovxatuliqavit
	gamoxatulxart	gamoxatuliqavit
	gamoxatulan	gamoxatuliqvnen

TABLE 3  
*Class 2i*  
*xat* ‘be painted’

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Indicative		Subjunctive
Non-past	Past	
<i>Present</i>	<i>Imperfect</i>	<i>Present Subjunctive</i>
vketdebi	vk <del>et</del> debodi	vk <del>et</del> debode
ketdebi	ketdebodi	ketdebode
ketdeba	ketdeboda	ketdebodes
vk <del>et</del> debit	vk <del>et</del> debodit	vk <del>et</del> debodet
ketdebit	ketdebodit	ketdebodet
ketdebian	ketdebod <b>nen</b>	ketdebod <b>nen</b>
<i>Future</i>	<i>Conditional</i>	<i>Future Subjunctive</i>
gavketdebi	gavketdebodi	gavketdebode
gaketdebi	gaketdebodi	gaketdebode
gaketdeba	gaketdeboda	gaketdebodes
gavketdebit	gavketdebodit	gavketdebodet
gaketdebit	gaketdebodit	gaketdebodet
gaketdebian	gaketdebod <b>nen</b>	gaketdebod <b>nen</b>
	<i>Aorist</i>	<i>Optative (Aorist Subj.)</i>
	gavketdi	gavketde
	gaketdi	gaketde
	gaketda	gaketdes
	gavketdit	gavketdet
	gaketdit	gaketdet
	gaketd <b>nen</b>	gaketd <b>nen</b>
	<i>Evidential Indicative</i>	<i>Evidential Subjunctive</i>
	gavketebulvar	gavketebuliqavi
	gaketebulxar	gaketebuliqavi
	gaketebula	gaketebuliqo
	gavketebulvart	gavketebuliqavit
	gaketebulxart	gaketebuliqavit
	gaketebulan	gaketebuliqv <b>nen</b>

TABLE 4  
*Class 2d*  
*ket-deb* ‘be done’

Indicative		Subjunctive
Non-past	Past	
<i>Present</i>	<i>Imperfect</i>	<i>Present Subjunctive</i>
vkvdebi	vkvdebodi	vkvdebode
kvdebi	kvdebodi	kvdebode
kvdeba	kvdeboda	kvdebodes
vkvdebit	vkvdebodit	vkvdebodet
kvdebit	kvdebodit	kvdebodet
kvdebian	kvdebodnen	kvdebodnen
<i>Future</i>	<i>Conditional</i>	<i>Future Subjunctive</i>
movkvdebi	movkvdebodi	movkvdebode
mokvdebi	mokvdebodi	mokvdebode
mokvdeba	mokvdeboda	mokvdebodes
movkvdebit	movkvdebodit	movkvdebodet
mokvdebit	mokvdebodit	mokvdebodet
mokvdebian	mokvdebodnen	mokvdebodnen
	<i>Aorist</i>	<i>Optative (Aorist Subj.)</i>
	movkvdi	movkvde
	mokvdi	mokvde
	mokvda	mokvdes
	movkvdit	movkvdet
	mokvdit	mokvdet
	mokvdnen	mokvdnen
	<i>Evidential Indicative</i>	<i>Evidential Subjunctive</i>
	movmkvdarvar	movmkvdariqavi
	momkvdarxar	momkvdariqavi
	momkvdara	momkvdariqo
	movmkvdarvart	movmkvdariqavit
	momkvdarxart	momkvdariqavit
	momkvdaran	momkvdariqvnen

TABLE 5  
Class 2x  
kvd 'die'

## GEORGIAN AGREEMENT WITHOUT EXTRINSIC ORDERING

Indicative		Subjunctive
Non-past	Past	
<i>Present</i>	<i>Imperfect</i>	<i>Present Subjunctive</i>
<b>vtamašob</b>	<b>vtamašobdi</b>	<b>vtamašobde</b>
tamašob	tamašobdi	tamašobde
tamašobs	tamašobda	tamašobdes
<b>vtamašobt</b>	<b>vtamašobdit</b>	<b>vtamašobdet</b>
tamašobt	tamašobdit	tamašobdet
<b>tamašoben</b>	<b>tamašobdnen</b>	<b>tamašobdnen</b>
<i>Future</i>	<i>Conditional</i>	<i>Future Subjunctive</i>
<b>vitamašeb</b>	<b>vitamašebdi</b>	<b>vitamašebde</b>
itamašeb	itamašebdi	itamašebde
itamašebs	itamašebda	itamašebdes
<b>vitamašebt</b>	<b>vitamašebdit</b>	<b>vitamašebdet</b>
itamašebt	itamašebdit	itamašebdet
<b>itamašeben</b>	<b>itamašebdnen</b>	<b>itamašebdnen</b>
	<i>Aorist</i>	<i>Optative (Aorist Subj.)</i>
	<b>vitamaše</b>	<b>vitamašo</b>
	itamaše	itamašo
	<b>itamaša</b>	itamašos
	<b>vitamašet</b>	<b>vitamašot</b>
	itamašet	itamašot
	itamašes	itamašon
	<i>Evidential Indicative</i>	<i>Evidential Subjunctive</i>
	<b>mitamašnia</b>	<b>metamaša</b>
	<b>gitamašnia</b>	<b>getamaša</b>
	<b>utamašnia</b>	etamaša
	<b>gvitamašnia</b>	<b>gvetamaš_a</b>
	<b>gitamašniat</b>	<b>getamaš_at</b>
	<b>utamašniat</b>	etamaš_at

TABLE 6  
 Class 3  
 tamaš 'play'

Indicative		Subjunctive
Non-past	Past	
<i>Present</i>	<i>Imperfect</i>	<i>Present Subjunctive</i>
<b>myvi3avs</b>	<b>myvi3avda</b>	<b>myvi3avdes</b>
<b>gyvi3avs</b>	<b>gyvi3avda</b>	<b>gyvi3avdes</b>
<b>yvi3avs</b>	<b>yvi3avda</b>	<b>yvi3avdes</b>
<b>gyvi3avs</b>	<b>gyvi3avda</b>	<b>gyvi3avdes</b>
<b>gyvi3avt</b>	<b>gyvi3avdat</b>	<b>gyvi3avdet</b>
<b>yvi3avt</b>	<b>yvi3avdat</b>	<b>yvi3avdet</b>
<i>Future</i>	<i>Conditional</i>	<i>Future Subjunctive</i>
<b>meyvi3eba</b>	<b>meyvi3eboda</b>	<b>meyvi3ebodes</b>
<b>gyvi3eba</b>	<b>gyvi3eboda</b>	<b>gyvi3ebodes</b>
<b>eyvi3eba</b>	<b>eyvi3eboda</b>	<b>eyvi3ebodes</b>
<b>gyvi3eba</b>	<b>gyvi3eboda</b>	<b>gyvi3ebodes</b>
<b>gyvi3ebot</b>	<b>gyvi3ebodat</b>	<b>gyvi3ebodet</b>
<b>eyvi3ebot</b>	<b>eyvi3ebodat</b>	<b>eyvi3ebodet</b>
	<i>Aorist</i>	<i>Optative (Aorist Subj.)</i>
	<b>meyvi3a</b>	<b>meyvi3os</b>
	<b>gyvi3a</b>	<b>gyvi3os</b>
	<b>eyvi3a</b>	<b>eyvi3os</b>
	<b>gyvi3a</b>	<b>gyvi3os</b>
	<b>gyvi3at</b>	<b>gyvi3ebot</b>
	<b>eyvi3at</b>	<b>eyvi3ebot</b>
	<i>Evidential Indicative</i>	<i>Evidential Subjunctive</i>
	<b>myvi3ebia</b>	<b>myvi3oda</b>
	<b>gyvi3ebia</b>	<b>gyvi3oda</b>
	<b>yvi3ebia</b>	<b>yvi3oda</b>
	<b>gyvi3ebia</b>	<b>gyvi3oda</b>
	<b>gyvi3ebiat</b>	<b>gyvi3odat</b>
	<b>yvi3ebiat</b>	<b>yvi3odat</b>

TABLE 7  
Class 4  
yvi3 'be awake'

The inconsistency of the match between logical (“initial” in Relational Grammar (RG)) grammatical relations and their formal markers constitutes a problem for an analysis based on classical morphemes because we have not simply an alternative phonological shape associated with a constant meaning (garden-variety allomorphy), but rather an apparent systematic substitution of forms which are canonically associable with a contrasting meaning. It is for this reason that Harris (1981, 1984) analyzes ‘inversion’ as a sequence of RG syntactic operations.

Anderson (1992:155-56) claims that there are no clearly syntactic attributes of ‘inversion’, that linear word order is unaffected, regardless of marker type, and thus that ‘inversion’ is a phenomenon restricted to inflectional morphology. Despite this rejection of Georgian ‘inversion’ as syntax proper, Anderson proposes a solution based on movement. Movement applies here not to syntactic units but rather covertly to Anderson’s abstract level of layered morphosyntactic representations (MSRs). The manipulation of MSRs essentially ‘tricks’ the inflectional component into giving the desired results, because the word formation rules (WFRs) introducing the affixes are stated so as to apply blindly to particular layers of MSR structure, i.e., the same MSR on different layers will license the application of different WFRs. This approach will thus give rise to the introduction of a featurally equivalent, but formally potentially distinct exponent. Despite their ability to cover the facts, MSR transformations have little independent motivation in the rest of Anderson’s theory.

### 3. Disjunctivity in Georgian agreement marking

The second morphosemantic mismatch to be found in Georgian agreement marking is a systematic formal underdetermination of verbs having particular combinations of two or more arguments. As seen in the paradigms in section 2, the two major sets of argument markers are as given in (2), repeated in (4):

(4)	1sg.	2sg.	3sg.	1pl.	2pl.	3pl.
“v-set”	<i>v-</i>	—	<i>-s</i>	<i>v-...-t</i>	<i>-t</i>	<i>-en</i>
“m-set”	<i>m-</i>	<i>g-</i>	—	<i>gv-</i>	<i>g-...-t</i>	—

Any analysis in which words are built up through a compilation of meaningful pieces (morphemes) or through the application of strictly information-increasing rules (as in Articulated Morphology, Steele 1995) would lead to the prediction that, all else being equal, the following distribution of markers in verb forms with two arguments should hold (assuming somewhat arbitrarily, but not crucially, that subject markers would appear consistently ‘outside of’ direct object markers):

(5) An “idealized” paradigm<sup>2</sup> for the present tense of *xedav*, ‘see’

DO Subj.	1sg.	2sg.	3sg.	1pl.	2pl.	3pl.
1sg.		<b>V-g</b> -xedav	v-xedav		<b>V-g</b> -xedav- <b>t</b>	v-xedav
2sg.	<b>m</b> -xedav		xedav	<b>gv</b> -xedav		xedav
3sg.	<b>m</b> -xedav- <b>s</b>	<b>g</b> -xedav- <b>s</b>	xedav- <b>s</b>	<b>gv</b> -xedav- <b>s</b>	<b>g</b> -xedav- <b>t-S</b>	xedav- <b>s</b>
1pl.		<b>V-g</b> -xedav- <b>t</b>	v-xedav- <b>t</b>		<b>V-g</b> -xedav- <b>T-t</b>	v-xedav- <b>t</b>
2pl.	<b>m</b> -xedav- <b>t</b>		xedav- <b>t</b>	<b>gv</b> -xedav- <b>t</b>		xedav- <b>t</b>
3pl.	<b>m</b> -xedav- <b>en</b>	<b>g</b> -xedav- <b>en</b>	xedav- <b>en</b>	<b>gv</b> -xedav- <b>en</b>	<b>g</b> -xedav- <b>T-en</b>	xedav- <b>en</b>

Affixes which are predicted (i.e., semantically motivated) but which do not actually occur are given as capitals in (5)<sup>3</sup>. From (5) it can be seen that those forms which are not as one would predict are all and only those in which two prefixal markers and/or two suffixal markers are semantically motivated.

These facts are summarized by Cherchi (1999:43, citing Aronson 1990:169-70) as the following set of stipulations:

- (6) **Rule 1:** First person subjects cannot occur with first person objects.  
Second person subjects cannot occur with second person objects.
- Rule 2:** The 2<sup>nd</sup> person object marker *g*- overrides the 1<sup>st</sup> person subject marker *v*-.
- Rule 3:** Only one *-t* suffix can occur in a given inflected verb form.
- Rule 4:** The 3<sup>rd</sup> person singular subject suffix *-s* is overridden by the plural object suffix *-t*.
- Rule 5:** The 3<sup>rd</sup> person plural subject suffix *-en* overrides the plural object suffix *-t*.

Carmack (1997) suggests that Georgian disjunctivity can be reduced to the operation of an information-based blocking mechanism. This account claims that, assuming a maximum of one prefix and one suffix in any given verb form, the information contained in the combination of markers which appears is more than any possible alternative (contextually appropriate) combination. Carmack proposes a calculation process for information content in morphemes (320) which allows a principled decision to be made. Although such a mechanism does give correct results much of the time, and it may capture some diachronic tendencies of how such a system developed, it is rather implausible as part of a synchronic grammar. The failure of a plural suffix *t* to accompany

<sup>2</sup> Shaded cells correspond to combinations of like (non-3<sup>rd</sup>) person values; the object arguments in these combinations are realized by a periphrastic construction rather than by an affix on the verb itself.

<sup>3</sup> An across-the-board ban on geminate consonants in Georgian makes the case of the competing *-t* suffixes for SU[1pl.]/DO[2pl.] moot.

the 1st person plural object prefix *gv-* in an otherwise unsuffixed form is accommodated by Carmack with an appeal to analogy, blocking the redundant marking of plurality (320, 323). If maximizing information is the driving force, however, a *-t* suffix ought to appear in such cases whenever it is not specifically pre-empted by *-s* or *-en*. The generalization that a 1st person plural object correlates only with the *gv-* prefix is missed in this account.

Halle and Marantz (1993:116-20) propose an analysis within their theory of Distributed Morphology (DM) whereby all the morphosyntactic features of the arguments in a Georgian clause are compiled in a (pro-)clitic cluster, immediately preceding the verb stem. They further propose that this collection of features is subject to morphological operations of *fission*, *fusion*, and *merger*, which create the necessary terminal nodes as part of DM's post-syntactic level of Morphological Structure (MS, located between SS and PF in the standard "T-model" of the grammar). The nodes created are of exactly the right number and end up in exactly the right positions with respect to the verb stem, by means of as many morphological operations as necessary.

There is, however, neither distributional nor phonological evidence to support the claim that the agreement markers are clitics rather than ordinary affixes. The motivation for DM's assumption of a clitic cluster, it would seem, is to have a structurally isolated 'workspace' in which to hash out the necessary node creation, deletion, combination, and sequencing, independent of the rest of verbal inflection. Even with this considerable expressive license, however, DM is left with no non-stipulative account of the disjunction between pairs of affixes. Halle and Marantz are left to assume a version of the *Elsewhere Condition* (Anderson 1969, 1986, 1992; Kiparsky 1973), whereby competition between any two items (in DM, morphemes) is resolved in favor of the more specific competitor. The lexical entries for the morphemes *g-* and *v-* as defined in Halle and Marantz (1993:119) are as follows:

- (7) a. [+2], DAT ↔ /g-/  
 b. [+1] ↔ /v-/

Assuming the EC, (7a) should precede and exclude (7b), the correct precedence relation. The problem, however, is that they tie the definition to dative case, which would seem to be at odds with the 'inversion' facts. If case must be ignored, Halle and Marantz (1993:120) are prepared to invoke extrinsic ordering of application, that is, the result of the disjunctive application is simply stipulated and does not follow from any other principles. Once this device is added to an already considerable arsenal of manipulations, the DM model is rendered nearly, if not completely, unfalsifiable.

The latter two assumptions, i.e. the EC and extrinsic ordering, are explicitly borrowed into DM from the work of Anderson (1986, 1992). Anderson makes the assumption that "[r]ules may be organized (by stipulation) into disjunctive blocks, corresponding (roughly) to the traditional notion of *position class*" (1986:3). Position classes (to be discussed further within PFM, below) are defined with respect to linear order and co-occurrence facts, i.e. purely distributionally. Membership in one of

Anderson's WFR-blocks and the disjunctivity which follows is not principled or predictable in this way, but rather may be stipulated,

For instance, of two descriptively adjacent rules, one might be a rule of prefixation and the other of suffixation. Such rules could potentially be stipulated to be disjunctive on the present approach, giving complementarity between structurally non-equivalent forms (4, fn. 3).

This move opens the range of possibilities in a way that no predictions are possible—for most any given set of observations, the linguist has the power to stipulate a rule ordering to obtain the desired effects. This lack of falsifiability must be seen as an excess, since it allows for many more types of interactions than are actually observed.

In the case of Georgian, where a WFR prefixing *g-* apparently preempts a WFR prefixing *v-*, the solution for Anderson is to assume that these rules belong to the same disjunctive block and that the rule prefixing *g-* is simply ordered ahead of the rule prefixing *v-* by stipulation, since the Elsewhere Condition as conceived of in Anderson (1986, 1992) does not favor one over the other on grounds of morphosyntactic specificity. This would seem to be only marginally more explanatory than the bald rule set of Aronson (1990) given in (6) above. While it is an advance for a theory to have an explicit acknowledgement of disjunctivity, the power involved in Anderson's approach to rule block formation and extrinsic ordering is a high price for a weak position.

#### **4. Georgian agreement in Paradigm Function Morphology**

Most recently, Stump (2001:69-73, 83-86) has taken on Georgian agreement as a testing ground for the strong Pāṇinian Determinism Hypothesis (PDH), a fundamental assumption of his Paradigm Function Morphology (PFM) approach to inflection:

According to the [PDH], all override relations within a realization-rule block are determined by a universal principle; the possibility is excluded that such relations might ever be stipulated on a language-specific basis (62).

This assumption is therefore very much at odds with Anderson's take on extrinsic ordering, and also with Halle and Marantz's (1993) position (in addition to a number of other conflicting assumptions there). The realization-rule blocks referred to in the preceding are inflectional rules in PFM which license the presence of a certain inflectional exponent in a certain linear position or 'slot'. In this way, PFM rule blocks much more closely reflect the traditional morphological notion of a position class than do their analogues in Anderson's theory.

The PDH states more specifically that the narrowest applicable rule in a rule block overrides the application of all other applicable rules in that block (Stump 2001: 22-24). Narrowness is determined with respect to a set-theoretic relation between the

morphosyntactic feature-value sets realized by each of the rules so compared, on the one hand, or between the set of lexemes to which the rules are applicable. In the former case, the narrowest rule realizes an extension of the features realized by any other applicable rule (it is therefore more specific). In the latter case, by contrast, the narrower lexeme class is a proper subset of those lexemes to which any other rule is applicable (ms. p. 77). Narrowness thus depends on a combination of these two dimensions. Applicability is assessed similarly with respect to particular pairings of lexical roots and full sets of morphosyntactic feature values—rules are applicable iff they do not conflict with the lexeme class of the root, and they realize a proper subset of the feature values in the full set.

PFM encounters a problem in Georgian based on the following proposed block of realization rules<sup>4</sup> (Stump 2001:70):

- |     |    |                                                                          |                                 |
|-----|----|--------------------------------------------------------------------------|---------------------------------|
| (8) | a. | $RR_{\text{pref}, \{AGR(\text{su}):\{PER:1\}\}, V}(<X, \sigma>)$         | $=_{\text{def}} <vX', \sigma>$  |
|     | b. | $RR_{\text{pref}, \{AGR(\text{ob}):\{PER:1\}\}, V}(<X, \sigma>)$         | $=_{\text{def}} <mX', \sigma>$  |
|     | c. | $RR_{\text{pref}, \{AGR(\text{ob}):\{PER:1, NUM:pl\}\}, V}(<X, \sigma>)$ | $=_{\text{def}} <gvX', \sigma>$ |
|     | d. | $RR_{\text{pref}, \{AGR(\text{ob}):\{PER:2\}\}, V}(<X, \sigma>)$         | $=_{\text{def}} <gX', \sigma>$  |

Since these rules belong to the same rule block, the PDH predicts that no two of these rules should qualify as the narrowest applicable rule in any context, i.e. there can be no ‘ties’, for this would entail an arbitrary, and therefore unprincipled, ‘tiebreaker’ stipulation. Rules (8b, c, and d) cannot simultaneously apply to the same form because they each realize a different value for the feature  $\{AGR(\text{ob})\}$ . Rule (8a) cannot conflict with either (8b) or (8c) because in Georgian, matching values for  $\{PER\}$  require the use of a periphrastic reflexive construction for one of the arguments. The only potential conflict, therefore, is between rules (8a) and (8d), which, as written, are equally narrow and equally applicable to a verb root (V) paired with any extension of the feature value set  $\{\{AGR(\text{su}):\{PER:1\}\}, \{AGR(\text{ob}):\{PER:2\}\}\}$ . Does this indeed falsify the PDH, as Anderson (1986, 1992) and Halle and Marantz (1993) would have it? Must extrinsic ordering be countenanced, even in the more constrained position class rule block of PFM?

Stump’s (2001:72ff) response to this problem is to propose a second mode of realization rule application, as *expansion schemata*. “A realization rule R applying in expanded mode is a rule schema instantiated by each member of a class  $S_R$  of rules applying in expanded mode...” (72). For every unexpanded rule in  $S_R$ , the set of morphosyntactic feature values mentioned in that rule’s property-set index must be a well-

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<sup>4</sup> PFM is an inferential-realizational theory of inflection. On this approach, morphological exponents are introduced in forms as licensed by the application of realization rules (RRs) which apply to pairings of lexical roots (X) and fully specified sets of morphosyntactic properties ( $\sigma$ ) applicable to such roots. RR bears three (subscript) indices, a *block index*, a *property-set index*, and a *class index*, in that order. These indices play a role in the determination of (1) Applicability and (2) (relative) Narrowness of competing rules within any rule block, as demanded under the PDH. See chapter 2 of Stump (2001) for detailed discussion.

formed extension of the property-set index of the schema. Assuming the following expansion schema in the prefix block for Georgian (arrows around a property-set index indicate expanded application):

$$(9) \quad \text{RR}_{\text{pref.} \leftarrow \{ \text{AGR}(\text{ob}): \{ \text{PER}:2 \} \} \rightarrow, \text{V}} (\langle X, \sigma \rangle) \quad =_{\text{def}} \langle gX', \sigma \rangle,$$

this entails that any form which involves the realization of a {PER:2} object argument will show a *g*- prefix and no other prefix. This claim is indeed consistent with the facts: “[w]henver a rule R realizing second-person object agreement competes with another rule, R is the overriding rule” (86).

Stump (2001) argues forcefully that expansion schemata are consistent with the PDH, and that they are formally more constrained, and hence more predictive than a theory which permits extrinsic ordering (73-75). The prediction that allows expansion schemata to escape criticism for being an *ad hoc* crypto-stipulation is that there will be no instances where expansion schemata in the same rule block will come into conflict, and therefore that rules applying in expanded mode will never be overridden when applicable.

This solution is ingenious and considerably more constrained than the competing analyses, but is this new mode of rule application actually motivated by the facts of Georgian? We are left to wonder, “What’s so special about {AGR(ob): {PER:2}}?”.

The question here is not whether expansion schemata are a valid formal device or not, but rather whether there is a way, within the existing resources of PFM, to gain the same results for Georgian without them. In the following section, I will propose a possible alternative which, while respecting the guidelines and leading ideas (the “what” and “how”) of PFM, offers somewhat more insight into the “why.”

## 5. PFM, Georgian, and the “narrowest applicable rule”

Stump’s response to the narrowness deadlock between rules (8a) and (8d) was to retool rule (8d) with respect to the property-set index, entailing a considerable augmentation of his rule theory, i.e. the introduction of expansion schemata. Since the Narrower relation is defined with respect to both the property-set and the lexeme class indices of realization rules (Stump 2001:52), I propose that a closer look at the class indices (simply given as V[erb] in the rules in (8)) is in order.

The choice to mark the rules with the class index V was presumably to make the rules as broadly applicable as possible. The conflict can only arise in principle in transitive or ditransitive verbs, and not in intransitives. The rules as stated are not falsified by this fact—since they simply are not both applicable, no arbitration is required (or rather the Pāṇinian well-formedness conditions are satisfied vacuously) in such cases. The use of V,

then, is not strictly speaking inaccurate, in that it makes no false predictions<sup>5</sup>, but it masks an alternative Narrowness assessment which could prove decisive without introducing otherwise novel machinery.

Lexeme class theory must presuppose a theory of the organization of the lexicon, and entries within that lexicon. It is not the case, however, that there is anything close to general agreement on what the lexicon is like, and in fact, much of generative linguistic theory has gone to considerable lengths to avoid using the lexicon for anything but the most recalcitrant of irregularities (e.g., "...there neither can nor should be a theory directly about [the lexicon]..." (Di Sciullo and Williams 1987:4)). That said, even Di Sciullo and Williams acknowledge that words are eminently categorizable, both derivationally and inflectionally, but they claim that these are aspects of the (undefined and therefore quasi-mystical) "space of words" in a language and not of the "lexicon" *per se* (4).

The sense of "lexicon" that I am interested in here, then, has more in common with the "word space" metaphor for the lexicon than the more traditional "rogue's gallery" conception (present even in Bloomfield (1933)), because our concern is the domain of morphological rules and what can inform them. It should stand to reason that lexeme classes and subclasses to which realization rules might refer will be those which have to do with morphological generalizations, whether morphosyntactic, morphophonological, or more purely morphological (morphomic). Some of the lexeme classes (beyond the major categories of N, V, and A) mentioned in Stump (2001) are the C-stem and Multiple C-stem nominals of Sanskrit (ch. 6), and the four-way division of Truncating and Non-truncating Consonantal and Vocalic verbs of Bulgarian (ch. 2). These classifications are equivalent to inflectional (declension and conjugation) classes, to be distinguished by patterns of inflection within their respective paradigms.

Built into the PFM reliance on override/default relations between realization rules is an implicit acknowledgment of inheritance from class to subclass, i.e., certain generalizations may hold of all verbs in a language e.g., but other facts will apply to certain subclasses to the exclusion of others. Taking inheritance on directly, as is done in Network Morphology (e.g., Corbett and Fraser 1993), or in certain outgrowths of Head-driven Phrase Structure Grammar (HPSG; esp. Riehemann 1997, Kathol 1999, Meurers 2000) will allow a picture of lexeme classification to come through more clearly.

Verbs in general have a minimum of one argument to index, regardless of the morphosyntactic properties associated with that argument in context (the distinction between *valence*, on the one hand, and *argument structure*, on the other). Verbs with a valence of one can index only one argument, and thus no conflict in realization can arise. Georgian verbs of the second conjugation are, as a class, intransitive, and thus have only one argument, all else being equal. The point here is that verbs can safely be said to have one morphosyntactic argument position (MAP, Gerds 1992, 1993a, 1993b) by default,

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<sup>5</sup> It was also the practice among Sanskrit grammarians (with Pāṇini foremost) to state rules as broadly as possible, within their formalism, including any number of irrelevant environments, just so long as no demonstrable counterexamples were included.

i.e. by virtue of being verbs. Having additional MAPs, then, is a fact about transitive and ditransitive verbs, and not a general fact about the class of verbs. In this way, the ability of a verb to take multiple arguments (understanding arguments to be SU, DO, or IO) is not something to be expected of all verbs, and it is for this reason that it was claimed above that although marking the realization rules in (8) as applying to the lexeme class V is not false, it is misleading with respect to what we can expect from particular classes of verbs, defined by their valence (and, accordingly, their MAPs).

To make this more concrete, we need to consider an interface between syntax and inflection with respect to the set of arguments to be realized on the verb<sup>6</sup>. Gerdts’s series of articles offers a bridge between the ‘terms’ of RG—logical subject (=1), logical direct object (=2), and logical indirect object (=3)—and the inflectional marking patterns which these terms receive under different (morpho-)syntactic conditions. This approach fits together very well with an approach to morphology which assumes the Separation Hypothesis, whereby grammatical function and (morpho-)phonological exponence are in principle distinct. PFM is one such approach to morphology. A MAP, in this sense, corresponds to a system of morphosyntactic marking (here a set of markers on the verb), which although they may be associated with one function canonically, need not be so associated in their every instance, as is the case in Georgian with the so-called ‘inversion’ construction: a mismatched pattern which occurs in certain tense/mood/aspect combinations for verbs of the first and third conjugations (see Tables 1-2, 6) and categorically for verbs of the fourth conjugation (see Table 7). From this perspective markers are elements of form and not classical linguistic signs, i.e. not *morphemes*. The single argument of an intransitive verb will be its logical subject, its ‘1’. By default, in Georgian, this term is associated with some member of the “*v*-set” of markers in (4) above, repeated here with amended (MAP-based) labels as (10):

(10)		MAP A	MAP B
	1st singular	<i>v-</i>	<i>m-</i>
	2nd singular	—	<i>g-</i>
	3rd singular	<i>-s</i>	—
	1st plural	<i>v-...-t</i>	<i>gv-</i>
	2nd plural	<i>-t</i>	<i>g-...-t</i>
	3rd plural	<i>-en</i>	<i>-t</i>

To recast this further into PFM terms, i.e., distinguishing prefix-slot exponents from non-prefixes<sup>7</sup>, we arrive at (11):

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<sup>6</sup> Case marking on NPs in Georgian is also controversial, and it does not follow one-for-one with the verb inflection patterns described here. Attempts to account for both argument marking and case marking in one fell swoop are bound to miss real generalizations about each.

<sup>7</sup> Any non-prefixal argument index would belong to some other position-based rule block, from which position they cannot affect the distribution of prefixes in any way.

(11)

	<b>Prefixes</b>	
	MAP A	MAP B
1st singular	v-	m-
2nd singular	—	g-
3rd singular	—	—
1st plural	v-	gv-
2nd plural	—	g-
3rd plural	—	—

This shows more clearly than ever the limited potential for conflict—exponents in the same row or in the same column cannot compete with each other in principle. It also shows that there is exactly one MAP A prefix, *v-*, which realizes the morphosyntactic property {PER:1}.

The innovation in the present analysis consists in the extension of the abstract indexation of sets of non-stem elements which nevertheless seem to organize themselves into (limited, non-lexemic) paradigms. Stump (2001:184) presents what he calls the *Indexing Autonomy Hypothesis* (IAH), specifically with reference to lexical stems, as follows:

- (12) **Indexing Autonomy Hypothesis** (IAH): The determination of a stem’s index is in principle independent of the determination of its form.

This hypothesis is designed to address apparent mismatches between a stem’s form and its function, or in other words, the fact that a single stem, as a formal element, may be associated in the same paradigm with semantically and/or grammatically unrelated functions. Purely morphological (*morphomic*) indices such as ‘strong’ or ‘weak’ (also the Sanskrit ‘*guṇa*’, ‘*vṛddhi*’ grades) may be assigned to stems on formal grounds, but the use to which these forms are put may vary from one inflectional class to another. The use of MAPs here is meant to be an analogous sort of index for the argument markers of Georgian. The analogy is not meant to go all the way through, of course, since whereas each lexeme of a certain category may have a number of distinct stems, often relatable to one another in morphophonological terms, these argument markers are a small and finite collection, and the MAPs are correspondingly few in number.

What remains is to incorporate this notion into the PFM framework. In the case of stems, PFM separates rules of stem formation, stem indexation, and stem selection, with only the last of these being realization rules proper (block ‘0’ rules). Since we really do not need rules of marker ‘formation’, and we similarly do not require productive rules of marker indexation, we actually only need to find a way to state the generalization of when to choose from column (MAP) A and when from B.

The default association between grammatical relations and MAPs is direct (adapted from Gerdtz 1992:293):

(13)

Grammatical Relations:	1	2	(initial relations in classic RG)
MAPs:	A	B	(final relations in classic RG)

This means that where there is a single argument (verbs with a valence of one) that argument will be realized (at least in part) with the MAP A marker on the verb which matches it for person and number (all else being equal). The empirical prediction, then, is that the only prefixal index that will appear on an intransitive Georgian verb is *v-*, when the 1-term is {PER:1}.

As discussed above, arguments in excess of one are the special case, rather than the default case, among the category of verbs taken as a whole. On this interpretation, it stands to reason that in a non-inverted transitive verb, the non-1-term, i.e., the direct object, will constitute a contribution toward Narrowness. In other words, a second term is only possible with a subset of the class V, in contrast with a first term<sup>8</sup>, which every verb has by default (i.e. inherits as members of the category V). Thus any realization rule realizing properties of a second term will be narrower than a rule realizing attributes of a 1-term. This is the implicit Narrowness that the realization rules as presented in (8) disguised. In the only situation where a conflict can arise, namely where the *property-set indices* on the rules in question would seem to be deadlocked, the relative Narrowness of the *class index* carries the day, and the 2-term/MAP B marker *g-* is in fact predicted to override the 1-term marker, under the ordinary definition of Narrowness: *v-* may appear only if the realization rule introducing *g-* is not applicable.

Although the MAPs may seem superfluous under direct association, their value comes to the fore in the so-called ‘inversion’ construction. MAP association other than that shown in (13) occurs if either:

- (14) (i) the verb lexeme belongs to the fourth conjugation, or  
 (ii) (a) the verb lexeme belongs to the first or third conjugation, and  
 (b) the property set is an extension of {EVID:yes}.

If the conditions of (14) are met, then the ‘inversion’ construction is used (Harris 1981, 1984).

(15) The ‘inversion’ construction in MAP terms:

Grammatical Relations:	$\hat{1}$	2
MAPs:	A	B

---

<sup>8</sup> Here “first term” is independent of the number of the grammatical role associated with that term under RG assumptions; thus a first term may be a 2-term, as in the RG analysis of the sole argument of unaccusative verbs.

In (15), the 1-term is placed *en chômage* (displaced, indicated by the circumflex diacritic), but there is a question as to whether this is the result of a syntactic operation, or merely the result of a stipulated override mapping of the 2-term onto MAP A, leaving the 1-term to “fend for itself” as it were. A 1-term so preempted in the ‘inversion’ construction does not simply take over the abandoned MAP B, and in fact a third term or an oblique may take the MAP B marker itself, leaving the 1-term to be marked as a canonical indirect object (=3-term) might.

The nature of the PFM inflectional component is one of static well-formedness conditions that hold of inflected forms which correspond to cells in the inflectional paradigms of the lexemes of a language. From this perspective, there is no place for post-syntactic reordering, even of abstract elements like MSRs. Lexemes and feature-value sets are paired, both in the cells of paradigms and in particular linguistic contexts. Inflected forms of lexemes, *words* in PFM parlance, are the morphophonological input to the phonological component, and as such, they are completely compiled structurally within the lexicon, with only (automatic) allophony and any external sandhi (segmental and/or suprasegmental) left to be resolved.

Since MAP specifications are essentially morphomic indices, it is an error to portray them as morphosyntactic properties on a par with {PER}, {TNS}, {MOOD}, etc., as in the following (cf. (8), above):

$$\begin{array}{ll}
 (16) \quad \text{RR}_{\text{pref},\{\text{AGR1}:\{\text{PER:1,MAP:A}\}\},\text{V}(\langle X,\sigma\rangle)} & =_{\text{def}} \langle vX,\sigma\rangle \\
 \text{RR}_{\text{pref},\{\text{AGR2}:\{\text{PER:1,NUM:sg,MAP:B}\}\},\text{V}(\langle X,\sigma\rangle)} & =_{\text{def}} \langle mX,\sigma\rangle \\
 \text{RR}_{\text{pref},\{\text{AGR2}:\{\text{PER:1,NUM:pl,MAP:B}\}\},\text{V}(\langle X,\sigma\rangle)} & =_{\text{def}} \langle gvX,\sigma\rangle \\
 \text{RR}_{\text{pref},\{\text{AGR2}:\{\text{PER:2,MAP:B}\}\},\text{V}(\langle X,\sigma\rangle)} & =_{\text{def}} \langle gX,\sigma\rangle
 \end{array}$$

Even though this use of a putative feature {MAP} would allow the realization rules to be stated generally over the class V without fear of contradiction, it is questionable to place a purely morphological feature side by side with, or in (partial) replacement of, feature values that determine its distribution, e.g., {TNS, MOOD, ASP}. This intermingling of the morphomic and morphosyntactic would actually introduce redundancy into the statement of the rules, since the value of {MAP} is predictable from conjugation class, and in the case of 1st and 3rd conjugation verbs, the value of evidential {EVID} modality.

The realization rules in (17) give the default associations between grammatical relation and a marker selected from the corresponding MAP set:

$$\begin{array}{ll}
 (17) \quad (a) \quad \text{RR}_{\text{pref},\{\text{PER:1}\},\text{V}(\langle X,\sigma\rangle)} & =_{\text{def}} \langle vX,\sigma\rangle \\
 (b) \quad \text{Where } \alpha=1 \text{ or } 3, & \\
 \quad \text{RR}_{\text{pref},\{\text{AGR2}:\{\text{PER:1,NUM:sg}\}\},\text{V}_\alpha(\langle X,\sigma\rangle)} & =_{\text{def}} \langle mX,\sigma\rangle \\
 (c) \quad \text{Where } \alpha=1 \text{ or } 3, & \\
 \quad \text{RR}_{\text{pref},\{\text{AGR2}:\{\text{PER:1,NUM:pl}\}\},\text{V}_\alpha(\langle X,\sigma\rangle)} & =_{\text{def}} \langle gvX,\sigma\rangle \\
 (d) \quad \text{Where } \alpha=1 \text{ or } 3, &
 \end{array}$$

$$RR_{\text{pref},\{\text{AGR2:}\{\text{PER:2}\}\},V\alpha}(\langle X,\sigma\rangle) =_{\text{def}} \langle gX,\sigma\rangle$$

Rule (17a) is stated quite generally, independent of grammatical relation, and since its exponent can appear on verb lexemes of any conjugation, it may be viewed as a default marker which appears to index any {PER:1} argument, just in case no narrower rule in the prefix block is applicable. In this way, since (17a) applies as a relative default, while (17d) applies only to a proper subset of the lexemes to which (17a) may apply, the precedence of (17d) over (17a) is captured without singling out the former as applying in a special, expanded, mode.

In order to incorporate the association shown in (15) into PFM without unnecessary redundancy, it is necessary to treat the MAPs as one would the index ‘strong’ or ‘weak’ with respect to stem, a designation which plays only an indirect role in the definition of paradigm functions. The identity of the markers associated with the 2-term under inversion and the 1-term without inversion must be captured. Such systematic syncretism may be handled in PFM by means of *rules of referral* (Stump 1993, 2001:ms. p. 67-68, 82-84), which point the exponence of a property-set toward an independently motivated rule of exponence. The format for a rule of referral is slightly different than that for rules of exponence, because in a sense rules of referral are ‘parasitic’ on particular rules of exponence. Adding the following rules of referral to the rules of exponence in (17), we approach the full prefix rule block:

$$\begin{aligned} (18) \quad (a) \quad & RR_{\text{pref},\{\text{AGR2}\},V4}(\langle \sigma \rangle) &=_{\text{def}} \langle \sigma \rangle / \{\text{AGR1}\} \\ (b) \quad & \text{Where } \alpha=1 \text{ or } 3, \\ & RR_{\text{pref},\{\text{AGR2,EVID:yes}\},V\alpha}(\langle \sigma \rangle) &=_{\text{def}} \langle \sigma \rangle / \{\text{AGR1, EVID:no}\} \end{aligned}$$

The notation  $\sigma/\rho$  is meant to be interpreted as defining the well-formed property set which is just like  $\sigma$ , except the feature mentioned in  $\rho$  is given the value mentioned in  $\rho$  in place of any value it may have in  $\sigma$ . Thus, in (18a), in order to realize a 2-term argument on a fourth-conjugation verb, look to what would ordinarily be done to a 1-term argument with the same {PER, NUM} values. Similarly, in (18b), for verbs of the first or third conjugations, in order to realize a 2-term argument in the evidential mode, look to what would ordinarily be done to a 1-term argument with the same {PER, NUM} values in the non-evidential mode.

Rule (18b) is relatively unproblematic, because the class index is held constant throughout. In (18a), however, the referral is from class V4 to V2, perhaps, or equivalently to V1 or V3, provided we restrict our attention to extensions of {EVID:no}. In short, one referral (18b) is *vertical*, i.e., within-paradigm, but the other (18a) is *horizontal*, i.e., across paradigms. It is not clear whether horizontal referrals are to be ruled out in principle, or if they are merely difficult to formalize. If the latter, we are perhaps finished here. If the former, however, it is worth considering alternative formalizations of the MAP generalization in (15), made first in terms of morphological metageneralizations:

- (19) (Morphomic) MAP selection rule  
Associate a 2-term argument with MAP A.
- (20) Morphological metageneralization
- (a) If  $X \in V4$ , then for any  $RR_{pref}$  applicable to X,  $(19) \in \phi_{RR}$ <sup>9</sup>.
  - (b) For any root-feature pairing  $\langle X, \sigma \rangle$ , if  $X \in V1 \vee V3$ , and if  $\sigma$  is an extension of {EVID:yes}, then for any  $RR_{pref}$  participating in the definition of  $PF\langle X, \sigma \rangle$ ,  $(19) \in \phi_{RR}$ .

This use of morphological metageneralizations departs from their use in Stump (2001:ms. p. 69-74), where they are limited to examples of morphophonological rules. The function of metageneralizations, however—that they are ‘rules about rules’—would seem to allow for the possibility of generalizations of this sort to have an analogous place in the grammar.

It may well be that the two conditions for ‘inversion’ belong to different formal structures (see Janda and Joseph (1986), Stewart (in progress)), that is, that the limited ‘inversion’ in classes V1 and V3 is better handled with a rule of referral as in (18b), but the categorical ‘inversion’ in class V4 is better handled with a morphological metageneralization. Since it would portray the formal identity of the MAP B markers to posit a set of realization rules bearing the class index V4 and stating the exponents directly, certainly an account closer to one of the above would be preferable.

## 6. Conclusions

As stated at the outset, there are two phenomena in Georgian argument indexing that challenge a morpheme-based account, the so-called ‘inversion’ construction and disjunctivity. The present analysis builds on the best of what has gone before in the treatment of these facts, and in fit of conservatism, an account is developed here which relies on independently motivated formal mechanisms within PFM theory in hopes of arriving at an adequate description of the data.

A call for an explicit theory of lexeme classes is made, with Network Morphology and certain developments of HPSG as possible guides to the characterization of subclasses and inheritance. With a clear and constrained theory of lexeme classification, the relative narrowness of competing realization rules can better be assessed, since there indeed appear to be cases where a comparison of property-set indices alone is inconclusive for the PDH.

Since some version of the Separation Hypothesis is already assumed in a realizational morphological theory such as PFM, it is reasonable to reaffirm the validity of the Hypothesis whenever form-function mismatches seem to arise. The patterning of

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<sup>9</sup>  $\phi_{RR}$  is a set of rules constraining the evaluation of a rule RR.

markers in the ‘inversion’ construction shows that the markers are not isomorphic linguistic signs, but rather they are formal elements, deployed for various functions in the synchronic grammar of modern Georgian.

Finally, the goal of this paper was to lend support to the strongest possible version of the PDH, whereby competition between any two applicable rules in the same block is always decided in favor of the narrower competitor. This competition operates in a principled fashion, given a consistent rule format, a distributionally based way to determine block membership, and explicit definitions of both narrowness and applicability. A PFM account need not relax its assumptions to handle the Georgian case. Expansion schemata or extrinsic ordering may yet be needed, but we should resist their premature adoption.

**Appendix - Morphosyntactic (MS) Properties in Georgian**

<i>Feature</i>	<i>(abbreviation)</i>	<i>Permissible values</i>
Evidential	(EVID)	yes, no
Aorist	(AOR)	yes, no
Future	(FUT)	yes, no
Mood	(MOOD)	indicative, subjunctive (indic, subj)
Past	(PAST)	yes, no
Agreement		
-‘(Logical) Subject’	(AGR1)	(sets of MS properties)
-‘(Logical) Object’	(AGR2)	(sets of MS properties)
Person	(PER)	1, 2, 3
Number	(NUM)	singular, plural (sg, pl)

Along with these feature-value pairs, the paradigm of the Georgian verb is defined by the following feature *co-occurrence restrictions*:

- a.  $\sigma$  is an extension of {EVID:yes}, iff neither {AOR} nor {FUT} are defined.
- b. Where  $\alpha = \text{yes or no}$ ,  $\sigma$  is an extension of {FUT: $\alpha$ } iff {EVID:no} and {AOR} is undefined.

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