Locality, Cyclicity and Markedness in Georgian Verbal Morphology*

0. Introduction

This paper examines person and number agreement in Georgian, a language with extremely complex verbal morphology whose agreement system has received considerable attention due to the challenge it has been perceived to pose for morphosyntactic theory. I show that despite its notoriety, Georgian agreement is in fact a well-behaved system. Its infamous 'idiosyncracies' follow from an interaction among locality, cyclicity and markedness in narrow syntax. However, this result requires two significant modifications to the standard minimalist treatment of phi-features, both of which I argue are independently necessary. One modification concerns the distribution of phi-features, specifically, the standard assumption that phi-features are packaged as 'bundles', such that they are always found in full sets (typically, person, number and gender). I provide empirical evidence for the claim that subsets of the phi- complement can be distributed across several functional projections (FP) (cf. Ritter 1992, 1993, 1995, Taraldsen 1994, Sigurðsson 1996, Ali 1997, Bejar 1998, Bejar 2000). Thus, rather than an FP having a full set of phi-features, FPs can have subsets of phi-features with the complete set spread across a clause. The other modification concerns the internal representation of phi-features. I claim that phi-features are hierarchically structured, along the lines proposed by Harley and Ritter (1998), (henceforth H&R), for morphological features. This internal structure makes it possible to speak concretely of markedness in the syntax, a facet of natural language which has resisted formalization in transformational syntax, but which is known to be a crucial factor in many complex morphosyntactic systems. I propose a markedness theorem which states that an

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unmarked feature cannot satisfy a probe (Bejar 1998, 1999, 2000, to appear), and show that this contributes considerably to the surface complexity of Georgian agreement morphology, to the extent that complexity has been misconstrued as idiosyncracy.

The paper is structured as follows. In section 1 my claim regarding the hierarchical structure of phi-features is made explicit. In section 2 the motivation for distributing phi-features across multiple functional projections is examined. In section 3 the Georgian data are introduced. In section 4 the analysis of basic Georgian agreement is presented, and in section 5 the analysis is extended to cover the so-called 'inverse' agreement pattern. In section 6 I outline certain consequences of the analysis and address problems raised for future research.

1. The structure of phi-features

In recent incarnations of the minimalist framework (Chomsky 1998, 1999), agreement is construed as the reflex of a syntactic relation triggered by uninterpretable phi-features on core functional projections (T, *v*, etc.). The agreement relation is implemented as an operation, Agree, which works as follows: an uninterpretable phi-feature activates a probe which scans a finite search space for an active DP with interpretable phi-features against which the uninterpretable set can be matched, valued, and perhaps deleted. An active DP is one which bears an uninterpretable case feature which has yet to be valued in the computation. The same probe just described for Agree is also responsible for valuing the uninterpretable case feature on the active DP (thereby deactivating the DP). This intertwining of case and agreement as reflexes of a single operation in the computation captures the pretheoretic intuition that case and agreement are both instantiations of the same head-dependent relation, and it accounts for many empirical observations made in the literature about the intimate relationship between case and agreement (for example Schütze 1997).

It is striking that under this formulation of case theory, phi-features are integral to case assignment, significantly elevating their status compared to previous versions of the framework. In effect, it can be said that phi-features drive the A-system in narrow syntax, thus making it all the more important to achieve an adequate understanding of their properties.

The standard view is that uninterpretable phi-features are bundled together as a set and activate a single probe.[1] The notion of a bundle is informal, and I am aware of no previous work attempting to articulate it. However, Chomsky (1998) explicitly claims that phi-features on a single head cannot be checked selectively, and are subject to an 'all-or-nothing' condition. In other words, it is not possible for [person] to be active while [number] is inactive, or vice versa. This paper argues that the 'all-or-nothing' view is overly simplistic, and the 'bundle' view of phi-features is simply inadequate. In section 2 it will be seen that the 'bundle' view cannot capture a range of data that is accounted for if the set of phi-features is distributed across multiple FPs. But more generally, the 'bundle' view is inadequate because it fails to capture the internal structure of phi-features, which I show in section 3 to be crucial to the computation (see also Bejar 1998, 1999, 2000, to appear). This internal structure is developed in the following sections.

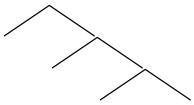
1.1 Deriving markedness

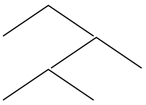
The question of how features are assembled into lexical items (LI) has not entered into minimalist research. Rightly or wrongly, it has been assumed that the internal structure of heads is irrelevant to syntax. This seems like an oversight in a framework where syntax is almost exclusively feature-driven. But even granting the possibility that, in fact, the composition of LIs is not significant for syntax, the problem remains that uninterpretable features on functional heads — the features that drive movement and agreement — are not intrinsic features of LIs. In Chomsky (1995) they are selected upon entering the numeration, as are LIs. Chomsky does not address in any detail the mechanism by which uninterpretable features are incorporated into LIs.

[1] In principle, there is one set of phi-features per head. However, multiple case-checking analyses (Ura 1996, and others) could be recast in terms of multiple sets of phi-features. For the purposes of this paper, I ignore this possibility.

In the absence of specific proposals to the contrary, I assume that the only operation available for doing so is Merge. Merge is defined as a recursive operation that creates a complex binary structure from two simpler structures (Chomsky 1995, 1998). By virtue of being binary, the output of successive applications of Merge is necessarily a hierarchically structured syntactic object, as in (1).

(1) monotonic merge non-monotonic merge





Thus, it follows from properties of Merge that the uninterpretable features on a functional head must be hierarchically structured.

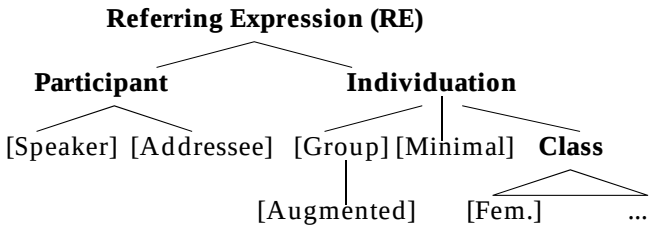
According to this view, the overall structure of feature hierarchies follows from basic properties of the derivation, however the exact position a given feature will have in the hierarchy does not follow in an obvious way from properties of Merge.[2] But this problem is not unique to features; at the level of heads the same problem arises, thus necessitating selection of one sort or another to determine what merges where. Something like selection is necessary for features as well. Although this is uncharted territory, the challenge of charting the selectional properties of features may benefit from the small body of work on morphological feature geometries that has emerged over the past decade. (Bonet 1991, Harley 1994, Ritter 1997, Harley and Ritter 1998, Bejar 1998, Cowper 1999, Heap 1999).

1.2 Morphological feature geometry

The literature on morphological feature geometries follows in the tradition of models developed in phonological feature theory (Clements 1985, Sagey 1986, Rice 1994, and many others). The geometry proposed by H&R (1998) is shown in (2).

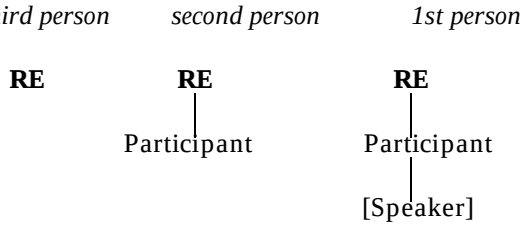
[2] Unless we consider selection to be a condition of Merge.

(2)

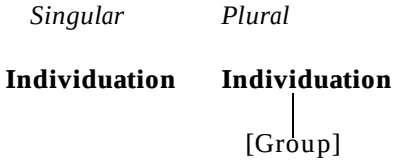


Crucially, (2) forces a shift away from the standard view of phi-features. The primitives of the geometry are not familiar categories like ‘first person’, ‘second person’ etc. Such labels are instead cover terms for feature clusters (or the lack thereof) within an organized space, as in (3) and (4).

(3) Person:



(4) Number:



The contrasts and dependencies encoded in this hierarchy are based on cross-linguistic evidence such as implicational universals (Greenberg 1963) and language-internal evidence such as feature co-occurrence restrictions and impoverishment facts (Bonet 1991, Harley 1994, H&R 1998).

In phonological feature geometry, the hierarchical organization of features has been used to evaluate markedness and compexity (Causley and Rice 1998, Causley 1999). This has been borrowed into morphological geometries as well. Markedness is represented by the presence or absence of structure. The more structure a representation has, the more marked it is. In (3) and (4), third person and singular are both unspecified features; they are represented simply by bare organizing nodes. Second person and plural are one degree more marked, as their organizing

nodes each have a structural dependent. The most marked representation given below is first person, whose organizing node has two dependents.[3]

1.3 Markedness in the computation: The Markedness Theorem

For H&R, the geometry is used to motivate a theory of paradigms and inventories, but they do not incorporate the geometry into the computational component. Nor do they address the ontological status of the feature-geometry, i.e. what/where exactly is it? My working assumption is that the geometry is not, in fact, a thing-in-itself. Rather, it is a way to depict selectional relations between features.[4] At the phrasal level, selectional properties manifest themselves as hierarchical structural relations, i.e. a selectee merges as the sister of its selector. My claim is that the same holds true in selection among phi-features.

By hypothesis, the relations captured by the geometry are reflected in such grammatical phenomena as the construction of lexical items, the order in which items in numeration are merged, and perhaps in semantic composition (Cowper and Hall 1999). Thus, it is a central claim of this paper that phi-features, i.e. formal features in the computation, have internal structure along the lines proposed by H&R (though with differences of detail that I do not address in this paper[5]). By hypothesis, this structure falls out from properties of Merge, and is driven by the selectional requirements of the features themselves.

An interesting consequence of this approach is that it essentially builds the notion of markedness, at least in a structural sense, into the syntax.[6] Markedness has played a prominent role in capturing both language-internal and cross-linguistic generalizations in 20th century

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[3] The geometry in (2) is designed to capture a wide range of cross-linguistically available inflectional categories, many of which are irrelevant for our purposes. The crucial content of the geometry, for us, lies in three of the generalizations captured by (2): (i) person dominates number; (ii) plural is marked and singular unmarked; and (iii) participants are marked, and 3rd person is unmarked.

[4] The question of where these relations come from is a much larger problem than can be addressed here. If it should turn out that there is little or no variation cross-linguistically with respect to the hierarchical relations between feature, then it might be said that they are given by UG. However it seems more likely that there will be variation, and some theory of how these contrasts are acquired will be required.

[5] For example, their geometry is not binary branching, but can easily be recast as a binary branching structure.

[6] The notion of 'markedness' has a range of meanings, many of which are not intended in this paper. I am referring strictly to structural markedness, which is tantamount to structural complexity. Notions such as frequency or peculiarity of usage are not relevant to this discussion.

linguistics, however within formal generative syntax very little attention has been given to it. In non-formal frameworks, complex morphosyntactic data has been successfully described in terms of markedness hierarchies of various sorts. The great strength of this approach has been the ability to capture otherwise elusive descriptive generalizations, but there has always been a problem with respect to formalization. A markedness 'hierarchy' has no concrete status in the grammar; there has been no clear articulation of *where* such hierarchies exist, or how they intervene to create the effects that have been attributed to them. The proposal in this paper is that structural markedness is a property of C_{HL} (Bejar 1998, 1999, 2000, to appear, cf. Branigan and Mackenzie 2000) it is simply a way of referring to the structural complexity of syntactic objects, specifically (for our purposes) phi-features.

In sections 3 and 4 I will show that markedness is crucial to the analysis of Georgian agreement morphology. I show that the complexity of the agreement paradigm can be reduced in large part to a markedness effect that results from what I propose may be a property of UG, namely, that only marked features can satisfy a probe (cf. Bejar 1998, 1999, 2000, to appear). This proposal, which I refer to as the Markedness Theorem, follows without further stipulation from the premise that what we have been calling an unmarked feature corresponds to the absence of structure, i.e. it's *not there*. In other words, there is systematic underspecification in the formal features of the computational component, and an absence of specification cannot enter into syntactic operations.

1.4 Summary

I have argued that phi-features, by virtue of being syntactic objects, must be assembled via merge, and therefore must have hierarchical structure. It was proposed that the details of this structure follow from selectional requirements of the individual features, as captured by independently developed morphological feature geometries. Structural hierarchy makes it possible to speak concretely of markedness in the computational component, and the Markedness Theorem enables markedness effects to be a direct result of properties of the computation.

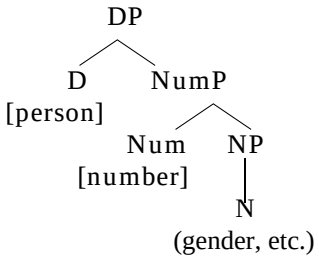
2. Distributing phi-features

In this section I examine the distribution of phi-features. I begin by reviewing the distribution of interpretable phi-features in noun phrases in section 2.1, then turn in 2.2 to the distribution of uninterpretable phi-features.

2.1 The distribution of interpretable phi-features

Ritter (1992, 1993, 1995) has argued that phi-features in noun phrases are not bundled together on a single head, but rather are distributed across the projections of the nominal complex, as in (5).

(5)



In (5), D is the locus of deictic features (including person), Num is the locus of number, and N is the locus of lexically idiosyncratic features like gender. The proposal builds on previous work (Brame 1982, Abney 1987, and others) which treated pronouns as DPs with no lexical content, (i.e. no NP). The original intuition was that the phi-features of pronouns are situated on D. Ritter extends this hypothesis to include the functional projection NumP, giving evidence from various languages, including Hebrew, Hungarian, and Haitian Creole (see the articles cited above for details).

It is particularly interesting that in (5) the hierarchical pattern in H&Rs geometry seems to be reflected in the overall structure of the DP. On the assumption that the geometry is a representation of selectional relations between features, the distribution of phi-features within the

DP suggests that the selectional relations between number, person and gender features can be 'satisfied' either by direct Merge (in which case a complex feature structure is created) or by command relations at the phrasal level. In a very general sense, person commands number, and number commands gender, regardless of which pattern is instantiated.[7]

2.2 Distribution of Uninterpretable phi-features

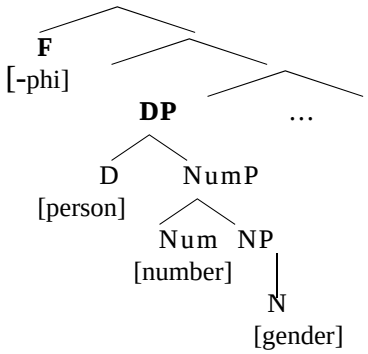
In this section I argue that uninterpretable phi-features, like interpretable phi-features, can be distributed across more than one FP. Section 2.2.1 argues that, in principle, individual phi-features must be able to operate independently of each other, i.e. they need not act in unison. In sections 2.2.1 and 2.2.2 I give empirical evidence that the phi-set can be distributed across multiple FPs.

2.2.1 The problem of one probe, many goals

If we take seriously the internal structure of a DP like (5), and we interpret the search procedure of a probe precisely, then locality predicts that the highest head of the nominal complex is the most local goal to a probe from a higher target, as in (6).

[7] As a description of the facts, it can be stated, for example, that [person] selects for either a [number] feature or a NumP. This raises interesting questions about what is meant by 'selection' in this context. For starters, it is unclear whether we are dealing with c-selection or s-selection. Furthermore, even assuming that it is correct to ascribe selectional requirements to features, it is not so clear that it is correct to say that the selectional requirement of a feature can be satisfied by the complement of the head H of which that feature is a dependent. This is not in the spirit of the local relationship normally thought to exist between a selector and selectee. It is perhaps simpler to maintain as a null hypothesis that NumP satisfies the selectional requirements of D and not of [person]. This in turn raises interesting questions as to why it should be that the selectional requirement of the head D reflects the selectional requirements of its dependent [person], and to what extent this is generalizable to other relationships between the selectional requirements of heads and the formal features they immediately dominate.

(6)



This raises several problems. If uninterpretable phi-features do indeed act as a set and activate a single probe, then D should be the most local target, predicting that only person agreement should be possible. Of course, it is not uncommon cross-linguistically to find agreement with the full set of phi-features, so it must be possible to probe beyond the highest functional projection of the nominal complex. But if we stop to consider in detail how this must be done, a problem arises. Agreement with the full complement of phi-features presupposes that D, Num and N are all goals of a single probe. How can a single probe have more than one goal?

There are several ways one can address this problem. One possibility is to redefine the operation Probe in such a way that it can have more than one goal. This clearly does considerable violence to the framework, and is an undesirable solution which I will not pursue. Another possibility is to assume feature percolation. Chomsky (1998, 1999) argues that it is the features of the selector which project, and not the features of the selectee (or any combination of the two). If this is correct, then it is unclear that feature percolation can be a coherent component of the grammar. However, should it turn out that feature percolation is a necessary operation, then it could in principle be subsumed as a special case of Agree. Percolation requires some mechanism by which the phi-features of Num and N end up on D (or its label DP), so that they are simultaneously accessible to a single probe.[8] Technically, this could be accomplished using successive Agree operations. One might suppose that Num has an uninterpretable [gender] feature which probes its domain and is valued by the interpretable [gender] feature on N.

[8] Contra Epstein.

Similarly, D could have uninterpretable [-number] and [-gender] which probe the domain and are valued by the interpretable [number] and [gender] features on Num and N, respectively.[9] However this solution presupposes that a valued uninterpretable feature can in turn value an uninterpretable feature higher up in the clause in the same way that an interpretable feature would. For example, in the scenario just described, we might expect that the person feature on D should be an interpretable feature while the number and gender features on D would be valued uninterpretable features, and that all three would pattern in the same way with respect to a higher probe. Various complications arise as to the mechanics of this solution which are beyond the scope of this paper. While it is in principle plausible that some kind of systematic solution might be worked out, it is not at all obvious that it is any simpler or more correct than avenue that I will explore, which is discussed in the next section.

2.2.2 Cyclic agreement

The solution I propose is that, in fact, there is more than one probe. In other words, each of the uninterpretable phi- features activates a probe, making Agree a cyclic operation. In principle, this result can be derived through two routes, and as will be discussed in section 6.2, it may be the case that languages vary as to which of these instantiate. One possibility is that uninterpretable phi-features are not 'bundled' together, but rather they are distributed between separate functional aheads, as in (7a). The second is that they are indeed clustered on a single functional head, but they are not 'bundled' in the sense that they have no internal structure — instead, they have the hierarchical configuration predicted by the feature geometry, as in (7b).

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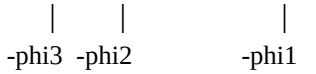
[9] If the uninterpretable [-gender] feature on Num were a dependent of [number], as in (i) then it would be sufficient for D to have an uninterpretable [-number] feature. If it were valued by Num, both the value of [number] and the value of [gender] would value [-number] on D, as in (ii), simultaneously 'percolating' the phi-features of both Num and N.

(i) ….Num[num] …. N[gender]
|
[-gender]

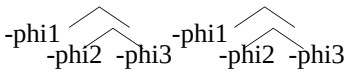
(ii) D[-number] …. Num [num]…..
|
[gender]

(7) Cyclic agree

a) [...C...[...T…[…DP…*v*...DP…]]]



b) [...C...[...T…[…DP…*v*...DP…]]]

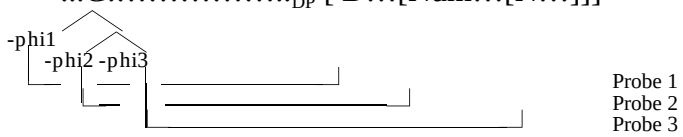


(7a) and (7b) are substantially different proposals, with very different consequences. (7a) predicts cyclic agreement in the current technical sense, where the cycle is determined by the order in which syntactic objects are created. In a clause where phi-1 is merged on a lower functional head than phi-2, the cycle predicts that phi-1 will probe before phi-2, as in (8).

(8) …$G_{[-phi2]}$ ... $H_{[-phi1]}$.. $_{DP}$ [D…[Num…[N…]]]

Agreement in (7b) is not strictly speaking cyclic. Despite the fact that it proceeds one feature at a time, as in (9), the order of operations does not follow directly from structure building in the derivation. [10]

(9) ...G……..$_{DP}$ [D…[Num…[N…]]]



[10] Note that while there is a theoretical problem with a one-to-many relation between probes and goals, there is no theory-internal problem with a one-to-many relation between targets and probes. It is already the case that we assume more than one probe is possible for a single target (for example EPP, -phi and so-called p-features can all be active on a single target (Chomsky 1998). However, the possiblity for multiple probes on a single target is not without difficulties. Prominent among these is the question of what the order of operations will be when more than one probe is active. While this question is beyond the scope of this paper, the possibility that feature hierarchies might determine this order of operations is an intriguing one.

Although a reasonable null hypothesis is that agreement in B proceeds in a top-down order, such that the order of operations is determined by the hierarchy of features, this is difficult to prove. Indeed, all possible orders (including the possibility that all phi probe simultaneously, as in the 'bundle' view) make the same prediction — that G will be a synthetic morpheme that encodes the features phi1, phi2 and phi3 of the most local active DP.

Despite the difficulty of giving direct arguments in favour of (9), there are no obvious reasons to suppose that it is incorrect. Chomsky (1998:40) argues against the possibility of such selective feature checking on the grounds that it predicts that the same agreement marker might encode features of two different arguments. This would occur if the probe for [–phi-1] caused displacement of the goal (raising to spec-G), so that the goal of [–phi-2] would be a different XP. However it is not obvious that this is a bad result. There do exist languages with agreement systems in which a single marker encodes features of both the subject and the object. And given that displacement is not a necessary correlate of Agree, there is no reason to suppose that all languages with agreement like (9) agreement should have this peculiar property.

However, there is evidence that (9) cannot *always* be correct. Specifically, there are empirical cases which are compatible with (8) and incompatible with (9). These involve languages with agreement splits. By 'splits' I mean either of two scenarios: (A) morphological splits with agreement marking split across more than one morpheme; (B) agreement asymmetries, where certain syntactic configurations partially block agreement.

2.3 Type A agreement splits

Some examples of type A splits are given in (10)-(12). In each of these examples, person and number agreement are encoded by separate morphemes.

(10) Georgian (Carmack 1997)

a. g-xedav-t
2-see-pl
'I see you(pl)

b. v-xedav-t
1-see-pl
'We see him'

(11) Standard Arabic[11]

a. y-aktub-uuna
3-write-pl
'They write'

b. t-aktub-uuna
2-write-pl
'You(pl) write'

(12) Selayarese (Basri 1997)

a. a'pa mu-halli'-÷i
what 2FAM-buy-PL
'What did you(pl) buy?'

b. i na'i la-ke'ok-i
H who 3-invite-PL
'Who did they invite?'

In such cases, the fact that phi-features are realized by more than one morpheme suggests on theory-internal grounds that more than one probe has occurred. The argument depends crucially on the assumption that morphemes are the phonological realization of syntactic heads (Halle and Marantz 1993). Thus, the split between morphemes can be construed as resulting from probes targetting distinct functional projections.

[11] I thank Abdel-khalig Ali for the Arabic data.

(13) i. $G_{[-phi]}$ ... $H_{[-phi]}$...$[DP_{[person]}$ $[NumP_{[number]}$ $[NP_{[gender]}$]]]...

ii. $G_{[-phi]}$ ...$\underline{[DP_{[person]}}$ $\underline{[NumP_{[number]}}$ $\underline{[NP_{[gender]}}$]]] $H_{[\underline{\sout{-phi}}]}$...$\underline{t}$

iii. $G_{[-phi]}$ ...$\underline{[DP_{[person]}}$ $\underline{[NumP_{[number]}}$ $\underline{[NP_{[gender]}}$]]] $H_{[\underline{\sout{-phi}}]}$...$\underline{t}$

In (13), a type-A agreement split is predicted because the probes for person and number target distinct functional heads. The probe on H is satisfied by a person feature (13i), then the DP raises to H's specifier position (13ii) and the probe on G is satisfied by the number feature (13iii). Thus, G will spell out a number agreement morpheme, and H a person agreement morpheme.

Note that the diagram in (13) *stipulates* that the [number] feature will be the goal of the second probe in (13iii), however nothing in (13) predicts this, and indeed it is unexpected on the assumption that [person] on D is a closer goal. Intuitively it might seem natural to expect that the [person] feature on D will not intervene because it has already entered into an association with H. However this intuition is not consistent with the framework as it stands. By hypothesis (Chomsky 1995, 1998, 1999) only uninterpretable features are deleted by a probe. *Interpretable* features do not delete. The [person] feature on D should therefore be the goal for both probes in (13). However, the existence of type-A agreement splits tells us that the [person] feature does not intervene in (13iii). This suggests that the uninterpretable features on the targets H and G are *not* generic [-phi] as depicted in (13). Rather, they must be specific phi-features, i.e. [-person] and [-number], so that under relativized minimality (Rizzi 1990) the [person] feature on D cannot block a probe for [-number].

A Type-A agreement split is not straightforwardly derived under the standard assumption that phi-feature sets probe as a bundle, or under the hypothesis in (9). Doing so requires the implementation of powerful morphological rules, such as fission (Halle and Marantz 1993). On the contrary, the distribution of person and number agreement across distinct functional

projections predicts the existence of Type-A phenomena and makes testable predictions concerning the locus of agreement in clause structure.

Now, suppose that in a certain construction some independent factor in the derivation prevents the DP in (13) from raising to a position where it would be the closest goal for G. This would give rise to a type-B agreement split, such that when raising is possible there will be number agreement, but not when raising is blocked.

2.4 Type-B agreement splits

Some examples of Type B splits in three languages are shown in (14)-(16). In (14) (Standard Arabic) there is number agreement in SVO word order, but no number agreement in VSO order. In (15) (Selayarese) number agreement with ergative subjects is impossible except when the absolutive argument is extracted from the clause. In (16), (Icelandic) matrix number agreement is possible with embedded nominative subjects if the nominative subject is third person, but not if it is first or second person.

(14) Asymmetry in Arabic: No number agreement in VSO (Ali 1997)

a. **t-**aktub-**u** al-banaat-u al-kitaab-a
   3.f-wrote-**sg** def-woman[pl]-nom def-book-acc
   'The women write the book.'

b. al-banaat-u **y-**aktub-**na** al-kitaab-a
   def-woman[pl]-nom **3-**write-**f.pl** def-book-acc
   '*The women* write the book.'

c. ***y-**aktub-**na** al-banaat-u al-kitaab-a
   3-write-**f.pl** def-woman[pl]-nom def-book-acc
   'The women write the book.'

(15) Asymmetry in Selayarese: No number agreement with ergative subjects, except in constructions with extracted objects.

i. Number marking of absolutive objects (Basri 1997)

a. ku-kuta÷na'ng-i-ko
1SG-ask-PL-2FAM
'I asked you (pl).', *'We asked you(sg)'.

b. ku-keke'k-i-÷i-ko
1SG-laugh-TRN-PL-2FAM
'I laughed at you (pl).', *'We laughted at you (sg)'

ii. Number marking of ergative subjects with extracted objects (Basri 1997)

a. a'pa mu-halli'-÷i
what 2FAM-buy-PL
'What did you(pl) buy?'

b. i na'i la-ke'ok-i
H who 3-invite-PL
'Who did they invite?'

(16) Asymmetry in Icelandic: No person agreement with first/second person nom. objects (Sigurðsson 1996:39)

a. Henni höfðu fundist [Tær vera duglegar]
her(D) had(3pl) found they(N) be industrious
'She found them to be industrious.'

b. Henni hafði fundist [Tið vera duglegar]
her had(dft) found you(pl) be industrious
'She found you to be industrious.'

c. *Henni höfðuð fundist [Tið vera duglegar]
her had(2pl) found you(pl) be industrious
'She found you(pl) to be industrous.'

The very existence of such partial agreement asymmetries lends plausibility to the cyclic agreement hypothesis, because if Agree applies once for the full set of phi-features, then it is not clear how certain configurations could *partially* block agreement. We would expect either full agreement, or no agreement. More importantly, data like (14)-(16) make it possible to test *where* the locus of agreement for a particular phi-feature is to be found. For example, Ali (1997) argues that the Arabic agreement asymmetry in (14) is derived from a split in the distribution of

uninterpretable phi-features across the clause, with number being checked in TP and person in a functional projection lower down. SVO in SA is a focus construction, and Ali argues that the subject moves through spec-T en route to the focus phrase (FP). Thus, in VSO order, number is not checked overtly, and as a consequence the agreement paradigm in VSO is deficient. [12]

2.5 Number over Person

It will be seen below that in Georgian, as in SA, the effect of cyclic Agree is that number is checked in a position higher than person. Whether this is universally true for languages with agreement splits is an open question (cf. Rice and Saxon 1994, Taraldsen 1994, Sigurðsson 1996).[13] The order <person, number> follows trivially from cyclicity given the assumption that the person-bearing FP is merged earlier in the derivation than the number-bearing FP. However, it is far less trivial to ask *why* person merges earlier in the derivation than number. I have argued above that the order in which phi-features are merged follows from their selectional properties.

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[12] This analysis works under the checking theory of movement (Chomsky 1995) where agreement is an instantiation of the spec-head relationship; but under the theory of agreement adopted in Chomsky (1998), the account must be revised, because failure to Move does not entail failure to agree. For Chomsky (1998), agreement is no more than the relationship between a target and a matching associate. Whether or not there is displacement of the associate is an independent matter. Each of the examples in (i) thus instantiates Agree, independently of whether there is movement.

(i) a. Three flowers have/*has emerged at the top of the tree
b. There are/*is three flowers at the top of the tree

The factors that determine displacement are poorly understood, but the question is not directly relevant to this paper. All that matters for us is that, in principle, nothing should prohibit agreement between T and S in VSO order. One possible way of restating Ali's (1997) analysis would be to make T the locus of person agreement, and F (as in Focus Phrase) the locus of number agreement. This would account for the lack of number agreement in non-focus constructions. Whatever the details of the analysis turn out to be, the generalization would hold that number is checked higher in the clause than person.

[13] These authors argue that person is higher in the clause than number, however upon closer examination I do not believe that their arguments are directly relevant to the facts under discussion in this paper. Rice and Saxon 1994 have argued that in Athapaskan person is higher than number. The argument is based on the fact that first and second person subjects raise to a position higher in the clause than third person subjects. On the assumption that third person arguments actually lack person and are really NumPs, they argue person is the pertinent feature for the higher subject position, and number is the pertinent feature for the lower subject position. However, the phenomenon discussed in these papers does not involve an agreement split in the sense intended here. For example, Athapaskan first and second person subjects control both person and number agreement, so presumably the higher position has both person and number features associated with it. The split is of a different nature.

Taraldsen (1994) and Sigurðsson (1996) propose that in Icelandic the locus of person agreement is higher in the clause than number agreement. In these papers, the agreement split is comparable to those under discussion here, however, the analysis of Icelandic as a split-agreement language has serious problems in that complicated phenomenon in quirky subject constructions are accounted for, but agreement in simple sentences (with nominative subjects) is not accounted for. Therefore it is not clear that Icelandic is a counterexample to the observation that person agreement precedes number agreement.

However, selection only makes sense as an ordering principle for *interpretable* features. Thus, whereas it appears that the selectional hierarchy encoded in the geometry is respected by the distribution of interpretable phi-features in a DP, the selectional hierarchy is not reflected in the distribution of uninterpretable phi-features across clause-level FPs. What is intriguing is that the distribution of uninterpretable phi-features in Georgian and SA seems to exactly mirror (in the sense of being the reverse of) the distribution of interpretable phi-features. I suspect that, in the end, if this observation is meaningful, an explanation may be found in the semantics of deixis (vis a vis person) and quantification (vis a vis number), but I have nothing further to say on the matter at this point.

Independent evidence for this order of operations (person agreement before number agreement) can in principle be established in cases where it is possible to determine the order of affixation of the split agreement markers. In a language where (13) holds, we would expect to find number agreement outside person agreement. It is striking that in each of the languages sampled in (10)-(12), person agreement is realized on the prefix and number agreement on the suffix. It remains to be determined whether the prefix+root is inside the stem+suffix in these examples.[14] It is not clear to me why the inner affix should always be realized as a prefix, but if that turns out to be correct, then it certainly raises questions for future research.

2.6 Summary

I have argued that Agree is a cyclic operation in languages with split-agreement morphology and agreement asymmetries. The existence of split-agreement is not consistent with the 'bundle'

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[14] This kind of evidence requires a cautionary note because it predicts something like Baker's (1985) Mirror Principle, which has been shown not to hold in all cases. Rice 2000 shows that morpheme order can be conditioned by semantic scope considerations. Basri 1997 shows that the distribution of the Selayarese plural agreement marker is conditioned by phonological factors. And in general it is well known from classic bracketing paradoxees that there is not always a straightforward relationship between the order in which morphemes are concatenate and their phonological expression However, barring evidence to the contrary, I assume that there is indeed a correlation between the distribution of morphemes and the order of operations in the syntax.

I have not yet found evidence that the person agreement marker is closer to the root than the number suffix in Georgian. Nor is there direct evidence in this regard for SA. However, SA can be compared with Hebrew which has word-internal phonological processes (lenition) which occur across the person-stem morpheme boundary, but not across the stem-number morpheme boundary (Balcaen 1999). This suggests that the person prefix is indeed closer to the root than the number suffix.

view of phi-features, but it is expected if [-person] and [-number] features may be split between functional projections. No principled predictions can be made with respect to the order of person and agreement and number agreement, however it is observed that person agreement precedes number agreement in at least two languages, and that this ordering of operations dovetails with the distribution of interpretable phi-features in DPs. We now turn to examine agreement morphology in Georgian, where the consequences of the proposal will be seen in detail.

3. Georgian

In this section, basic facts about Georgian verbal morphology are briefly reviewed. Section 3.1 is a brief outline of the agreement system. Section 3.2 is an overview of the problems posed by Georgian, and previous analyses of these problems. In section 3.3 I outline the beginnings of a solution, which is then developed in section 4.

3.1 About Georgian agreement morphology

The set of Georgian agreement markers is shown in (15). Broadly speaking, Georgian has both subject and object agreement, however it will be shown in the next section that there is rarely full agreement with both arguments.

Georgian has two agreement patterns. In the most common pattern, which I will refer to as ‘basic’, the v-set markers of (17) realize subject agreement, and the m-set markers realize object agreement. The second agreement pattern is known in the Georgian literature as the 'inverse' pattern, because instead of realizing object agreement, the m-set markers realize subject agreement. Examples from each pattern are given in (18) and (19).

(17) agreement markers (based on Anderson:143) (shaded cells are allomorphic variants)

prefix set	**v**	**m**	**h, u, e, a**
1sg	v-	m-	m-, mi-, me-, ma-
2sg	ø	g-	g-, gi-, ge-, ga-
3sg	-s, -a	ø	h-, u-, e-, a-
1pl	v-__-t	gv-	gv-, gvi-, gve-, gva-
2pl	-t	g-__-t	g-__-t, gi-__-t, ge-__-t, ga-__-t
3pl	-en (…)	ø	h-, u-, e-, a-

(18) m-set marks object in basic pattern

a. m-xedav
   1-see
   'You see me'

b. g-xedav
   2-see
   'I see you'

(19) m-set marks subject in inverse pattern

a. g-inaxav-var
   2-EVID.see-{1}[15]
   'You have seen me'

b. m-inaxav-xar
   1-EVID.see-{2}
   'I have seen you'

The distribution of the two patterns cannot be understood without further background about the verbal system. The first relevant factor is the tense-mood-aspect system, which subdivides into what are known in the Georgian literature as 'screeves'. Each cell in (20) is a screeve. Descriptively, a screeve is a conjugation for which all inflection remains constant except agreement marking.

[15] The abbreviations used for the Georgian data are: 1=first person; 2=second person; 3=third person; Pl=plural; EVID=evidential mood; PSYCH=light psych-verb. NB: curly brackets {} enclose the glosses for morphemes which are not considered to be the relevant to the analysis, but which clearly intersect with the agreement system in some respect. See sections 3.4 and 5.1 for details.

(20) screeves: tense/mood/aspect conjugations

PRESENT	IMPERFECT	CONJUNCTIVE PRESENT
FUTURE	CONDITIONAL (FUTURE)	CONJUNCTIVE FUTURE
AORIST		OPTATIVE SCREEVE
PRESENT PERFECT	PLUPERFECT	CONJUNCTIVE PERFECT

The screeves fall into three categories which are known as 'Series', as shown in (21). The classification into Series correlates roughly with tense/aspect/mood, again. As a generalization, it can be said that Series I is non-past, Series II is simple past, and series III is a preterite perfect evidential. But in fact the traditional criterion for Series membership is purely formal and has to do with case. Each Series governs a distinct case pattern. The three case patterns attested in the language are shown in (22). Series I governs nominative-accusative[16] case, Series II governs ergative-nominative case, and Series III governs dative-nominative case. The table in (23) shows the cross-classification of series, case and also argument structure.

(21) series

SERIES	**SCREEVES**		
SERIES I (pres)	PRESENT	IMPERFECT	CONJUNCTIVE PRESENT
(fut)	FUTURE	CONDITIONAL (FUTURE)	CONJUNCTIVE FUTURE
SERIES II	AORIST SCREEVE		OPTATIVE SCREEVE
SERIES III	PRESENT PERFECT	PLUPERFECT	CONJUNCTIVE PERFECT

(22) case patterns

	Subject	Object	IO
A	NOM	ACC	DAT
B	ERG	NOM	DAT
C	DAT	NOM	oblique

[16] Dative and accusative case in Georgian are morphologically identical., and in the Georgian literature they are generally both glossed as 'dative'. However I will refer to the case of structurally case-marked objects as accusative.

(23) cross-classification of series, class, and case

	Series I	Series II	Series III
Transitive	nominative subject	ergative subject	dative subject
Unaccusative	nominative subject	nominative subject	nominative subject
Unergative	nominative subject	ergative subject	dative subject
Psych-	dative subject	dative subject	dative subject

It is now possible to put the distribution of basic and inverse agreement patterns into its full context. The shaded cells in (24) represent screeves that trigger the inverse agreement pattern, all others trigger the basic agreement pattern.

(24) cross-classification of series, class, case, and agreement (shade = inverse agr.)

	Series I	Series II	Series III
Transitive	nominative	ergative	dative
Unaccusative	nominative	nominative	nom
Unergative	nominative	ergative	dative
Psych-	dative	dative	dative

3.2 The problem of Georgian agreement

The basic agreement paradigm is irregular in various respects which can be reduced to two core problems, which I refer to as the competition problem and the selection problem.

3.2.1 The competion problem

(25)

Prefix		**Suffix**	
v-	1 subject	-t	plural
m-	1 object		
gv-	1.Pl object	{-s	3 subject}
g-	2 object	{-en	3.Pl subject}

Recall from (8) that Georgian has a type-A split, with person and number agreement generally realized by distinct morphemes, as can be seen in (25). Furthermore, there is both subject and object agreement in this pattern, but as alluded to above, there is rarely full agreement with both arguments, because subject and object agreement markers often compete

for the same position of exponence. For instance, consider two prefixes found in the basic pattern: *v-* a first person subject marker, and *g-* a second person object marker. Given a sentence meaning "I see you", they cannot both be instantiated. In this particular case, the second person object marker g- wins. The attested form is *g-xedav* and not **v-xedav* , **g-v-xedav*, or **v-g-xedav*, any of which might reasonably have been expected, given the available lexical inventory. But it will be shown in section 3 that it is not always the object marker that wins. The problem this poses is how to predict, without stipulation, which argument wins the competition. I refer to this henceforth as the competition problem.

3.2.2 The Selection problem

The complexity caused by the morphological split is exacerbated by the fact that the referent indexed in each of the agreement positions seems to float. Sometimes the prefix agrees with the object, and the suffix agrees with the subject, as in (26a). But in (26b) this relation is is reversed; instead of agreeing with the object, the prefix agrees with the subject, and the plural suffix agrees with the object. Finally, in (26c) both the prefix and the suffix agree with the object, while in (26d) both agree with the subject. I refer to this henceforth as the selection problem.

(26)	a.	g-xedav-t 2-see-Pl	'We see you'
	b.	gv-xedav-t 1.Pl-see-Pl	'You(Pl) see us'
	c.	g-xedav-t 2-see-Pl	'I see you(Pl)'
	d.	v-xedav-t 1-see-Pl	'We see him'

3.3 Previous analyses

Most recent accounts of this data have been morphological, and can be reduced to rule ordering solutions.

3.3.1 Previous analyses: Harris, Anderson, Halle & Marantz, Carmack

Harris (1981) assumes that person agreement is always with both the subject and the object, but that one prefix always deletes (either because of morphological or phonological rules). Her analysis of number agreement is more systematic. She shows that the choice of which argument the plural suffix will agree with is conditioned by a markedness hierarchy (more on this in section 4). However she does not formalize an implementation of this analysis.

Anderson (1992) proposes internally disjunctive blocks of morphological insertion rules. He proposes that all of the prefixes (both v-set and m-set) belong to a single rule ordering schema. The disjunctive ordering of these rules eliminates the competition problem. For example, the marker *g-* is introduced by a rule which takes precedence over the rule introducing the first person subject marker *v-*, thereby deriving the positional blocking we saw at the top of this section in the form meaning 'I see you'. The selection problem is dealt with by a set of rules for verbal agreement, which gives object agreement precedence over subject agreement as in (27) (a simplified version of Anderson's actual rules).

(27) *(Direct Object Agreement: Obligatory)* Copy the features and referential index from a Direct Object NP to the Verb if present; if there is no Direct Object, add ø.

(Subject Agreement: Optional) Copy the features and referential index from a subject NP to the Verb if one is present; otherwise add ø).

I do not have space to do full justice to Anderson's analysis. Suffice it to say that the data is adequately described in Anderson's analysis, however the determination of precedence does not follow from anything but the rule ordering itself.

Halle and Marantz (1993) propose that the agreement features of the inflected verb are in a clitic cluster which attaches as a sister to the inflected verb. In this clitic cluster, features of all first and second person arguments in the clause are fused into a single terminal node. Lexical insertion rules, ordered by specificity, determine which of these features will be realized morphologically, thereby resolving the selection problem. So, for example, if the clause has a

first person subject and a second person plural object, feature specification in the lexicon will determine that the second person object morpheme is more specific than the first person morpheme,[17] and it will therefore be inserted. To handle the fact that there is a type-A person/number split, Halle and Marantz propose a fission rule that splits off the plural feature from the fused Clitic. Again, this analysis derives the correct surface facts, however everything hinges on carefully contrived feature specifications, and both the fusion and fission operations are idiosyncratic. The agreement pattern is not linked to any property of the syntax, and therefore there is no principled reason why one might expect Georgian, and not, say English, to exhibit this kind of agreement.

Carmack (1997) postulates morphological affix frames which compete for lexical insertion on the basis of specificity. In his approach there is no competition between individual affixes, but rather between groups of affixes. A more highly specified combination of prefix and suffix will block a less highly specified combination of prefix and suffix. So, for example, in the construction meaning 'they see you(pl)' a highly specified affix frame [g_en] blocks other semantically adequate but less highly specified frames *[g_s], *[g_t], *[_en], *[_s], *[g_], *[_t], *[_]. The postulation of affix frames is an overly powerful addition to the theory of vocabulary insertion which derives the surface facts without explaining them.

3.3.2 A general objection to rule ordering

One main goal of my approach is to eliminate, as much as possible, extrinsic morphological rule ordering, the value of which is more descriptive than explanatory. Morphological rule ordering has, in one version or another, been the dominant research paradigm in generative morphology. One significant contribution of Distributed Morphology (Halle & Marantz 1993) has been to recast conditions on rule ordering in terms of general specificity principles (cf. Kiparsky's elsewhere condition). Even so, there is a sleight-of-hand in this approach, because without a

[17] See section 3.3.2 for a general critique of this approach.

properly argued for theory of morphological features, there is room for ad hoc manipulation of specificity. Consider, for example, an agreement prefix that appears with third person, masculine, singular subjects. The feature specifications in (28) are just a subset of those that could, in principle, be consistent with such a morpheme.

(28)	(i)	(ii)	(iii)	(iv)	(v)	
	[ø]	3	3	3	+3	etc.
		sg	masc	masc	+masc	
				sg	+sg	
					-1	
					-2	
					-fem	
					-pl	

(26) shows that one can easily manipulate specificity in order to achieve the desired rule ordering results. Thus, if the analysis of this hypothetical morpheme required that it be ordered late, the feature specification in (i) would be appropriate; on the other hand, an earlier insertion rule would require one of the heavier specifications. There is, as yet, no robust theory of morphological feature specification or underspecification, thus it is easy to disguise extrinisic rule ordering as intrinsic ordering by making improper use of the paninian principle.

The ordering of operations in syntax is more constrained. Cyclicity and locality provide an explicit procedure for determining the order of operations.[18] My claim is that the morphological machinery introduced in previous analyses is unmotivated and unnecessary, because the architecture of the agreement pattern is syntactically determined. More importantly, I will show in the sections that follow that there is nothing extraordinary about the syntax of Georgian agreement; general syntactic principles suffice to derive the essential properties of the morphological system.

[18]It is difficult to introduce ad hoc orderings in syntax without either violating theta theory or introducing obviously unorthodox structures that require justification. Of course, the relative freedom with which features triggering movement are often posited introduces a different kind of sleight-of-hand.

3.3 Towards a solution

An example of the basic agreement paradigm is shown below. (29) is the paradigm for the present tense (i.e. Series I) conjugation of the transitive verb *xedav* meaning 'to see'.

(29) Present inflection: *xedav-s* 'see'

Subject	Object				
	1sg	1pl	2sg	2pl	3
1sg			**g-xedav** 2-see I see you	**g-xedav-t** 2-see-Pl I see you(pl)	**v-xedav** 1-see I see him/them
	—	—			
1pl			**g-xedav-t** 2-see-Pl we see you	**g-xedav-t** 2-see-Pl we see you(pl)	**v-xedav-t** 1-see-Pl we see him/them
	—	—			
2sg	**m-xedav** 1-see you see me	**gv-xedav** 1.Pl-see you see us	—	—	**ø-xedav** see you see him/them
2pl	**m-xedav-t** 1-see-Pl you(pl) see me	**gv-xedav-t** 1.Pl-see-Pl you(pl) see us	—	—	**ø-xedav-t** see-Pl you(pl) see him/them
3sg	**m-xedav-s** 1-see-{3.Sg} he sees me	**gv-xedav-s** 1.Pl-see-{3.Sg} he sees us	**g-xedav-s** 2-see-{3.Sg} he sees you	**g-xedav-t** 2-see-Pl he sees you(pl)	**ø-xedav-s** see-{3.Sg} he sees him/them
3pl	**m-xedav-en** 1-see-{3.Pl} they see me	**gv-xedav-en** 1.Pl-see-{3.Pl} they see us	**g-xedav-en** 2-see-{3.Pl} they see you	**g-xedav-en** 2-see-{3.Pl} they see you(pl)	**ø-xedav-en** see-{3.Pl} they see him/them

Let us now return to the competition problem. I will consider just person agreement, for the moment. In the example of the previous section, we saw that the second person object marker won over the first person subject marker. What determines this? It is not always case that the object wins, because in a sentence like (30), there is agreement with the subject, and not the object.

(30) v-xedav
1-see
'I see him'

Nor are we dealing with a markedness hierarchy of the sort found in many languages where a fixed hierarchy of feature values determines the outcome. In such a system, we would expect the second person argument to beat the first person argument, because second person is higher on the hierarchy. In such a view, whichever argument bears the second person feature should always win. This is not true for Georgian, because in (31) the second person argument fails, and the first person argument wins.

(31) m-xedav
1-see
'You see me'

With respect to number agreement, the situation is also complicated. Sometimes the number of both the subject and the object is marked, as in (32a) , and sometimes only the number of the subject is marked, as in (32b,c) .

(32) a. gv-xedav-t
1.Pl-see-Pl
'You see us'
b. g-xedav-t
2-see-Pl
'We see you(Pl)'
c. v-xedav-t
1-see-Pl
'We see him/them'

However, certain generalizations *can* be extracted. In general, it can be said that the verb tends to agree with the person of the object, and with the number of the subject. The examples in (33)

show person agreement with the object and not the subject; the examples in (33) show number agreement with the subject. and not the object.

(33) a. **m**-xedav-s ‘He sees **me**’
1-see-{3}

b. **g**-xedav-s ‘He sees **you**’
2-see-{3}

(33) a. v-xedav '**I** see him/them'
1-see

b. v-xedav-**t** ‘**We** see him/them’
1-see-Pl

c. ø-xedav '**You** see him/them'
2-see

d. ø-xedav-**t** ‘**You(pl)** see him/them’
2-see-Pl

But when the object is third person (i.e. structurally unmarked) there can be person agreement with the subject (see 33a,b) and when the subject is singular (i.e. structurally unmarked) there can be number agreement with the object, as in (34).

(34) a. **m**-xedav 'You see **me**'
1-see

b. **gv**-xedav 'You see **us**'
1.Pl-see

c. **m**-xedav-s ‘She sees **me**’
1-see-{3}

d. **gv**-xedav-s ‘She sees **us**’
1.Pl-see-{3}

e. **g**-xedav ‘I see **you**’
2-see

f. **g**-xedav-**t** ‘I see **you(pl)**’
2-see-Pl

In this respect it can be said that Georgian agreement is governed by an overarching markedness pattern. Person agreement is with the object, unless the object is unmarked for person. Number agreement is with the subject, unless the subject is unmarked for number.

Carmack (1997) points out another set of generalizations. In constructions with first person objects, both the plurality of the subject and that of the object are marked, as in (35). In constructions with second person objects, the plurality of the object is only marked if the subject is singular, as in (36). And in constructions with third person objects, the plurality of the object is never marked, as in (37). I section 4 I show that these descriptive generalizations can be derived from the general properties of the computation.

(35)
a. m-xedav 'you(sg) see me'
1-see
b. gv-xedav 'you(sg) see us'
1.Pl-see
c. m-xedav-t 'you(pl) see me'
1-see-Pl
d. gv-xedav-t 'you(pl) see us'
1.Pl-see-Pl

e. m-xedav-s ‘she sees me’
1-see-{3}
f. gv-xedav-s ‘she sees us’
1.Pl-see-{3}
g. m-xedav-en ‘they see me’
1-see-(3.Pl.T)
h. gv-xedav-en ‘they see us’
1.Pl-see-(3.Pl.T)

(36) a. g-xedav 'I see you(sg)'
2-see
b. g-xedav-t 'I see you(pl)'
2-see-Pl
c. g-xedav-t 'We see you(sg)/(pl)'
2-see-Pl

d. g-xedav-s ‘She sees you’
2-see-{3}
e. g-xedav-t ‘She sees you(pl)’
2-see-Pl
f. g-xedav-en ‘They see you(sg)/(pl)’
2-see-{3.Pl}

(37) a. v-xedav 'I see him/them'
1-see
b. v-xedav-t 'We see him/them'
1-see-Pl

c. xedav ‘You see him/them’
see
d. xedav-t ‘You(pl) see him/them’
see-Pl

e. xedav-s ‘She sees him/them’
see-{3}
f.. xedav-en ‘They see him/them’
see-{3.Pl}

3.4 Third person subjects

Suffixes marking third person agreement are rather different and some discussion is required. These are the 3.sg *-s* and 3.pl suffix *-en*, which can be found in the two bottom rows of the table in (29). These subject markers are traditionally included as part of the agreement paradigm, but in fact they have a different status from the other agreement markers because the latter are

invariant with respect to tense, whereas *-s* and *-en* are in fact synthetic with tense, as can be seen from the fact that they vary with the screeve of the verb, as shown in (38).

(38)

	3.sg subject markers	**3.pl subject markers**
present, future	-s	-en
imperfect/conditional	-a	-nen
aorist	-o	-es

In the analysis that follows, I leave this set of morphemes aside because their properties are substantially different from the other agreement markers. I have nothing further to say about the nature of the special relationship between third person subjects and tense, except to note that this relationship is found elsewhere in the language as well, and certainly deserves further exploration. A special interaction between third person subjects and tense can also be observed in the phenomenon known as *aris* cliticization (Harris 1981), where the third person copula *aris* can alternate with a clitic form *–a*, as in (38b,d). *Aris* clitization is not possible with first or second person subjects.

(39) a. es aris cemi cigni
this is my book
'This is my book.'

b. es cemi cigni-a
this my book-is
'This is my book.'

c. gela aris ekimi
Gela is doctor
'Gela is a doctor.'

d. gela ekimi-a
Gela doctor-is
'Gela is a doctor.'

3.5 Summary

In this section I have outlined the basic facts about Georgian agreement, and presented the problems these pose. It was shown that despite the considerable surface complexity of the agreement system, certain generalizations can be made which suggest that markedness is a key factor in the system. We now proceed to an analysis that derives these generalizations from properties of the syntactic component.

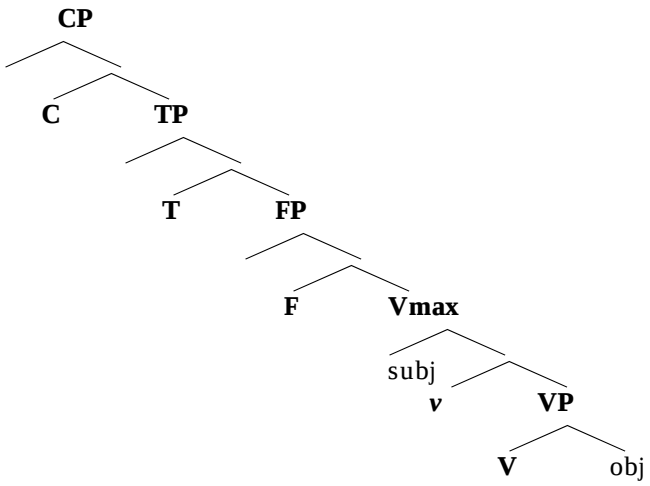
4. The analysis

The observation that markedness effects are found in Georgian is not new. Harris (1981), Carmack (1997), Tuite (1998) and others have previously observed markedness effects in the language, and have treated them as governed by abstract markedness hierarchies. But the abstract hierarchies posited in these analyses have no clear analog in a derivational framework. In this section I show how markedness can be incorporated directly into the computation (Bejar 1998, 1999, 2000, to appear). I assume that the formal features of the computational component have

internal structure along the lines discussed in section 1, and I show that the basic Georgian agreement pattern is derived from the interaction among cyclicity, locality and the Markedness Theorem.

The basic clause structure of Georgian is given in (40). The FP dominating VMax is a focus projection that enters into wh-movement, but it is not directly relevant to the analysis.[19]

(40) clause structure



My account rests on two claims. The first is that Georgian agreement is cyclic in the sense that phi-features are distributed across more than one functional projection, with the locus of person agreement being *v*, and the locus of number agreement being T. The second claim is that checking patterns in C_{HL} obey the Markedness Theorem, repeated as (41):

(41) An unmarked feature cannot satisfy a Probe

The evidence that number and person agreement occur on separate heads is in part morphological, and in part syntactic. The fact that person and number agreement are expressed by distinct morphological markers suggests that person and number activate independent probes.

[19]Juvenal Ndayiragie (pc) has suggested that the preverbal FP is a common feature of SOV languages and may play a role in agreement systems. I have not yet had the opportunity to examine this possibility for Georgian.

But it is more crucial that person and number markers can agree with distinct arguments in the same sentence, and the choice of argument varies from construction to construction, as shown in the previous discussion of the selection problem. There is no way to derive this result if person and number are probed simultaneously. The selection problem forces the conclusion that person and number agreement are derived independently of each other, and it will be shown below that independent factors in the derivation determine which argument will be co-indexed by which probe.

The assumption that person is probed before number addresses both the selection problem and the competition problem. Given this assumption, locality considerations correctly predict the attested pattern in the paradigm. The fact that objects are privileged with respect to person agreement follows naturally if the locus of person agreement is the light verb: the object is the closest (and only) goal for the probe. Whether the subject is Merged before or after the probe, it will not be in the search space, which is restricted to the domain of *v*.

(42) [*v* V NP_{obj}]

Subjects, on the other hand, are privileged with respect to number agreement, not person agreement. This follows naturally from the derivation if the locus of number agreement is a higher functional projection, namely T. In (43) we see the derivation at the point where T has merged with Vmax. Assuming that T probes for number, the closest goal is the subject, not the object. The derivation is shown in (44).

(43) [T [NP_{subj} *v* [V NP_{obj}]]]

(44)

step	**object in the computation**					**Operation**
i.			*v*	V NP_{obj}	—>	Agree (Person)
ii.			*v*	V NP_{obj}	—>	Merge NP_{subj}
iii.		NP_{subj}	*v*	V NP_{obj}	—>	Merge T
iv.	T	NP_{subj}	*v*	V NP_{obj}	—>	Agree (Number)
v.	T	NP_{subj}	*v*	V NP_{obj}		

(43) and (44) give the basic architecture of the Georgian agreement paradigm. The markedness pattern described in the section 2 arises from the interaction of locality and the Markedness Theorem. Consider first the probe for person. If the person feature on the object is marked (i.e. first person or second person) then the probe will be satisfied and an m-set agreement marker will be realized, as in the prefixes found in blocks X and Y of (45). If the person feature on the object is unmarked (i.e. third person) then no m-set agreement marker will be realized, as in block Z of (45), which has no m-set marking (only v-set marking). In other words, m-set marking is the morphological reflex of the probe for person by light *v*. If that probe is not satisfied, then no m-set marking is realized.

(45)Columns: person of object; Rows: number of subject

	Present tense Xedav-s		first person objects **X**			second person objects **Y**			third person objects **Z**		
			1/1	2/1	3/1	1/2	2/2	3/2	1/3	2/3	3/3
i.	Sg.S	Sg.O	—	**m_** 1_	**m_s** 1_{3}	**g_** 2_	—	**g_s** 2_{3}	**v_** 1_	_	**_s** _{3}
ii.		Pl.O	—	**gv_** 1.p_	**gv_s** 1.p_{3}	**g_t** 2_p	—	**g_t** 2_p	**v_** 1_	_	**_s** _{3}
iii.	Pl.S	Sg.O	—	**m_t** 1_p	**m_en** 1_{3.p}	**g_t** 2_p	—	**g_en** 2_{3.p}	**v_t** 1_p	**_t** _p	**_en** _{3.p}
iv.		Pl.O	—	**gv_t** 1.p_p	**gv_en** 1p_{3p}	**g_t** 2-p	—	**g_en** 2_{3.p}	**v_t** 1_p	**_t** _p	**_en** _{3.p}

On the other hand, v-set marking is a reflex of the probe for number by T. If the number feature on the subject is marked, then the subject constitutes the nearest goal, and number agreement will be with the subject, as in rows iii and iv of (45). However, if the subject is singular, the Markedness Theorem predicts that it will not satisfy the probe, thus allowing the probe to look further in the search space and enter into Agree with a lower plural argument, i.e. the object, as in (46). The morphological reflex of this can be see in row (ii) of (45).

(46) [T [$NP_{sg,subj}$ *v* [V $NP_{pl.obj}$]]]

4.2 Predictions

On basic minimalist assumptions, the analysis predicts that locality will always determine which argument enters into agreement. In this section I examine various constructions where this prediction can be tested.

4.2.1 Ditransitives

The prediction is borne out in ditransitive constructions, where the higher object (i.e. the indirect object) triggers person agreement, and agreement with the direct object is blocked, as shown in (47).[20]

(47) a. gv-acukeb-s am cigns
1.Pl-give-PRES this book
He is giving us this book

b. g-acukeb-t am cigns
2-give-Pl this book
He is giving you(Pl) this book

c. acukeb-s tavis cign-s cems stent-eb-s
give-PRES self's book-DAT my student-Pl-DAT
He is giving his book to my students (Harris 1981:213-214)

(48)

step	**object in the computation**						**Operation**
i.			*v*	NP_{IO} V	NP_{obj}	—>	Agree (Person)
ii.			*v*	$\underline{NP_{IO}}$ V	NP_{obj}	—>	Merge NP_{subj}
iii.		NP_{subj}	*v*	NP_{IO} V	NP_{obj}	—>	Merge T
iv.	T	NP_{subj}	*v*	NP_{IO} V	NP_{obj}	—>	Agree (Number)
v.	T	$\underline{NP_{subj}}$	*v*	NP_{IO} V	NP_{obj}		

4.2.2 Unaccusatives and Passives

The analysis predicts that single-argument constructions (unaccusatives and passives) should pattern like transitives with third person objects in that there can only be v-set agreement. In the latter case, there can be no m-set marking because the object has no structurally marked person

[20] If the IO is third person and the DO is second or first person, the Markedness Theorem predicts that the m-set marker on the verb should agree with the DO, not the IO. I was unable to test this, as sentences of this type (third person IO, first/second DO) were rejected by my consultant. This is probably a reflection of the so-called me-lui constraint, also known as the person-case constraint (Bonet 1991).

feature, so the probe for person by light *v* is never satisfied. In the former, there can be no m-set marking because either there is no light verb or it is defective (Burzio's generalization), and therefore there can be no probe for person.

(49) passives and unaccusatives: T ... [V ... OBJ]

transitives with third person objects: T ... [*v* V ... OBJ3]

(50) to (52) show that the prediction is correct. Agreement in the (a) sentences is realized by a v-set marker; the ungrammatical sentences in (b) show agreement realized by m-set marker.

(50) passive

a. v-set agreement
dacerili **v**-ar-**t**
caught 1-BE-Pl
'We are caught.' (Harris 1981: 215)
b.cf. m-set agreement
*dacerili **gv**-ar

(51) unaccusative

a. v-set agreement
da-**v**-ixrce-t
PERF-1-drown-Pl
'We drowned.' (Harris 1981:216)
b. cf. m-set agreement
*da-**gv**-ixrce

(52) transitive with third person object

a. v-set agreement
v-xedav-t
1-see-Pl
'We see him'
b. cf. m-set agreement
***gv**-xedav

4.3 Problems

The analysis developed so far correctly predicts the basic architecture of the Georgian agreement paradigm. However, there are two exceptions which need to be addressed: first person plural subjects, and 3.Sg objects.

4.3.1 First person plural subjects

The analysis predicts that in constructions with a first person subject and a 3rd person object, there should be no person agreement because the object cannot satisfy the probe for person by light *v* and the subject is not in the search space of that probe. Contrary to this prediction, first person subjects have a special v-set marker in these constructions.

(53) v-xedav
1-see
'I see him'

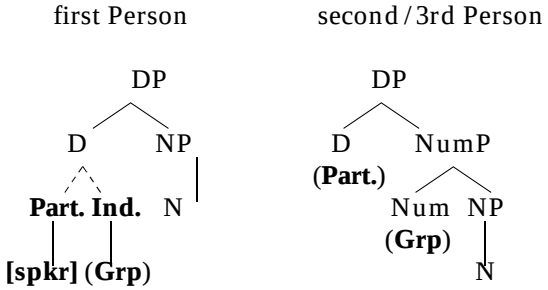
This fact is puzzling at first, however I believe that it follows from the syntactic structure of first person pronouns. The claim is that the structure of first person plurals is special. Intuitively, this makes sense. First person plurals differ from other plurals which have the meaning ‘more than one X’. A first person plural doesn’t mean more than one 'me', it is a heterogenous class (H&R 1998), denoting one speaker and at least one non-speaker.

Ritter (1992, 1993, 1995) argues that the existence of more than one DP-internal functional projection (namely DP, NumP) predicts the existence cross-linguistically of two kinds of pronouns: those that project a NumP, and those that do not. I have argued elsewhere that first person pronouns do not project a NumP.[21] The consequence of this is that instead of person and number features being merged on separate heads, they must both be dependents of the same

[21] As opposed to second and third person pronouns, which I claim do project a NumP. Note that this is inconsistent with Ritter’s use of the dichotomy. For her, neither first or second persons project NumP.

functional head (presumably D) and when D is checked both features will be checked simultaneously because they form a structural constituent.

(54)



If Georgian first person pronouns have this same property, then the exceptional facts can be explained. Because the plural feature is contained in the sister of the participant feature, the two features cannot be checked separately. Thus, when a first person subject satisfies the probe for number by T, person is checked as a free rider, thus explaining the exceptional first person subject marker in the v-set. Similarly, when a 1.pl object undergoes Agree with light *v* in the first cycle of agreement, number is checked as a free rider. This explains the special portmanteau 1.pl marker *gv-* in the m-set. No other object marker is synthetic with number because person and number features are not a constituent in other pronouns.

4.3.2 Third person plural objects

When the object is third person it is not able to satisfy the probe for number, whether or not the subject is transparent. This is an intriguing fact for which I have no solution at this point. It is interesting to note that only those objects that have acted as an agreement associate for light *v* can satisfy the probe from T. Why this should be is mysterious. I had considered that perhaps this was a result of phase impenetrability, however 3rd person objects *are* able to receive nominative case from T , so they must be accessible to a probe from T[22]. This question is left for future research.

4.4 Summary

It has been proposed that person and number agreement are separate operations in Georgian, and that person agreement occurs before number agreement. Locality determines which argument enters into Agree in both cases, and complexity is introduced by the Markedness Theorem which intervenes to create the effects described above as the selection problem and the competition problem. In effect, it can be said that there are no subject markers or object markers per se. Rather, we have markers that are a reflex of the probe for person by light *v*, and markers that are a reflex of the probe for number by T. These are what have been traditionally referred to as the m-set and the v-set markers, respectively.

5. Inverse agreement

We are now in a position to discuss the inverse agreement pattern, and the factors determining its distribution. The distribution of the two patterns is repeated below.

[22]If it were to turn out that nominative is the default case in Georgian, then the phase impenetrability argument might hold. However, at present I have no evidence for this; nor do I have evidence that light *v* is indeed a phase in Georgian.

(55) cross-classification of series, class, case, and agreement (shade = inverse agr.)

	Series I	Series II	Series III
Transitive	nominative	ergative	dative
Unaccusative	nominative	nominative	nom
Unergative	nominative	ergative	dative
Psych-	dative	dative	dative

As noted in section 2, there is a strict correlation between dative subjects and the inverse pattern. This fact has been taken to be problematic in previous investigations of Georgian (King 1994, Harris 1981) where special lexical and transformational rules have been proposed to account for the distribution of the inverse pattern. I will show that this distribution is not only unproblematic, but in fact, like the basic pattern, it follows directly from properties of the derivation. I consider the alternation between basic and inverse agreement to be a type-B split, i.e. a structurally sensitive agreement asymmetry. That the conditioning environment for this alternation must be syntactic is suggested by the perfect correlation between the inverse pattern and dative subject constructions.

5.1 Deriving inverse agreement

An example of the inverse agreement paradigm is shown below.

(56) Inverse agreement pattern: Evidential: *u-naxav-s* 'see'

Subject	Object				
	1sg	1pl	2sg	2pl	3
1sg	—	—	**m-inaxav-xar** 1-EVID.see-{2} I have seen you	**m-inaxav-xar-t** 1-EVID.see-{2}-Pl I have seen you(pl)	**m-inaxav-s** 1-EVID.see-{3} I have seen him/them
1pl	—	—	**gv-inaxav-xar** 1.Pl-EVID.see-{2} we have.see you	**gv-inaxav-xar-t** 1.Pl-EVID.see-{2}-Pl we have seen you(pl)	**gv-inaxav-s** 1.Pl-EVID.see-{3} we have seen him/them
2sg	**g-inaxav-var** 2-EVID.see-{1} you have seen me	**g-inaxav-var-t** 2-EVID.see-{1}-Pl you have seen us	—	—	**g-inaxav-s** 2-EVID.see-{3} you have seen him/them
2pl	**g-inaxav-var-t** 2-EVID.see-{1}-Pl you(pl) have seen me	**g-inaxav-var-t** 2-EVID.see-{1}-Pl you(pl) have seen us	—	—	**g-inaxav-t** 2-EVID.see-Pl you(pl) have seen him/them
3sg	**v-u-naxav-var** 1-EVID.see-{1} he has seen me	**v-u-naxav-var-t** 1-EVID.see-{1}-Pl he has seen us	**u-naxav-xar** EVID.see-{2} he has seen you	**u-naxav-xar-t** EVID.see-{2}-Pl he has seen you(pl)	**u-naxav-s** EVID.see-{3} he has seen him/them
3pl	—	—	—	—	**(u-naxav-t)**[23] EVID.see-Pl They have seen him/them

There are several differences between the inverse and basic agreement patterns which are beyond the scope of this paper. For example, I will not discuss the object markers *-xar* and *-var* (these are actually the first and second person forms of the verb meaning 'to be').[24] Our focus is the property that has received the most attention in the literature, and the one that is considered to be the main characteristic of the inverse pattern: that m-set markers realize subject agreement rather than object agreement in the inverse pattern. It is worth recalling that in section 3 we arrived at the conclusion that there are no subject markers and object markers *per se* in the language; there are merely markers that realize the the agreement relation on T (v-set) and markers that realize the agreement relation on light *v* (m-set). In other words, the special property of the inverse pattern has been incorrectly stated in previous analyses.

[23]This form is an innovation. For many Georgian speakers, inverted 3 subjects do not show plural marking (Carmack 1997).

[24]I speculate that these forms spell out the light verb that introduces the dative argument.

We saw in the discussion of basic agreement that m-set markers always realize object agreement, because subjects are merged outside the light *v* and are therefore never in the search space of a probe targetting light *v*. It is therefore revealing that in the inverse pattern the reverse is true: m-set markers typically encode the features of the subject. This suggests that in the inverse constructions, the subject *is* in fact in the search space of light *v*, and is more local than the object. The fact that the subject of an inverse agreement construction must be dative reinforces this hypothesis, because as will be seen in section 4.4, dative arguments in Georgian are always merged in a position below *v* but above the lexical verb.

Thus, the crucial factor underlying the agreement split in Georgian is whether the light verb precedes or follows the subject. Henceforth, I refer to the light verb which is the target of the probe for person as *v** to distinguish it from other light verbs (applicatives, malefactives, etc.) which may enter into argument structure but are not correlated with case, Agree, or the external argument position. When the subject is merged above *v**, the basic agreement pattern is attested; when the subject is merged *below v**, the inverse agreement pattern is attested. If this hypothesis is correct, then there is really only one agreement mechanism in Georgian: *v** probes person, T probes number. The difference between the inverse and basic paradigms is a type-B asymmetry that follows from other properties of the derivation.

(57) Basic pattern

...SUBJ.... *v* .....V....OBJ ....

(58) Inverse pattern

....*v*.... SUBJ ....V .... OBJ ....

By hypothesis, evidentials have the same structure as psych-verbs (see McGinnis 1997).[25]

(59) evidential: T …*v*...[DAT …*v* EVID… [V …OBJ]
psych-verbs: T …*v*...[DAT …*v* PSCYH… [V …OBJ]

(60) shows the basic configuration that underlies the inverse agreement pattern. Markedness Theorem aside, the subject is the nearest goal for both probes.

(60)

cycle 2
cycle 1
Psych-verb: T …*v**...[SUBJ …*v* … [V …OBJ]

As in the basic agreement pattern, the Markedness Theorem derives the details of the paradigm. When the subject has marked features of both person and number, m-set agreement is with the subject, and number agreement is also with the subject.

(61) gv-inaxav-var
1.pl-EVID.see-(2)
'We have seen you.'

(62) (you) mo-g-cons-t pelamusi
You-DAT preV-2-like-pl pelamusi
'You(pl) like pelamusi.

However, if the subject is third person (unmarked), then the probe for person by *v** will extend past the subject, and the m-set marker can agree with the person of the object (if it is a marked person).

[25]Note that Marantz (cited in McGinnis 1997, note 3) proposes that psych-verbs and Series III verbs have the same structure, but its not clear to me what his overall picture of the structure is.

(63) v-unaxav-var
1-EVIDsee-1
'He has seen me.'

(64) mo-v-consvar
preV-1-like
'He likes me.'

If the subject is singular, then the probe for number by T can be satisfied by a non-third person plural object .

(65) m-inaxavar-t
1-EVIDsee-Pl
'I have seen you(pl).'

(66) mo-consxar-t
preV-like-pl
'He likes you(pl).'

This analysis is supported by independent facts about psych-verbs and the Series III conjugation, as will be seen in sections 5.1 and 5.2.

5.2 Binding

The analysis of psych-predicates as having a non-thematic subject position is consistent with Belleti and Rizzi's (1988) analysis of psych-predicates in Italian. Further evidence for a non-thematic A-position in psych-predicates can be found in binding facts, and certain details of word order. Consider the sentences below, identical except for the verb class of the embedded predicates. In (67) the verb *naxos* is a normal transitive verb, governing the ergative case pattern because it is subordinate to a present tense matrix predicate. In (68) the verb *achuenos* is a psych-predicate, governing the dative case pattern.

(67) Nino-s_i unda [rom Lali-m_j naxos tavisi tavi$*_{i/j}$ televisor-shi]
N.-DAT wants that Lali-ERG see(opt) self-NOM television-on
'Nino wants Lali to see herself on TV' BUT
*'Nino wants Lali to see Nino on TV'

(68) Nino-s_i unda [rom Lali-s_j achuenos tavisi tavi$_{i/j}$ televisor-shi]
N-DAT wants that L.-DAT watch(opt) self-NOM television-on
'Nino wants Lali to watch herself on television' OR
'Nino wants Lali to watch Nino on television'

These sentences differ with respect to their binding properties, and since all else but verb class is equal between them, it is reasonable to conclude that this is the critical factor. In (67), the anaphor cannot be bound by the matrix subject, but in (68) it can. The binding pattern in (67) is the expected one, because *Lali* is a closer accessible subject than *Nino*. But (68) can be accounted for if the dative experiencer has not moved out of the verb phrase; then, given the assumption that there is no external argument in the specifier of v*, the closest accessible subject for the anaphor is the matrix subject *Nino*.

Furthermore the word order of the psych-predicate is freer than that of the regular transitive, suggesting that there is indeed an extra position in the former construction. In (67') the object anaphor cannot displace to the left of the subject, but in (68') it can.

(67') *Nino-s unda [rom tavisi tavi Lali-m naxos televisor-shi
N.-DAT wants that self-NOM L.-ERG see(opt) television-on

(68') Nino-s_i unda [rom tavisi tavi$_{i/j}$ Lali-s_j achuenos televisor-shi
N-DAT wants that self-NOM L.-DAT watch(opt) television-on

5.3 Passives

Crucially, when Georgian psych-verbs and evidentials are passivized, the inverse agreement pattern is *not* instantiated; instead we see basic agreement (Harris 1981:139).

(69) a. vanos szuls direktori
Vano-DAT hates director
'Vano hates the director.'

b. direktori sezulebulia
director-NOM hated-is
'The director is hated.'

This fact is predicted by the analysis, because a passive verb will not select v*, therefore the subject can only be the goal of T, restricting agreement to v-set marking. The same explanation holds for the fact that unaccusatives in Series III conjugation control the basic agreement pattern, not the inverse pattern.

5.4 Structural evidence

Marantz proposes that the experiencer in Georgian psych-predicates is assigned inherent Dative case by a lower *v* (cited in McGinnis 1997:5), the same light *v* that assigns dative to the indirect object of applicatives, causatives and evidentials. Thus, by hypothesis, there is a structural parallel common to all dative-argument constructions. My claim is that the crucial distinction between those which trigger the inverse pattern and those that do not is whether or not the verb projects a thematic subject position above *v*.

(70) dative constructions - basic agreement pattern

T...[SUBJ ... *v* ... [IO ... *v* ... V ... OBJ]

(71) dative constructions - inverse agreement pattern

T …*v*...[SUBJ …*v* … [V …OBJ]

Dative argument constructions in Georgian have a striking similarity, which holds whether or not the dative is a subject (psych-verbs, evidentials) or an indirect object (applicatives, etc.). Ditransitivity and the inverse agreement pattern are in complementary distribution. Ditransitive psych-verbs are simply unattested (this is true cross-linguistically). Ditransitives in the evidential conjugation invariably have their IO demoted to an oblique. If applicative *v* and evidential *v* occupy the same structural position then they are expected to be in complementary distribution.

5.5 Summary

I have argued that the inverse agreement pattern is a reflex of independently motivated structural properties. Simply put, a subject external to transitivizing *v** will derive the basic agreement pattern, a non-thematic *v** will derive the inverse agreement pattern. Binding and word order facts provide independent evidence for the existence of non-thematic *v**.

6. Consequences, Questions and Conclusions

The analysis has interesting consequences, and raises several problems for recent claims in minimalist theory (Chomsky 1998, 1999), suggesting questions for future research.

6.1 Challenges to minimalist assumptions

In this section I outline five problems raised for current minimalist assumptions (Chomsky 1998, 1999: (i) the relationship between case and agreement; (ii) the adequacy of the distinction between 'active' and 'inactive' goals; (iii) the status of intervention effects; (iv) the problem of default agreement; and (v) the notion of defective phi-sets.

6.1.1 Case and agreement

The relationship between case and agreement in Georgian does not conform to the popular claim that case and agreement are two reflexes of a single syntactic operation (Schütze 1997, Chomsky 1998). Chomsky proposes that the checking of uninterpretable phi-features simultaneously deletes both the features themselves and the structural case feature on the associate in the checking relation. But in Georgian a verb can agree with one argument and assign case to another.

(72) glex-ma datesa simind-i
peasant-ERG sowed corn-NOM
'The peasant sowed corn.'

(73) glex-i tesavs simind-s
peasant-NOM sows corn-ACC
'The peasant is sowing corn.'
(Harris 1981)

(74) MISSING SENTENCE (will send with hard copy)

In (72), the nominative object is 3.Sg, so it cannot satisfy either the probe for [-person] or the probe for [-number]. Nonetheless, it receives case from T. Similarly, in (73) the accusative object is 3.Sg, and thus does not enter into Agree, yet it is assigned case by *v**. More convincingly, (74) shows that an accusative object can enter into agreement with T. Despite the fact that it is the subject that gets nominative case in (74), the object is the goal of the number probe. These facts indicate that, in Georgian, the [-phi] system and the case system cannot be linked in the manner assumed by Chomsky, Schütze and others.

6.1.2 Active vs. inactive goals

A crucial premise of the framework set out in Chomsky (1998) is that that both targets and goals must be active in order to trigger or participate in an operation. A target or goal is made active by the presence of an uninterpretable feature. For instance, T is made active by the presence of uninterpretable phi-features, and is rendered inactive by the deletion of these features. A DP is made active by the presence of an uninterpretable case feature, and is rendered inactive by the deletion of this feature. Crucially, the deletion of the uninterpretable case feature in DP is taken to be a reflex of the same probe that deletes the uninterpretable phi-features on T (all that has been said of T holds true for *v* as well). However, the active/inactive contrast posited by the theory is not supported by the Georgian data. Under my analysis, a DP that has received case, and therefore should be inactive, is still available to be the agreement associate for a higher FP. For example, (74) shows that the accusative object is not rendered inactive even though its case has been assigned by *v**. If it were inactive we would not expect it to enter into number agreement with T.

6.1.3 Intervention effects

Certain intervention effects predicted by the theory are not attested in Georgian. This may well be related to the problem just discussed of what makes a DP active or inactive, however I leave the question open. In principle intervention effects should be observed in a structure like (75)

(Chomsky 1998: (47)) where both α and β match the probe (P), but α is inactive (because its case has already been assigned) and the probe is blocked. In this scenario, only default agreement-case can arise as a reflex of P.

(75) …P…. α ….. β

The postulation of defective intervention effects is incompatible with my analysis which preupposes that (i) an active DP with unmarked phi will not block a probe for phi, and (ii) and inactive DP with unmarked phi will not block a probe for phi. By hypothesis, the Markedness Theorem makes α in (75) transparent.

6.1.4 Default agreement

The Markedness Theorem also raises questions about default case/agreement. If an unmarked feature cannot satisfy a probe, the incidence of default agreement is greatly increased, which raises serious questions about case theory and licensing (see also Cho 2000). Originally, checking theory was designed so that an unchecked feature crashed the derivation. In recent years, the notion of default case/agreement has become increasingly popular (Schütze 1998). The analysis presented here certainly assumes that a probe which finds no goal due to the Markedness Theorem does *not* crash the derivation. This raises the question, when *does* failure to find a goal crash a derivation?

6.1.5. Defective phi-sets

Chomsky exploits the 'all-or-nothing' condition to develop an account of non-finite complementation (raising and ECM constructions), in which non-finite T has an incomplete phi-set, which makes it 'defective'. By stipulation, a defective T can check and delete phi features on a goal, but by virtue of being incomplete, it cannot delete the uninterpretable case feature that

activates the matched goal, so the goal remains active, and may undergo further raising to a higher target (matrix T in a raising construction, matrix *v** in an ECM construction).

Under my view, this typology of finite vs. non-finite complementation is untenable, because an FP with less than a full set of phi-features is not defective.

6.2 Further consequences and questions

Aside from the theoretical questions raised above, the proposals made in this paper have interesting consequences which need to be explored. Foremost amongst these are the typological predictions that follow from my claims. I see three avenues that are particularly worth pursuing. The first concerns the question of distributing phi-sets across multiple FPs. I see no reason to suppose that languages without split-agreement properties have distributed phi-features. This predicts cross-linguistic variation between languages with split-phi and languages with clustered phi. It is also relevant to ask whether languages which distribute their phi-features do so in more than one way. If so, one can wonder whether the feature hierarchy constrains the possibilities. We might expect to find a finite typology of agreement splits cross-linguistically, based on the pattern in the feature hierarchy.

The second avenue for research concerns feature structure, and its consequences for relativized minimality. If the structural property proposed here is correct, then there are a finite number of probe 'search criteria' that we might expect to encounter. For example, it is reasonable to suppose that languages may vary with respect to which component of the feature structure is probed. Languages like Georgian probe each terminal node in the phi-feature hierarchy. Other languages might select intermediate constituents as a search criterion (for

example, only the participant node, in which case only first and second person arguments could be goals). And still other languages might simply probe phi- at the root of the feature hierarchy, in which case any phi-feature in the search domain would match the probe.

I propose that English is of this last type, and the difference between Georgian agreement and English agreement can be understood largely in terms of this typology. English arguably has just one contrast in its agreement paradigm: the contrast between finding a goal and not finding a goal.

(76)

	Sg	Pl
1	-ø	-ø
2	-ø	-ø
3	-s	-ø

In every cell of the paradigm where at least one (it doesn't matter which) phi-feature of the subject is marked, there is no agreement marking. Only in the case where both person and number are unmarked is an agreement marker realized.[26] This is consistent with a probe at the root of [-phi] which is insensitive to the quality of the interpretable phi-features in the goal. It is sufficient for there to be some marked phi- to satisfy the probe.[27]

Finally, and perhaps most importantly, this research raises the question of how formal features in general assembled and distributed on heads. In principle, if the claims made here are correct, then it is reasonable to hypothesize that all formal features are part of some such hierarchical structure. If this can be shown to be true, then it may shed light on certain nagging

[26] It is tempting to say that *–s* licenses default agreement in English. However this is an open question.

[27] There is another difference between English and Georgian which is crucial to establishing the difference between them. That is the ability for an argument that has already been assigned case to remain active. We have seen that in Georgian this is possible. In English, however, this is clearly not possible. Otherwise we would expect that with 3.Sg subjects, the probe would extend past the unmarked subject and potentially be satisfied by some marked phi-feature on the accusative object.

theoretical questions concerning cyclicity and the ordering of operations (for example, if a head has more than one set of uninterpretable features — say EPP, -phi, and -T — which of these is probed first, and what is their relationship to one another?)

6.3 Conclusions

I have argued that the Georgian agreement pattern can be derived from general syntactic principles, specifically from an interaction between the structural markedness of phi-features and core locality principles. In Georgian, and other languages with complex agreement, phi-features *can* be probed one at a time, because they are not 'bundled' on a single head. Rather they are distributed across the functional projections of the clause, with [person] on one FP, and [number] on another. Given this distributed view of phi-features, phi-features are necessarily probed individually, and in an order that follows from cyclicity. A feature merged lower in the tree is probed before a feature merged higher in the tree. In other words, Agree for the full complement of phi-features is cyclic.

The analysis avoids the idiosyncrasy of previous approaches and reveals an underlying systematicity to Georgian verbal morphology which derives from general syntactic properties. Perhaps more importantly, it demonstrates that markedness effects — which have long been relegated to abstract hierarchies of one sort or another — can be derived from core principles, and can be shown to be both a source of order and a source of complexity.

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