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Two representations of case: Evidence from numerals and relatives

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This paper highlights a fundamental tension between the representations required for case syncretism versus the representations required for case priority. Case syncretism is captured with a feature decomposition based on the patterns established in Caha 2009. However, a different decomposition is required for case priority relations, which are instantiated in Bosnian/Croatian/Serbian (BCS) numeral constructions and in BCS and German relative constructions. The paper proposes that this conflict can be resolved by introducing two levels of representation into the case system: priority is determined by set structures in the syntax, while syncretism is analyzed following a post-syntactic unification operation.

1 Introduction

Numeral constructions and light-headed relatives (LHRs) in Bosnian/Croatian/Serbian (BCS) reveal a tension between representations of case syncretism and representations of case priority. Caha (2009) demonstrates that syncretism is possible only among adjacent cases ordered in a universal sequence and that this pattern can be captured through a hierarchical decomposition of case. Given the universality of the analysis, the syncretism patterns are applicable to BCS, as Caha indeed shows. However, the case interactions within both BCS numeral and relative constructions—with additional support from German—conflict with the hierarchy predicted by Caha's case sequence.[1] In particular, these examples indicate that the lexical cases (genitive, locative, dative, instrumental) clash with one another, and none can take priority over the others. By contrast, Caha's decomposition predicts that instrumental overrides dative, which overrides locative, which in turn overrides genitive. To resolve this paradox, this paper proposes that the case system should be layered to accommodate both representations: priority is determined through containment relations of syntactic set structures, while syncretism is analyzed post-syntactically after 'flattening' of the structures through a unification operation (see Ackema & Neeleman 2018). The following discussion reveals the conflict through examinations of both syncretism and priority in the relevant examples and then introduces the two-level solution.

2 Representations of syncretism

Caha (2009) formalizes the universal patterns of case syncretism as Universal Contiguity:

(1) Universal (Case) Contiguity (Caha 2009: 10)
   a. Non-accidental case syncretism targets contiguous regions in a sequence invariant across languages.
   b. The Case sequence: *nominative – accusative – genitive – dative – instrumental – comitative*.

With reference to BCS, Caha adds the "prepositional" (locative) case to the sequence between genitive and dative, noting that it is largely syncretic with dative apart from minor differences in stress.[2] While this may signal that locative is moving toward elimination from BCS, the data presented in the following sections indicate that locative does contribute to the priority paradigm and should be included in the current analysis.[3] Caha contends that a hierarchy of

[1] Other works have discussed case syncretism while analyzing the priority patterns found in numeral constructions, such as the Jakobsonian feature-based analysis in Franks 2002. However, Caha (2019b) points out that such approaches to syncretism overgenerate, instead advocating an analysis based on the hierarchical organization of case and cumulative decomposition of these cases into features.

[2] Caha (2009) specifically refers to Serbian rather than BCS, but this does not affect the data.

[3] Thanks to a reviewer for suggesting that locative examples be tested.

features based on the cumulative decomposition of case is necessary to capture the adjacency constraint on syncretism (see also Caha 2019b). This hierarchy can be adapted to the layout in (2), where each case set is built with the addition of a single identifying feature. At this point, it is worth mentioning that some analyses of case syncretism disagree with the organization of this hierarchy (e.g. Harðarson 2016; Graf 2019; Zompì 2019; Bárány 2021), suggesting that the feature decomposition may not be as incremental as Caha (2009) proposes. For now, I assume that Caha's decomposition is correct, but §4 reflects on how the two-level account proposed in this paper is compatible with these alternate views of syncretism, as well as with languages in which both the priority and syncretism patterns align with (2). I emphasize that the decomposition in (2) integrates the general patterns of syncretism for the relevant BCS cases without assuming Caha's nanosyntactic underpinnings.

(2) Features for syncretism

Nominative:	{NOM}
Accusative:	{NOM, ACC}
Genitive:	{NOM, ACC, GEN}
Locative:	{NOM, ACC, GEN, LOC}
Dative:	{NOM, ACC, GEN, LOC, DAT}
Instrumental:	{NOM, ACC, GEN, LOC, DAT, INSTR}

In line with this decomposition, **Table 1** shows the syncretisms found in the declension of *prijatelj* 'friend' (for the complete BCS nominal paradigm see Caha 2009: 238–239).

In Caha's analysis, the spell-out of syncretic forms is governed by the Superset Principle, where the inserted form contains (i.e. is a minimal superset of) the set of case features on the

'friend'		
	SG	**PL**
NOM	prijatelj	prijatelj-i
ACC	prijatelj-**a**	prijatelj-e
GEN	prijatelj-**a**	prijatelj-a
LOC	prijatelj-**u**	prijatelj-**ima**
DAT	prijatelj-**u**	prijatelj-**ima**
INSTR	prijatelj-em	prijatelj-**ima**

Table 1: BCS syncretisms.

node. Alternatively, some analyses of syncretism utilize underspecification, where the inserted form is a maximal subset of the necessary case features. Impoverishment also seems to be a valid option: deletion of the outermost feature of each successive case set in (2) would reduce that set to the features of the one before it. For the most part, the data in this paper do not bear on which method to use, but §4 contains some speculation regarding the use of impoverishment.

3 Representations of priority

In addition to syncretism, case hierarchies are commonly used to address priority patterns (Vogel 2001). This section reviews the behavior of case in both BCS numeral constructions as well as BCS and German relative constructions, which each produce the decomposition in (3) (see Assmann 2013; Himmelreich 2017 for similar systems). If priority is based on containment so that a case C_1 can override another case C_2 if C_2 is a subset of C_1, (3) predicts the following sequence of priority: NOMINATIVE < ACCUSATIVE < LEXICAL (compare Pittner 1995; Grimm 2007; Zompì 2019; Bárány 2021). As the examples will show, the lexical cases can override accusative, which in turn overrides nominative, but the lexical cases appear to 'clash' amongst themselves by hypothesis due to a lack of containment.

(3) Features for priority

Nominative:	{NOM}
Accusative:	{NOM, ACC}
Genitive:	{NOM, ACC, GEN}
Locative:	{NOM, ACC, LOC}
Dative:	{NOM, ACC, DAT}
Instrumental:	{NOM, ACC, INSTR}

Turning first to BCS higher numeral constructions (containing 'five' and above), priority is particularly noticeable in the interactions of genitive with the other cases, as it is widely accepted that numerals impose genitive case on their complements (see e.g. Franks 1995; Wechsler & Zlatić 2003; Bošković 2006). Numeral constructions are grammatical across nominative, accusative, and genitive environments, exemplified in (4) with an accusative environment (Giusti & Leko 1995; Zlatić 1997; Wechsler & Zlatić 2003).

(4) *BCS*

Vid(j)e-la	je	pet	visok-ih	žiraf-a.
see-PST.F.SG	AUX.3SG	five	tall-GEN.PL	giraffe-GEN.PL

'She saw five tall giraffes.'

On the other hand, numeral constructions are largely considered ungrammatical as complements of dative- and instrumental-case-assigning verbs, exemplified in (5) with the dative-assigning

verb *pomoći* (Franks 2002; Bošković 2006; 2008; Stjepanović 2012). I put locative case aside for now—locative only surfaces on complements of prepositions in BCS, but numeral constructions behave differently with prepositions than they do as complements of lexical-case-assigning verbs (Zlatić 1997; Wechsler & Zlatić 2003; Bošković 2006; 2008).

(5) a. ??/*Pomog-la je pet visok-ih žiraf-a.
help-PST.F.SG AUX.3SG five tall-GEN.PL giraffe-GEN.PL
('She helped five tall giraffes.')

b. *Pomog-la je pet visok-im žiraf-ama.
help-PST.F.SG AUX.3SG five tall-DAT.PL giraffe-DAT.PL
('She helped five tall giraffes.')

Notice that in (5), the result is ungrammatical whether the nominal form is genitive or dative (similarly with instrumental). The overall distribution of numeral constructions thus suggests that genitive can override nominative and accusative but clashes with both dative and instrumental.

As it happens, the BCS LHRs discussed below provide independent evidence of the same clashes (see Citko 2004). The crucial evidence for case priority comes from the examples in which the light head is omitted. We will see that a genitive head cannot be omitted when the wh-pronoun is either dative or instrumental (and vice versa), indicating a clash between these cases. By contrast, a nominative head is always optional, and an accusative head is optional with a wh-pronoun realizing any of the lexical cases. This possibility of omitting the head suggests that the case of the wh-pronoun is allowed to take precedence, again predicting the sequence NOMINATIVE < ACCUSATIVE < LEXICAL.

We now turn to a case-by-case discussion of the paradigm. Given the contrived nature of these examples, there is some variability in judgments, which is discussed in the footnotes to avoid complication. Beginning with (6), the matrix clause is nominative, while the relative clause is manipulated to assess the six case combinations. Here, the light head *ono* is always optional.[4] Since nominative is not required to surface in the construction via the head, it appears that all cases can take priority over nominative. This is because without the head, the case of the

[4] The data reflect 18 responses, distributed across Bosnian, Croatian, and Serbian informants. Regarding (6), 11 agreed that the head could be omitted, while 7 indicated a difficulty with (6b–f), though they could omit the head in other examples in line with the predictions of (3). This variation need not cause concern, as there is reportedly a meaning shift due to animacy with the omission of the head in (6). Additional research is necessary, but there is independent evidence of a similar effect in BCS *što*-relative clauses. Goodluck & Stojanović (1996) report a link between the optionality of a resumptive clitic and the inanimacy of the head it refers to. If a similar idea is extended to the examples in (6), an inanimate reading tied to the omission of the head could be marked in the nominative matrix clause, where the subject is more naturally interpreted as animate. Regarding (6a), all informants' ability to omit the head may be attributed to the frequency of this expression.

relative clause surfaces on the relative pronoun, while the nominative case of the matrix clause is not realized.

(6) Nominative

a. Ti si (on-o) što jesi.
you are that-NOM what.NOM are
'You are what you are.'

b. Ti si (on-o) što jedeš.
you are that-NOM what.ACC eat
'You are what you eat.'

c. Ti si (on-o) čega se boje.
you are that-NOM what.GEN REFL fear
'You are what they fear.'

d. Ti si (on-o) o čemu se radi.
you are that-NOM about what.LOC REFL be.about
'You are what it's all about.'

e. Ti si (on-o) čemu se rugaju.
you are that-NOM what.DAT REFL mock
'You are what they mock.'

f. Ti si (on-o) čime se baviš.
you are that-NOM what.INSTR REFL pursue
'You are what you do.'

The accusative examples in (7) reflect a similar pattern: accusative is overridden by the lexical cases, indicated by the optionality of the head in (7c–f). The head can also be omitted in (7b) when both clauses realize accusative. In (7a), however, the head is required, suggesting that nominative cannot override accusative despite the fact that *što* is a nominative/accusative syncretic form. The conflict in (7a) that would result from omitting the head crucially differs from the behavior of BCS free relatives (FRs), which allow repair by syncretism (Milićević 2011). This fundamental contrast may be attributed to a difference in syntactic structure (see Citko 2004 for a related discussion of Polish).[5]

[5] Unlike LHRs, BCS FRs require strict case matching between clauses (Gračanin-Yuksek 2008), but mismatches are tolerated if the relative pronoun realizes a syncretic form (Milićević 2011). With the LHR in (7a), the NOM/ACC form of *što* does not seem to have an impact. This contrast in repair potential may be attributed to a difference in structure between LHRs and FRs. In LHRs, distinct words (the head and wh-pronoun) spell out distinct syntactic positions; in FRs, the relative pronoun seems to spell out two syntactic positions for the matrix and relative clauses. The form of the relative pronoun in FRs could result from the fusion of two feature sets into one spell-out, potentially through the process of spanning (Svenonius 2012). This would create a context for deletion that is absent in LHRs. §4 explores how impoverishment may be well-suited to address this potential for repair limited to certain constructions.

(7) Accusative

a. Vide *(on-o) što jesi.
see that-ACC what.NOM are
'They see what you are.'

b. Tražiš (on-o) što voliš.
seek that-ACC what.ACC love
'You seek what you love.'

c. Otkrivaš (on-o) čega se bojiš.
reveal that-ACC what.GEN REFL fear
'You reveal what you fear.'

d. Vidiš (on-o) o čemu se radi.
see that-ACC about what.LOC REFL be.about
'You see what it's all about.'

e. Vidiš (on-o) čemu se rugaju.
see that-ACC what.DAT REFL mock
'You see what they mock.'

f. Voliš (on-o) čime se baviš.
love that-ACC what.INSTR REFL pursue
'You love what you do.'

In the genitive examples, the head is optional only when both the matrix and relative clauses are genitive. This further substantiates the claim that genitive takes priority over nominative and accusative but not vice versa, since nominative and accusative wh-pronouns cannot appear without the head (8a–b).[6] Similarly, the inability of locative, dative, and instrumental wh-pronouns to occur without the head in (8d–f) indicates that the lexical cases cannot take priority over genitive.

(8) Genitive

a. Boje se *(on-oga) što jesi.
fear REFL that-GEN what.NOM are
'They fear what you are.'

b. Bojiš se *(on-oga) što vidiš.
fear REFL that-GEN what.ACC see
'You fear what you see.'

[6] A reviewer points out that (8a–b) raise the question of why the genitive case of the head cannot surface, either on the wh-pronoun or on the head itself while the pronoun is deleted. This seems to be impossible for independent reasons. As initial speculations, this could potentially stem from the underlying structure of these examples or else the semantic 'lightness' of the head.

c. S(j)ećaš se (on-oga) čega se boje.
remember REFL that-GEN what.GEN REFL fear
'You remember what they fear.'

d. Bojiš se *(on-oga) o čemu razgovaraju.
fear REFL that-GEN about what.LOC speak
'You fear what they talk about.'

e. Bojiš se *(on-oga) čemu se rugao.
fear REFL that-GEN what.DAT REFL mocked
'You fear what he mocked.'

f. Bojiš se *(on-oga) čime se bave.
fear REFL that-GEN what.INSTR REFL pursue
'You fear what they do.'

The same is true for the remaining locative, dative, and instrumental examples in the appendix (with additional comments): the head is optional only with case matching between clauses. When nominative or accusative occurs on the wh-pronoun, or when any two lexical cases are paired, the head cannot be omitted. Altogether, these LHRs demonstrate a sequence of case priority where nominative is overridden by accusative which is overridden by the lexical cases. Moreover, the interaction of genitive with the other cases exactly parallels the numeral constructions.

Remarkably, German FRs provide a non-Slavic parallel of the BCS LHRs, though without instrumental case since German does not distinguish it morphologically. While some speakers adhere to strict case matching in FRs (Vogel 2001; Vogel & Frisch 2003), others display the pattern in (9) where a more complex case in the relative clause can override the matrix case. The most relevant examples are presented, but the full paradigm can be found in Himmelreich 2017: 57–59.

(9) *German* (adapted from Himmelreich 2017: 57–59)

a. Uns besucht, wen Maria mag.
us visits$_{NOM}$ who.ACC Maria likes$_{ACC}$
'Who visits us Maria likes.'

b. Ich kann gebrauchen wessen Maria sich gestern entledigt hat.
I can use$_{ACC}$ who.GEN Maria self yesterday got.rid.of$_{GEN}$ has
'I can use whoever Maria got rid of yesterday.'

c. *Maria gedenkt, wem die Terroristen vor zehn Jahren bei
Maria commemorates$_{GEN}$ who.DAT the terrorists ago ten years at
dem Anschlag Schmerzen zugefügt haben.
the attack pain caused$_{DAT}$ have
('Maria remembers who the terrorists inflicted pain on ten years ago.')

d. *Der Mann ähnelt, wessen Maria gestern in ihrer Rede
the man resembles$_{DAT}$ who.GEN Maria yesterday in her speech
gedacht hat.
commemorated$_{GEN}$ has
('The man resembles who Maria commemorated in her speech yesterday.')

As with BCS, the case of the pronoun in (9a–b) reveals that nominative is overridden by accusative, which is overridden by genitive. The ungrammaticality of (9c–d) indicates a clash between genitive and dative, as neither form of the wh-pronoun is grammatical.[7] Since the priority pattern is not restricted to either BCS or numeral constructions, these examples suggest that case priority is indeed prevalent and should be considered alongside patterns of syncretism. Moreover, Caha (2009) shows that German syncretism patterns conform to Universal Contiguity; thus, German, like BCS, displays a priority/syncretism paradox.

The containment relations between the cases in (3) easily capture the observed patterns of priority.[8] These feature sets allow all cases to override nominative, since it is contained in

[7] Himmelreich's examples were verified by four informants. Two rated (9d) with the DAT-GEN pairing as questionable rather than strictly ungrammatical. A reviewer points out that this questionability may stem from the fact that the genitive appears to be fading in German. Regardless of the explanation, it seems that genitive does not straightforwardly override dative, similar to BCS. One of these two speakers suggested that (9d) would be better as:

(i) Der Mann ähnelt **dem,** **dessen** Maria gestern in ihrer Rede
the man resembles$_{DAT}$ that.DAT who.GEN Maria yesterday in her speech
gedacht hat.
commemorated$_{GEN}$ has
'The man resembles who Maria commemorated in her speech yesterday.'

This is comparable to the equivalent BCS examples in (8e) and (5c) in the appendix where the head cannot be omitted, and both cases must be realized (see Hanink 2018 for similar German examples). Therefore (i) supports the inability of genitive to override dative.

[8] The BCS and German examples show that the pronoun consistently realizes the case of the relative clause, which either matches or is more complex than the matrix case. In addition to this pattern, Bergsma (2019) observes that some languages are strictly case matching, others require the matrix case to override the embedded case, and still others seem to have no restrictions for FRs. Regarding German, Bergsma accounts for examples similar to Himmelreich 2017 using a grafting analysis in which the pronoun is simultaneously part of both clauses. Bergsma employs Caha 2009's nanosyntactic view of case and its decomposition, but grafting could potentially work with the analysis proposed here if the structures in (10) are inserted as bundles on the pronoun. When the more complex case originates from the relative clause, the feature bundle on the pronoun contains the less complex case of the matrix clause, allowing it to be accessed. If lexical cases are paired, a clash is predicted due to a lack of containment. Similar reasoning applies to the LHRs; if the matrix case is accessible via the feature bundle on the pronoun, the head is optional. For case-matching languages, Bergsma must add two restrictions: Only graft highest node and Keep spellout. These restrictions are not directly generated by nanosyntax nor do they translate directly to a feature-bundle analysis, and further work is required to determine the implementation needed in this type of account. In terms of languages in which the matrix clause requires the more complex case on the pronoun, Bergsma uses the nanosyntactic framework to merge additional case nodes. Thus, an equivalent feature-bundle account would have to allow for the addition of case features—a task I leave to future research. While the two-level account proposed in this paper does not address

all sets. Genitive, locative, dative, and instrumental also override accusative, since all contain the set of accusative features. However, the individual sets of genitive, locative, dative, and instrumental are predicted to clash with each other, as none of them fully contain the features of the others. Crucially, this lack of containment among the lexical cases differs from the syncretism configuration given in (2). Using the system in (3), there is no obvious way to capture Universal Contiguity. Take the paradigm in **Table 1** for example: the apparent dative/instrumental syncretism cannot be analyzed here using supersets, subsets, or impoverishment, since neither set contains the other. On the other hand, the system in (2) does not capture the priority patterns observed in the numeral and relative constructions, as both dative and instrumental are predicted to override genitive. This fundamental conflict between priority and syncretism suggests that the two patterns may require different analyses, though the distribution of case features should ideally remain constant throughout.

4 A possible solution: Two levels of representation

While the feature sets in (2) address syncretism, they fail to predict the priority patterns captured by the sets in (3). However, the use of two distinct sets of case features within a single language does not contribute to a contentful theory. Instead, (10) shows that it may be possible to derive the general shape of the priority relations in (3) from the features of (2). The structural cases (nominative and accusative) remain sets of atomic features as we saw in (2) and (3); the lexical cases (genitive, locative, dative, and instrumental) contain an embedded set in addition to the NOM and ACC features. This decomposition provides a basis for the case clashes.

(10) Set structures for priority

Nominative:	{NOM}
Accusative:	{NOM, ACC}
Genitive:	{NOM, ACC, GEN}
Locative:	{NOM, ACC,{GEN, LOC}}
Dative:	{NOM, ACC,{GEN, LOC, DAT}}
Instrumental:	{NOM, ACC,{GEN, LOC, DAT, INSTR}}

Rather than considering all cases as sets of atomic features as in (2), (10) suggests that the priority relations can be derived through a decomposition into features and embedded sets. In both (10) and (3), nominative is composed of one element, accusative of two, and genitive, locative,

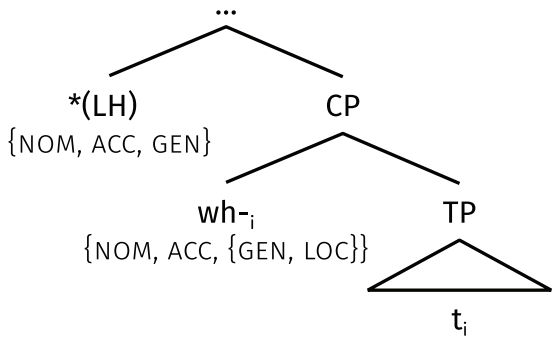
these typological alternations, Bergsma points out that further research is required to determine their motivations. Overall, Bergsma's analysis does well in recognizing these alternations, but without adaptation the solution does not seem to be able to account for the priority/syncretism paradox observed here. It is unclear how to resolve this within a single language without employing two case levels.

dative, and instrumental of three elements.[9] If we maintain that a case C_1 overrides another C_2 when C_1 is composed of all elements of C_2, then (10) correctly captures the observed patterns of case priority. For example, dative overrides accusative since it includes the NOM and ACC features that define accusative. However, dative clashes with genitive due to a lack of containment. Genitive is composed of the features NOM, ACC, and GEN, but dative does not contain GEN as an atomic feature, only as a member of the embedded set {GEN, LOC, DAT}.

The conflict between priority and syncretism can then be resolved if priority relations are determined by set relations in the syntax. These set structures are post-syntactically 'flattened' to the sets of features in (2), after which spell-out takes place and potentially leads to syncretism.[10] Flattening amounts to a unification of the outermost and embedded sets through removal of internal structure; as such, is not a difficult assumption to make because no complex mechanisms are added to the grammar. Information is simply removed, but the content of each case remains constant throughout.

Let us consider how this unfolds in the BCS examples. We have seen that a case clash occurs when the head is omitted in examples such as (8d), where the head realizes genitive and the wh-pronoun realizes locative. This outcome can be illustrated with the structure below, which loosely follows Citko's (2004) analysis of LHRs. Priority is determined through containment relations in the syntax. In (11), the features of the head are not recoverable from the features of the wh-pronoun because there is no containment between the genitive and locative cases at this level. Both cases include the NOM and ACC features, but they differ with regard to GEN. In the composition of genitive, GEN is an atomic feature, while in locative it only appears as a member of the embedded set {GEN, LOC}. Since the composition of genitive is not fully contained within the composition of locative, the features of head are not recoverable, and it cannot be grammatically omitted.

(11) Syntactic representation of BCS LHR

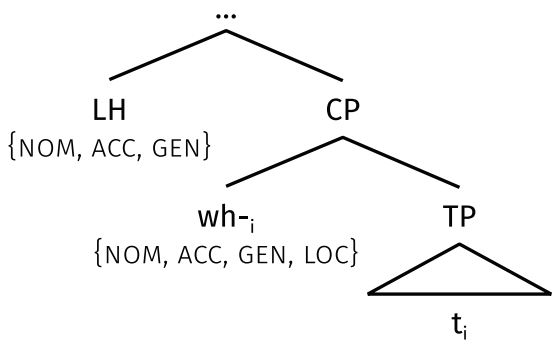


[9] It is possible to find other mathematical arrangements of the features that predict the same patterns as (10). The sets in (10) provide an intuitive representation, but it is difficult to evaluate the most accurate representation on purely empirical grounds.

[10] Flattening may have analogues in morphophonology. One possible application is in spanning whereby multiple heads are given a single spell-out (Svenonius 2012, among others). It seems reasonable to hypothesize that the features of these heads are unified through a flattening operation before realization.

Syncretism can be derived as a post-syntactic by-product after flattening the internal set structure to yield sets of features. As discussed regarding (7a), syncretism does not appear to affect the BCS LHRs, but it has been observed that syncretism resolves feature conflicts in certain constructions (Milićević 2011; Himmelreich 2017; Bergsma 2019). Continuing with the example from above, let us consider how a hypothetical repair would work. After flattening, the set of locative features on the wh-pronoun contains the genitive features of the head, as depicted in (12). Therefore, operations on the larger set of features containing LOC can produce {NOM, ACC, GEN}.

(12) Post-syntactic representation of BCS LHR



Thus far, it has not been necessary to know precisely which method is used to analyze syncretism, the critical point being that the flattened sets are related through containment. However, it now seems that impoverishment may best accommodate this repair potential in the two-level system, at least for a subset of the examples. This is because impoverishment can be precisely formulated to address idiosyncrasies, and constructions that do not exhibit repair potential simply lack the necessary deletions. If the clash in (11) were repairable through syncretism, one could imagine a rule such as (13) that reduces the flattened set of locative features to genitive in a specific context, such as on the wh-pronoun in the environment of a genitive light head.[11] It would then be possible to omit the head since its features match those of the wh-pronoun. Note that in order to derive the correct syncretism predictions, impoverishment must be restricted to the outermost feature of a case set, perhaps through a requirement on the well-formedness of case sets with respect to (2). Zompì (2019) proposes a similar constraint using Graduality.

(13) [LOC] → ∅ / [CONTEXT __]

This repair is not observed in BCS LHRs, so the rule in (13) is merely hypothetical. Flattening does occur in the derivation, but case override is restricted to the syntax, so the priority relations

[11] Repair is limited to certain constructions, so impoverishment would likely have to make some reference to the syntax. Since (13) is a hypothetical deletion, I am not concerned about its precise formulation. More data regarding the available repairs would be required to determine best formulation for these rules.

stand as they did in (11). This shows that cases may clash, but at the level of spell-out, they form unified sets that can be manipulated to derive a syncretic form if the relevant rules exist.

For certain repairs, it is conceivable that impoverishment would have to occur prior to flattening to repair the mismatch at the correct case level. Though impoverishment is typically considered a morphological operation, Keine (2010) argues for the possibility of syntactic impoverishment. Given Zompì's (2019) Graduality, it seems that impoverishment of the embedded sets would only be able to reduce the case sets in (10) to nominative or accusative. More research would be required to work this out in detail, and whether this solution is feasible in the constructions where this repair is observed is a matter of further analysis. However, early impoverishment does appear appropriate for certain patterns. For example, Bárány (2021) examines Spanish differential object marking, where dative is syncretic with accusative to the exclusion of genitive. At first glance, such early impoverishment seems applicable to the syncretism patterns of languages that do not conform to Caha's (2009) Universal Contiguity.

Up to this point, I have assumed that Caha's (2009) view of case-feature accumulation is correct for syncretism; sets of case features grow incrementally with the addition of a single feature. In examining exceptions to Universal Contiguity, other analyses of syncretism implement less exacting ideas of feature growth, positing that the lexical cases are not strictly ordered with respect to each other (e.g. Harðarson 2016; Graf 2019; Zompì 2019; Bárány 2021). These analyses differ slightly in their implementations, but their proposals somewhat resemble my priority hierarchy. Bárány (2021) and Graf (2019) both argue for partially ordered case hierarchies to maintain the general principle of contiguity but allow for more flexibility. Their predictions align with Zompì's (2019) case-class hierarchy, where the cases within each class are unordered with respect to each other; this amounts to a containment hierarchy of UNMARKED $\subset$ MARKED $\subset$ OBLIQUE, where genitive is not a member of any class. Harðarson (2016) suggests a weaker form of contiguity but develops language-specific case hierarchies. Overall, the two-level system proposed here does seem amenable to these alternative views of syncretism if cases are represented syntactically as sets of structures. Without this level distinction, it is difficult to determine how a single language can contain a priority/syncretism paradox where the cases that clash with each other are syncretic in other environments; here, the above analyses fall short. They are perhaps sufficient to address the priority data for BCS and German, but a more articulated hierarchy for the lexical cases is necessary to accurately capture the syncretism data. Assuming that all languages have two levels of case, then the proposal advanced in this paper has the flexibility to accommodate additional patterns if we allow the timing of flattening to vary cross-linguistically. For example, in the languages discussed by the above sources, it is possible that flattening occurs later than it does in BCS and German so that syncretism operates on the basis of unflattened set structures. Alternatively, these languages may have only the unflattened level of case.

On the other hand, there are also languages in which the priority patterns appear to align with the predictions made by the Universal Contiguity hierarchy. This is the focus of Caha's (2019a) work on case competition, in which he principally investigates Russian and Ossetic. In Russian numeral constructions, for example, the numeral assigns genitive case to its complement, as we saw earlier with BCS. This genitive surfaces in nominative and accusative case environments but, in contrast to BCS, is overridden in the lexical case environments. Caha cites the following examples:

(13) *Russian* (adapted from Franks 1994: 600–613)

a. Pjat' krasiv-yx devušek prišli.
five.NOM beautiful-GEN.PL girl.GEN.PL arrived
'Five beautiful girls arrived.' (nominative)

b. Ivan kupil pjat' mašin.
Ivan.NOM bought five.ACC cars.GEN.PL
'Ivan bought five cars.' (accusative)

c. Ivan vladeet pjat'-ju fabrik-ami.
Ivan.NOM owns five-INSTR factory-INSTR.PL
'Ivan owns five factories.' (instrumental)

d. o pjat-i knig-ax
about five-LOC book-LOC.PL
'about five books' (locative)

This predicts that the lexical cases override genitive, which overrides nominative and accusative, roughly corresponding to the hierarchy predicted by Universal Contiguity. The priority data alone are not sufficient to determine the precise order of all lexical cases with respect to each other, but in Caha's investigation, there is no strong evidence to suggest that the syncretism and priority hierarchies vary within a single language. Again, it is possible that the behavior of these languages could be accommodated in the current system by adjusting the timing of the flattening operation. Since priority relations are determined in the syntax, languages such as Russian could have flattening early in the derivation so that priority is determined on the basis of the flattened case sets. Otherwise, these languages may contain only the flattened level of case. I leave it to future research to determine the exact implementation that would be required to address this typological variation within the system proposed here.

5 Conclusion

This paper highlights a conflict between representations of case syncretism and case priority through an examination of numeral constructions and relative constructions in BCS, with added support from German. The conflict is resolved by introducing two levels of case representation,

where the syntactic interactions of set structures define priority relations and post-syntactic flattening yields sets of case features that determine syncretism. Such a solution predicts that case syncretism cannot be analyzed with a purely syntactic account—at least in languages containing this priority/syncretism paradox—with implications for syncretism more generally. The solution seems to be incompatible with the nanosyntactic view of syncretism in Caha 2009 where each case is a projecting head, but further research is required in this area.

Abbreviations

3 = third person, ACC = accusative, AUX = auxiliary, DAT = dative, F = feminine, GEN = genitive, INSTR = instrumental, LOC = locative, NOM = nominative, PL = plural, PST = past, REFL = reflexive, SG = singular

Additional file

The additional file for this article can be found as follows:

- **Appendix.** BCS light-headed relative paradigm. DOI: https://doi.org/10.16995/glossa.5822.s1

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Competing interests

The author has no competing interests to declare.

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