# Free relative clauses and timing of case assignment in Moksha Mordvin[*]

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## 1. Overview

According to the Dependent Case Theory, cases are assigned in a certain order. Lexically governed cases are assigned first, followed by the dependent case and finally, the unmarked case and the default case (Marantz 1992). This order of case assignment operations is generally determined by the Elsewhere Principle: The more marked (or specific) a case value is, the earlier it is assigned. In this paper, I present a novel argument for the specific order of case assignment operations and for the earlier assignment of lexical cases.

The evidence comes from free relative clauses in Moksha Mordvin (Finno-Ugric)[1]. Unlike headed relative clauses, the formation of free relatives is cross-linguistically restricted by the matching condition (first suggested by (Grimshaw 1977)). It states that the case and the category of the *wh*-phrase has to match the case and the category required by the predicate in the main clause. Mismatches are allowed in Moksha, if the free relative clause corresponds to the subject or to the direct object position in the main clause, or if it is in the indirect object position and the case of a *wh*-phrase is structural.

The pattern is analyzed as follows. First, relative clauses in the subject and direct object positions that appear to be free relatives are in fact headed by *pro*. Unrelated phenomena in Moksha syntax confirm that the null pronoun is available in these two positions only. Second, structural case is assigned in the subject, direct object and indirect object positions. Even though different structural cases are assigned in the main and in the relative clause, the matching condition is not violated because structural cases are assigned after the operation that ensures matching applies. Lexical cases, on the contrary, are assigned before matching, at an earlier point in the derivation and their values are visible for the matching condition. That is why a mismatch between two lexical cases is not allowed.

I present the data in section 2, articulate my assumptions in section 3, provide the analysis in section 4 and summarize in section 5.

## 2. Data

### 2.1 Background on Moksha

This section provides the necessary background on nominal categories, case and agreement in Moksha Mordvin. Nouns in Moksha are marked for case, definiteness, possessivity and number. Due to the cumulative nature of affixes and to the featural co-occurrence restrictions, the language is traditionally described as having three declensions – definite, indefinite and possessive. In the indefinite delcension, 15 cases are distinguished (nominative, genitive, dative, ablative, inessive, elative, illative, lative, prolative, translative, caritive, causalis, equative, temporalis and vocative). Number is marked only in the nominative. In the definite declension, there are three case forms: nominative, genitive and dative. Number is distinguished in all forms of the definite declension. This part of the nominal paradigm is illustrated in (1) below. In addition to the rich case system, Moksha has postpositions.

(1)    *Part of the Moksha nominal paradigm illustrated by the noun velʲə 'village'*

|  | Indefinite declension | | Definite declension | |
| --- | --- | --- | --- | --- |
|  | SG | PL | SG | PL |
| nominative | velʲə | velʲə-t | velʲə-sʲ | velʲə-tʲnʲə |
| genitive | velʲə-nʲ | | velʲə-tʲ | velʲə-tʲnʲə-nʲ |
| dative | velʲə-nʲdʲi | | velʲə-tʲi | velʲə-tʲnʲə-nʲdʲi |
| ablative | velʲə-də | | | |
| inessive | velʲə-sə | | | |
| elative | velʲə-stə | | | |

The case used to mark possessors and direct objects is the same (2). I call it genitive.

(2)    a.    tʲɛ  ava-tʲ          kud-əc
              this woman-DEF.GEN house-3SG.POSS
              'the house of this woman'

       b.    mon nɛj-inʲə          tʲɛ  ava-tʲ
              I    see-PST.3.O.1SG.S this woman-DEF.GEN
              'I saw this woman.'

Moksha has differential object marking. Direct objects may be marked for genitive or unmarked (3). Verbs agree with marked direct objects.

(3)    a.    mon nʲɛj-sa            knʲiga-tʲ      / *knʲiga
              I    see-NPST.3SG.O.1SG.S book-DEF.GEN   book

       b.    mon nʲɛj-an        knʲiga / *knʲiga-tʲ
              I    see-NPST.1SG book    book-DEF.GEN
              'I see a / the book.'

## 2.2 Matching effects in free relatives

Free relatives are relative clauses without an overt head. They are subject to the matching condition (Grimshaw 1977, Bresnan and Grimshaw 1978, Groos and van Riemsdijk 1981). It states that the case and the category of the *wh*-phrase has to match the case and the category required from the absent head in the main clause. (4) illustrates a matching free relative in Moksha. Verbs in both clauses require a direct object marked for genitive.

(4)     mon rama-jnʲə,         mezʲə-nʲ   ton miʃənd-itʲ
        I     buy-PST.3.O.1SG.S what-GEN you sell-PST.3.O.2SG.S
        'I bought, what you was selling.'

The research on free relatives has shown that matching conditions hold to various degrees in different languages (see Hirschbühler and Rivero 1983, Suñer 1984, Grosu 1994, Izvorski 1996, Vogel 2001, Spyropoulos 2011). For instance, mismatches are prohibited in some German dialects and in others they are allowed if a case in the relative clause is more marked than a case in the main clause (Vogel 2001). In Catalan and Spanish relatives without an overt head are exempt from the matching requirements in the subject position (Hirschbühler and Rivero 1983, Suñer 1984). Free relatives in Moksha obey the matching condition in some cases, but violate it in others. The pattern found in Moksha was not attested earlier and the data contribute to the typology of non-matching free relatives.

     Let's start with the subject and direct object free relatives. They are grammatical, independently of a case or a category in the relative clause (5), (6), (7). In the direct object free relatives verb is marked for the object agreement[2]. It indicates that the case from the main clause is genitive. Due to space limitations, I do not provide examples for each possible combination of cases. Which case is assigned is indicated in the line before example.

(5)     NOM *in the main clause,* DAT *in the relative clause*
        tʲɛ kutʲ-tʲ           esə, [ ki-nʲdʲi   Katʲɛ tɛʃnʲə-sʲ ],      erʲɛ-j
        this house-DEF.GEN in.IN    who-DAT Katja write-PST.3SG live-NPST.3SG
        'The person, whom Katja wrote, lives in this house.'

(6)     NOM *in the main clause,* IN *in the relative clause*
        tosa ašč-i,       [ mej-sə   mon molʲ-an       oʃ-u ]
        there be-NPST.3SG   what-IN I     go-NPST.1SG city-LAT
        'There lies the thing, in which I will go to the city.'

(7)     GEN *in the main clause,* PostP *in the relative clause*
        nʲɛj-sa,             [ ki-nʲ      ezdə   pelʲ-an ]
        see-NPST.3SG.O.1SG.S   who-GEN in.ABL fear-NPST.1SG
        'I see the one that I fear.'

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[2]The object agreement is obligatory. It is presumably due to the semantics of free relatives.

In the direct object free relatives, dative case is assigned in the main clause. Only if the *wh* is marked for nominative or genitive, are mismatches allowed (8), (9). If any other case is assigned in the main clause, matching is obligatory (10), (11).

(8)    DAT *in the main clause,* GEN *in the relative clause*
       Katʲɛ knʲiga-nc        maks-əzʲə,      [ ki-nʲ      mon nʲɛj-inʲə ]
       Katja book-3SG.POSS.GEN give-PST.3SG.3SG  who-GEN I    see-PST.3.O.1SG.S
       'Katja gave her book to the person, whom I met.'

(9)    DAT *in the main clause,* IN *in the relative clause*
       *urdaz-sʲ      pecʲ,          [ mej-sə  mon jaka-n       oʃ-u ]
       mud-DEF.SG adhere.PST.3SG   what-IN I     go-NPST.1SG city-LAT
       'The mud adheres to the dress in which I am going to the city.'

(10)    ABL *in the main clause,* DAT *in the relative clause*
       *mon pelʲ-an,       [ ki-nʲdʲi   son lezks-i ]
       I     fear-NPST.1SG   who-DAT she help-NPST.3SG
       'I am afraid of the one, whom she helps.'

(11)    EL *in the main clause,* NOM *in the relative clause*
       *mon tu-nʲ,        [ mezʲə pɛk ičkazʲə ]
       I     go-PST.1SG   what  very far
       'I left the place that is very far away.'

Table (12) summarizes the data. If nominative or genitive is assigned in the main clause, there are no restrictions on the case or the category of the *wh*-word. If dative is assigned in the main clause, the grammaticality depends on the case in the relative clause. Free relatives are allowed only if it is nominative, genitive or dative. Matching is obligatory otherwise. In all cases, *wh* can only be marked for the case and category requested in the relative clause.

(12)    *Case and category mismatches in Moksha free relatives*

| | | Case assigned in the main clause | | | | |
|---|---|---|---|---|---|---|
| | | NOM | GEN | DAT | ABL | Locative cases, PostP |
| | NOM | OK | OK | OK | * | * |
| | GEN | OK | OK | OK | * | * |
| Case assigned in the relative clause | DAT | OK | OK | OK | * | * |
| | ABL | OK | OK | * | OK | * |
| | Locative cases, PostP | OK | OK | * | * | * different / OK same |

## 3.    Assumptions

Following Groos and van Riemsdijk (1981), Gračanin-Yuksek (2008), Himmelreich (2017), I assume that free relative clauses are CPs embedded under a null nominal head, with the *wh*-phrase in Spec,CP. Alternative approaches try to avoid the postulation of the null head. They associate the *wh*-element with positions in both the relative clause and in the main clause. For example, the *wh* may get to the position of the head by movement (Bresnan and Grimshaw 1978); it may be re-analyzed as a part of the main clause due to some specific properties of cyclic spell-out (Ott 2011) or labeling (Donati and Cecchetto 2011). An argument against this family of approaches comes from the extraposition[3]. As noted in (Groos and van Riemsdijk 1981), relative clauses are extraposed without the head noun. If the *wh*-phrase were the head of the free relative, it should also be stranded under extraposition, contrary to fact: In Moksha, the head noun in a headed relative clause does not undergo extraposition (13), unlike the *wh*-phrase in free relatives (14)[4]

(13)    ʃobdava  stʲərʲnʲɛ-sʲ sa-sʲ,        [ kijə erʲɛ-j        tosə ]
        morning girl-DEF    come-PST.3SG who live-NPST.3SG there
        'The girl, who lives next door, arrived in the morning.'

(14)    ʃobdava  (*kijə) sa-sʲ,        [ *(kijə) erʲɛ-j        tosə ]
        morning who    come-PST.3SG who    live-NPST.3SG there
        'The person, who lives next door, arrived in the morning.'

The requirement for matching results form Agree operation between the null nominal head in the main clause and the *wh*-phrase (Spyropoulos 2011, Himmelreich 2017). The null head bears its own case and category features and additionally probes for case and category of the *wh*. If values contradict, a sentence is ill-formed. The derivation is given in (15).

(15)    *The structure of a free relative clause*
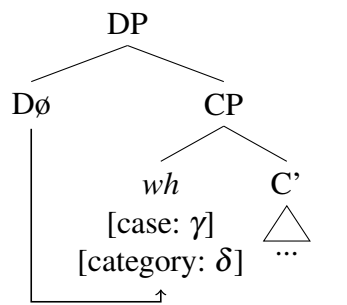


**Features on Dø:**
[case: $\alpha$]        [case$_{\text{wh}}$: $\gamma$]
[category: $\beta$]    [category$_{\text{wh}}$: $\delta$]

Ungrammatical if $\alpha \neq \gamma$ or $\beta \neq \delta$.

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[3]For the extensive discussion of different approaches, pros and cons, see (Himmelreich 2017).

[4]Ott (2011) suggests a solution to this problem: Extraposition applies postsyntactically and the *wh*-phrase is reassembled back as part of the CP at PF. While the detailed implementation is lacking, it is hard to oversee the consequences of this approach.

## 4.    Analysis

I propose that mismatches in Moksha free relatives are not a uniform phenomenon, but result from the combination of two processes. They are discussed in two subsequent sections.

### 4.1    Relatives headed by *pro*

Moksha has *pro* in the subject (16) and in the direct object positions (17).

(16)   nʲɛj-an          virʲ
       see-NPST.1SG forest
       '[I] see a forest.'

(17)   mon nʲɛj-sa
       I    see-NPST.3SG.O.1SG.S
       'I see [that person].'

Examples with null arguments are not enough to show that *pro* is restricted to these two positions. Nouns in more oblique positions (e.g. instruments or locations) are generally not obligatory projected, so that the absence of a noun in an oblique position does not indicate that *pro* is possible there. Evidence that allows to compare subject and direct object to other positions comes from correlatives. In correlatives, the relative clause is in the left periphery and a demonstrative correlate fills the corresponding position in the main clause (Srivastav 1991). In Moksha an overt demonstrative is not obligatory in the subject position (18). It is also not obligatory in the object position if the verb has object agreement (19). The pronoun is overt in other cases, see (20) for the indirect object and (21) for a postpositional phrase.

(18)   [ kona  jalga-zʲə-nʲdʲi          zvonʲcə-nʲ ], vandi     sa-j
         which friend-1SG.POSS-DAT call-PST.1SG tomorrow come-NPST.3SG
       'My friend, to whom I wrote letters, will arrive tomorrow.'

(19)   [ kona  ki-tʲ           ezga  viʃk-stə  patʃ͡kədʲ-at        oʃ-u ],  minʲ
         which road-DEF.SG.GEN in.PROL strong-EL reach-NPST.2SG city-LAT we
       mu-sʲk           / *minʲ mu-mə
       find-PST.3.O.1PL.S we   find-PST.1PL
       'We found a road that may be used to read the city quickly.'

(20)   [ kona  sosʲəda-zʲə           af   suvsʲ-i ],        mon zvonʲ-ənʲ      ??(sʲɛ-nʲdʲi)
         which neighbor-1SG.POSS NEG enter-NPST.3SG I     call-PST.1SG that-DAT
       'I called to my neighbor that did not come to me for [for a while].'

(21)   [ kona  pinʲə-tʲ           mon vasʲft-inʲə ],        *(sʲɛ-nʲ ezdə) pelʲ-an
         which dog-DEF.GEN I     see-PST.3.O.1SG.S that-GEN in.ABL fear-NPST.1SG
       'I am afraid of the dog that I saw.'

This suggests the possibility that relatives in subject and direct object positions are headed by *pro*. Such relatives are then homophones to free relatives. I propose that all non-matching subject and direct object relatives are in fact headed, so that there is no Agree between the head and the *wh*-phase. The structure is given in (22).

(22)     *Pro as the head of the relative clause*

DP

pro
[case: $\alpha$]
[category: $\beta$]

CP

*wh*
[case: $\gamma$]
[category: $\delta$]

C'
...

Grammatical even if $\alpha \neq \gamma$ or $\beta \neq \delta$.

A similar pattern can be found in other languages (e.g. Bulgarian, Catalan, Modern Greek, Spanish) that have *pro* in the subject position and allow for non-matching relatives there. Izvorski (1996) suggests that the relative clauses are left-dislocated and there is a resumptive *pro* in the main clause. This analysis, however, does not work for Moksh because the non-matching relatives can be embedded in the main clause (5) or follow it (6), (7).

## 4.2     Structural case comes too late

The first two columns of the table (12) are explained by *pro*. The third column shows that free relatives with dative in the main clause and nominative or genitive in the relative clause are also grammatical despite mismatches. These data are part of a bigger pattern: If nominative, genitive or dative is assigned in the relative clause and in the main clause, a mismatch is allowed. The pattern is not straightforwardly detectable from the table (12) because of a partial overlap with the relatives headed by *pro*.

The data are derived as follows. The disjunctive case hierarchy proposed by Marantz (1992) and extensively used in the Dependent Case Theory (Baker and Vinokurova 2010, Baker 2015, Levin and Preminger 2015) divides cases into types that are realized in a certain order: lexically governed case, dependent case, unmarked case, default case. The sequentiality of case assignment operations suggests that other operations may apply between them. An example of this can be found in Moksha. In Moksha lexical cases are assigned earlier than structural cases and the Agree operation between the null head and the *wh*-phrase takes place after the assignment of lexical cases, but before structural cases[5]. I take nominative, genitive and dative (at least of indirect objects) to be structural cases.

The derivation of a free relative with dative in the main clause and nominative in the relative clause is given in (23). The case in the relative clause is structural, it is assigned to the *wh*-phrase late and fails to feed Agree with the null D. Note that the assignment of a structural case within the relative CP happens after the agreement between the Dø and the *wh*

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[5] Richards (2013) proposes that structural, but not lexical cases are deleted before LF Spell-out, because uninterpretable features are not tolerated at LF. Even though the approach suggests the possibility that structural cases may be deleted earlier and they are therefore not visible for matching, it, however, cannot be extended to Moksha. If structural cases are deleted shortly after they are assigned (as suggested in (Richards 2013)), then contrary to facts, case on *wh* is predicted to be absent at PF as well. If the deletion applies at the phase level, right before the Spell-out, case features should be actually visible for Agree with the null head: Under the assumption that the complement of a phase head is spelled out, the *wh*-phrase in Spec,CP does not undergo Spell-out earlier than the null head of the free relative is merged.

and it looks like the operation applies to the proper sub-tree of the structure. The derivation, however, does not violate the Strict Cycle Condition, because following Marantz (1992), I assume that the assignment of the structural case applies postsyntactically.

(23)     *Mismatch between* DAT *in the main clause and* NOM *in the relative clause*
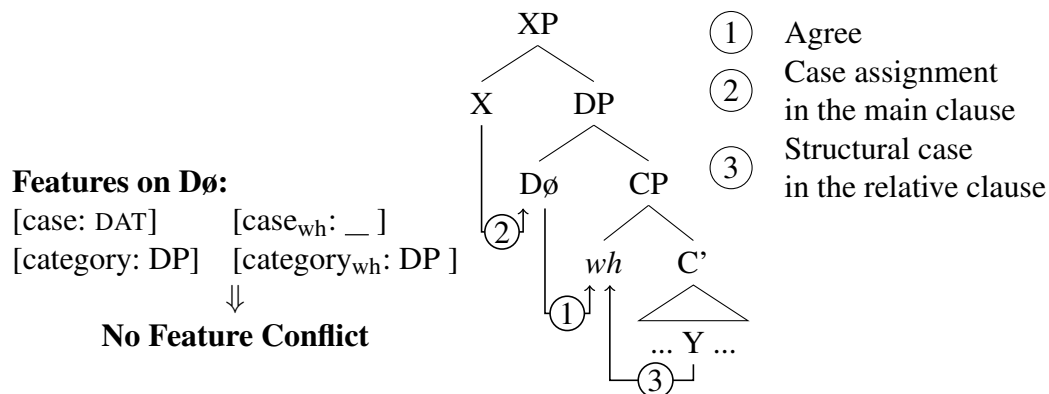


Since the structural case from within the relative clause is never visible for Agree, the system presented so far wrongly predicts the mismatch between a structural case in the relative clause and any case in the main clause to be allowed. The mismatch is ungrammatical if the case in the relative clause is lexical. I propose that this ungrammaticality is due to a mismatch in category, not in case. Nouns that bear a structural case (nominative, genitive or dative) are DPs, while nouns marked for a lexical case (ablative, inessive, lative etc.) are KPs. Evidence for this comes from the different properties of nouns in these cases. First, definiteness is marked only in three structural cases, see table (1) above. This suggests that nouns in these cases have a DP layer, while nouns in other cases do not. Second, lexical cases are partially similar to postpositions. For instance, the possessive marker precedes structural cases, but follows lexical cases and some postpositions (24)[6]. I therefore assume that lexical cases in Moksha head a special projection (let us call it KP) that takes NP as its complement and shares some properties with postpositional phrases[7].

(24)     mork∫-əzʲə-nʲ      / mork∫-sə-n       / mork∫ langə-zə-n
         table-1SG.POSS-GEN / table-IN-1SG.POSS / table  on-ILL-1SG.POSS
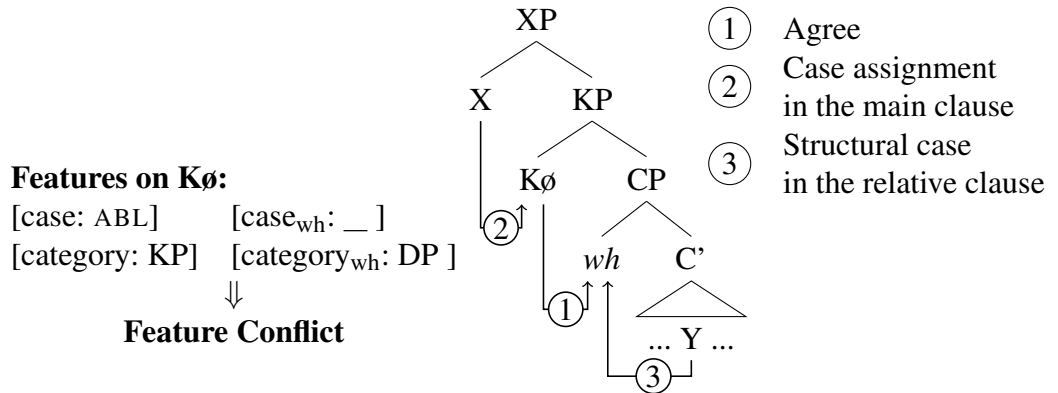
The derivation in (25) shows free relatives with a structural case in the relative clause and a lexical case in the main clause. It crashes due to the mismatch in categorial features. If different lexical cases are assigned in the main and in the relative clause, a free relative is correctly predicted to be ungrammatical because of the mismatch in case (26).

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[6]McFadden (2004), Guseva and Weisser (2018) claim that the order of the case and the possessive affix does not reflect differences in syntactic structure, but instead results from the post-syntactic reordering operations (Lowering, Local Dislocation). This approach does not account for the similarities between lexical cases and postpositions and there are no arguments for these postsyntactic reordering operations in Moksha.
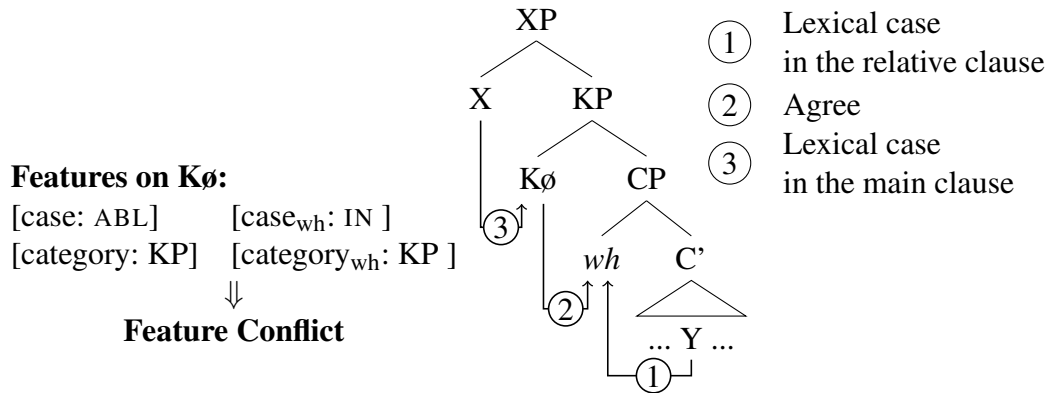
[7]The choice between KP and DP correlates with case, but while case may be assigned later, categorial labels are presumably determined early in the syntax. I assume that similarly to the choice between DP and PP, the choice between DP and KP is built into selectional requirements of the predicate.

(25)   *Mismatch between* ABL *in the main clause and* DAT *in the relative clause*

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                                    XP              ①  Agree
                                   /  \             ②  Case assignment
                                  X    KP               in the main clause
                                      /  \           ③  Structural case
   Features on Kø:               Kø      CP              in the relative clause
   [case: ABL]      [case_wh: __ ]    ②↑
   [category: KP]   [category_wh: DP ]      wh     C'
                    ⇓                    ①↑      /\
             Feature Conflict                   ... Y ...
                                                 ③
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(26)   *Mismatch between* ABL *in the main clause and* IN *in the relative clause*

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                                    XP              ①  Lexical case
                                   /  \                 in the relative clause
                                  X    KP            ②  Agree
                                      /  \           ③  Lexical case
   Features on Kø:               Kø      CP              in the main clause
   [case: ABL]      [case_wh: IN ]   ③↑
   [category: KP]   [category_wh: KP ]      wh     C'
                    ⇓                    ②↑      /\
             Feature Conflict                   ... Y ...
                                                 ①
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## 5.   Summary

Moksha presents a novel pattern of mismatching in free relatives. I argued that non-matching relatives in the subject and in the direct object positions that appear to be free relatives are in fact headed by *pro* and that mismatches between two structural cases can be derived if Agree that ensures matching applies between the assignment of lexical and structural cases. If my analysis is correct, this provides further evidence for sequentiality of case assignment operations and for the earlier assignment of lexical cases.

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