Relative clauses in Moksha: Raising by reprojection

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Abstract

This paper presents novel data on relative clauses with inverse case attraction in Moksha Mordvin. This is a rare type of externally-headed relative clauses where the head noun bears case assigned inside the relative clause (see Bianchi 1999; 2000b, Kholodilova 2013, Deal 2016, Wood et al. 2017, Abramovitz 2021). On the basis of a correlation between a case marking on the head noun and reconstruction effects (idioms, anaphor binding, condition C), I argue that raising derivation of relative clauses is a part of natural language syntax (Schachter 1973, Vergnaud 1974, Kayne 1994, De Vries 2002, Sportiche 2017, i.a.) and that it co-exists with the head-external derivation (cf. Sauerland 1998; 2003, Bhatt 2002, Harris 2008, Jarvis 2025 for co-existence of several relative clause derivations). The paper then proposes a novel implementation of the raising derivation, according to which the head NP projects upon its movement to the main clause. Such projecting movement follows from projection by selection approach to labeling (Chomsky 1995, Stabler 1997, Adger 2003) combined with the possibility of upward search (Baker 2008, Zeijlstra 2012).

Keywords: Relative clauses, case, reconstruction effects, raising derivation, projection, inverse case attraction, Moksha Mordvin

1 Introduction

Inverse case attraction (ICA) is a phenomenon in the relative clause syntax under which the head of a postnominal relative clause bears case assigned to a relativized element inside the relative clause. It is schematized in (1). The head of the relative clause precedes the relative pronoun, but shows case α assigned by a predicate inside the relative clause, not case β assigned in the main clause.

(1) [head-α [$_{\text{CP}}$ relative.pronoun-α ... predicate$_{\text{[case: }\alpha\text{]}}$...] ... predicate$_{\text{[case: }\beta\text{]}}$ ...]

This paper presents a study of relative clauses with ICA in Moksha Mordvin, a Finno-Ugric, Uralic language. Data in (2) show a relative clause with ICA in Moksha. In this example, the head of the relative clause appears in the direct object position of the main clause. Nouns in this position are typically assigned genitive; see (3) without the relative clause. Instead, the head noun in (2) is marked for dative. This case is assigned by the verb in the relative clause and also appears on the relative pronoun.

(2) ICA: external case – GEN, internal case – DAT

Jalga-z'ə-**n'd'i**	[kona-**n'd'i**	t'aš-n'ə-n']		mon	n'ɛj-sa.
friend-1SG.POSS.SG-DAT	which-DAT	write-FREQ-PST.1SG		I	see-NPST.3SG.O.1SG.S

'I will see my friend to whom I have been writing.'

(3) Jalga-z'ə-**n'** / *jalga-z'ə-**n'd'i** mon n'ɛj-sa.
friend-1SG.POSS.SG-GEN friend-1SG.POSS.SG-DAT I see-NPST.3SG.O.1SG.S
'I will see my friend.'

Relative clauses with ICA are rare cross-linguistically and their syntax remains debated (see Bianchi 1999; 2000b, Kholodilova 2013, Cinque 2015; 2020, Deal 2016, Wood et al. 2017, Abramovitz 2021). In this paper, I will present novel data on relatives with ICA in Moksha Mordvin. On the basis of these data, I will argue that relatives with ICA are externally-headed as shown in (4a) and are derived by raising; see (4b). Thus, this study provides further evidence in favor of the raising derivation and implies that it must be part of natural language syntax (Schachter 1973, Vergnaud 1974, Kayne 1994, De Vries 2002, Sportiche 2017, i.a.).

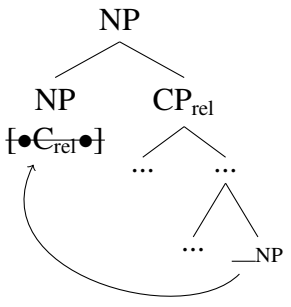
(4) a. $[_{DP}\ D\ [_{NP}\ NP\ [_{CPrel}\ \ldots\ ]\ ]\ ]$

b. $[_{DP}\ \text{head}\ [_{CP}\ C_{rel}\ \ldots\ \_\_\text{head}\ ]\ ]$

Relatives with ICA in Moksha co-exist with externally-headed relatives without ICA. Heads of such relative clauess show the expected external case assigned in the main clause and I will therefore call them *regular* externally-headeded relative clauses. I will show that their syntax differs from the syntax of relatives with ICA; they must be derived by head-external generation. This implies that several derivations for relative clauses must co-exist within one language (see Sauerland 1998; 2003, Bhatt 2002, Harris 2008, Jarvis 2025).

After this, I review existing approaches to the syntax of raising and argue that raising relative clauses are best derived by projecting movement of the head noun as schematized in (5). I show that projecting movement follows naturally if projection by selection approach to labeling (Chomsky 1995, Adger 2003) is combined with the possibility of upward search (Baker 2008, Wurmbrand 2012, Zeijlstra 2012, Bjorkman & Zeijlstra 2019). The head of the relative clause originates inside the relative clause, but has an active Merge feature that probes upwards, finds the relative CP once it is built, and brings about movement of the head noun. Since the head NP bears the feature that triggers this merge step, the NP also projects in the landing site.

(5) Projecting movement in relative clauses



The paper proceeds as follows. In section 2, I provide evidence that relative clauses with ICA are externally-headed. In section 3, I consider reconstruction diagnostics and show that relative clauses with ICA are derived by raising and that raising cannot be the single derivation of relative

clauses in Moksha. Section 4 presents an implementation of the raising derivation that is based on projecting movement of the head noun. Finally, section 5 considers further properties of relatives with ICA in Moksha and shows how they are derived under the current analysis.

2 ICA and typology of relative clauses

2.1 Background

Moksha belongs to the Finno-Ugric branch of the Uralic language family and, together with Erzya, forms the Mordvin group. Moksha is spoken primarily in the Republic of Mordovia, Russia. The data presented in this paper were collected during my fieldwork with Moksha speakers residing in the villages of Lesnoe Cibaevo and Lesnoe Ardaševo, in the Republic of Mordovia, Russia.

Moksha has been described in several grammatical studies and dictionaries. At earlier stages of this research, I relied on the descriptions by Koljadënkov (1954), Koljadënkov & Zavodova (1962) and the dictionaries by Ščankina (1993).

Moksha is characterized by relatively free word order, with a tendency toward SVO as the basic order. Its morphology is predominantly suffixal and exhibits both agglutinative and cumulative properties. Verbs bear tense–aspect–mood suffixes, followed by subject or subject–object agreement markers. The language displays differential object marking, and the presence of object agreement depends on the referential properties and case marking of the direct object. Direct objects are either unmarked or be marked for genitive. The case on direct objects is called traditionally genitive instead of accusative because the shape of the case marker on direct objects in Moksha is identical to the case that appears on possessors. Moksha has a relatively rich case system and employs postpositions. Nouns inflect for number, definiteness, and possessivity.

In addition to relatives with ICA, Moksha has regular externally-headed relative clauses and internally-headed correlatives. All three relativization strategies coexist within the speech of the same speakers and show no clear dependence on register or sociolinguistic factors.

2.2 Structures for relatives with ICA

Relative clauses with ICA were originally discussed on the basis of extinct Indo-European languages. They are attested in ancient Greek (Grimm 2005: 78-92), Hittite, Old Persian, Oscan, and Umbrian (Hahn 1964), Latin (Touratier 1980: 147-211), Middle High German (Pittner 1995), and Old English (Harbert 1983). Further research has shown that ICA is also present in several modern languages, including Besermyan Udmurt (Belyaev 2012, Kholodilova & Privizentseva 2015), Ingrian Finnish (Kholodilova 2013), Nez Perce (Deal 2016), non-standard Icelandic (Wood et al. 2017), and Koryak (Abramovitz 2021).

In the previous studies, different structures were assigned to relative clauses with ICA. First, they were argued to be a subcase of correlatives that differs from regular correlative clauses in that the order of a relative pronoun and a head noun is reversed (Pittner 1995, Belyaev 2012, Georgi & Salzmann 2017, and also Bianchi 1999; 2000b).

(6) $[_{\text{CP}}$ head-α rel.pron-α ... case.assigner$_{[\text{case: }\alpha]}$ ...], $[_{\text{MC}}$... case.assigner$_{[\text{case: }\beta]}$ pron-β...]

Second, relatives with ICA were viewed as a type of internally-headed relative clause where the head moves to the left of the relative pronoun, but remains within the relative CP. The relative CP is then embedded under a silent nominal structure (Abramovitz 2021).

(7) $[_{MC}\ [_{DP}\ D\ ...\ [_{CP}\ head\text{-}\alpha\ rel.pron\text{-}\alpha\ ...\ case.assigner_{[case:\ \alpha]}\ ...\ ]\ ]\ ...\ case.assigner_{[case:\ \beta]}\ ]$

Third, relatives with ICA were suggested to belong to externally-headed relative clauses[1] and differ only in the case displayed by the head noun (Deal 2016).

(8) $[_{MC}\ [_{DP}\ ...\ head\text{-}\alpha\ [_{CP}\ rel.pronoun\text{-}\alpha\ ...\ case.assigner_{[case:\ \alpha]}\ ...\ ]\ ]\ ...\ case.assigner_{[case:\ \beta]}\ ]$

In what follows, I will argue that this latter view is correct for Moksha and relatives with ICA are externally-headed.

2.3 Interpretation

The main argument for relative clauses with ICA being externally-headed comes from their interpretation. Since Grosu & Landman (1998) and Grosu (2002), three interpretations of relative clauses are typically identified—appositive, restrictive, and maximalizing—and there are cross-linguistically observed correlations between a syntactic type of the relative clause type and the set of its interpretations. In particular, correlatives are only maximalizing (Grosu 2002, Lipták 2009, Brasoveanu 2012, Lin 2020). Internally-headed relative clauses can be maximalizing or restrictive (Grosu 2002; 2012, Watanabe 2004 as well as Hanink 2021, Hucklebridge 2022), but not appositive (Lehmann 1984: 278, De Vries 2002, Grosu 2012). Thus, if relatives with ICA can have an appositive interpretation, they must be externally-headed because such an interpretation is not available for correlatives or internally-headed relative clauses.

Under the appositive interpretation, the relative clause provides additional, background information on the head of the relative clause, it does not restrict the set of individuals the head noun refers to. Relative clauses with ICA can have an appositive interpretation as shown in (9)-(10). In (9), the appositive reading is ensured by a parenthetical within the relative clause. In (10), the head is a proper name.

(9) ICA: external case – NOM, internal case – GEN

Rovnaj	kaftə	**pr'istupn'ik-n'ə-n'**	[kona-t'n'ə-n'	meždu	pročim
straight	two	criminal-DEF.PL-GEN	which-DEF.PL-GEN	between	others

kunda-z'ən'	Pet'ɛ]	vor'gəd'-kšn'ə-s'-t'.
catch-PST.3PL.O.3SG.S	Petja	run.away-AVR-PST.3-PL

'Exactly two criminals, who Petja, by the way, caught, were running away.'

[1]The terms externally-headed and head-external indicate different notions. Externally-headed relative clauses are contrasted with internally-headed relative clauses and refer to a typological classification of relative clauses based on the position of the head noun outside or inside the relative CP in the surface structure. The term head-external refers to a derivational analysis of relative clauses under which the head is base-generated outside the relative CP, and the gap position inside the relative clause is occupied by an operator. The head-external structure is contrasted with two other derivations of relative clauses—raising and matching.

(10) ICA: external case – NOM, internal case – GEN

Puškin-ən' [kona-n' jalga-nzə t'er-n'-əz' senat-ən'
Pushkin-GEN which-GEN friend-3SG.POSS.PL call-FREQ-PST.3.O.3PL.S senate-GEN
ploščad'-t'i] ašəz' sa-v.
square-DEF.SG.DAT NEG.PST.3SG come-PASS
'Pushkin, who his friends were calling to Senate Square, could not come. '

Relatives with ICA can be restrictive as well. The relative clause in (11) restricts the reference of the head noun, so that the sentence is compatible with a continuation stating that more criminals were running away and Petja did not catch all of them.

(11) ICA: external case – NOM, internal case – GEN

Pr'istupn'ik-n'ə-n' [kona-t'n'ə-n' kunda-z'ən' Pet'ɛ]
criminal-DEF.PL-GEN which-DEF.PL-GEN catch-PST.3PL.O.3SG.S Petja
vor'gəd'-kšn'ə-s'-t'.
run.away-AVR-PST.3-PL
'Criminals who Petja caught were running away.'

The availability of the restrictive interpretation for relatives with ICA is also confirmed by (12). In this example, the head noun contains a free choice quantifiers that renders an appositive or a maximalizing interpretation impossible because a specific head noun is required for both of them.

(12) ICA: external case – NOM, internal case – GEN

L'ubovaj **pr'istupn'ik-t'** kona-n' pal'icija kunda-z'ə
any criminal-DEF.SG-GEN which police catch-PST.3SG.O.3SG.S
jora-j vor'gəd'-əm-s.
want-NPST.3[SG] run.away-INF-ILL
'Any criminal who police caught wants to escape.'

Relatives with ICA also show other properties that are characteristic for externally-headed relatives. As shown in (13), they allow for stacking: One external head may be modified by two relative clauses. The same case is assigned to the gap in both relative clauses. This case is genitive and it also appears on the head noun, instead of the nominative that is expected given the position of the head noun in the main clause.

(13) ICA: external case – NOM, internal case – GEN

Pɛr'ɛkɛ-t' [**kona-n'** pid'-əz'ə sas'ədə-z'ə]
pie-DEF.SG.GEN which-GEN cook-PST.3SG.O.3SG.S neighbor-1SG.POSS.SG
[**kona-n'** min' srazu seva-s'k] ul'-s' kapsta-n'.
which-GEN we immediately eat-PST.3.O.1PL.S be-PST.3[SG] cabbage-GEN
'The pie that my neighbor cooked that we immediately ate was with cabbage.'

I conclude that relatives with ICA in Moksha are externally-headed. In the next section I will provide the data in coordination confirming this conclusion.

2.4 Coordination

The possibility to coordinate two relative CPs under one head is a commonly used constituency diagnostic that in the literature on relative clauses was used to determine whether the relative clause is externally- or internally-headed (see the discussion in Borsley 1997, Bianchi 2000a, Bodomo & Hiraiwa 2010). The argument goes as follows: If two relative CPs can be coordinated under one head noun as schematized in (14), the head noun must be outside the relative CP and the relative clause is thus externally-headed.

(14) $[_{DP}$ D NP $[_{\&P}$ $[_{CP}$ C ...] and $[_{CP}$ C ...]]]

The data in (15) show coordination of two relative clauses with ICA in Moksha. The same case is assigned to the head noun in both conjuncts and the head noun is marked for this case.

(15) ICA: external case – NOM, internal case – GEN

Jalga-t'	[**kona-n'**	vɛt'-in'ə		kud-u]	i	[**kona-n'**
friend-DEF.SG.GEN	which-GEN	bring-PST.3.O.1SG.S		house-LAT	and	which-GEN
and-in'ə	l'ɛm-də]	kurək	n'i	tu-j.		
feed-PST.3.O.1SG.S	soup-ABL	soon	already	go-NPST.3[SG]		

'The friend that I brought home and that I gave soup is leaving soon.'

At the first sight, these data seem to argue for the externally-headed status of relatives with ICA, but approaches positioning the head on the left edge inside relative CP can in fact derive these data as well. Nothing precludes the overt head noun from being positioned inside the first conjunct, while the head inside the second conjunct could be zero or deleted under identity (see Bianchi 2000a;b).

(16) $[_{DP}$ D $[_{\&P}$ $[_{CP}$ head C ...] and $[_{CP}$ ~~head~~ C ...]]]

An evidence against such reanalysis of basic coordination data comes from relative clauses where different cases are assigned in the two conjuncts. As shown in (17), the head of coordinated CPs can be then marked for case from either of the two conjuncts.

(17) a. ICA: external case – NOM, internal case – GEN & DAT

Jalga-t'	[**kona-n'**	vɛt'-in'ə		kud-u]	i	[**kona-n'd'i**
friend-DEF.SG.GEN	which-GEN	bring-PST.3.O.1SG.S		house-LAT	and	which-DAT
n'ɛft'-in'ə	od	škaf-t']		kurək	n'i	tu-j.
show-PST.3.O.1SG.S	new	cupboard-DEF.SG.GEN		soon	already	go-NPST.3[SG]

'The friend who I brought home and who I showed the new cupboard is leaving soon.'

b. ICA: external case – NOM, interncal case – GEN & DAT

Jalga-t'i	[**kona-n'**	vɛt'-in'ə		kud-u]	i	[**kona-n'd'i**
friend-DEF.SG.DAT	which-GEN	bring-PST.3.O.1SG.S		house-LAT	and	which-DAT
n'ɛft'-in'ə	od	škaf-t']		kurək	n'i	tu-j.
show-PST.3.O.1SG.S	new	cupboard-DEF.SG.GEN		soon	already	go-NPST.3[SG]

'The friend who I brought home and whom I showed the new cupboard is leaving soon.'

These data exclude an asymmetric placement of the head noun with ICA in the first conjunct.[2] However, as shown in (18), the data can still be captured if the head is outside the coordination, yet within the extended CP projections (Bianchi 2000a;b).

(18) $[_{DP}$ D $[_{CP1}$ head $[_{\&P}$ $[_{CP2}$ $\_\__{head}$ ...] and $[_{CP2}$ $\_\__{head}$ ...]]]]

To sum up, while coordination does not provide decisive evidence by itself, it aligns with the interpretive properties of relatives with ICA and does not argue against the externally-headed status of relatives with ICA. In section 2.6, I will further argue that the head of a relative clause with ICA cannot be positioned in the specifier of a higher extended CP layer, which will exclude the structure in (18) and complete the argument.

2.5 Left periphery restriction

The next property deals with positional restrictions of relatives clauses with ICA. As shown in (19), relative clauses with ICA must be placed on the left edge of the sentence. They cannot follow the main clause material.

(19) a. ICA: external case – GEN, internal case – DAT

Škaf-t'i [**kona-n'd'i** mon put-in'ə fətəgrafijə-t'n'ə-n'] min'
closet-DEF.SG.DAT which-DAT I put-PST.3.O.1SG.S photo-DEF.PL-GEN we
jorda-s'k.
throw.away-PST.3.O.1PL.S
'We threw away the cabinet where I put the photos.'

b. *Min' jorda-s'k **škaf-t'i** [**kona-n'd'i** mon
we throw.away-PST.3.O.1PL.S closet-DEF.SG.DAT which-DAT I
put-in'ə fətəgrafijə-t'n'ə-n'].
put-PST.3.O.1SG.S photo-DEF.PL-GEN
'We threw away the cabinet where I put the photos.'

This restriction does not apply to relative clauses with external case; see (20).

[2]The possibility for the head to show case from either of the two conjuncts is interesting in itself and raises further questions if relatives with ICA are derived by raising, as argued later in the paper. This would mean that the head of a relative clause with ICA shows case assigned inside the relative CP, because it is base-generated within conjunction of two relative CP and moves to the main clause at a later stage. I tentatively suggest that the data in (18) instantiate ATB movement and follow from a combination of forward ellipsis (Salzmann 2012) and backward ellipsis approaches (Ha 2008). The data thus illustrate ATB extraction from one conjunct accompanied by ellipsis in the other conjunct. The head noun bears case from the first conjunct, as in (18a), if extraction proceeds from the first conjunct and ellipsis applies in the second. Ellipsis in the first conjunct and movement from the second conjunct lead to case assigned in the second conjunct on the head noun; see (18b).

(20) No ICA: external case – GEN, internal case – DAT

Min' jorda-s'k **škaf-t'** [**kona-n'd'i** mon put-in'ə
we throw.away-PST.3.O.1PL.S closet-DEF.SG.GEN which-DAT I put-PST.3.O.1SG.S
fətəgrafijə-t'n'ə-n'].
photo-DEF.PL-GEN

'We threw away the cabinet where I put the photos.'

The left periphery restriction is attested in other languages with ICA (see Bianchi 1999, Kholodilova 2013, Kholodilova & Privizentseva 2015, Deal 2016, Abramovitz 2021) and is also typical for correlatives that standardly have an internal head (see Srivastav 1991, Dayal 1996, Lipták 2009, Lin 2020). It also holds for correlatives in Moksha; see (21). The data illustrate a correlative construction in Moksha. It shows that correlatives are placed at the left edge, similarly to relatives with ICA. The two types of relative clauses differ in that the relative pronoun precedes the head noun and shows no case/number inflection in correlatives.

(21) a. Correlative construction

[Kona škaf-t'i mon put-in'ə fətəgrafijə-t'n'ə-n'] min'
which cabinet-DEF.SG.DAT I put-PST.3.O.1SG.S photo-DEF.PL-GEN we
jorda-s'k (s'ɛ-n').
throw.away-PST.3.O.1PL.S that-GEN

'We threw away the cabinet where I put the photos.'

b. *Min' jorda-s'k (s'ɛ-n') [kona škaf-t'i mon
we throw.away-PST.3.O.1PL.S that-GEN which closet-DEF.SG.DAT I
put-in'ə fətəgrafijə-t'n'ə-n'].
put-PST.3.O.1SG.S photo-DEF.PL-GEN

'We threw away the closet in which I put the photos.'

The shared position at the left edge might be viewed as an argument that relatives with ICA have the same structure as correlatives and are thus internally-headed. I will now present four arguments showing that relatives with ICA in Moksha are different from correlatives in that relatives with ICA are moved to the left edge, while correlatives are base generated there.

The first diagnostic is based on the fact that movement is typically restricted by islands: If the relative clause is embedded into an island, movement to the left must be blocked, while the base generation at the left edge could still be possible. In (22), the relative clause with ICA positioned at the left edge is associated with the position inside the adjunct island and the sentence is ungrammatical.

(22) ICA: external case – NOM, internal case – GEN

*__Katə-t'__ [kona-n' t'ejə-n kaz'-əz'] mon
cat-DEF.SG.GEN which-GEN PRON.DAT-1SG.POSS gift-PST.3.O.3PL.S I
ul'-an kən'ɛr'd'-f [kədə __ karma-j kunc'-əmə šejə̯r'-t'].
be-NPST.1SG happy-PTCP.RES if become-NPST.3[SG] catch.FREQ-INF mouse-PL

'I will be happy if the cat that they gifted to me starts catching mice.'

Example (23) confirms that the ungrammaticality is not due the ban on long-distance movement:

(23) ICA: external case – GEN, internal case – DAT

Jalga-z'ə-n'd'i [kona-n'd'i kunarə iz'-ən' zvon'-c'ə] Kat'ɛ
friend-1SG.POSS.SG-DAT which-DAT long.ago NEG.PST-PST.1SG call-FREQ.CN Katja
az-əz'ə Maša vas'ft-əz'ə __.
say-PST.3SG.O.3SG.S Masha meet-PST.3SG.O.3SG.S
'Katja said that Masha met a friend whom I am not calling for a long time.'

Internally-headed correlatives do not obey the island restriction and can correspond to the position within an adjunct:

(24) Correlative construction

[Kona katə-t' t'ejə-n kaz'-əz'] mon ul'-an
which cat-DEF.SG.GEN PRON.DAT-1SG.POSS gift-PST.3.O.3PL.S I be-NPST.1SG
kən'ɛr'd'-f [kədə __ karma-j kunc'-əmə šejə̯r'-t'].
happy-PTCP.RES if become-NPST.3[SG] catch-FREQ.INF mouse-PL
'I will be happy if the cat that was gifted to me starts catching mice.'

The second argument comes from variable binding. Data in (25) show that a variable inside the relative clause with ICA can be bound by a quantified noun phrase in the main clause.

(25) ICA: external case – GEN, internal case – DAT

Pin'ə-t'i [kona-n'd'i **son$_i$** maks-əz'ə jaŗ̥cambɛl'-t']
dog-DEF.SG.DAT which-DAT PRON.3SG give-PST.3SG.O.3SG.S food-DEF.SG.GEN
ɛr' s'ora-n'ɛ-s'$_i$ mɛl'aft-əz'ə.
every boy-DIM-DEF.SG.NOM remember-PST.3SG.O.3SG.S
'Every boy$_i$ remembered the dog that he$_i$ gave food.'

The pronoun inside a correlative clause, on the contrary, cannot co-vary with the quantified noun phrase in the main clause; see (26).

(26) Correlative construction

[Kona pin'ə-t'i **son$_{j/*i}$** maks-əz'ə jaŗ̥cambɛl'-t'] **ɛr'**
which dog-DEF.SG.DAT PRON.3SG give-PST.3SG.O.3SG.S food-DEF.SG.GEN every
s'ora-n'ɛ-s'$_i$ mɛl'aft-əz'ə.
boy-DIM-DEF.SG.NOM remember-PST.3SG.O.3SG.S
'Every boy$_i$ remembered the dog that he$_{j/*i}$ gave food.'

The third argument is based on reflexive binding. The data show that a reflexive pronoun embedded in to the head of a relative clause with ICA can be bound by the material in the main clause that c-commands the base position of the relative CP in the main clause.

(27) ICA: external case – GEN, internal case – DAT

Es'$_i$ mašina-**ncti** [kona-n'd'i put-f lama jarmak] **Vas'ɛ$_i$** dagə
self car-3SG.POSS.SG.DAT which-DAT put-PTCP.RES many money Vasja again
pet'-əz'ə.
repair-PST.3SG.O.3SG.S
'Vasja$_i$ again repaired his$_i$ car that a lot of money was invested into.'

The test cannot be applied to correlatives as their heads cannot contain a reflexive and resist modification very generally:

(28) Correlative construction

*[Kona **es'$_{*i/*j}$** mašina-nc Vasja$_i$ rama-z'ə] mon$_j$
which self car-3SG.POSS.SG.GEN Vasja buy-PST.3SG.O.3SG.S I
pet'-in'ə.
repair-3SG.O.1SG.S
'I repaired his/my car that Vasja bought.'

The final argument comes from coordination. Data in (29) show that a relative clause with ICA can be coordinated with a noun phrase that is marked for the case assigned in the main clause. Such case marking suggests that the full coordinated noun phrase occupied a case assignment position in the main clause prior to its movement to the left edge.

(29) ICA: external case – GEN, internal case – DAT

Ečkə **katə-t'** i osal **pin'ə-t'i** [kona-n'd'i ton maks-at
thick cat-DEF.SG.GEN and skinny dog-DEF.SG.DAT which-DAT you give-NPST.2SG
jaṛca-ma] mon soda-sajn'ə.
eat-NZR I know-NPST.3PL.O.1SG.S
'I know the skinny dog that you give food and the fat cat.'

I conclude that while correlative clauses are base merged at the left edge in Moksha, relative clauses with ICA are generated embedded in the main clause and move to the left edge as sketched in (30).

(30) Relative clauses with inverse case attraction

a. [$_{MC}$ ... predicate ... [head [$_{CP}$ ...]] ...]

b. [[head [$_{CP}$ ...]] [$_{MC}$ ... predicate ... ___ ...]

Thus, placement on the left periphery does not in fact group relatives with ICA and correlatives; it provides no insight in whether relatives with ICA are externally- or internally-headed. I will leave the exact account of movement of relatives with ICA to the left beyond the scope of this paper and tentatively suggest that it is required because the head DP that bears case assigned within the relative clause cannot appear in the position where another case is assigned in the main clause; see Abramovitz (2021) or Author (2022) for possible technical implementations.

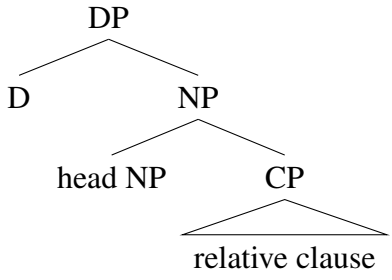
2.6 Structures for externally-headed relatives

Let us take stock of the empirical picture. The interpretive data unambiguously demonstrate that relatives with ICA are externally-headed. The coordination test supports an externally-headed structure, even though it does not provide sufficient evidence on its own. Placement at the left edge does not argue against an externally-headed structure. The nature of this position differs for relatives with ICA, and correlatives in Moksha and therefore does not indicate structural similarity between the two types of relatives. Thus, I conclude that relatives with ICA are externally-headed. In this section, I review possible structures of externally-headed relative clauses.

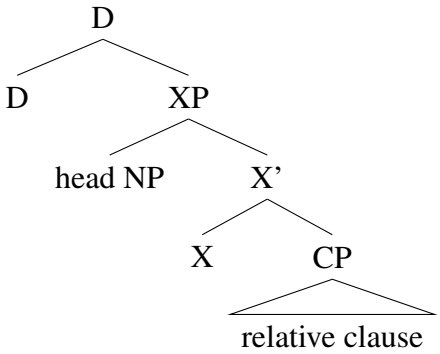
Relative clauses considered externally-headed from a typological perspective are assigned different syntactic structures in the formal literature. There are two main options. The first structure is illustrated in (31) and it shows a regular noun phrase structure for the head noun. The relative CP is combined directly with the NP and the full NP appears in the complement of the external D head. The second structure is given in (32) and it owes its existence to the raising derivation, under which the head originates inside the relative CP and moves to its surface position. Since movement targets specifier positions, the head NP also occurs in the specifier. Analyses differ with respect to the identity of the projection that the head NP is a specifier to. It was suggested to be one of the extended C layers (Bianchi 1999; 2000b) or some nominal head, e.g., *n* (Bhatt 2002, Deal 2016).

However, independently of the label of this projection, it breaks down the head-complement relation between the D head and the NP, so that NP is not D's complement, but a specifier of D's complement. This deviation from the regular noun phrase structure was noted and argued to give incorrect empirical predictions for a number of phenomena including inflection on nominal modifiers that must be determined by an immediately c-commanding D head (cf. Heck 2005 on German) and anti-pronominal contexts that require a lexical DP and cannot be satisfied by a D head and an NP in the specifier position (Pankau 2018).

(31) DP has a regular structure



(32) NP is in Spec,XP



I will now show that the structure in (32) also makes incorrect predictions for nominal inflection in Moksha. The evidence comes from definiteness marking. As shown in (33), nouns in Moksha are marked for definiteness. It is realized by a suffix that also expresses number and case information.

(33) a. t'ɛ pin'ə-**t'i**
this dog-DEF.SG.DAT
'to this dog'

b. kodamə bd'ə pin'ə-**n'd'i**
how INDEF dog-DAT
'to some dog'

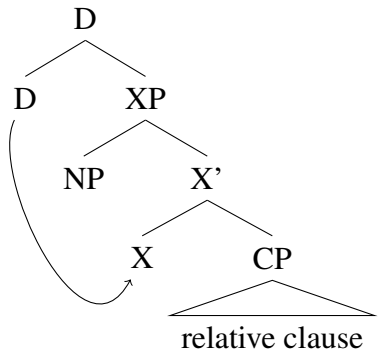
Data in (34) show that heads of relative clauses with ICA bear this regular definiteness inflection.

(34) a. ICA: external case – NOM, internal case – DAT
T'ɛ pin'ə-**t'i** [kona-n'd'i maks-ən' jaṛca-ma] aščˇ-i dvor-sə.
this dog-DEF.SG.DAT which-DAT give-PST.1SG eat-NZR be-NPST.3[SG] yard-IN
'This dog that I gave food is in the yard.'

b. ICA: external case – NOM, internal case – DAT
Kodamə bd'ə pin'ə-**n'd'i** [kona-n'd'i maks-ən' jaṛca-ma] aščˇ-i
how INDEF dog-DAT which-DAT give-PST.1SG eat-NZR be-NPST.3[SG]
dvor-sə.
yard-IN
'Some dog that I gave food is in the yard.'

Since definiteness is associated with the D head, not the noun itself, further operations need to apply for definiteness to be morphologically realized on a noun. For instance, this can be ensured by head movement of the N to the D head in syntax or by Lowering of the definiteness to the N head in morphology. Both these operations are set up to target heads in one projection line (Travis 1984, Baker 1988, Embick & Noyer 2001), so they produce a correct outcome if a DP that heads a relative clause has a regular DP structure as in (31). For the structure in (32), both head movement and Lowering predict that the D head interacts with the head of the additional functional projection X that hosts NP in its specifier, not the NP head of the relative clause. For instance in case of Lowering, definiteness then is predicted to appear on the X head, not on the noun; see (35).

(35) Lowering approach to definiteness inflection



The argument so far depends on established tools of combining syntactic heads into words,[3] but it can be further generalized to be independent of the specific operations that bring inflection onto a

[3]Another option for bringing the noun and definiteness inflection together is Local Dislocation (Embick & Noyer 2001). This operation is not sensitive to syntactic structure and therefore places inflection on an adjacent noun inde-

noun. I will now show that definiteness in Moksha is more generally not realized in the structural position occupied by the noun in (32); i.e., on specifiers of the main projection line. The evidence comes from adnominal modifiers as in (36). These modifiers are nominal themselves, but lack the DP layer as witnessed by their inability to be modified by a demonstrative or be definite; see (36b-c).

(36) a. Son n'ɛj-əz'ə [s'en'əm sel'mə] s't'ər'-n'ɛ-t' /
she see-PST.3SG.O.3SG.S blue eye girl-DIM-DEF.SG.GEN

b. *[t'ɛ s'en'əm sel'mə] s't'ər'-n'ɛ-t' /
this blue eye girl-DIM-DEF.SG.GEN

c. [s'en'əm sel'mə-(*s'/*t'n'ə)] s't'ər'-n'ɛ-t'.
blue eye-DEF.SG/DEF.PL girl-DIM-DEF.SG.GEN
'She saw the girl with (these/ the) blue eyes.'

These noun phrases are parallel to the structures assigned to heads of relative clauses by (32) in that there is an NP that modifies the main projection line in the DP. Data in (37) show that definiteness belonging to the main projection line cannot be realized on NPs in this structural position.

(37) Son n'ɛj-əz'ə
she see-PST.3SG.O.3SG.S

a. [t'ɛ [s'en'əm sel'mə] s't'ər'-n'ɛ-**t'**]
this blue eye girl-DIM-DEF.SG.GEN

b. * [t'ɛ [s'en'əm sel'mə-**t'**] s't'ər'-n'ɛ]
this blue eye-DEF.SG.GEN girl-DIM

c. * [t'ɛ [s'en'əm sel'mə-**s'**] s't'ər'-n'ɛ-**n'**].
this blue eye-DEF.SG.NOM] girl-DIM-GEN
'She saw this girl with blue eyes.'

Thus, independently of the exact mechanism that could bring about a correct inflection in relative clause heads under the structure with the additional XP in (32), it would predict that the definiteness from the D head is also realized on the modifier instead of the noun in (37), contrary to the facts.

To sum up, in this section I have argued that despite internal case marking on the head noun relatives with ICA are externally-headed and their heads must have a regular noun phrase structure. In the next section, I will turn to the CP-internal syntax of relatives with ICA.

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pendently of whether it is a head or a specifier. This allows to derive inflection on a noun positioned in the Spec,XP and an NP in the complement of the D head in the same way. However, this insensitivity to structure and reliance on linear adjacency create problems of their own. The D head and the noun can be separated by various nominal modifiers, such as an adjective, for instance: *t'ɛ mazi pin'ə-t'i* 'this beautiful dog-DEF.SG.DAT'. An approach that relies on Local Dislocation would incorrectly predict the inflection to appear on the adjective, contrary to fact.

When applied to relative clauses, Local Dislocation also fails to capture the distinction between a head of the relative clause and the modifier in (37). In this example, the linear relation between the D head and a modifier of the head noun—one that, unlike the head of the relative clause, never shows definiteness inflection in the main projection line—is the same as the linear relation between the D head and the head noun of the relative clause.

3 Relative CP-internal syntax

3.1 Background

There are three major derivation types proposed for externally-headed relative clauses: raising, matching, and head-external. Under the raising derivation, the head of the relative clause is first merged in the relativized position within the relative CP and then moves up to head the relative clause (Schachter 1973, Vergnaud 1974, Kayne 1994, Donati & Cecchetto 2011, Sportiche 2017).

(38) $[_{DP}\ \text{head}\ [_{CP}\ C_{rel}\ \ldots\ \_\_\text{head}\ ]\ ]$

Under the matching account, there are two instances of the head noun, not related by movement. One head is generated inside the relative CP and the other one is outside. Since the two heads are identical, one of them is deleted before the derivation terminates (Munn 1994, Cresti 2000, Citko 2001, Salzmann 2006; 2017; 2018, Cinque 2015; 2020).

(39) $[_{DP}\ \text{head}\ [_{CP}\ \sout{\text{head}}\ C_{rel}\ \ldots\ \_\_\text{head}\ ]\ ]$

Finally, under the head external structure, the head is base merged outside of the relative CP and there is no representation of the head noun inside the relative CP (Partee 1975, Chomsky 1977, Jackendoff 1977, Haegeman 1994, and Boef 2012 to some extent).

(40) $[_{DP}\ \text{head}\ [_{CP}\ \ldots\ C_{rel}\ \ldots\ ]\ ]$

Relative clauses with ICA are prominent in the debate on what is the correct derivation of relative clauses because they differ from regular externally-headed relative clauses in that the head noun shows case assigned inside the relative CP. Such case marking straightforwardly follows under the raising derivation: The head noun is base merged inside the relative clause, receives case in this position, and then moves to the main clause (see Bianchi 1999; 2000b, Deal 2016).

(41) $[_{DP}\ \text{head-DAT}\ [_{CP}\ C_{rel}\ \ldots\ \text{predicate}_{[dat]}\ \_\_\text{head-DAT}\ ]\ \text{predicate}_{[nom]}\ ]$

In this section, I will provide evidence showing that the raising derivation indeed underlies relative clauses with ICA. I will apply well-established reconstruction diagnostics to relatives with ICA and compare this type of relative clauses and regular externally-headed relative clauses also attested in Moksha; see (42a) with ICA and (42b) with an external case.

(42) a. No ICA: external case – GEN, internal case – DAT

Jalga-z'ə-**n'** [kona-**n'd'i** t'aš-n'ə-n' is'ak] mon
friend-1SG.POSS.SG-GEN which-DAT write-FREQ-PST.1SG yesterday I
n'ɛj-sa kurək.
see-NPST.3SG.O.1SG.S soon
'I will soon see my friend to whom I have been writing yesterday.'

b. ICA: external case – GEN, internal case – DAT

Jalga-z'ə-**n'd'i** [kona-**n'd'i** t'aš-n'ə-n' is'ak] mon
friend-1SG.POSS.SG-DAT which-DAT write-FREQ-PST.1SG yesterday I
n'ɛj-sa kurək.
see-NPST.3SG.O.1SG.S soon
'I will soon see my friend to whom I have been writing yesterday.'

I will show that the results are best accounted for if relatives with ICA are derived by raising and the raising derivation co-exists with another derivation type that underlies relatives with external case in Moksha.

3.2 Idioms

The first diagnostic involves idioms and is based on the assumption that parts of an idiom must be base generated as a constituent (Bach 1974, Chomsky 1980: 149-153, McCawley 1998: 57). The ability of a head noun to build an idiom with a material in the relative CP or in the main clause shows whether the head noun is base generated in the main or in the relative clause. I will use Moksha idiom *pan'žəms potmə.* It means 'to tell everything' and is literarily composed out of verb *pan'žəms* 'to open' and noun *potmə* meaning 'stomach' or 'gut' in the direct object position.

I start with the scenario where the idiom is placed inside the relative CP. In (43a-b), the head noun builds an idiom with the predicate of the relative clause. The data show that the head noun is then obligatorily marked for the internal case; that is, idiomatic interpretation inside the relative clause is possible for relatives with ICA, but not for regular externally-headed relative clauses.

(43) a. ICA: external case – NOM, internal case – GEN

Potmə-nc [kona-n' Vas'ɛ **pan'ž-əz'ə** ava-ncti
gut-3SG.POSS.SG.GEN which-GEN Vasja open-PST.3SG.O.3SG.S wife-3SG.POSS.SG.DAT
__] kunarə af maks-i pokoj.
long.ago NEG give-PST.3[SG] rest
'Everything that Vasja revealed to his wife was worrying him for a long time.'

b. No ICA: external case – NOM, internal case – GEN

*__Potmə-c__ [kona-n' Vas'ɛ **pan'ž-əz'ə** ava-ncti
gut-3SG.POSS.SG.NOM which-GEN Vasja open-PST.3SG.O.3SG.S wife-3SG.POSS.SG.DAT
__] kunarə af maks-i pokoj.
long.ago NEG give-PST.3[SG] rest
'Everything that Vasja revealed to his wife was worrying him for a long time.'

The idiom is formed by the head of the relative clause and the predicate of the main clause in (44a-b). Unlike in the previous scenario only the case assigned in the main clause is grammatical on the head noun, ICA is not possible.

(44) a. No ICA: external case – GEN, internal case – NOM

Potmə-nc [kona kunarə af maks-i pokoj] Vas'ɛ
gut-3SG.POSS.SG.GEN which[NOM] long.ago NEG give-PST.3[SG] rest Vasja
pan'ž'-əz'ə ava-ncti.
open-PST.3SG.O.3SG.S wife-DEF.SG.DAT
'Vasja revealed to his wife everything that was worrying him for a long time.'

b. ICA: external case – GEN, internal case – NOM

*__Potmə-c__ [kona kunarə af maks-i pokoj] Vas'ɛ
gut-3SG.POSS.SG.NOM which[NOM] long.ago NEG give-PST.3[SG] rest Vasja
pan'ž'-əz'ə ava-ncti.
open-PST.3SG.O.3SG.S wife-DEF.SG.DAT
'Vasja revealed to his wife everything that was worrying him for a long time.'

Thus, the data show a one-to-one correspondence between the case marking on the head noun and idiomatic interpretation.[4] If the idiom is in the relative clause, the case assigned in the relative clause is required. If the idiom is in the main clause, the head noun must be also marked for the case assigned in the main clause.

3.3 Anaphor binding

The next reconstruction effect is based on binding of anaphors. Moksha has several ways of expressing reflexivity (see Toldova & Shalganova 2018 for a recent description). In the adnominal position that is relevant for this diagnostic simple reflexive *es'* is used; see (45). This pronoun is obligatorily bound by the c-commanding noun phrase.

(45) Van'ɛ$_i$ es'$_{i/*j}$ var'aga-nc mu-z'ə.
Vanja self mitten-3SG.POSS.SG.GEN find-PST.3SG.O.SG.S
'Vanja$_i$ found his$_{i/*j}$ mitten.' (Toldova & Shalganova 2018: 654)

[4]The correlation between the idiomatic interpretation and case on the head noun is robust for the idiom *pan'žəms potmə* 'to tell everything' that is used in the examples above, but not all Moksha idioms display uniform behavior. For instance, judgments of native speakers vary for the idiom *s'ed'ijəc af ozaj*, which has an idiomatic meaning 'to worry' and a literal meaning 'his heart does not sit'. Some speakers demonstrate a dependency on the case marking of the head noun for this idiom as well, while other speakers do not show a correlation with case and allow the idiomatic interpretation independently of the case marking on the head noun. The existence of these two idiom types requires systematic research, but on the basis of the data available at this point, I hypothesize that the difference is determined by the degree of idiomaticity: idioms with a lower degree of idiomaticity do not need to be base-generated as a constituent, but the presence of both parts of an idiom in a broader context is sufficient, at least for some speakers (cf. Nunberg et al. 1994, Larson 2017, and see also Webelhuth et al. 2018).

I will now turn to binding in relative clauses and start with the case where the binder is inside the relative clause. In (46a-b), the head of the relative clause contains the reflexive. This example shows that binding by the CP-internal material succeeds if the head noun is marked for the internal case, but is ungrammatical if the head shows external case.

(46) a. ICA: external case – NOM, internal case – GEN

Es'$_i$ kud-**ənc** [kona-n' **Vas'ɛ$_i$** mi-z'ə] t'ɛn'i
self house-3SG.POSS.SG.GEN which-GEN Vasja sell-PST.3SG.O.3SG.S now
aščˇ-i savə.
be-PST.3[SG] empty
'His$_i$ house that Vasja$_i$ sold is now empty.'

b. No ICA: external case – NOM, internal case – GEN

*__Es'$_i$__ kud-**əc** [kona-n' **Vas'ɛ$_i$** mi-z'ə] t'ɛn'i
self house-3SG.POSS.SG.NOM which-GEN Vasja sell-PST.3SG.O.3SG.S now
aščˇ-i savə.
be-PST.3[SG] empty
'His$_i$ house that Vasja$_i$ sold is now empty.'

Data in (47a-b) show that the result holds if the antecedent for the reflexive pronoun is inanimate and thereby logophoric binding is excluded (see Charnavel & Sportiche 2016, Charnavel 2019, and Charnavel & Bryant 2022).

(47) a. ICA: external case – NOM, internal case – DAT

Es'$_i$ luv-ij-ənzə-**n'd'i** [kona-t'n'ə-n'd'i t'ɛ **kn'iga-s'$_i$**
self read-PTCP.ACT-3SG.POSS.PL-DAT which-DEF.PL-DAT this book-DEF.SG.NOM
maks-i nad'əja-ma __] uč-ij̊-t' pe.
give-NPST.3[SG] hope-NZR wait-NPST.3-PL end
'Its$_i$ readers whom this book$_i$ gave hope are waiting for the continuation.'

b. No ICA: external case – NOM, internal case – DAT

*__Es'$_i$__ luv-ij-ənzə [kona-t'n'ə-n'd'i t'ɛ **kn'iga-s'$_i$**
self read-PTCP.ACT-3SG.POSS.PL which-DEF.PL-DAT this book-DEF.SG
maks-i nad'əja-ma __] uč-ij̊-t' pe.
give-NPST.3[SG] hope-NZR wait-NPST.3-PL end
'Its$_i$ readers whom this book$_i$ gave hope are waiting for the continuation.'

However, anaphor binding differs from idioms in that there is no correlation between anaphor binding in the main clause and the case of the head noun. In (48a-b), the reflexive is still embedded in the head noun, but the binder is positioned within the main clause. The head noun may be marked for the case assigned in the main clause or for the case assigned in the relative clause. Both markings are grammatical.

(48) a. ICA: external case – GEN, internal case – DAT

Es'$_i$ mašina-**ncti** [kona-n'd'i put-f lama jarmak] **Vas'ɛ$_i$** dagə
self car-3SG.POSS.SG.DAT which-DAT put-PTCP.RES many money Vasja again
pet'-əz'ə.
repair-PST.3SG.O.3SG.S

'Vasja$_i$ again repaired his$_i$ car that a lot of money was invested into.'

b. No ICA: external case – GEN, internal case – DAT

Es'$_i$ mašina-**nc** [kona-n'd'i put-f lama jarmak] **Vas'ɛ$_i$** dagə
self car-3SG.POSS.SG.GEN which-DAT put-PTCP.RES many money Vasja again
pet'-əz'ə.
repair-PST.3SG.O.3SG.S

'Vasja$_i$ again repaired his$_i$ car that a lot of money was invested into.'

To sum up, binding of the anaphor in the relative clause forces internal case on the head noun while binding in the main clause is grammatical with both internal and external case.

3.4 Condition C

The final diagnostic relies on condition C. It requires for R-expressions to be free throughout the derivation (Chomsky 1981). This diagnostic applies to the relative clauses as follows: The head noun phrase contains an R-expression and the relative clause includes a third person pronoun in the position that c-commands the gap inside the relative CP. Example (49) shows that in this scenario the internal case marking on the head noun incurs the violation of condition C: *Pushkin* in the head noun cannot co-refer with the pronoun in the subject position of the relative clause.

(49) ICA: external case – NOM, internal case – GEN

Puškin-ən'$_j$ kn'iga-**nc** [kona-n' **son$_{i/*j}$** t'ɛšt'-əz'ə
Pushkin-GEN book-3SG.POSS.SG.GEN which-GEN PRON.3SG write-PST.3SG.O.3SG.S

__ Pavləfskɛj dača-sə] aščі-i bibl'iat'eka-sə-nək.
pavlosk's country.house-IN be-NPST.3[SG] library-IN-1PL.POSS

'Pushkin's book that he wrote in Pavlovsk's country house is in our library.'

Coreference between the proper name and the pronoun is possible if the head noun is marked for the external case.

(50) No ICA: external case – NOM, internal case – GEN

Puškin-ən'$_j$ kn'iga-**c** [kona-n' **son$_{i/j}$** t'ɛšt'-əz'ə
Pushkin-GEN book-3SG.POSS.SG.NOM which-GEN PRON.3SG write-PST.3SG.O.3SG.S

__ Pavləfskɛj dača-sə] aščі-i bibl'iat'eka-sə-nək.
pavlosk's country.house-IN be-NPST.3[SG] library-IN-1PL.POSS

'Pushkin's book that he wrote in Pavlovsk's country house is in our library.'

To sum up, coreference between the proper name in the head and a pronoun in the relative clause forces external case and is blocked by the internal case marking.

Besides the consequences for the structure of relative clauses, these data have implications for DP structure in Moksha. They show that the genitive modifier (the possessor in (49)) must be present in the first-merge position of the noun phrase; it cannot be late-merged. The data also require the genitive modifier to be associated with a lower position at the NP level, because under the raising derivation only the NP, not the whole DP, moves from the relative clause to the main clause. Both of these conditions are satisfied if genitive modifiers—arguments as well as possessors—are first merged as sisters of the N head and then move to a higher position at the DP-level (cf. Szabolcsi 1994, Delsing 1998). As a result, they are not adjuncts and are not eligible targets for late Merge. They also cannot avoid the low position in the relative CP by being generated directly in the specifier of the external D.

3.5 Analysis

The table in (51) summarizes the application of reconstruction diagnostics to relative clauses in Moksha. It shows that relative clauses have different reconstruction profiles depending on the case marking of the head noun. In particular, relative clauses with ICA allow idioms and anaphor binding in the relative clause and cannot obviate the violation of condition C. Relatives with the regular external case allow for idioms in the main clause and obviate condition C violations. Both types of relative clause are compatible with anaphor binding in the main clause.[5]

[5]A complication in this otherwise clear-cut empirical picture comes from variable binding by a quantified noun phrase. As shown in (51), variable binding shows no correlation with the case on the head noun, and a variable in the head noun can be bound by a CP-internal quantified noun phrase independently of whether the head noun is marked with internal or external case.

(51) External case – NOM, internal case – GEN

Son'$_{i/j}$	kel'gəma	igruška-**nc/c**		[kona-n'	[**ɛr'**
PRON.3SG.GEN	favorite	toy-3SG.POSS.SG.GEN/3SG.POSS.SG.NOM		which-GEN	every
s'ora-n'ɛ-t'$_j$	d'ɛd'a-c]	kand-əz'ə	__	bal'n'ica-s]	l'ezd-i
boy-DIM-DEF.SG.GEN	mother-3SG.POSS.SG	bring-PST.3SG.O.3SG.S		hospital-ILL	help-NPST.3[SG]

af pel'ə-m-s vrač-də.
NEG fear-INF-ILL doctor-ABL

'His$_{i/j}$ favorite toy that every boy's$_j$ mother brought to the hospital helps him to be not scared of doctors.'

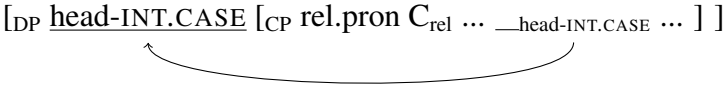
I suggest that these data shed no light on the structure of relative clauses in Moksha, and that the absence of a correlation with the case marking of the head noun is due to the requirements on variable binding, which—unlike anaphor binding—do not rely on c-command in syntax (see Salzmann 2018 for the same conclusion and Jacobson 2018, Sternefeld 2018, Barker 2018 for a discussion of various problems with using variable binding as a diagnostic for relative clause structure). This hypothesis is confirmed by the fact that variable binding remains grammatical even when the gap position inside the relative clause (i.e., the position where the head noun is base-generated under the raising analysis) is not c-commanded by a quantified noun phrase.

(53) Reconstruction in Moksha relative clauses

Diagnostics	Relative clause with internal case (ICA)	Relative clause with external case
1. Idiom in the relative clause	OK	*
2. Idiom in the main clause	*	OK
3. Anaphor binding in the relative clause	OK	*
4. Anaphor binding in the main clause	OK	OK
5. Condition C in the relative clause	*	OK

I would like to suggest that this empirical picture is best derived if relative clauses with ICA are derived by raising. As mentioned above, this straightforwardly accounts for the internal case marking on the head: The head noun is base generated inside the relative CP, gets its case there, and then moves to the main clause afterwards.

(54) Raising derivation for relatives with internal case



Such derivational path of the head noun also accounts for the reconstruction profile of relatives with ICA. First, assuming that parts of an idiom must be base generated together, first merge inside the relative clause enables idioms inside the relative clause. The position in the main clause is derived by movement, so that the requirement for parts of an idiom to be base generated together is not met in the main clause and idiomatic interpretation is not available.

Second, I assume that anaphor binding applies in syntax (Reuland 2001; 2011, Hicks 2008; 2009, Rooryck & Vanden Wyngaerd 2011, Murugesan 2022) and is derived by Agree. Similarly to other instances of Agree, anaphor binding may apply at any stage of the syntactic computation as soon as the c-command requirement between a probe and a goal is satisfied. This accounts for the anaphor binding data in the following way: Since heads of relatives with ICA are base merged in relative CPs, the reflexive pronoun contained in the head is c-commanded by any relative clause-internal material that c-commands the gap position and can be bound there. After movement out of the relative clause to the main clause, the head NP is c-commanded by the main clause material and appears in the same local domain with it. Therefore, anaphor binding is possible in the main clause as well.

Third, I assume that condition C holds in syntax and known cases of Condition C obviation involving A-movement and adjuncts are accounted for by late merge (cf. Lebeaux 1998, Takahashi & Hulsey 2009, Keine & Bhatt 2019). Under the raising derivation in (54), the head noun must be

(52) External case – GEN, internal case – NOM

Son'$_{i/j}$	kel'gəma	igruška-**c**	[kona	__	aščˇ-i	**ɛr'**	**s'ora-n'ɛ-t'$_j$**	
PRON.3SG.GEN	favorite	toy-3SG.POSS.SG	which		be-NPST.3[SG]	every	boy-DEF.SG.GEN	
komnata-sə]	vračˇ-t	ur'ada-z'.						
room-IN	doctor-PL	take.away-PST.3.O.3PL.S						

'His$_{i/j}$ favorite toy that is in every boy's$_j$ room doctors took away.'

inside the relative clause to get internal case, the late merge is blocked. As a result, condition C applies in the relative CP internal position and cannot be obviated.

Relative clauses with external head show a different reconstruction profile. I suggest that it is derived by the the head-external derivation sketched in (55). The head noun is base generated in the main clause, it never was a part of the relative CP and therefore cannot show case assigned there.

(55) Head-external derivation for relatives with external case

[$_{DP}$ <u>head-EXT.CASE</u> [$_{CP}$ rel.pron C_{rel} ...]]

The first merge position of the head noun phrase in the main clause enables idioms in the main clause and rules out idioms in the relative clause. Similarly, since the head is first merged in the main clause, an anaphor contained in the head noun phrase cannot be c-commanded and bound within the relative clause. Finally, the head noun was never part of the relative clause, so it is not evaluated for condition C there.

Overall, this analysis supports the co-existence of two structures for relative clauses in one language (Sauerland 1998, Bhatt 2002, Harris 2008, Jarvis 2025) and provides yet another case where superficially similar phenomena have different syntactic derivations.

3.6 Alternatives

In this section, I will show that other derivations alone or in combinations fail to derive the data.

I will start with an account where head-external approach underlies both relatives with ICA as well as relative clauses with external case. Under the proposal above, the head-external structure derives relative clauses with external case, but not relative clauses with ICA. In principle, head-external generation can also account for the possibility of case attraction: The head noun is base generated in the main clause, but gets its case via agreement with a relative pronoun that bears case assigned inside the relative CP and moves to the left periphery of the relative clause (cf. Harbert 1983, Gračanin-Yuksek 2013, and also Bader & Meng 1999, Bader & Bayer 2006, Czypionka et al. 2018).

(56) ICA by agreement

[$_{DP}$ <u>head-INT.CASE</u> [$_{CP}$ rel.pron-INT.CASE C_{rel} ... $\_\_{rel.pron}$ ...]]

case

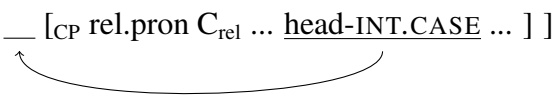
However, the challenge is that this agreement in case must alter the reconstruction profile of the head noun. In particular, Agree with the relative pronoun must enable the interpretation of the head noun inside the relative CP. This clearly does not follow from the Agree operation as it stands and to the best of my knowledge such consequences of Agree are unknown for its other applications. Therefore, I conclude that the head-external only approach is not suitable to derive all relative clauses in Moksha.

Another option is that the raising derivation currently suggested only for relatives with ICA underlies relatives with regular external case as well. This is possible if being merged inside the

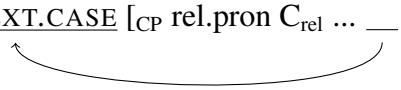
relative clause the head does not receive case in its base position, but case assignment can be postponed until after movement; see (57b).

(57) Raising only

a. ICA: Case assignment before movement



b. No ICA: Case assignment after movement



While in section 4.3, I will suggest that the version of raising with late case assignment in (57b) is indeed attested in other languages, it does not account for relative clauses with external case in Moksha. The problem again lies in the account of the reconstruction data. Despite the same base positions and derivational paths, heads of relative clauses with internal and external case in Moksha show connectivity to different positions, and it seems that the case marking determines which position this is. Such a dependency between case and connectivity resembles the distinction between A and Ā movement: A-moved noun phrases get case in their landing position and, as a rule, are not evaluated for condition C in their base position. They are thus similar to the heads with the external case. Ā-moved noun phrases, on the contrary, get case in their base position and are evaluated in their base position for condition C as well. They are thus similar to the heads with the internal case. This is, however, where similarities end. Binding of reflexives is typically possible in a base and in a final position independently of a movement type (see, e.g., Barss 1986; 2001), while the data above show that heads with the external case cannot be bound in the relative CP, in what would be is their base position under this account. Similarly, both A- and Ā-moved phrases can form an idiom in their first merge position (cf. Postal 1974). This again differs from the behavior of heads with the external case, which do not form idioms in the relative CP.

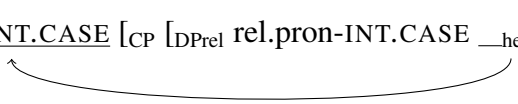
The final alternative analysis for relative clauses in Moksha involves matching derivation. Matching can account for relative clauses with internal case marking if the external head is deleted and the internal head is phonologically realized (Cinque 2015; 2020, Wood et al. 2017, and to some extent Abramovitz 2021).

(58) ICA by matching

[[DP ~~head-EXT.CASE~~ [CP head-INT.CASE relative.pronoun ...]] ...]

The problem is however that heads with internal case appear to the left of the relative pronoun. This means that the internal head must still move across the relative pronoun as shown in (59). In result, matching needs to include raising as its proper subpart and it must be additionally followed by the deletion of the second external instance of the head.

(59)



Next, if matching were the only derivation of relative clause, and needed to account for both relative clauses with ICA and relative clauses with external case, then relatives with external case could be derived by deletion of the internal head; see (60).

(60) [head-EXT.CASE ~~head-INT.CASE~~ [$_{CP}$ [$_{DPrel}$ rel.pron-INT.CASE $\_\__{head}$] C_{rel} ... $\_\__{DPrel}$ ...]]

In that case, relatives with ICA and relatives with external case share the syntactic part of the derivation and differ in which of the two heads is realized at PF. In order to derive correlation between case and reconstruction effects, PF-realization of the head must correlate with its interpretational possibilities in the following way: If the external head is pronounced, only the external head must participate in idiomatic interpretation, anaphor binding, and condition C. The internal head must be invisible for these processes. If the internal head is realized, the internal position must be visible for idiom interpretation and condition C, but both the external and the internal head remain accessible for anaphor binding. This does not follow from PF-deletion of a head and further contradicts known applications of the matching analysis that accounts for the reconstruction in regular externally-headed relative clauses as in English or German by assuming that the external head can be pronounced, while the internal head is interpreted (Salzmann 2018).

4 The syntax of raising

4.1 Background

In the previous two sections, two conclusions were reached. First, relative clauses with ICA are externally-headed and their external head has a regular DP structure as shown in (61). Second, these relative clauses are derived by raising of the head noun phrase from the relativized position in the relative clause to the main clause; see (62).

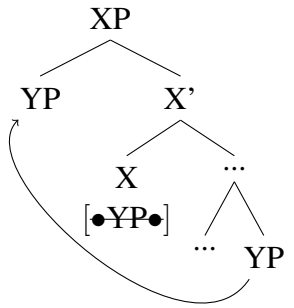
(61) The final structure of relative with ICA:
[$_{DP}$ D [$_{NP}$ NP [$_{CPrel}$ ...]]]

(62) Movement of the head noun
[$_{DP}$ head [$_{CP}$ C_{rel} ... $\_\__{head}$]]

It turns out that providing a theoretical account that combines these two conclusions is surprisingly non-trivial. The problem is that the head noun phrase moves from within the relative clause and movement typically proceeds to specifier positions; see (63).[6]

[6]Following Heck & Müller (2007), I indicate Merge features as [•F•] and Agree features as [∗F∗]. This is a purely notational decision that, in substance, aligns fully with standard definitions of Agree and Merge. Agree features are valued or checked over some distance and require c-command. Merge features are checked only locally under sisterhood, for both internal and external Merge. Internal and external Merge differ in their search domains: External Merge requires interaction with the Numeration, whereas internal Merge involves search within the existing tree structure.

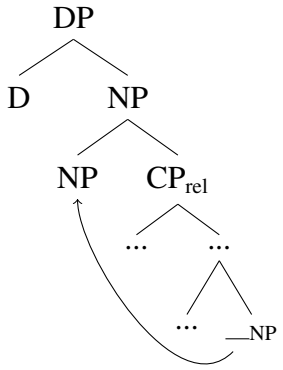
(63) Movement



For this reason, several formal accounts of relative clauses place the head noun in a specifier position of some additional functional projection (Bianchi 1999; 2000b, Bhatt 2002, Deal 2016). But as discussed in section (2.6) such structure does not allow the head NP to be the complement of the external D head and are disqualified on the empirical grounds.

What is required to account for both movement of the head noun and the correct DP structure is projecting movement of the head noun phrase; i.e., the NP moves to merge with the CP and projects in its landing site yielding an NP that is then selected by the external D head; see (64).[7]

(64) Projecting movement in relative clauses



The idea that an empirically accurate implementation of the raising syntax should involve projecting movement is not new; see the discussion by Bhatt (2002). Donati (2006), Donati & Cecchetto (2011), Cecchetto & Donati (2016) develop an implementation of the raising derivation that employs projecting movement. The account is based on Chomsky's (2013) labeling algorithm, according to which labeling of newly created syntactic objects relies on Minimal Search. This system suggests that if a projection is built by merge of a head and a phrase, the search always detects the head first, as it is a computationally simpler item. This accounts for projection of the head noun in

[7]Overall, the concept of projecting movement is clearly peripheral and yet persistent in generative syntax: Projecting movement of terminals was sometimes used for deriving extended functional projections and head movement (Pesetsky 1985, Ackema et al. 1993, Haider 2000, Koeneman 2000, Bury 2003, Fanselow 2003, Surányi 2005, and Georgi & Müller 2010, Müller 2011, Börjesson & Müller 2020). It was also proposed that wh-words can project upon their movement to the left periphery giving raise to free relative clauses (Bury 2003, Donati 2006, Citko 2008) or even complement clauses (Bayer & Brandner 2008). Some proposals also allow for the projecting movement of a branching constituent (Hornstein & Uriagereka 2002, Bury 2003, Georgi & Müller 2010, Sato 2010).

relative clauses as follows: The head moved from within the relative clause is a syntactic terminal and therefore it projects in its landing site.

While accounting for the theoretically challenging notion of projecting movement, this analysis requires that it is only the N head that is moved from within the relative CP. This does not allow us to account for the reconstruction effects that the raising derivation is set out to derive, because elements that are required to be interpreted in a position within the relative clause are often modifiers of the N head rather than the N head itself. As a result, this approach also does not derive the Moksha data. Recall from sections 3.3 and 3.4 that anaphors embedded in the nominal DP can be bound within the relative CP (see (65)) and nominal modifiers are evaluated there for condition C (see (66)). These data provide primary evidence in favor of the raising derivation, but also require for more than just an N head to move from inside the relative CP.

(65) ICA: external case – NOM, internal case – DAT

Es'$_i$	luv-ij-ənzə-**n'd'i**	[kona-t'n'ə-n'd'i	t'ɛ	**kn'iga-s'$_i$**	
self	read-PTCP.ACT-3SG.POSS.PL-DAT	which-DEF.PL-DAT	this	book-DEF.SG.NOM	
maks-i	nad'əja-ma]	uč-i̊j-t'	pe.		
give-NPST.3[SG]	hope-NZR	wait-NPST.3-PL	end		

'Its$_i$ readers whom this book$_i$ gave hope are waiting for the continuation.'

(66) ICA: external case – NOM, internal case – GEN

Puškin-ən'$_j$	kn'iga-**nc**	[kona-n'	**son$_{i/*j}$**	t'ɛšt'-əz'ə	
Pushkin-GEN	book-3SG.POSS.SG.GEN	which-GEN	PRON.3SG	write-PST.3SG.O.3SG.S	
__	Pavləfskɛj dača-sə]	aščі	bibl'iat'eka-sə-nək.		
	Pavlosk's country.house-IN	be-NPST.3[SG]	library-IN-1PL.POSS		

'Pushkin's book that he wrote in Pavlovsk's country house is in our library.'

To sum up, existing implementations of the raising derivation do not account for the relative clauses with ICA in Moksha. In the next section, I will suggest an implementation of the raising derivation that combines projecting movement and the phrasal status of the head noun.

4.2 Projecting movement

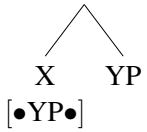
I would like to suggest that projecting movement follows from two assumptions. First, labels[8] of newly created projections are established according to the projection by selection principle (Chomsky 1995, Adger 2003 as well as Stabler 1997):

(67) Projection by selection
The item that selects is the item that projects.

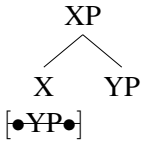
[8] I use the term *labeling*, but I do not assume the Labeling Algorithm developed by Chomsky (2013; 2015), with which the term labeling is often associated. I use the term labeling to refer to the mechanism that assigns categorial labels to newly created constituents, and I assume the projection by selection principle to provide such a mechanism. I also assume that categorial labels are created immediately upon Merge, rather than being delayed until Spell-Out. They are used primarily for selection in syntax.

This principle states that the label of a newly created projection is determined by selection, a syntactic object with a merge feature that triggers a given merge step also provides the label; see (68)-(69).

(68) Merge



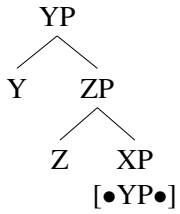
(69) Labeling



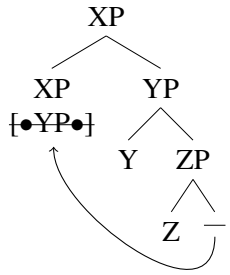
Second, probing can apply upwards. The notion of upward search was suggested for Agree (Baker 2008, Wurmbrand 2012, Zeijlstra 2012, Himmelreich 2017, Bjorkman & Zeijlstra 2019) and here I extend this possibility to merge features as well.[9]

Projecting movement then takes place if a syntactic object enters the derivation with an active merge feature and is embedded under further material before this feature can be checked as in (70). This merge feature probes upwards and as it finds its goal, the phrase moves upwards. After movement, XP with [•YP•] and YP are sisters and this allows the merge feature to be checked. Since the movement step is triggered by the merge feature on the displaced syntactic object, the displaced syntactic object also provides the label; see (71).

(70) Base position



(71) Movement and projection



This implementation of projecting movement is conceptually based on the earlier work by Fanselow (2003) (see also Surányi 2005 and Georgi & Müller 2010), which entertains the idea of movement being triggered directly by the features of a displaced syntactic object, but pursues a different technical implementation.[10]

[9]This application of upward search is not exempt from the standard questions raised by upward Agree. Under downward search, the goal for Agree or internal Merge is readily available in the probe's c-command domain when the probe enters the derivation, so that the corresponding operation takes place immediately. Upward search differs in that the goal is not present when the probe enters the derivation. As a result, the probe must remain active and continue probing until the assumed locality boundary is reached or there are no more items in the Numeration. If the probe does not find a suitable goal, the derivation crashes. The addition of upward search complicates the system, but it does not presuppose that the probe cannot fail, nor does it require lookahead.

[10]Fanselow (2003) offers the metaphor of Münchhausen-style movement after the German literary character Baron Münchhausen who saved himself from drowning by pulling up on his own hair.

The proposed implementation is fully compatible with standard restrictions on feature-driven Merge and does not require any new assumptions, aside from the claim that Merge features can probe upward. In particular, internal Merge in (71) follows the same principles as internal Merge with downward search: first, the syntactic object satisfying the selection feature is located in the tree; then movement applies to establish a local relation between the merge feature and the selected category; finally, the merge feature is checked under sisterhood and deleted.[11]

I will now turn to relative clauses and show how raising syntax is derived. A sentence that contains a raising relative clause starts with the Numeration as in (72). It contains syntactic heads and their features. The features are ordered (see Müller 2010, Georgi 2014, Murphy & Puškar 2018). Among other syntactic objects, the Numeration obligatorily contains the NP with [•CP•]. Naturally, the feature [•CP•] is not inherent to the N head; it must be present only in a small subset of derivations that include the N head. I contend that the features of syntactic heads are not fully fixed, but instead show a limited degree of flexibility in that, for instance, the feature [•CP•] can be added to the head when the Numeration is formed. This flexibility is not introduced by the analysis of relative clauses, but is independently required. Among other things, consider the arguments of nouns, which—unlike verbal arguments—are never obligatory and therefore require a corresponding selection feature to be present in some derivations and absent in others.[12]

In the numeration (72), the relative pronoun D_{rel}, the relative C head, and the $NP_{[•CP•]}$ transitively select each other, so that one of them has to enter the derivation and be itself selected by a higher material before all of its merge features can be satisfied. This state of affairs will enable projecting movement.

(72) Numeration for raising relative clauses:

$$\{ \begin{bmatrix} C_{rel} \\ \bullet TP \bullet \\ \bullet DP_{rel} \bullet \end{bmatrix}, \dots, \begin{bmatrix} V \\ \bullet DP \bullet \\ \dots \end{bmatrix}, \begin{bmatrix} D_{rel} \\ \bullet NP \bullet \\ \dots \end{bmatrix}, \begin{bmatrix} N \\ \dots \\ \bullet CP_{rel} \bullet \\ \dots \end{bmatrix}, \dots \}$$

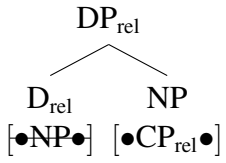
In the first step of the derivation in (73), the relative pronoun D_{rel} is merged with the head NP. The latter has unchecked merge feature [•CP_{rel}•].[13] After this, the derivation proceeds in the regular way and the relative CP is built as illustrated in (74).

[11] Donati & Cecchetto (2011) propose an alternative mechanism for triggering noun movement, which they term selection-driven movement. Under their analysis, the D head—still present in the Numeration—selects an NP rather than a CP. This selectional requirement is taken to force displacement of the noun within the CP to a higher position in the structure. After labeling, the new constituent satisfies the categorial expectations of D. The necessary assumptions about probing and movement triggers are not any simpler than the ones made in this paper and the NP label does not arise automatically as a consequence of movement. Rather, it must be derived via the Labeling Algorithm (Chomsky 2013) as discussed in section 4.1.

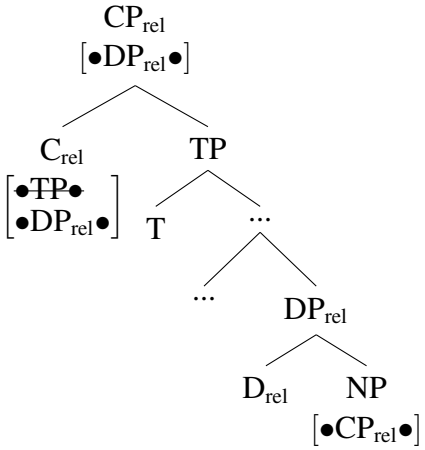
[12] As an alternative that does not require manipulating features in the Numeration, an anonymous reviewer suggests placing the selection feature on an additional functional head, analogous to the Q head in Cable (2007). This is indeed a viable alternative, but since some flexibility in the features of syntactic heads is independently required, such an analysis would not simplify the model. It also comes with the trade-off of complicating the DP structure: if QP hosts the selection feature [•CP•], it is the QP, not the NP, that projects in the landing site.

[13] Alternative derivations where other syntactic objects from the numeration in (72) enter the derivation with an active merge feature do not converge; i.e., it turns out impossible to empty the numeration and satisfy the active features on syntactic objects.

(73) Step 1: Relative DP

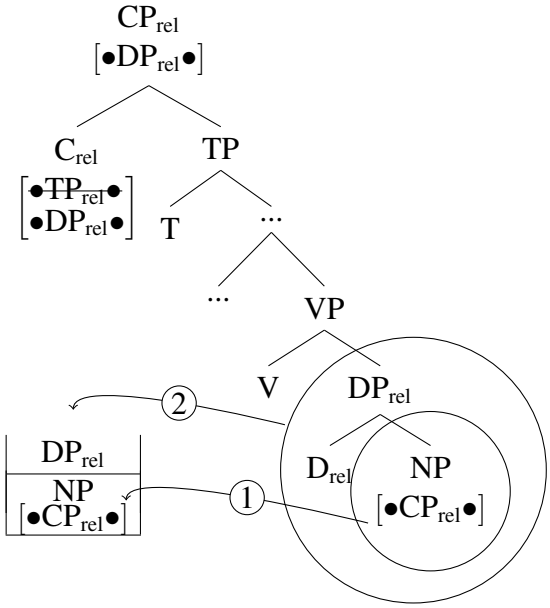


(74) Step 2: Relative CP



After merge of C_{rel} and checking of its first merge feature [•TP•], there are two unchecked merge probes in the derivation: [•DP_{rel}•] on the C_{rel} head and [•CP_{rel}•] on the NP. Both probes have located their goals and I suggest that at this point copies of the two syntactic objects that are to be displaced are subsequently created and merged to workspace, where similarly to features on the heads they are organized in a stack (Heck 2016, Heck & Himmelreich 2017). I assume that the upward search is given precedence over the downward search (Assmann et al. 2015, Bjorkman & Zeijlstra 2019), so that the head NP is copied first. The remainder of the relative DP that contains the relative pronoun is copied and placed in the stack afterwards; see (75).

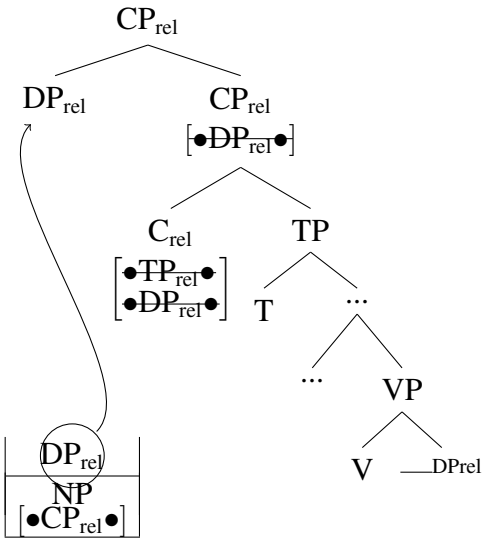
(75) Step 3: Search and copying



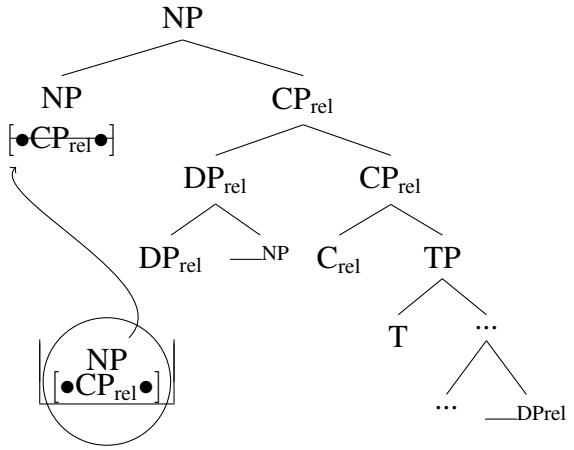
The syntactic object that is put to the stack last appears on the top of the stack and therefore must

be merged back to the derivation as the first one. In (76), the DP_{rel} is merged with the relative CP. The head NP is merged with this CP in the next step; see (77).[14] The NP checks its own selection feature [•CP_{rel}•] and therefore projects in its landing site. This gives rise to projecting movement.[15]

(76) Step 4: Merge of DP_{rel}



(77) Step 5: Merge of the head NP

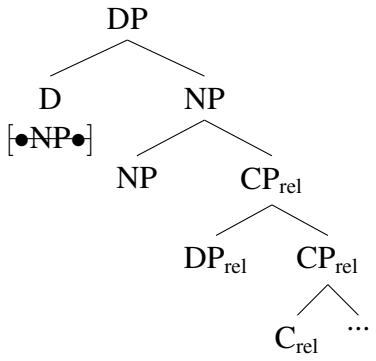


The top projection is thus labeled NP and it can be selected by the external D head. A regular DP structure for the head noun phrase is derived.

[14] An anonymous reviewer suggests an alternative that does not require copying two syntactic objects to the stack in the workspace. They propose that DP_{rel} must move first, as it is the larger constituent containing $NP_{[•CP•]}$, and that $NP_{[•CP•]}$ is subextracted in the next step. This implementation is also tenable, but it has theoretical costs of its own. First, after movement of DP_{rel} to Spec,CP, neither $NP_{[•CP•]}$ c-commands the relative C head nor does the relative C head c-command $NP_{[•CP•]}$. As a result, the condition for movement of $NP_{[•CP•]}$ is not met: the relation between C and NP would either have to be fixed and recalled from a previous step of the derivation, before movement of DP_{rel}, or m-command would have to be assumed. Second, the subsequent subextraction from a displaced syntactic object violates the Freezing Effect (Ross 1967, Wexler & Culicover 1980).

[15] Unlike most existing analyses, movement of the head noun in the present account is triggered by upward search for a CP rather than by downward search for an NP. This difference gives rise to the expectation that the locality restrictions governing the raising of the head noun in relative clauses may differ from those attested in other instances of noun movement. Although space limitations preclude a detailed discussion, the prediction appears to be borne out. For example, in German the head of a relative clause can correspond to a gap inside a PP within the relative clause, whereas extraction of wh-words out of PPs is ungrammatical (see Heck 2005). A further case concerns unbounded possessor extraction in English, though the empirical pattern is less clear. Bhatt (2002) argues against a raising derivation for such relative clauses, whereas Sportiche (2017) presents new evidence suggesting that a raising derivation can also underlie relative clauses involving unbounded possessor extraction.

(78) Step 6: Merge of the external D head



To sum up, in this section I have suggested the analysis of raising relative clauses that involves projecting phrasal movement. The analysis shows that projecting movement comes for free once the projection by selection principle is combined with upward probing. In the next section, I will turn to the case marking on the head noun.

4.3 Internal vs. external case

In Moksha, raising derivation produces relative clauses with ICA, i.e., the noun raised from within the relative CP is marked for a case assigned inside the relative CP. While such internal case marking on the head noun is rather rare, it is also attested in several other languages, including, for instance, ancient Greek (Grimm 2005: 78-92), Latin (Touratier 1980: 147-211), Ingrian Finnish (Kholodilova 2013), Nez Perce (Deal 2016), and Koryak (Abramovitz 2021). In the absence of the evidence to the contrary, I assume that these languages also instantiate the raising derivation with the internal case marking on the head noun.

At the same time, raising derivation was originally proposed on the basis of languages where the head noun is marked for the case assigned in the main clause. For instance, such external case marking is attested in Polish:

(79) Widziałem tego pana, co zbił ci szybę.
saw.1SG the.ACC man.ACC what broke your.SG glass.ACC
'I saw the man who broke your glass.' (Borsley 1997: 635).

German data in (80) also illustrate the head DP with the case assigned in the main clause. The example also combines such external case marking with anaphor binding in the relative CP. The head noun phrase contains reflexive pronoun *sich* that is bound by the subject of the relative clause. This argues that the relative clause is derived by raising.

(80) Der Wesenszug von **sich$_i$**, [den **Peter$_i$** noch nicht _ kannte], störte
the.NOM trait of self which.ACC Peter still not knew annoyed
niemanden.
no.one
'No one was annoyed by the side of himself$_i$ that Peter$_i$ did not know yet.' (Salzmann; 2006: 99)

Note that relative clauses with external case in Moksha discussed above do not pattern together with the Polish and German data in (80)-(79). Moksha sentences with the external case are different in that they show no reconstruction effects to the relative clause internal position and were therefore argued to be derived by head-external generation, not raising.

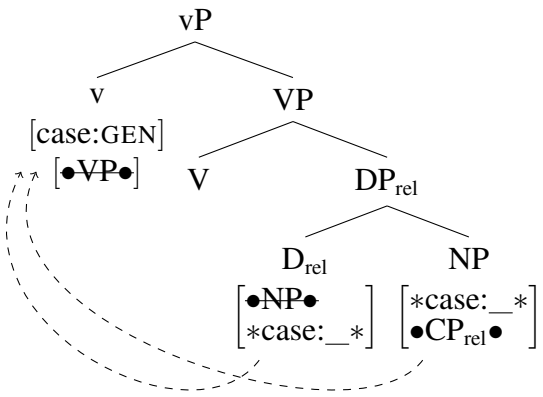
Thus, depending on the case marking of the head DP two types of the raising relative clauses can be distinguished: raising relatives with internal case in languages with ICA and raising relatives with external case in languages like German or Polish.

This state of affairs can be captured in several ways. For instance, one might assume that the noun receives case in every position it passes through, and that a relative clause specific rule determines which case is overtly realized: the outermost case in languages such as Polish and German, and the innermost case in languages with ICA (cf. Pesetsky 2013, Grishin 2023 for similar machinery applied to different phenomena). The theoretical cost of this analysis is that the definition of the basic syntactic operation Agree would need to be revised so that the case probe can remain active and continue probing even after it has been valued in the relative clause. While such a move is not unprecedented (cf. Deal 2015; 2023), this amendment is in fact unnecessary to account for the distribution of case marking in relative clauses. Instead, I pursue an analysis based on the ordering of syntactic operations, a mechanism already employed in the present account.

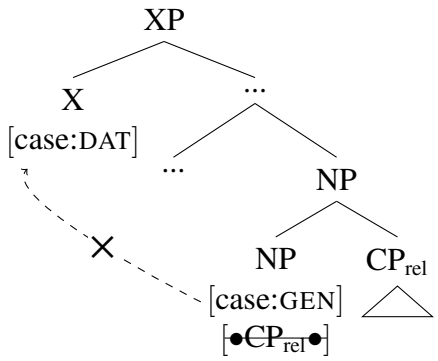
I suggest that the two types of languages follow from different orderings of the case probe and the [•CP_{rel}•] feature on the N head. The first type of raising relatives where the head noun shows case assigned in the relative clause is derived if the case probe is ordered before [•CP_{rel}•]. This ordering ensures that case is valued first, when the head noun is inside the relative CP; see (81).[16] After the case probe is valued, the lower ordered [•CP_{rel}•] feature becomes available and once the relative CP is built, it triggers projecting movement of the head NP. In the main clause, the head noun appears in a position where some case (dative in the derivation below) can be assigned to a noun phrase, but it cannot be assigned in this scenario because the case probe on the noun already has a value; see (82).

[16]In the structures in (81) and (84), the NP appears to receive case across the DP phase boundary, the presence of which becomes relevant for the analysis of limited extraction out of relative clauses in section 5.2. One way to address this apparent tension is to assume that locality restrictions on agreement and movement are not identical (see Bošković 2007), so that blocking movement does not imply blocking agreement. Alternatively, one might propose that case assignment to the N head does not apply independently of case assignment to the D head. If both heads bear an unvalued case probe at the top of their respective feature stacks, feature sharing applies (see Frampton & Gutmann 2000; 2006, Pesetsky & Torrego 2007), yielding a single shared probe that is subsequently valued from outside the DP phase. More generally, the tension between the locality boundary introduced by the D head and the distribution of case features within the noun phrase is well known (cf. Danon 2011), and at least some of the existing solutions are compatible with the analysis proposed here.

(81) Internal case: In the relative CP

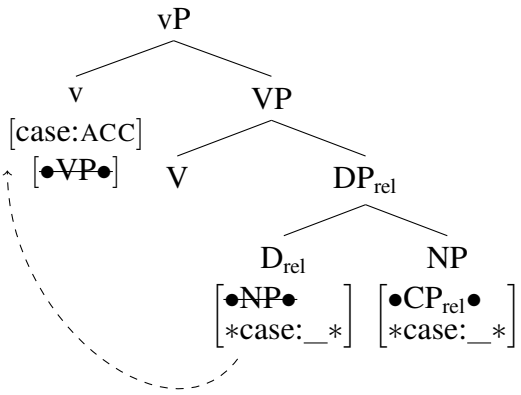


(82) Internal case: In the main clause

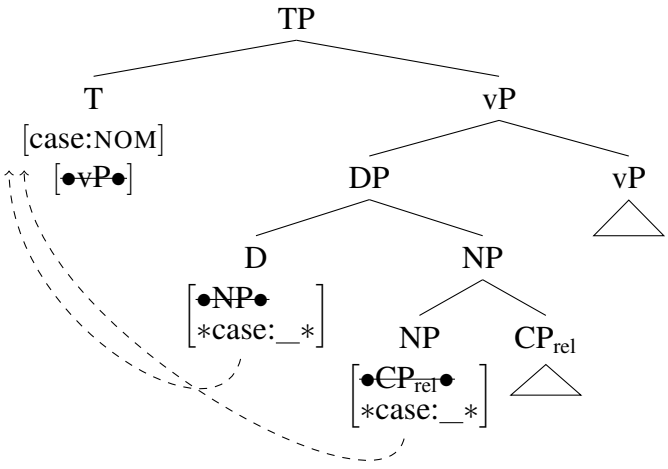


The reverse ordering of the case probe and the [•CP$_{rel}$•] produces raising relative clauses with external case. If the case probe is ordered after the merge feature, case assignment may take place only after the merge feature is discharged, i.e., only after the head noun moves to the main clause, out of the domain of case assigners in the relative CP. As a result, the head noun gets case only after its movement to the main clause. The structure in (83) shows case assignment in the relative clause. At this point, [•CP$_{rel}$•] is not checked, so that [∗case:_∗] on N is not yet accessible. The case probe on the relative pronoun D$_{rel}$ is at the top of its stack, so the relative pronoun gets case in the relative CP. The structure in (84) illustrates the case assignment in the main clause. Feature [•CP$_{rel}$•] is checked upon the movement of the head NP to the main clause, so that [∗case:_∗] becomes accessible and the head can get its case in the main clause.

(83) External case: In the relative CP



(84) External case: In the main clause



The two types of raising relative clauses and the ordering of features on the noun underlying

them are summarized in (85):

(85) Case marking on the head under raising

Pattern	Ordered features on the N head
1. Internal case (ICA) *Latin, Moksha, Nez Perce etc.*	[∗case:_∗] ≺ [•CP_{rel}•]
2. External case *German, Polish, Italian etc.*	[•CP_{rel}•] ≺ [∗case:_∗]

The analysis accounts for an obligatory early valuation of case in relatives with ICA by ordering the case feature before the merge feature and for a delayed valuation of case in raising relatives with a regular case by ordering the case feature after the merge feature. The latter ordering shields case from the probing at earlier stages.

This formal apparatus is sufficiently general to allow for the possibility of delaying case assignment in virtually any type of movement accompanied by feature checking on a displaced syntactic object. This option, however, is naturally constrained by the availability of a case feature in the landing site. Movement of the head NP in relative clauses differs from most other movement types in that a case feature is available in both the launching and the landing positions. Typically, a noun can receive case either in its base position (for Ā-movements) or in the landing position (for A-movements). As a result, if a noun phrase fails to receive case in the position where it is available, no alternative case feature will be present in the other position, and the derivation will crash. This restriction prevents the approach from overgenerating, while at the same time enabling a new perspective on several other phenomena that have previously been analyzed as instances of case overwriting (Bejar & Massam 1999, Merchant 2006, Potsdam 2006, Boeckx et al. 2010, Fong 2019, i.a).

4.4 Summary and outlook

In this section, I have presented the analysis of relative clauses with ICA in Moksha. This account provides a novel implementation of the raising derivation and allows to combine the raising syntax and the regular DP structure in the main clause. This result is achieved by projecting movement of the noun phrase. Projecting movement is shown to be a direct consequence of two otherwise well-established assumptions: projection by selection approach to labeling and upward search.

The analysis also accounts for the internal and external case markings on the head noun attested in raising relative clauses cross-linguistically. The account suggests that different orderings of the case probe and the merge feature that is responsible for movement of the head noun produce the two types of raising relative clauses.

Both core components of the analysis, projecting movement and timing of case assignment, are coached in the approach to syntax where Merge is feature-driven (Chomsky 1957; 1993. Adger 2003, Abels 2012, Collins & Stabler 2016, Müller 2017, Zyman 2018) and features on syntactic heads are ordered (Müller 2010, Georgi 2014; 2017, Assmann et al. 2015, Murphy & Puškar 2018). I would like to suggest that the account of intricate data on Moksha relative clauses provides further empirical ground for this highly deterministic model of syntax.

In the reminder of this paper, I will go through further properties of relatives with ICA in Moksha and show that they are compatible with the proposed analysis.

5 Other properties

5.1 Extraposition

The first property is extraposition. As shown in (86), extrapostion for relative clauses with ICA is ungrammatical. In this example, the relative CP is positioned on the right edge of the sentence and the head noun bears internal case.

(86) ICA: external case – NOM, internal case – DAT

*__S't'ər'-n'ɛ-t'i__ tu-s' kaftə n'ed'ɛl'a-t [__kona-n'd'i__ maks-in'ə
girl-DIM-DEF.SG.DAT go-PST.3[SG] two week-PL which-DAT give-PST.3.O.1SG.S
kel'gəma kn'iga-z'ə-n'].
favorite book-1SG.POSS.SG-GEN
'The girl left for two weeks, whom I gave my favorite book.'

Data in (87) illustrate that extraposition is grammatical for relative clauses with external case.

(87) No ICA: extenal case – NOM, internal case – DAT

__S't'ər'-n'ɛ-s'__ tu-s' kaftə n'ed'ɛl'a-t [__kona-n'd'i__ maks-in'ə
girl-DIM-DEF.SG.NOM go-PST.3[SG] two week-PL which-DAT give-PST.3.O.1SG.S
kel'gəma kn'iga-z'ə-n'].
favorite book-1SG.POSS.SG-GEN
'The girl left for two weeks, whom I gave my favorite book.'

I would like to suggest that the ungrammaticality of extraposition does not indicate that the head noun is inside the relative clause at the surface level (pace Abramovitz 2021), but is expected once the head noun was inside the relative clause at an earlier stage of the derivation; that is, if a relative clause is derived by raising as already suggested for relatives with ICA.

According to Fox & Nissenbaum (1999), extraposition to the right is derived as follows: First, the head DP that is not yet modified by the relative clause is moved to the right edge. Then, the relative clause is late merged to the head noun. Finally, the higher copy of the head DP is deleted and the lower copy is pronounced. The derivation is schematized in (88a-c).

(88) a. Movement of the head NP

$[_{MC}$ [... DP ...] DP]

b. Late adjunction of the relative CP

$[_{MC}$ [... DP ...] [DP $[_{CP}$ rel.pron ...]]]

c. Realization of the lower copy of DP

$[_{MC}$ [... DP ...] [~~DP~~ $[_{CP}$ rel.pron ...]]]

Under the raising analysis, the head noun originates inside the relative clause. Therefore, independently of its final position, the head noun cannot be merged with the main clause material before it

is combined with the relative CP as it is required in the first step of the derivation in (88). Thus, it is the raising derivation that blocks CP extaposition and the diagnostic does not provide evidence that the head noun stays within the relative CP. A ban on extraction is also observed for raising relatives in other languages (Hulsey & Sauerland 2006, Takahashi & Hulsey 2009, Jarvis 2025).[17]

5.2 Extraction out of the relative clause

The next property of relative clauses is extraction out of the relative CP. The data in (89a-b) show that relatives with ICA in Moksha allow limited extraction out of the relative CP. Such extraction is ungrammatical for relatives with external case.

(89) a. ICA: external case – NOM, interncal case – DAT

Bibl'iat'eka-stə [**jalga-z'ə-n'd'i** [kona-n'd'i mon sɛv-in'ə
library-EL friend-1SG.POSS.SG-DAT which-DAT I take-PST.3.O.1SG.S
kn'iga-t' __]] kelk-si luv-əm-s.
book-DEF.SG.GEN love-NPST.3SG.O.3SG.S read-INF-ILL
'My friend for whom I took the book from the library loves to read.'

b. No ICA: external case – NOM, interncal case – DAT

*Bibl'iat'eka-stə [**jalga-z'ə** [kona-n'd'i mon sɛv-in'ə
library-EL friend-1SG.POSS.SG[NOM] which-DAT I take-PST.3.O.1SG.S
kn'iga-t' __]] kelk-si luv-əm-s.
book-DEF.SG.GEN love-NPST.3SG.O.3SG.S read-INF-ILL
'My friend for whom I took the book from the library loves to read.'

Abramovitz (2021) observes similar extraction for relative clauses with ICA in Koryak (see also Belyaev 2012 on Beserman). He suggests that extracted phrase stays inside the relative CP, in one of the split-CP projections and uses this as an argument for internally-headed syntax of these relatives. Data in (90) demonstrate that the extracted phrase can be interleaved with the main clause material. This shows that extraction indeed proceeds to the position outside of the relative CP.

(90) ICA: external case – NOM, internal case – GEN

Bibl'iat'eka-stə mon ar's'-an [čtə [**kn'iga-t'** kona-n'
library-EL I think-NPST.3[SG] that book-DEF.SG.GEN which-GEN
sɛv-əz'ə __ Kat'ɛ] aščˇ-i stol-sə].
take-PST.3SG.O.3SG.S Katja be-NPST.3[SG] table-IN
'I think that the book that Katja took from the library is on the table.'

While relative clauses are a textbook example of island structures (Ross 1967), there are numerous cases in the literature showing that limited extraction out of a relative clause is possible under

[17] Hulsey & Sauerland (2006) assume the version of the raising derivation where the head noun stays within the relative CP in the specifier of an extended C projection. The discussion of extraposition above shows that this assumption is not necessary and the raising of the head noun is already sufficient to account for ungrammaticality of extraposition.

certain conditions (Erteschik-Shir 1973, McCawley 1981, Engdahl 1997, Cinque 2010, Kush et al. 2013, Sichel 2018, Vincent 2021). The restrictions on such extraction are not the same across languages, but seem to be often associated with the raising derivation. Following Sichel 2018 (in spirit, but not in letter), I would like to suggest that extraction out the relative clause in Moksha is also conditioned by the raising syntax.

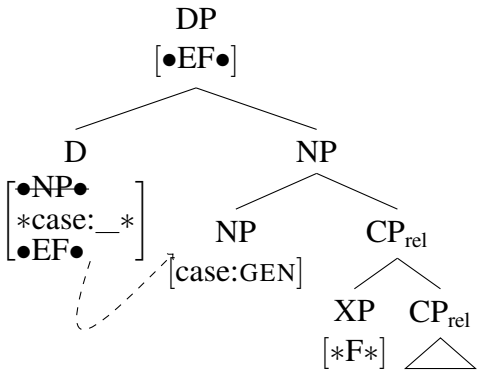
Limited extraction out of the raising relative clauses in Moksha can be accounted as follows: First, phases constitute locality domains in syntax and extraction out of them must proceed through the phase edge; see the Phase Impenetrability Condition (PIC) in (91). CPs as well as DPs are phases (Svenonius 2004, Matushansky 2004, Bošković 2014).

(91) Phase Impenetrability Condition:
In phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations. (Chomsky 2000: 108)

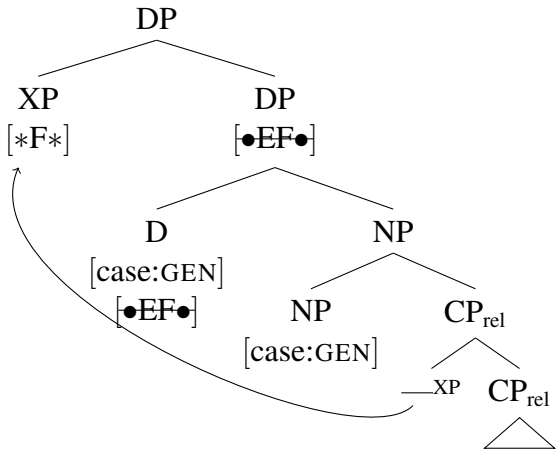
Second, movement to the phase edge is driven by edge features (Chomsky 2000; 2001; 2008) and edge features are ordered with respect to other features on the phase head (Müller 2010, Georgi 2014). Third, in Moksha edge features in a DP are ordered after the case probe. As a result, movement to the DP edge in Moksha is possible only after this DP gets case.[18]

The derivation of extraction from the relative clause with ICA is illustrated in (92)-(93). In (92), the D head that is external to the relative CP receives its case from the NP that was raised from within the relative CP and therefore is already marked for case. After the case assignment, the edge feature of this external D head is accessible and this allows for the XP to move from the CP edge to the DP edge; see (93).

(92) External D gets internal case



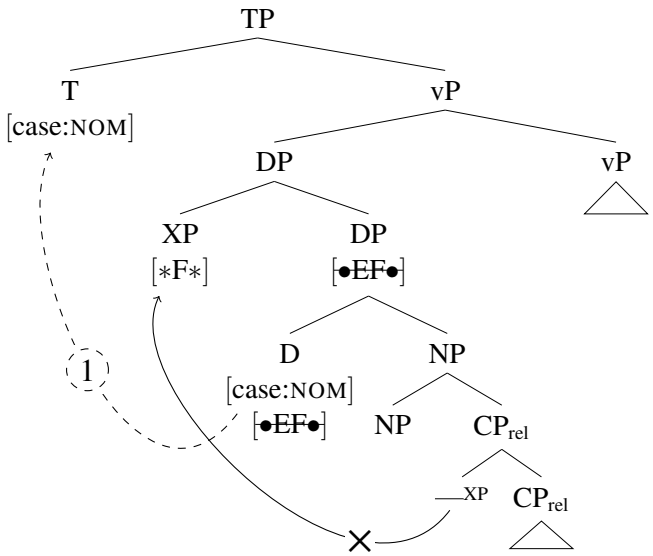
(93) Movement to DP edge



[18]This analysis implies a more general ban on extraction out of DPs in Moksha. In particular, DPs not modified by a raising relative clause will always get their case feature assigned later in the derivation, so that their edge features are also inaccessible until it is too late to extract any DP-internal material to the edge. I suggest that syntactic objects that can be extracted out of the DP must be first merged in Spec,DP or moved there due to some DP-internal considerations, but without employing the edge features. Syntactic objects extracted out of relative clauses are different, because they do not strictly speaking belong to the DP and there can be no independent reasons for them to move to the DP edge.

Heads of regular externally-headed relative clauses, on the contrary, receive case from higher projections in the main clause, when the material in their complement is already rendered inaccessible by PIC:

(94) No extraction out of relatives with external head



To sum up, extraction out of the relative CP attested for relatives with ICA, but not for externally-headed relative clauses is compatible with the analyses of these relative clauses. The account ties the possibility of extraction to timing of case assignment in different relative clauses.

6 Conclusion

On the empirical side, this paper presents novel data on relative clauses in Moksha Mordvin. It shows that the language has a rare type of relative clauses where a head of an externally-headed relative clause shows case assigned in the relative CP. Such relative clauses co-exist with relatives where the head noun shows regular external case. The study of the two relative clause types reveals a correspondence between case marking on the head noun and reconstruction effects (idioms, anaphor binding, condition C).

These empirical findings are accounted for if the raising derivation is part of natural language syntax and if raising co-exists with the head-external structure. I then argue that the raising derivation involves projecting movement of the head noun and show that it naturally follows from projection by selection principle combined with upward search.

References

Abels, Klaus (2012): *Phases: An Essay on Cyclicity in Syntax*. Mouton de Gruyter, Berlin.

Abramovitz, Rafael (2021): Deconstructing Inverse Case Attraction. Ms., Massachusetts Institute of Technology.

Ackema, Peter, Ad Neeleman & Fred Weerman (1993): Deriving functional projections. In: A. J. Schafer, ed., *Proceedings of North East Linguistics Society 23*. GLSA Publications, Amherst, MA, p. 17–31.

Adger, David (2003): *Core Syntax: A Minimalist Approach*. Oxford University Press, Oxford.

Assmann, Anke, Doreen Georgi, Fabian Heck, Gereon Müller & Philipp Weisser (2015): Ergatives Move Too Early: On an Instance of Opacity in Syntax, *Syntax* 18(4), 343–387.

Bach, Emmon (1974): *Syntactic Theory*. Holt, Rinehart, and Winston, New York.

Bader, Markus & Josef Bayer (2006): *Case and linking in language comprehension evidence from German*. Springer, Dordrecht.

Bader, Markus & Michael Meng (1999): Case Attraction Phenomena in German. Ms., University of Jena.

Baker, Mark (1988): *Incorporation: A Theory of Grammatical Function Changing*. The University of Chicago Press, Chicago, London.

Baker, Mark (2008): *The Syntax of Agreement and Concord.*. Cambrige University Press, New York.

Barker, Chris (2018): Evaluation order, crossover, and reconstruction. In: M. Krifka & M. Schenner, eds., *Reconstruction effects in relative clauses*. Vol. 75 of *Studia grammatica*, Mouton De Gruyter, Berlin, pp. 357–386.

Barss, Andrew (1986): Chains and Anaphoric Dependence. Doctoral thesis, Massachusetts Institute of Technology, Cambridge, MA.

Barss, Andrew (2001): Syntactic Reconstruction Effects. In: M. Baltin & C. Collins, eds., *The Handbook of Contemporary Syntactic Theory*. John Wiley & Sons, Ltd, chapter 21, pp. 670–696.

Bayer, Josef & Ellen Brandner (2008): On wh-head-movement and the Doubly-Filled-Comp Filter. In: C. B. Chang & H. J. Haynie, eds., *Proceedings of the 26th West Coast Conference on Formal Linguistics*. Cascadilla, Somerville, MA, p. 87–95.

Bejar, Susana & Diane Massam (1999): Multiple Case Checking, *Syntax* 2(2), 65–79.

Belyaev, Oleg Igorevič (2012): Korreljativnaja konstrukcija i otnositel'nye predloženija s vnutrennej veršinoj v besermjanskom dialekte udmurtskogo jazyka. In: A. I. Kuzniciva, ed., *Finno-ugorskie jazyki: Fragmenty grammatičeskogo opisanija*. Jazyki slavjanskoj kul'tury, Moskva, p. 647–679.

Bhatt, Rajesh (2002): The Raising Analysis of Relative Clauses: Evidence from Adjectival Modification, *Natural Language Semantics* 10, 43–90.

Bianchi, Valentina (1999): *Consequences of Antisymmetry. Headed Relative Clauses*. Vol. 46 of *Studies in generative grammar*, Mouton de Gruyter, Berlin.

Bianchi, Valentina (2000a): The Raising Analysis of Relative Clauses: A Reply to Borsley, *Linguistic Inquiry* 31(1), 123–140.

Bianchi, Valentina (2000b): Some Issues in the Syntax or Relative Determiners. In: A. Alexiadou, P. Law, A. Meinunger & C. Wilder, eds., *The syntax of relative clauses*. Vol. 32 of *Linguistik aktuell / Linguistics today*, John Benjamins, Amsterdam, Philadelphia, pp. 53–83.

Bjorkman, Bronwyn M. & Hedde Zeijlstra (2019): Checking Up on (ϕ-)Agree, *Linguistic Inquiry* 50(3), 527–569.

Bodomo, Adams & Ken Hiraiwa (2010): Relativization in Dàgáárè and its typological implica-

tions: Left-headed but internally-headed, *Lingua* 120(4), 953–983.
Boeckx, Cedric, Norbert Hornstein & Jairo Nunes (2010): Icelandic Control Really Is A-Movement: Reply to Bobaljik and Landau, *Linguistic Inquiry* 41(1).
Boef, Eefje (2012): Doubling in relative clauses: Aspects of morphosyntactic microvariation in Dutch. Doctoral thesis, Universiteit Utrecht.
Börjesson, Kristin & Gereon Müller (2020): Long Distance Agreement and Locality: A Reprojection Approach. In: P. Smith, J. Mursell & K. Hartmann, eds., *Agree to Agree: Agreement in the Minimalist Programme*. Language Science Press, Berlin, p. 225–265.
Borsley, Robert D. (1997): Relative Clauses and the Theory of Phrase Structure, *Linguistic Inquiry* 28(4), 629–647.
Bošković, Željko (2007): On the Locality and Motivation of Move and Agree: An Even More Minimal Theory, *Linguistic Inquiry* 38(4), 589–644.
Bošković, Željko (2014): Now I'm a Phase, Now I'm Not a Phase: On the Variability of Phases with Extraction and Ellipsis, *Linguistic Inquiry* 45(1), 27–89.
Brasoveanu, Adrian (2012): Correlatives, *Language and Linguistics Compass* 6(1), 1–20.
Bury, Dirk (2003): Phrase structure and derived heads. Doctoral thesis, University College London, London.
Cable, Seth (2007): The Grammar of Q: Q-Particles and the Nature of Wh-Fronting, as Revealed by the Wh-Questions of Tlingit. PhD thesis, Massachusetts Institute of Technology, Cambridge, MA.
Cecchetto, Carlo & Caterina Donati (2016): *(Re)labeling*. MIT Press, Cambridge, MA.
Charnavel, Isabelle (2019): *Locality and logophoricity: A theory of exempt anaphora*. Oxford University Press, Oxford.
Charnavel, Isabelle & Dominique Sportiche (2016): Anaphor Binding: What French Inanimate Anaphors Show, *Linguistic Inquiry* 47(1), 35–87.
Charnavel, Isabelle & Shannon Bryant (2022): Disentangling locality, logophoricity and subjecthood in English Picture Noun Anaphora. Ms., Université de Genève and Harvard University. To appear in NLLT.
Chomsky, Noam (1957): *Syntactic Structures*. Mouton de Gruyter, The Hague/Paris.
Chomsky, Noam (1977): On Wh-Movement. In: P. Culicover, T. Wasow & A. Akmajian, eds., *Formal Syntax*. Academic Press, New York, pp. 71–132.
Chomsky, Noam (1980): *Rules and Representations*. Columbia classics in philosophy, Columbia University Press, New York.
Chomsky, Noam (1981): *Lectures on Government and Binding*. Foris, Dordrecht.
Chomsky, Noam (1993): A minimalist program for linguistic theory. In: K. Hale & S. J. Keyser, eds., *The view from Building 20: Essays on linguistics in honor of Sylvain Bromberger*. MIT Press, Cambridge, MA, p. 1–52.
Chomsky, Noam (1995): *The Minimalist Program*. MIT Press, Cambridge.
Chomsky, Noam (2000): Minimalist Inquiries: The Framework. In: R. Martin, D. Michaels & J. Uriagereka, eds., *Step by Step*. MIT Press, Cambridge, pp. 89–155.
Chomsky, Noam (2001): Derivation by Phase. In: M. Kenstowicz, ed., *Ken Hale. A Life in Language*. MIT Press, Cambridge, pp. 1–52.
Chomsky, Noam (2008): On Phases. In: R. Freidin, C. P. Otero & M. L. Zubizarreta, eds., *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*. MIT Press, Cambridge, pp. 133–166.

Chomsky, Noam (2013): Problems of projection, *Lingua* 130, 33–49.
Chomsky, Noam (2015): Problems of projection: Extensions. In: E. Domenico, C. Hamann & S. Matteini, eds., *Structures, strategies, and beyond: Studies in honour of Adriana Belletti*. John Benjamins, Amsterdam, pp. 3–16.
Cinque, Guglielmo (2010): On a selective 'violation' of the Complex NP Constraint. In: C. J.-W. Zwart & M. de Vries, eds., *Structure preserved: Studies in syntax for Jan Koster*. John Benjamins, Amsterdam, p. 81–90.
Cinque, Guglielmo (2015): Three phenomena discriminating between "raising" and "matching" relative clauses, *Semantics-Syntax Interface* 2(1), 1–27.
Cinque, Guglielmo (2020): *The Syntax of Relative Clauses: A Unified Analysis*. Cambridge Studies in Linguistics, Cambridge University Press, Cambridge.
Citko, Barbara (2001): Deletion under Identity in Relative Clauses, *North East Linguistics Society* 31(1), 131–145.
Citko, Barbara (2008): Missing labels, *Lingua* 118(7), 907–944. Morphosyntactic mismatches in lexical categories.
Collins, Chris & Edward Stabler (2016): A Formalization of Minimalist Syntax, *Syntax* 19(1), 43–78.
Cresti, Diana (2000): Ellipsis and Reconstruction in Relative Clauses, *North East Linguistics Society* 30(1), 153–163.
Czypionka, Anna, Laura Dörre & Josef Bayer (2018): Inverse Case attraction: experimental evidence for a syntactically guided process, *The Journal of Comparative Germanic Linguistics* 21(2), 135–188.
Danon, Gabi (2011): Agreement and DP-Internal Feature Distribution, *Syntax* 14(4), 297–317.
Dayal, Veneeta (1996): *Locality in wh-quantification*. Kluwer, Dordrecht.
Deal, Amy Rose (2015): Interaction and Satisfaction in phi-Agreement. In: T. Bui & D. Özyıldız, eds., *Proceedings of NELS 45*. GLSA, Amherst, MA, pp. 179–192.
Deal, Amy Rose (2016): Cyclicity and Connectivity in Nez Perce Relative Clauses, *Linguistic Inquiry* 47(3), 427–470.
Deal, Amy Rose (2023): Interaction, Satisfaction, and the PCC, *Linguistic Inquiry* 55(1), 39–94.
Delsing, Lars-Olof (1998): Possession in Germanic. In: A. Alexiadou & C. Wilder, eds., *Possessors, Predicates and Movement in the Determiner Phrase*. John Benjamins, Amsterdam, pp. 87–109.
Donati, Caterina (2006): On wh-head movement. In: L. L.-S. Cheng & N. Corver, eds., *Wh-movement: Moving on*. MIT Press, Cambridge, MA, pp. 21–46.
Donati, Caterina & Carlo Cecchetto (2011): Relabeling Heads: A Unified Account for Relativization Structures, *Linguistic Inquiry* 42(4), 519–560.
Embick, David & Rolf Noyer (2001): Movement Operations after Syntax, *Linguistic Inquiry* 32(4), 555–595.
Engdahl, Elisabet (1997): Relative clause extractions in context, *Working Papers in Scandinavian Syntax* (60), 51–79.
Erteschik-Shir, Nomi (1973): On the nature of island constraints. Doctoral thesis, Massachusetts Institute of Technology, Cambridge, MA.
Fanselow, Gisbert (2003): Münchhausen-style head movement and the analysis of Verb-Second. In: A. Mahajan, ed., *Head movement and syntactic theory*. ULCA & Universität Potsdam Working Papers in Linguistics, Los Angeles & Potsdam, pp. 40–76.

Fong, Suzana (2019): Proper movement through Spec-CP: an argument from hyperraising in Mongolian, *Glossa: a journal of general linguistics* 4(1), 30.

Fox, Danny & Jon Nissenbaum (1999): Extraposition and scope: A case for overt QR. In: S. Bird, A. Carnie, J. D. Haugen & P. Norquest, eds., *Proceedings of the 18th West Coast Conference on Formal Linguistics (WCCFL18)*. Cascadilla Press, Somerville, MA, p. 132–144.

Frampton, John & Sam Gutmann (2000): Agreement Is Feature Sharing. Unpublished manuscript, Northeastern University.

Frampton, John & Sam Gutmann (2006): How Sentences Grow in the Mind: Agreement and Selection in an Efficient Minimalist Syntax. In: C. Boeckx, ed., *Agreement Systems*. John Benjamins, Amsterdam, pp. 121–157.

Georgi, Doreen (2014): Opaque Interactions of Merge and Agree: On the Nature and Order of Elementary Operations. Doctoral thesis, Leipzig University, Leipzig.

Georgi, Doreen (2017): Patterns of movement reflexes as the result of the order of Merge and Agree, *Linguistic Inquiry* 48(4), 585–626.

Georgi, Doreen & Gereon Müller (2010): Noun-Phrase Structure by Reprojection, *Syntax* 13(1), 1–36.

Georgi, Doreen & Martin Salzmann (2017): The matching effect in resumption: a local analysis based on Case attraction and top-down derivation, *Natural Language & Linguistic Theory* 35(1), 61–98.

Gračanin-Yuksek, Martina (2013): The syntax of relative clauses in Croatian, *The Linguistic Review* 30(1), 25–49.

Grimm, Scott M. (2005): Lattice of Case and Agentivity. Master's thesis, Universiteit van Amsterdam, Amsterdam.

Grishin, Peter (2023): Omnivorous Third Person Agreement in Algonquian, *Glossa: A Journal of General Linguistics* 8(1).

Grosu, Alexander (2002): Strange Relatives at the Interface of Two Millennia, *GLOT International* 6(6), 145–167.

Grosu, Alexander (2012): Towards a More Articulated Typology of Internally Headed Relative Constructions: The Semantics Connection, *Language and Linguistics Compass* 6(7), 447–476.

Grosu, Alexander & Fred Landman (1998): Strange Relatives of the Third Kind, *Natural Language Semantics* 6, 125–170.

Ha, Seungwan (2008): Ellipsis, Right Node Raising and Across-the-Board Constructions. PhD thesis, Boston University, Boston, MA.

Haegeman, Liliane (1994): *Introduction to Government and Binding Theory*. Vol. 1 of *Blackwell textbooks in Linguistics*, 2 edn, Blackwell, Oxford.

Hahn, Emma A. (1964): Relative and antecedent, *Transactions and Proceedings of the American Philological Associatoion* 95, 111–141.

Haider, Hubert (2000): Branching and discharge. In: P. Coopmans, M. B. Everaert & J. Grimshaw, eds., *Lexical specification and insertion*. John Benjamins, Amsterdam, p. 135–164.

Hanink, Emily A. (2021): DP structure and internally headed relatives in Washo, *Natural Language & Linguistic Theory* 39, 505–554.

Harbert, Wayne (1983): A Note on Old English Free Relatives, *Linguistic Inquiry* 14(3), 549–553.

Harris, Jesse A. (2008): On the Syntax and Semantics of Heim's Ambiguity. In: N. Abner & J. Bishop, eds., *Proceedings of the 27th West Coast Conference on Formal Linguistics*. Cascadilla, Somerville, MA, pp. 194–202.

Heck, Fabian (2005): Gegen Kopfanhebung in deutschen Relativsätzen. Talk presented at Tagung zur Generativen Grammatik des Südens (GGS), Universität Tübingen.
Heck, Fabian (2016): Non-Monotonic Derivations. Habilitation, Universität Leipzig, Leipzig.
Heck, Fabian & Anke Himmelreich (2017): Opaque Intervention, *Linguistic Inquiry* 48, 47–97.
Heck, Fabian & Gereon Müller (2007): Extremely local optimization. In: E. Brainbridge & B. Agbayani, eds., *WECOL 34: Proceedings of the 34th Western Conference on Linguistics*. Fresno, California State University, p. 170–183.
Hicks, Glyn (2008): Why the Binding Theory Doesn't Apply at LF, *Syntax* 11(3), 255–280.
Hicks, Glyn (2009): *The Derivation of Anaphoric Relations*. John Benjamins, Amsterdam.
Himmelreich, Anke (2017): Case Matching Effects in Free Relatives and Parasitic Gaps: A Study on the Properties of Agree. PhD thesis, Universität Leipzig.
Hornstein, Norbert & Juan Uriagereka (2002): Reprojections. In: S. D. Epstein & T. D. Seely, eds., *Derivation and explanation in the Minimalist Program*. Blackwell, Oxford, p. 106–132.
Hucklebridge, Shay (2022): Implementing head-internal relativization in a bare noun language. Ms., University of Massachusetts at Amherst.
Hulsey, Sarah & Uli Sauerland (2006): Sorting out Relative Clauses, *Natural Language Semantics* 14(2), 111–137.
Jackendoff, Ray (1977): *$\bar{X}$-Syntax: A Study of Phrase Structure*. Vol. 2 of *Linguistic Inquiry Monographs*, MIT Press, Cambridge, MA.
Jacobson, Pauline (2018): Deconstructing reconstruction. In: M. Krifka & M. Schenner, eds., *Reconstruction effects in relative clauses*. Vol. 75 of *Studia grammatica*, Mouton De Gruyter, Berlin, pp. 303–356.
Jarvis, Rebecca (2025): Raising and head-external relatives in Atchan, *Natural Language & Linguistic Theory* 43(8), 1771–1811.
Kayne, Richard S. (1994): *The Antisymmetry of Syntax*. Linguistic Inquiry Monographs, MIT Press, Cambridge, MA.
Keine, Stefan & Rajesh Bhatt (2019): Secondary strong crossover in Hindi and the typology of movement. In: M. Baird & J. Pesetsky, eds., *NELS 49: Proceedings of the Forty-Ninth Annual Meeting of the North East Linguistic Society*. GLSA, University of Massachusetts, Amherst, MA, pp. 125–134.
Kholodilova, Maria (2013): Inverse attraction in Ingrian Finnish, *Linguistica Uralica* XLIX(2), 96–116.
Kholodilova, Maria & Mariia Privizentseva (2015): Inverse attraction in Finno-Ugric languages. Talk at 'Insufficient strength to defend its case': Case attraction and related phenomena. Wroclaw, Poland, September 18–19.
Koeneman, Olaf (2000): The flexible nature of verb movement. Doctoral thesis, Utrecht University, Utrecht.
Koljadënkov, Mixail Nikitič (1954): *Grammatika mordovskix (mokšanskogo i érzjanskogo) yazykov. Sintaksis [Grammar of Mordvin (Moksha and Erzya) languages. Syntax]*. Vol. 2, Mordovskoe knižnoe izdatel'stvo, Saransk.
Koljadënkov, Mixail Nikitič & Raisa Aleksandrovna Zavodova (1962): *Grammatika mordovskix (mokšanskogo i érzjanskogo) yazykov. Fonetika i morfologija [Grammar of Mordvin (Moksha and Erzya) languages. Phonology and morphology]*. Vol. 1, Mordovskoe knižnoe izdatel'stvo, Saransk.
Kush, David, Akira Omaki & Norbert Hornstein (2013): Microvariation in islands?. In: J. Sprouse

& N. Hornstein, eds., *Experimental syntax and island effect*. Cambridge University Press, Cambridge, p. 239–264.
Larson, Richard K. (2017): On "Dative Idioms" in English, *Linguistic Inquiry* 48(3), 389–426.
Lebeaux, David (1998): Where does binding theory apply?. Technical report. NEC Research Institute.
Lehmann, Christian (1984): *Der Relativsatz*. Gunter Narr Verlag, Tübinden.
Lin, Jo-Wang (2020): Correlatives. In: D. Gutzmann, L. Matthewson, C. Maeier, H. Rullmann & a. E. Z. Tho, eds., *The Wiley Blackwell Companion to Semantics*. John Wiley & Sons, Ltd.
Lipták, Anikó (2009): The landscape of correlatives: An empirical and analytical survey. In: A. Lipták, ed., *Correlatives cross-linguistically*. John Benjamins, Amsterdam, pp. 1–49.
Matushansky, Ora (2004): Going through a phase. In: M. McGinnis & N. Richards, eds., *Perspectives on phases*. MIT Working Papers in Linguistics 49, MIT, MIT Working Papers in Linguistics, Cambridge, p. 157–181.
McCawley, James D. (1981): The syntax and semantics of English relative clauses, *Lingua* 53(2), 99–149.
McCawley, James D. (1998): *The Syntactic Phenomena of English*. The University of Chicago Press, Chicago, London.
Merchant, Jason (2006): Polyvalent case, geometric hierarchies, and split ergativity. In: J. Bunting, S. Desai, R. Peachey, C. Straughn & Z. Tomkova, eds., *Proceedings of the 42nd annual meeting of the Chicago Linguistics Society*. Vol. 2, Chicago Linguistic Society, Chicago, pp. 57–76.
Müller, Gereon (2010): On Deriving CED Effects from the PIC, *Linguistic Inquiry* 41(1), 35–82.
Müller, Gereon (2011): *Constraints on Displacement. A Phase-Based Approach*. Benjamins, Amsterdam.
Müller, Gereon (2017): Structure removal: An argument for feature-driven Merge, *Glossa* 2(1), 28.1–35.
Munn, Alan (1994): A Minimalist account of reconstruction asymmetries, *North East Linguistics Society* 24(2), 397–410.
Murphy, Andrew & Zorica Puškar (2018): Closest conjunct agreement is an illusion, *Natural Language & Linguistic Theory* 36(4), 1207–1261.
Murugesan, Gurujegan. (2022): Deriving the Anaphor-Agreement Effects and the Violations of It, *Syntax* 25, 39–83.
Nunberg, Geoffrey, Ivan A. Sag & Thomas Wasow (1994): Idioms, *Language* 70(3), 491–538.
Pankau, Andreas (2018): The Matching Analysis of relative clauses: an argument from antipronominal contexts, *The Journal of Comparative Germanic Linguistics* 21, 189–245.
Partee, Barbara (1975): Montague Grammar and Transformational Grammar, *Linguistic Inquiry* 6(2), 203–300.
Pesetsky, David (1985): Morphology and Logical Form, *Linguistic Inquiry* 16, 193–246.
Pesetsky, David (2013): *Russian Case Morphology and the Syntactic Categories*. Vol. 66 of *Linguistic Inquiry Monographs*, MIT Press, Cambridge, MA.
Pesetsky, David & Esther Torrego (2007): The Syntax of Valuation and the Interpretability of Features. In: S. Karimi, V. Samiian & W. K. Wilkins, eds., *Phrasal and Clausal Architecture: Syntactic Derivation and Interpretation: In Honor of Joseph E. Emonds*. John Benjamins, Amsterdam, pp. 262–294.
Pittner, Karin (1995): The Case of German relatives, *The Linguistic Review* 12(3), 197–232.
Postal, Paul M. (1974): *On Raising: One Rule of English Grammar and Its Theoretical Implica-*

tions. MIT Press, Cambridge.
Potsdam, Eric (2006): Backward Object Control in Malagasy: Against an empty category analysis. In: D. Baumer, D. Montero & M. Scanlon, eds., *The Proceedings of the 25th West Coast Conference on Formal Linguistics*. Cascadilla Press, Somerville, pp. 328–336.
Reuland, Eric (2001): Primitives of Binding, *Linguistic Inquiry* 32, 439–492.
Reuland, Eric (2011): *Anaphora and Language Design*. MIT Press, Cambridge, MA.
Rooryck, Johan & Guido vanden Wyngaerd (2011): *Dissolving Binding Theory*. Oxford.
Ross, John Robert (1967): Constraints on variables in syntax. Doctoral thesis, Massachusetts Institute of Technology, Cambridge, MA.
Salzmann, Martin (2006): Resumptive Prolepsis: A Study in indirect A'-dependencies. Doctoral thesis, Universiteit Leiden.
Salzmann, Martin (2012): A derivational ellipsis approach to ATB-movement, *The Linguistic Review* 29(3), 397–438.
Salzmann, Martin (2017): *Reconstruction and Resumption in Indirect A'-dependencies. On the Syntax of Prolepsis and Relativization in (Swiss) German and beyond*. Mouton De Gruyter, Berlin, Boston.
Salzmann, Martin (2018): A new version of the Matching Analysis. Combining deletion under recoverability with vehicle change. In: M. Krifka & M. Schenner, eds., *Reconstruction effects in relative clauses*. Vol. 75 of *Studia grammatica*, Mouton De Gruyter, Berlin, pp. 187–223.
Sato, Yosuke (2010): Relabeling and Multiple Spell-Out: Raising-to-Object as Epiphenomenon. Ms., National University of Singapore.
Sauerland, Uli (2003): Unpronounced heads in relative clauses. In: K. Schwabe & S. Winkler, eds., *The Interfaces: Deriving and interpreting omitted structures*. Vol. 61 of *Linguistik aktuell / Linguistics today*, John Benjamins, Amsterdam, Philadelphia, p. 205–226.
Sauerland, Ulrich (1998): On the Making and Meaning of Chains. Doctoral thesis, Massachusetts Institute of Technology, Cambridge, MA.
Ščankina, Valentina Ivanovna (1993): *Mokěen'-ruzon' valks – Russko-mokšanskij slovar' [Moksha-Russian dictionary – Russian-Moksha dictionary]*. Mordovskjaj knižnjaj izdatel'stvas', Saransk.
Schachter, Paul (1973): Focus and Relativization, *Language* 49(1), 19–46.
Sichel, Ivy (2018): Anatomy of a Counterexample: Extraction from Relative Clauses, *Linguistic Inquiry* 49(2), 335–378.
Sportiche, Dominique (2017): Relative Clauses. Ms., University of California, Los Angeles.
Srivastav, Veneeta (1991): The Syntax and Semantics of Correlatives, *Natural Language & Linguistic Theory* 9(4), 637–686.
Stabler, Edward P. (1997): Derivational minimalism. In: C. Retoré, ed., *Logical aspects of computational linguistics*. Springer, Berlin, p. 68–95.
Sternefeld, Wolfgang (2018): Telescoping by continuations. In: M. Krifka & M. Schenner, eds., *Reconstruction effects in relative clauses*. Vol. 75 of *Studia grammatica*, Mouton De Gruyter, Berlin, pp. 387–404.
Surányi, Balázs (2005): Head movement and reprojection, *Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös Nominatae. Sectio Linguistica. ELTE Tomus* 26, 313–342.
Svenonius, Peter (2004): On the edge. In: D. Adger, C. de Cat & G. Tsoulas, eds., *Peripheries: Syntactic edges and their effects*. Kluwer, Dordrecht, p. 261–287.
Szabolcsi, Anna (1994): The Noun Phrase. In: F. Kiefer & K. É.. Kiss, eds., *The Syntactic Structure*

of Hungarian. Vol. 27 of *Syntax and Semantics*, Academic Press, San Diego, CA, pp. 179–274.

Takahashi, Shoichi & Sarah Hulsey (2009): Wholesale Late Merger: Beyond the A/Ā distinction, *Linguistic Inquiry* 40(3), 387–426.

Toldova, Svetlana Jur'evna & Tatiana Aleksandrovna Shalganova (2018): Reflexive [Refleksiv]. In: S. J. Toldova & M. A. Kholodilova, eds., *Èlementy mokšanskogo jazyka v tipologičeskom osveščenii [Elements of Moksha language in the typological perspective]*. Buki Vedi, Moscow, pp. 633–655.

Touratier, Christian (1980): *La relative. Essai de théorie syntaxique (à partir de faits latins, français, allemands, anglais, grecs, hébreux, etc.)*. Klincksieck, Paris.

Travis, Lisa (1984): Parameters and effects of word order variation. Doctoral thesis, Massachusetts Institute of Technology, Cambridge, MA.

Vergnaud, Jean-Roger (1974): French relative clauses. Doctoral thesis, Massachusetts Institute of Technology, Cambridge, MA.

Vincent, Jake Wayne (2021): Extraction from Relative Clauses: An Experimental Investigation into Variable Island Effects in English—-or-—This is a Dissertation That We Really Needed to Find Someone Who'd Write. Doctoral thesis, University of California Santa Cruz, Santa Cruz.

de Vries, Mark (2002): The Syntax of Relativization. Doctoral thesis, University of Amsterdam.

Watanabe, Akira (2004): Parametrization of Quantificational Determiners and Head-Internal Relatives, *Language and Linguistics* 5(1), 59–97.

Webelhuth, Gert, Sascha Bargmann & Christopher Götze (2018): Idioms as evidence for the proper analysis of relative clauses. In: M. Krifka & M. Schenner, eds., *Reconstruction effects in relative clauses*. Vol. 75 of *Studia grammatica*, Mouton De Gruyter, Berlin, pp. 225–262.

Wexler, Ken & Peter Culicover (1980): *Formal Principles of Language Acquisition*. MIT Press, Cambridge, MA.

Wood, Jim, Einar Freyr Sigurðsson & Iris Edda Nowenstein (2017): Inverse attraction in Icelandic relative clauses. In: H. Thráinsson, C. Heycock, H. P. Petersen & Z. S. Hansen, eds., *Syntactic Variation in Insular Scandinavian*. Vol. 1 of *Studies in Germanic Linguistics*, John Benjamins, Amsterdam, Philadelphia, pp. 200–232.

Wurmbrand, Susi (2012): The syntax of valuation in auxiliary–participle constructions. In: J. Choi, E. A. Hogue, J. Punske, D. Tat, J. Schertz & A. Trueman, eds., *Proceedings of the 29th West Coast Conference on Formal Linguistics (WCCFL 29)*. Cascadilla Press, Somerville, p. 154–162.

Zeijlstra, Hedde (2012): There is only one way to agree, *The Linguistic Review* 29(3), 491–539.

Zyman, Erik (2018): On the driving force for syntactic movement. Doctoral thesis, University of California, Santa Cruz.