

An argument for postsyntactic lowering of negation in Udmurt and Mari verb clusters*

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1. Introduction

In recent years, a considerable amount of work has been devoted to the question of which processes are responsible for the formation of complex words in the syntax. Standardly, complex words are formed by means of head-movement in a bottom-up fashion with heads low in the tree moving up successive-cyclically to a higher position thereby forming complex words. In contrast to this view, it has been claimed that word formation can also proceed top-down (Embick and Noyer 2001). Under this approach, heads move in a successive-cyclic fashion to a position that is lower in the tree thereby creating complex words as well. While upward movement is normally taken to apply in core syntax, downward movement is an operation of the post-syntactic component.

In this paper, we investigate the properties of negative verb clusters in the two Finno-Ugric languages Meadow Mari (henceforth Mari) and Udmurt and set out to defend the following claims: (i) Negation in Mari and Udmurt forms a complex unit with the highest verb of the clause. This is in contrast to related languages like Finnish where the negative auxiliary is a syntactically free element that can be separated from the main verb. (ii) The complex unit consisting of the verb and negation (plus inflectional material) is formed via post-syntactic lowering. Evidence for this approach comes from the distribution of inflectional categories like tense and agreement and the placement of adverbial clitics, which, in the presence of negation, display optionality as to whether they are interleaved inside the verb cluster or occur in cluster-peripheral position. We argue that this pattern can be derived by treating these clitics as phrase-structurally ambiguous in that they project their

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own phrase only optionally with the result that they can but do not have to be affected by lowering. The alternative to the formation of complex words in terms of (upward) head-movement cannot account for the distribution of inflectional categories and the clitics.

Section 2 of this paper reviews the properties of negation in Mari and Udmurt and provides evidence that negation forms a complex unit with the highest verb of the clause. Section 3 then presents our approach based on postsyntactic lowering. Section 4 discusses the interaction of negative verb clusters with adverbial clitics and extends our account to these patterns. Section 5 then goes on to show that the same facts cannot be derived by means of an approach in terms of upward head-movement. Section 6 concludes.

2. Negation in Mari and Udmurt

Several Finno-Ugric languages employ a negative auxiliary (see, e.g., Mitchell 2006, Miestamo, Tamm & Wagner-Nagy 2015). This is also the case in Mari (see Alhoniemi 1993, Saarinen 2015) and Udmurt (see Winkler 2011, Edygarova 2015). The analysis of negation as an auxiliary has some advantages: First, negation governs the form of the highest verb in the clause in a way reminiscent of other embedding verbs. The main verb appears in what is referred to as the connegative stem (glossed as CN, a form that is roughly identical to the bare stem). Second, the negative auxiliary bears inflectional features that otherwise end up on the highest verb of the clause, such as tense and subject agreement. In Mari, negation bears both person and number inflection (1), while in Udmurt, person is marked on negation and number on the connegative verb (2):

- | | |
|--|--|
| <p>(1) a. puŋ-š-da
give-PST-2PL
'you gave'</p> <p style="margin-left: 40px;">b. ŋ-š-da pu
NEG-PST-2PL give.CN
'you did not give' <i>Mari</i></p> | <p>(2) a. šot-i-dj
give-PST-2PL
'you gave'</p> <p style="margin-left: 40px;">b. ɛ-d šote
NEG.PST-2 give.CN.PL
'you did not give' <i>Udmurt</i></p> |
|--|--|

Finally, negation always takes scope over the hierarchically highest verb in the same clause. In the Udmurt example below, only the high reading of negation scoping above the matrix verb *dišt-* ('dare') is possible (see (3)). To enforce a low reading, more complex constructions involving negative converb clauses or finite embedded clauses must be used.

- (3) Maša-jen veraškj-nj ɛ-z dištj.
Masha-INS talk-INF NEG.PST-3 dare.CN.SG
'S/he didn't dare to talk to Masha.'
not: 'S/he dared not to talk to Masha.' *Udmurt*

For these reasons, one might suggest that negation is an auxiliary occupying a relatively high position in the clause. However, we will show in what follows that treating negation as an auxiliary is insufficient since negation does not behave syntactically like other 'regular' auxiliaries in at least two respects.

Lowering of negation in Mari/Udmurt verb clusters

First, negation displays different verb cluster orders than other types of embedding verbs. In Mari, auxiliaries and other embedding verbs typically take their complement to the left. Thus, in the unmarked case, the verbs appear in descending [(3)21]-order at the end of a sentence as in (4a). However, for the purposes of backgrounding, Mari also allows arguments and argument clauses to appear postverbally as in (4b):

- (4) a. Môj kušt-en kert-am. [21] b. Môj kert-am kušt-en. [12]
 1 SG dance-GER can-1 SG 1 SG can-1 SG dance-GER
 ‘I can dance.’ ‘I can dance.’ *Mari*

Word order in Udmurt is, as a tendency, more flexible than in Mari, thus, argument clauses may appear to the left or to the right of the verb (see, e.g., Asztalos 2018:107–113).

- (5) Ta pešanaj kirdža-nj bigate / bigate kirdža-nj. [21]/[12]
 this grandma sing-INF can.PRS.3SG can.PRS.3SG sing-INF
 ‘This grandma can sing.’ *Udmurt*

The negative auxiliary, however, necessarily occurs before the highest verb of the clause. This is all the more surprising since, given its scope and morphological selection properties, it can be argued to be the hierarchically highest element in the cluster. Thus, cluster-final position should be the prototypical position for a high auxiliary. Nonetheless, negation must precede the highest verb in the clause. A descending [(3)21]-order is impossible:

- (6) Ta pešanaj ug kirdža / *kirdža ug. [12]/*[21]
 this grandma NEG.PRS.3 sing.CN.SG sing.CN.SG NEG.PRS.3
 ‘This grandma does not sing / is not singing.’ *Udmurt*

- (7) Tud-ôm už-ôn o-m kert / *kert o-m. [312]/*[321]
 3SG-ACC see-GER NEG-1 SG can.CN can.CN NEG-1 SG
 ‘I cannot see her/him.’ *Mari*

Second, negation in other Finno-Ugric languages, e.g., Finnish, need not be adjacent to the connegative verb (see e.g. Vilkuna 1998, Kaiser 2006). In Udmurt and Mari, this holds for auxiliaries like *kert-* ‘can’, which need not be adjacent to the dependent non-finite verb, and arguments can be placed between them, cf. (8). In contrast, even though both Udmurt and Mari exhibit quite free word order pre- and postverbally, negation in Mari and Udmurt immediately precedes the connegative verb. As shown in (9), phrasal material in between negation and the connegative verb leads to ungrammaticality.

- (8) a. Môj ôšt-en paša-m kert-am. [V-DP-Aux]
 1 SG do-GER work-ACC can-1 SG
 b. Môj kert-am paša-m ôšt-en. [Aux-DP-V]
 1 SG can-1 SG work-ACC do-GER
 ‘I can do the work.’ *Mari*

- (9) *Môj ôšt-en o-m paš-a-m kert. *[Neg-DP-V]
 1 SG do-GER NEG-1 SG work-ACC can.CN
 'I cannot do the work.'

Mari

Thus, the morphosyntactic distribution of negation in Mari/Udmurt not only differs from other auxiliaries within the languages but also from negative auxiliaries in related languages. On the surface, negation behaves more like a bound element that forms a close unit with the verb. This is further supported by phonological criteria in the two languages. In Udmurt, for example, stress shifts from the last syllable of the lexical verb to the first one when the verb is preceded by negation (cf. Edygarova 2015:269). Based on these facts, we conclude that the syntactic behavior of negation in Mari and Udmurt suggests that, unlike in Finnish, negation is not a syntactically free element but rather a bound element that forms a complex unit with the highest verb.

3. A Lowering Approach

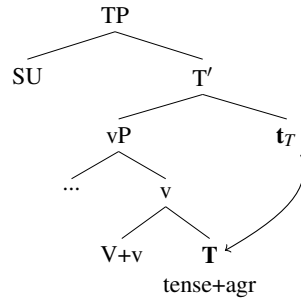
We have seen that negation and the connegative verb seem to form a complex unit syntactically and for (some) phonological processes. This is, a priori, in contradiction to the properties we saw at the beginning of Section 2, namely that negation occupies a high position in the structure as it governs the form of the highest verb, bears tense and agreement morphology and takes high scope. Thus, the question arises of how the complex unit consisting of the verb and the negation is formed. We argue that this happens by postsyntactic lowering (Embick and Noyer 2001). The Neg head originates in a high syntactic position right below T, which bears the tense and agreement features. Evidence for the relative position of Neg and T comes from the following observations: First, subject NPIs are licensed, suggesting that there is a subject position below Neg. Second, optional movement of quantified subjects leads to scope ambiguities, suggesting it targets a position above negation. As shown in (10), a floating quantifier is interpreted below negation, while a quantifier that is part of the subject takes scope over negation:¹

- (10) a. Djšetskiš-jos tros ɛ-z vue. $\neg > \text{many}$
 student-PL many NEG.PST-3 arrive.CN.PL
 'Not many students arrived.'
- b. Tros-ez djšetskiš-jos ɛ-z vue. $\text{many} > \neg$
 many-DET student-PL NEG.PST-3 arrive.CN.PL
 'Many students did not arrive.' Udmurt (Edygarova 2015:282)

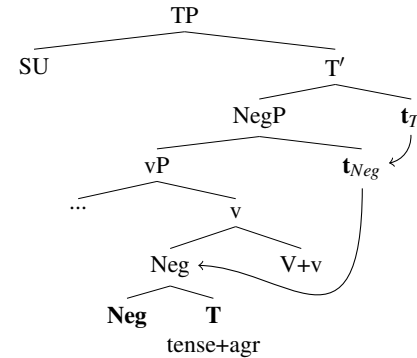
Following Embick and Noyer (2001), we assume that Neg⁰ as well as T have a morphosyntactic requirement to appear in a local relation with a verb, i.e., with v⁰, with the local relationship implying that they must appear within the same complex head. Both T and Neg therefore lower in the postsyntax to v⁰. The following trees illustrate an affirmative (11) and a negative verb cluster (12).

¹Our structural assumptions are in line with Mitchell (2006), who argues that there is variation w.r.t. the position of NegP in Finno-Ugric languages: below TP in Mari and Udmurt, and above TP in Finnish.

(11) Lowering derivation: affirmative



(12) Lowering derivation: negative



The correct surface order obtains with the following assumptions about the linearization of complex heads: First, functional heads whose sister is lexical are ordered to the right (i.e., *v* follows *V*). Second, if both sisters are functional heads, the non-projecting head is linearized to the right. This leads to the head-final/suffixing default pattern in affirmative clusters. This general linearization statement can be overridden by more specific statements. This is the case with negation: *Neg* is linearized to the left of its sister, which results in the preverbal position of negation (we will encounter another more specific linearization requirement in the context of clitic placement below).

The derivations in (11)–(12) have some immediate benefits. First, since lowering is typically assumed to be a postsyntactic operation, the absence of semantic effects is explained straightforwardly. We have seen that negation in Mari and Udmurt obligatorily takes high scope. An alternative account in terms of syntactic head-movement like the one discussed in Section 5 would need to stipulate that, unlike other instances of head-movement (see, e.g., Lechner 2007, Roberts 2010), this instance of head-movement cannot have semantic effects.

Second, it derives the correct constituency within the complex head. Tense and agreement features appear affixed to negation, and not to the main verb. Under the account we propose this follows straightforwardly as the agreement/tense head *T* first adjoins to *Neg* and only then does the whole complex consisting of *Neg* and *T* lower to *v*, cf. (12).

The third and by far the strongest argument for the derivation in (12) comes from the placement of adverbial clitics in verb clusters; as we will see in the next section, adverbial clitics crucially display different placement possibilities in the presence of negation.

4. Clitics in the Cluster

In Section 2, we said that phrasal non-verbal material cannot occur in between the negation and the connegative verb, as was shown for direct objects in example (9). We took that as an argument that they form a complex unit. However, in Udmurt, some adverbs like *ńi* ‘already, anymore’ and *na* ‘still, yet’ can occur inside the cluster in the presence of negation (Vilkuna 1998, Arkhangelskiy 2014). As argued by Arkhangelskiy (2014), *ńi* and *na* are (phonological) clitics that generally occur after the predicate. In (13), the clitic follows the hierarchically highest verb of the clause:

- (13) Ta pići pijaš lıddž(işk)ı-nı bigate=ńı.
 this little boy read(INTR)-INF can.PRS.3SG=already
 ‘This little boy can already read.’ Udmurt

Interestingly, however, in negative verb clusters optionality arises. The clitics can either attach to the connegative verb or to negation.

- (14) Ta pešanaj ug<=ńı> kirdža<=ńı>.
 this grandma NEG.PRS.3=anymore sing.CN.SG=anymore
 ‘This grandma does not sing anymore.’ Udmurt

These findings are supported by the data from the Udmurt Corpus², as illustrated below. In the Udmurt Corpus, the adverbial clitics *ńı* and *na* always follow auxiliaries like *bigat-* ‘can’ (15); thus, no optionality arises. In (16), we see that, with negated verbs, the clitics can follow the connegative verb, but they crucially can also precede it, attaching to negation. Finally, the table in (17) shows that the pattern carries over to three-verb clusters consisting of negation and the auxiliary *bigat-* ‘can’. Again, the clitics follow either the connegative verb or negation. However, they do not follow the non-finite verb embedded by *bigat-*.³

- (15) *[V-Aux_{can}]-clusters* (16) *[Neg-V]-clusters* (17) *[V-Neg-Aux_{can}]-clusters*

	Hits
V-CAN- <i>ńı</i>	358
V-CAN- <i>na</i>	270
V- <i>ńı</i> -CAN	0
V- <i>na</i> -CAN	0

	Hits
NEG-V- <i>ńı</i>	4577
NEG-V- <i>na</i>	2167
NEG- <i>ńı</i> -V	1328
NEG- <i>na</i> -V	614

	Hits
V-NEG-CAN- <i>ńı</i>	251
V-NEG-CAN- <i>na</i>	82
V-NEG- <i>ńı</i> -CAN	98
V-NEG- <i>na</i> -CAN	23
V- <i>ńı</i> -NEG-CAN	0
V- <i>na</i> -NEG-CAN	0

The main finding from this investigation is that the clitics precede the hierarchically highest verb only in the presence of negation. This, we would like to argue, is due to the lowering of T+Neg to the preverbal position, which drags the clitic along. Lowering is a successive-cyclic adjunction operation and consequently, any intervening head must be taken along.

Examples like (13) suggest that the base position of the adverbial clitics is above auxiliaries like *bigat-* ‘can’. Given their aspectual nature, they will be introduced below T. As for their relative position w.r.t. negation, we adopt the analysis by Löbner (1989), who has shown that adverbs with the meaning of ‘already’ and ‘not anymore’ are systematically related by internal negation. In Udmurt (as, e.g., in Hebrew) the relationship between the two meanings is morphologically transparent (unlike in English). While ‘already’ asserts that a

²The corpus, available at: <http://udmurt.web-corpora.net>, currently contains 9.57 million words. The searches were carried out in June 2019. In some, but not all cases, the results were manually disambiguated.

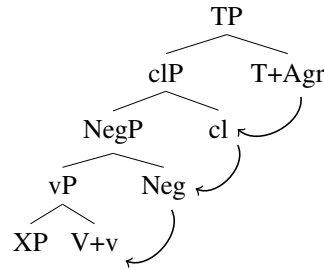
³It should be mentioned that, upon elicitation, some of our Udmurt consultants accepted the order V-CL-Aux_{can}. We have to leave an investigation of why the judgments deviate from the corpus data for future research. It should be emphasized that the judgments on negative verb clusters pattern with the findings from the corpus shown in (16) and (17).

proposition holds true at point t and presupposes that it was not true before t , ‘not anymore’ asserts that a proposition does not hold true at t and presupposes that it was true before t . Thus, in its negated use, the adverb takes scope over negation. We therefore assume that the Udmurt adverbial clitics are merged between NegP and T as in (18):

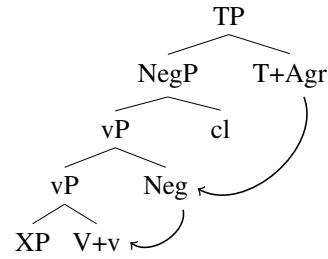
- (18) [[[[... V+v] Aux] Neg] Cl] T]

We propose that the optionality of clitic placement in the presence of negation results from the clitics’ ambivalent phrase-structural status as optionally projecting heads. As a result of this ambiguity, the clitics can either be targeted by processes affecting heads or they can be skipped. If they project, they are targeted, i.e., lowering of T will dislocate them to the preverbal position, see (19). If they do not project, they are skipped and will remain in their base position, see (20). Eventually, they will lean to the final element of the cluster in search for a phonological host.⁴

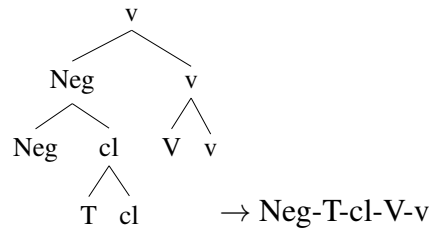
- (19) *Negated clusters: Cl projects*



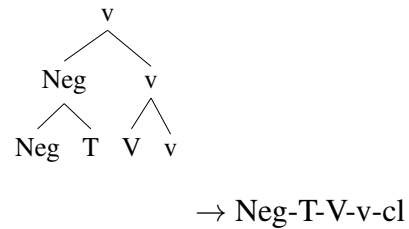
- (20) *Negated clusters: Cl does not project*



- (21) *Complex Heads: Cl projects*



- (22) *Complex Heads: Cl does not project*



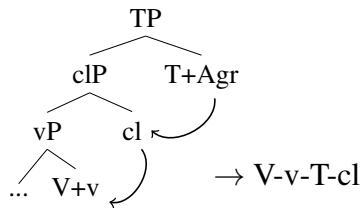
The lowering derivation in (19) derives the complex head in (21). Given that negation is linearized to the left of its sister, it will end up in preverbal position, preceding also T and the clitic. The relative order of T and the clitic follows under the assumption that clitics like *ni* and *na* are specified to be linearized after their sister; the final linearization is thus: Neg-T-cl-V-v. The derivation in (20) will derive the complex head in (22), leading to the linear order Neg-T-V-v-cl. Thus, the two alternative orders can be related to the interaction

⁴Above, we have assumed that the clitics are syntactic heads which optionally project their own phrase. This implementation is close to the approach of Cecchetto and Donati (2010), who propose that lexical items always have, in principle, the capacity to provide the label. An obvious alternative to capture the ambiguity is to capitalize on the fact that, as heads adjoined to phrases, clitics are [+minimal, +maximal] in Bare Phrase Structure terms. Consequently, they can thus be the target of head-movement given their [+minimal] property, but they can also be skipped given their [+maximal] property.

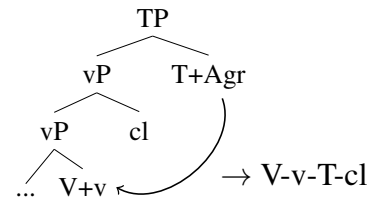
of the phrase-structural status of the clitic itself and the lowering operation that applies independently due to the morphosyntactic requirements of T and Neg. In the next section, we will see that this straightforward connection cannot be made under the assumption that the formation of the Neg-T-V-complex obtains by means of (upward) head-movement.

Before we proceed, we will briefly discuss the derivation of affirmative clusters. Recall that they do not show optional clitic placement. The clitics typically occur in cluster-final position (cf. (13)). This is due to the fact that both derivations lead to the same result. If the clitic projects and is picked up during lowering of T to v, the same surface order obtains given that the complex consisting of [T+cl] is linearized after the V+v complex, see (23) (the linearization of the clitic after T again follows from a vocabulary-specific linearization requirement, i.e., the enclitic nature of *ni/na*). If the clitic does not project, it is skipped and will, of course, end up in cluster-peripheral position as well, see (24).

(23) *Affirmative clust.: Cl projects*



(24) *Affirmative clust.: Cl does not project*



5. Against an Approach in Terms of Upward Head-Movement

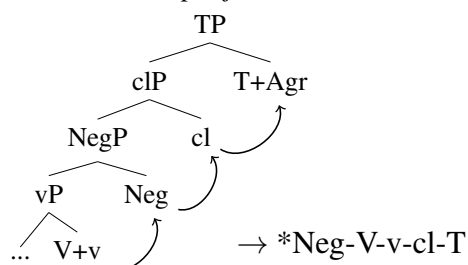
In this final section, we will show that the properties of negative verb clusters in Mari and Udmurt cannot be derived by means of upward head-movement. Assuming the same underlying syntactic structure as in the lowering derivations above, an analysis in terms of head-movement would posit that the verb moves successive cyclically to T. On its way it picks up Neg⁰ in case it is present. In very much the same way as in the lowering derivation, such an account could assume that complex heads are typically linearized with functional material to the right (leading to suffixing configurations); only negation would be linearized to the left of its verbal host.⁵

The first problem that obtains for upward head-movement is the constituency of the resulting complex head: Given that Neg and V form a unit to the exclusion of T, T cannot be affixed to Neg (it would arguably be linearized after V). We thus predict the wrong distribution of inflectional categories (the same problem would obtain if Neg were generated above T: V would form a unit with T to the exclusion of Neg). The second problem arises in the clitic derivations: Regardless of whether successive-cyclic head-movement picks up or skips the clitic, we would arrive at the wrong surface order of elements in the cluster. Consider the negative clusters below: In (25), the clitic is picked up by head-movement. This crucially derives the wrong constituency within the complex head: Tense+agreement would fail to occur on the negative auxiliary, and since the clitic intervenes between V and

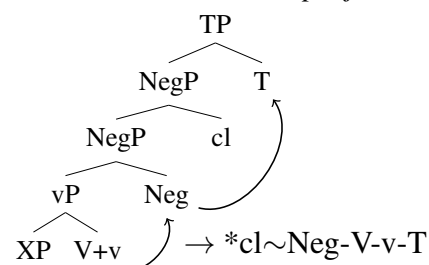
⁵Mitchell (2006:233f.), who posits verb movement to T in affirmative clusters in Mari/Udmurt, argues that there is no verb movement in negative clusters. Consequently, she cannot account for the fact that negation and connegative verb must be adjacent.

T, affixation of T will fail, leading to a crash of the derivation. Alternatively, if the clitic is skipped by head-movement, it is expected to occur before the cluster, either leaning to the preverbal constituent or procliticizing to the verb cluster (depending on one's additional assumptions) (26). Neither option is attested.

(25) *Head-mvt: Cl projects*



(26) *Head-mvt: Cl does not project*



Various attempts could be made to save a head-movement account. First, one could assume a different underlying syntactic position of the clitic. One straightforward option would be to introduce the clitic above Neg and T as this would at least derive the cluster-final order. However, this leaves the optionality of clitic placement in negative contexts unaccounted for. The clitic should always be cluster-final, contrary to fact. A second possibility would be to assume a flexible base-position of the clitic, i.e., the clitic could either be merged above or below T and Neg. But that may be semantically implausible and it would not explain why the syntactic base-position of the clitic should correlate with the presence or absence of negation in a given configuration. The question thus arises of why the base position of the clitic should be fixed in affirmative contexts but flexible in negative contexts.

6. Conclusion

In this paper we have argued for two related points: (i) Negation in the Finno-Ugric languages Mari and Udmurt forms a complex unit with the hierarchically highest verb of the clause. Unlike in other Finno-Ugric languages, negation does not have the morphosyntactic distribution of auxiliaries; rather, it behaves like a bound element in that it always appears immediately preceding the connegative verb. Nonetheless we saw that negation must be relatively high in the syntactic structure as it bears tense and subject agreement morphology, takes high scope and governs the form of the hierarchically highest verb. (ii) We argued that this paradox can be resolved by assuming that negation is base generated high in the structure (i.e., essentially in the position of a regular negative auxiliary), while having a morphosyntactic requirement to appear in a local relationship with *v*. In order to satisfy this requirement, negation lowers postsyntactically. The main argument for the lowering approach came from the absence of semantic effects, the distribution of inflectional categories (tense and agreement) and the optionality of clitic placement: Since lowering proceeds downwards, T and negation form a unit at the very beginning, thus deriving the correct constituency with tense and agreement attaching to negation. Furthermore, under the assumption that clitics project their own phrase only optionally, they can either be picked up by lowering of T+Neg, leading to cluster-internal position, or they can be

skipped, leading to cluster-final position of the clitic. Crucially, the special properties of negative verb clusters can thus be related to the independently motivated lowering operation. We have shown that such a solution is not available under an alternative account that makes use of upward head-movement.

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