Append-lists for Russian wh-fronting DELPH-IN 2020

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Introduction

- We replaced diff-lists with append-lists in the Grammar Matrix
- In particular, tested on Russian multiple wh-fronting
  - Seems to have worked well (though there are some things to talk about further)
- To be presented at HPSG-2020

Append-lists

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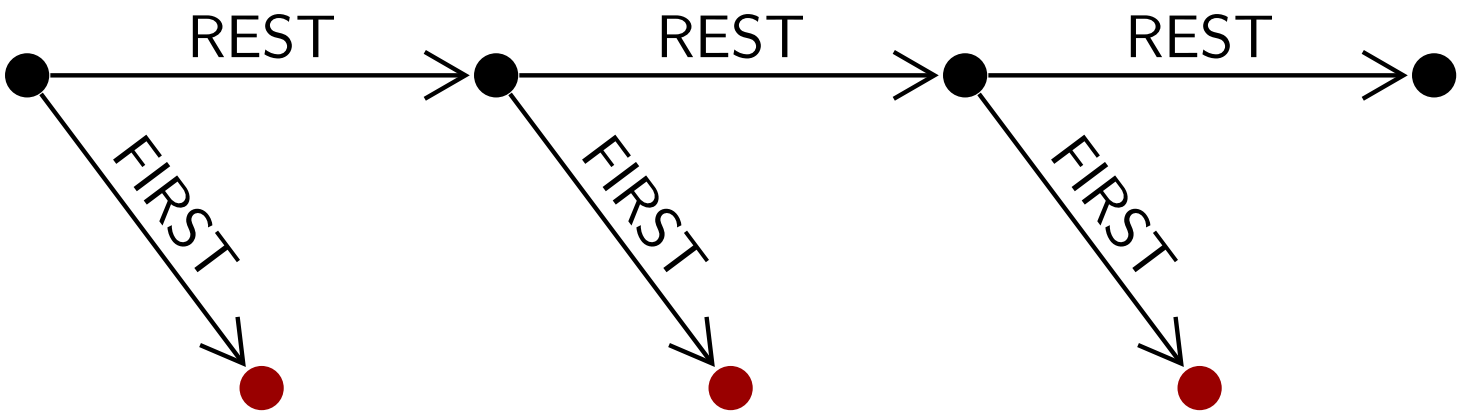
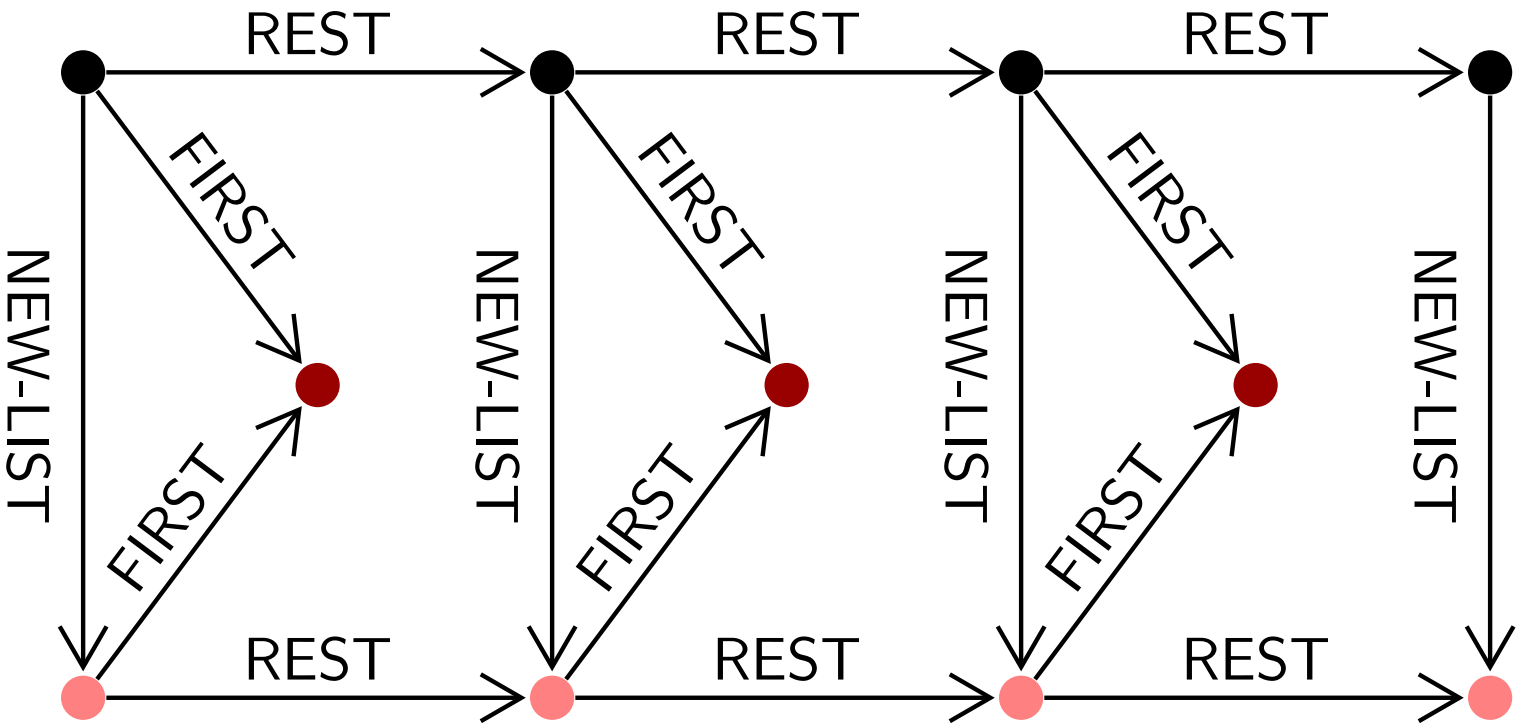
  1. Append lists to each other
  2. Use closed lists (e.g. to check length)
- Like diff-lists, append-lists contain lists
- Unlike diff-lists, these lists are closed
- The append operation:
  1. Creates an open list from each closed list
  2. Combines the open lists (like diff-lists)
  3. Closes the list

Creating an open list



Creating an open list



Russian wh-fronting

(1) Kto kogda kogo videl?
who.NOM when who.ACC see.PST
'Who saw whom and when?' [rus]

(2) Ty gde rabotaesh?
2SG where work.2SG.PRES
'Where do you work?' [rus]

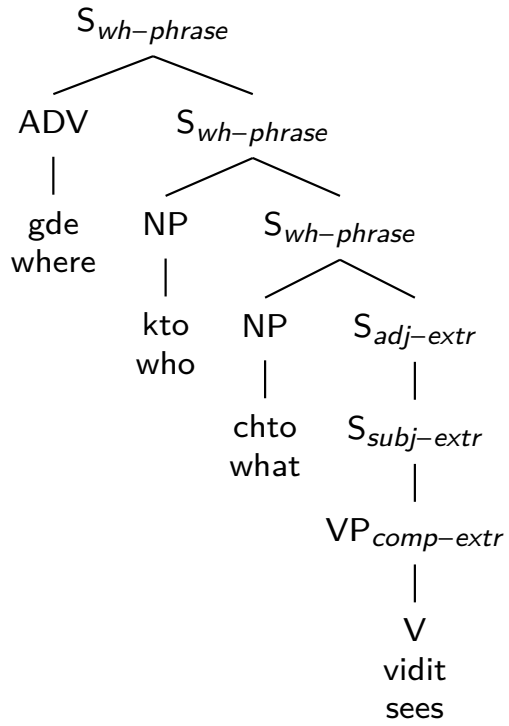
(3) Gde ty rabotaesh?
where 2SG where work.2SG.PRES
'Where do you work?' [rus]

(4) ?Kto kogda kogo ty tochno znaesh chto videl?
who.NOM when who.ACC 2SG for.sure know that see.PST
'Who do you know for sure saw whom and when?' [rus]

Multiple Questions in the Grammar Matrix

$$\left[\begin{array}{ll} \textit{OLD-filler-gap-phrase} & \\ \text{SLASH} & \langle\rangle \\ \text{ARGS} & \left\langle \boxed{2}, \left[\text{SLASH} \left\langle \boxed{2} \right\rangle\right] \right\rangle \end{array}\right]$$

$$\left[\begin{array}{ll} \textit{wh-phrase} & \\ \text{SLASH} & \boxed{1} \\ \text{ARGS} & \left\langle \boxed{2}, \left[\text{SLASH} \left\langle \boxed{2} \right\rangle \oplus \boxed{1}\right] \right\rangle \end{array}\right]$$



(5) Gde kto
where.WHERE who.NOM
chto vidit?
what.ACC see.3sg
'Who sees what [and] where?'[rus]

NB: Extraction rules also important

QUE and SLASH in the Grammar Matrix

- Verbs etc., append their arguments' QUE and SLASH values (lexical threading; Bouma et al. 2001)
- All wh-words are QUE-nonempty (as in the ERG; cf. Ginzburg and Sag 2000)
- Allow more than one element on QUE and SLASH (Sag et al. 2003; Crysmann 2015; cf. ERG and previous Matrix core)
- Use append-list instead of diff-list, to allow appending of closed lists (Aguila-Multner and Crysmann 2018)
- Analyze Russian as **optional** multiple fronting
  - Both filler-gap wh-rule and in-situ unary rule
  - Other rules allow QUE-nonemtpy daughters, too!
  - Ambiguity! Current solution: New features

L-QUE and WH

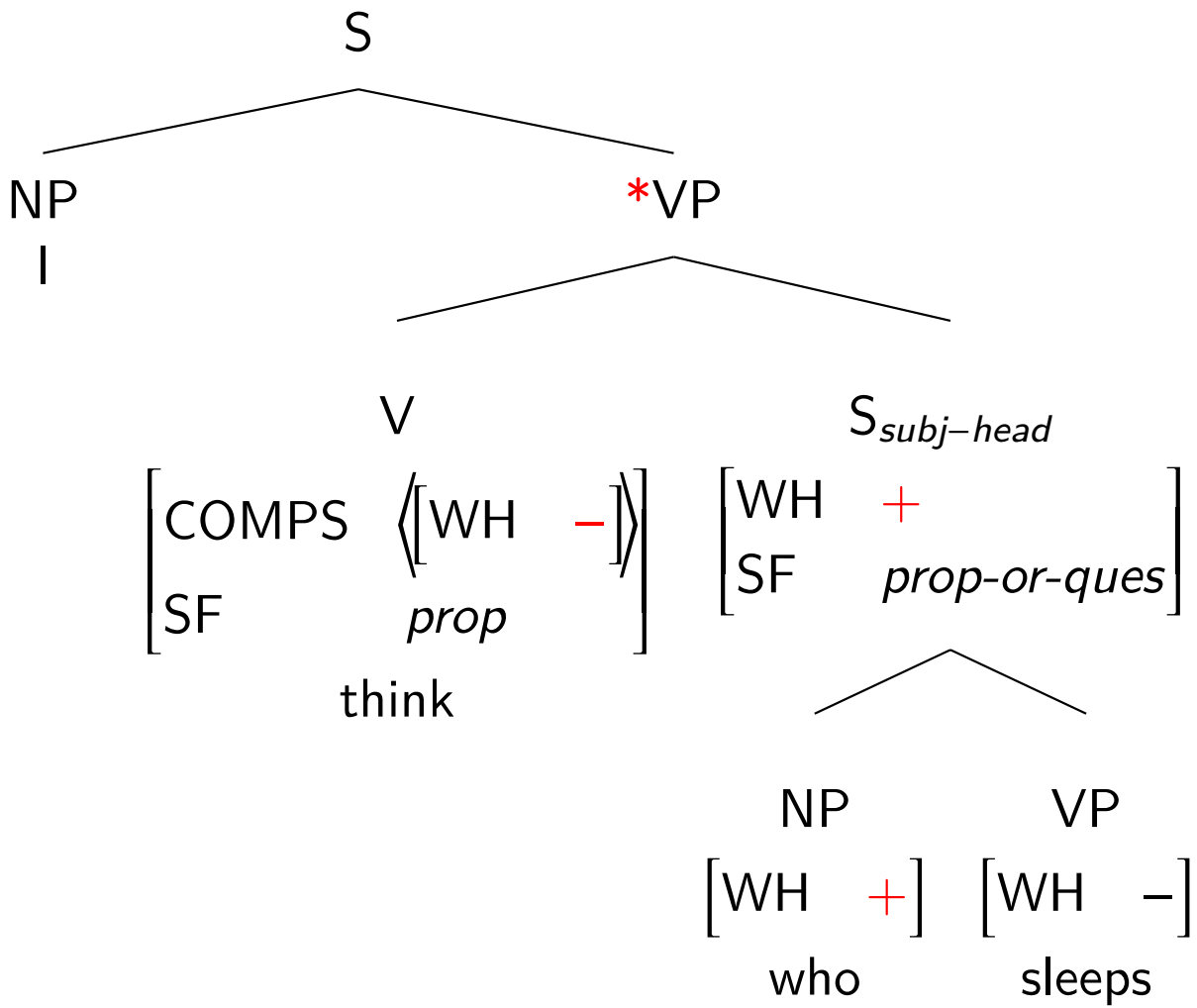
Features used to (i) track a wh-word at the left periphery of the clause; (ii) track any presence of a wh-word anywhere in the clause

$$\begin{bmatrix} \textit{basic-wh-word} \\ \text{SYNSEM} \begin{bmatrix} \text{L-QUE} & + \\ \text{LOCAL|CAT|WH|BOOL} & + \end{bmatrix} \end{bmatrix}$$

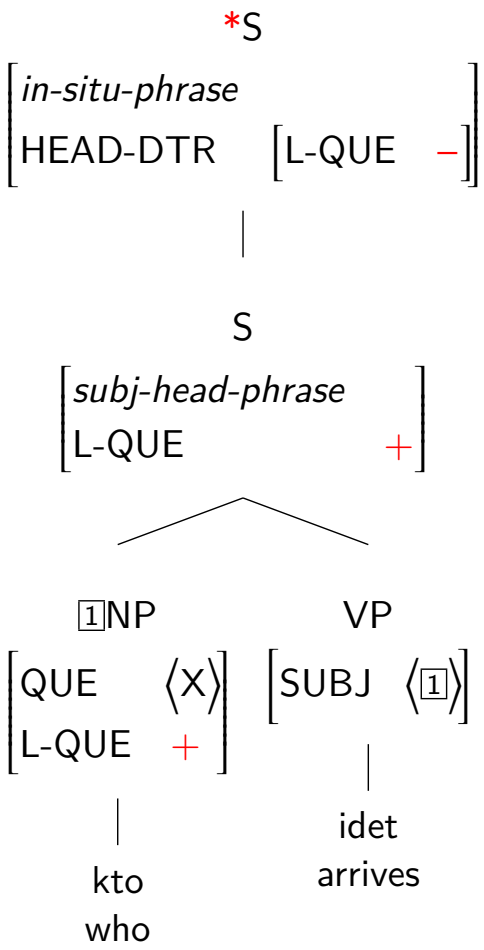
$$\begin{bmatrix} \textit{basic-non-wh-word} \\ \text{SYNSEM} \begin{bmatrix} \text{L-QUE} & - \\ \text{LOCAL|CAT|WH|BOOL} & - \end{bmatrix} \end{bmatrix}$$

Any phrase-or-lex-rule (except *wh-* and *in-situ* phrases) is a **logical OR** of the daughters' WH.

WH feature at work: Most rules's WH is the OR of daughters' WH



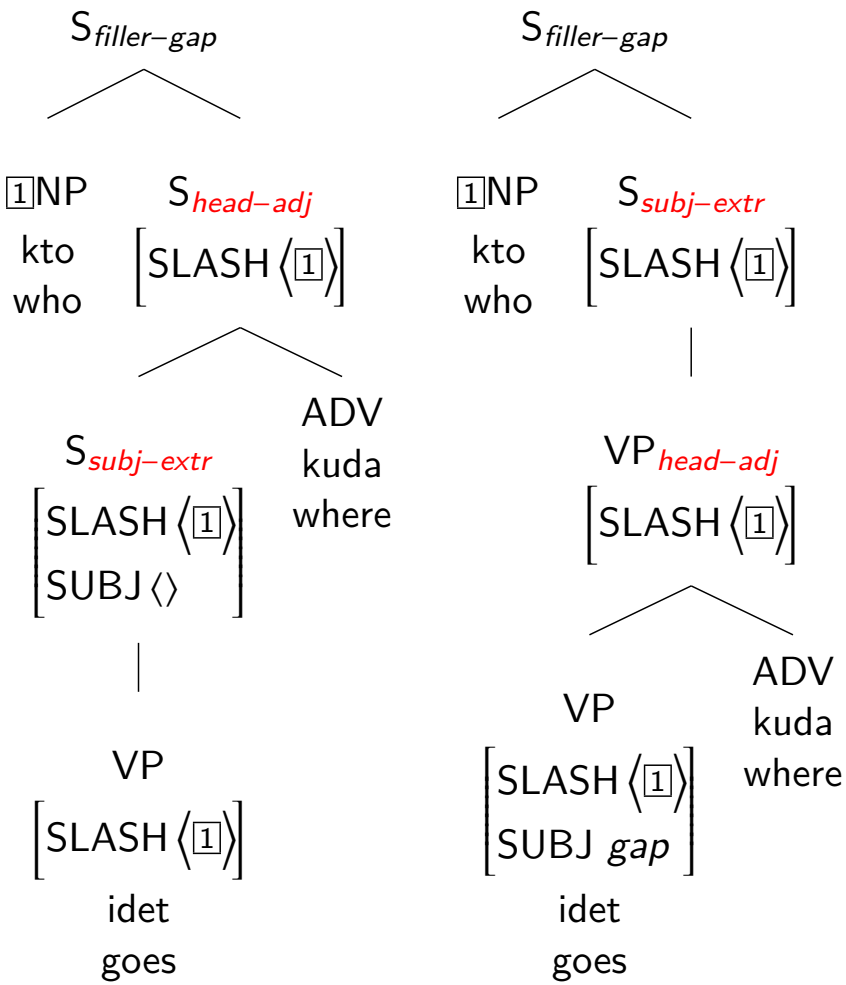
L-QUE feature at work



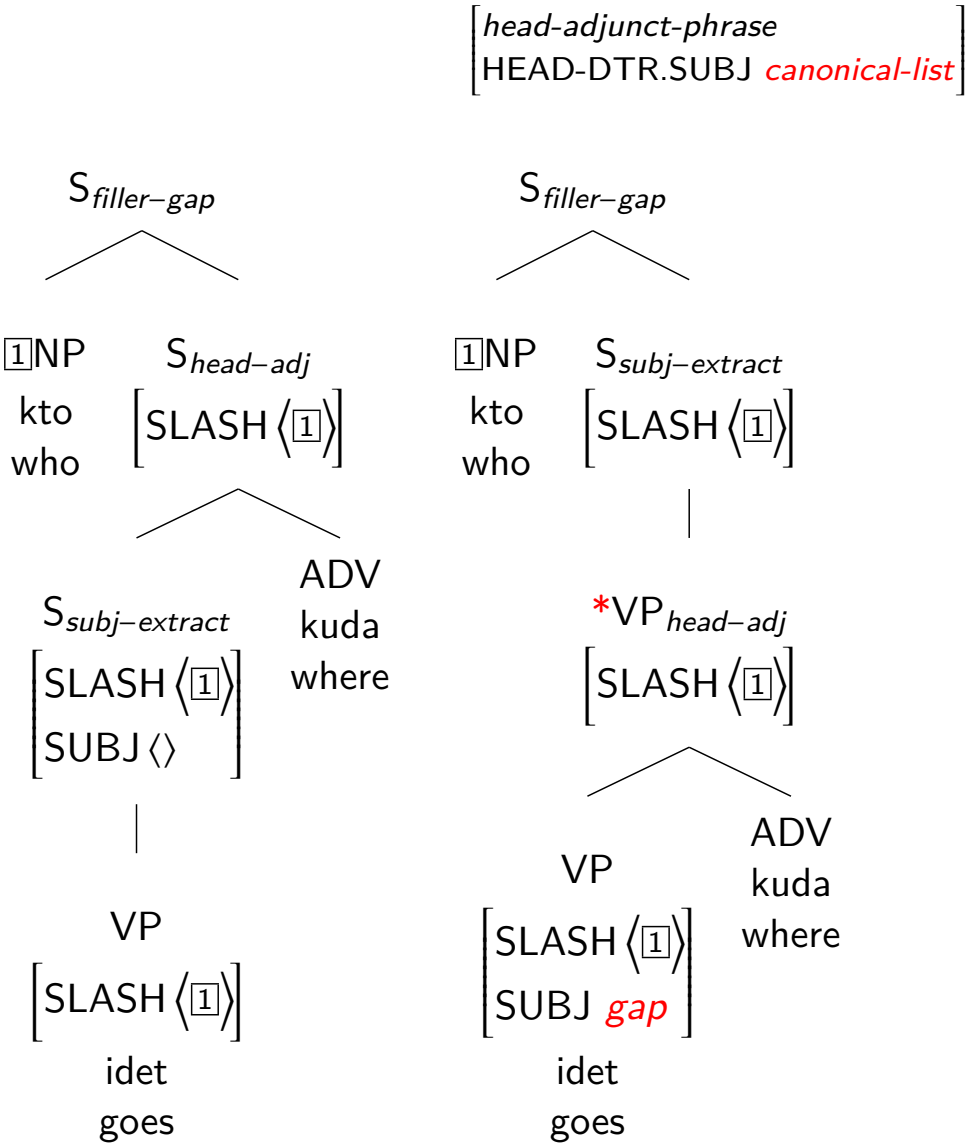
$$\begin{bmatrix} \textit{phrase-or-lexrule} \\ \text{L-QUE } \boxed{1} \\ \text{ARGS} \left\langle \begin{bmatrix} \text{L-QUE } \boxed{1} \end{bmatrix}, \ldots \right\rangle \end{bmatrix}$$

- Track the question word along the left periphery of the clause
  - (Miller 1992; Song 2014)
- Constrain the *in situ* phrase to only take L-QUE – daughters

But not quite done!



Canonical list at work



Russian test suite (304 sentences)

Coverage %	Overgeneration %	Ambiguity
68.5	6.8	1.72

(6) *Gde kogda my kupili eti knigi?
where when 1PL.NOM buy.PAST.1PL these book.PL.ACC
Sounds like: 'Where when did we buy these books?'

(7) Kto gde ty dumaesh lezhit?
who where 2SG think.2SG lie.3SG
'Who is lying where?' [rus]

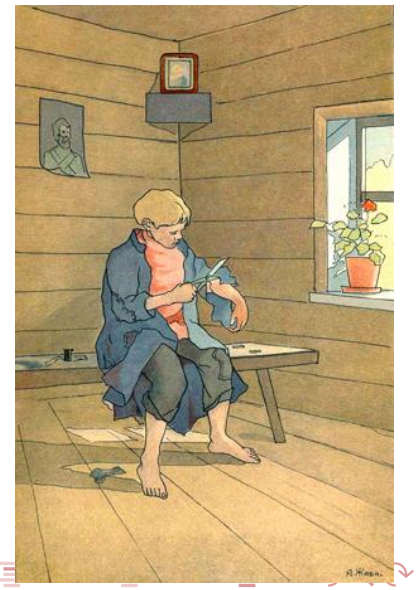
(8) V kakoi Ivan priehal gorod?
IN which.SG.ACC Ivan.NOM arrive.PAST.3SG town.SG.ACC
'In which town did Ivan arrive?" [rus]

(9) Kto i chto vidit?
who.NOM AND what.ACC see.3SG.PRES
"Who sees what?" [rus]

Conclusion: Russian as optional fronting

- Having non-fronted wh-words be QUE-nonempty for analyses of flexible word order presents difficulties.
  - (a fable by Ivan Krylov: https://faculty.arts.ubc.ca/winder/me/mutanda/trishkas_caftan.htm)
- InfoStr library has filler-gap rules, too!
  - e.g. (10) could be modeled as topic-and-wh-fronting
    - but would multiple filler-gap rules lead us to the same kaftan?

(10) Ty gde rabotaesh?
2SG where work.2SG.PRES
'Where do you work?' [rus]



Conclusion: Append lists

- Append lists worked well for a lot of changes and additions to the Grammar Matrix
- Lexical threading and append-lists do not mix all that well
  - Need lots of rules to license flexible orders
  - Perhaps just append-lists would be ultimately easier?

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