On the Russian hybrid coordination construction

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Abstract

This paper discusses a coordination construction that occurs in Russian in which constituents with different syntactic functions and different thematic roles are conjoined. These conjuncts are co-arguments of the same head and are subject to a number of idiosyncrasies.

We consider several alternative analyses of the phenomena, and conclude that these are unable to account for the full range of the facts. Thus, even though these conjuncts do not form a semantic unit with a unique grammatical role, there is evidence that they do form a kind of coordination structure. The phenomena are challenging for any theory of grammar, but the syntax-semantics account that we provide involves minimal changes to standard HPSG architecture.

1 Introduction

Russian is a relatively free word order language. A simple sentence like (1a) can be realized in six different ways as shown below. These realizations have essentially the same core semantics, even though these differ in frequency, pragmatic import and information structure.

(1) a. Vse znayut kogo-to.
everyone$_{nom}$ knows someone$_{acc}$

b. Kogo-to znayut vse.

c. Vse kogo-to znayut.

d. Kogo-to vse znayut.

e. Znayut vse kogo-to.

f. Znayut kogo-to vse.

The particular phenomenon addressed in this paper arises when a conjunction lexeme i ('and') is inserted between the co-arguments of the same head. Thus in (2) one can see what appears to be a coordination between the subject *vse* 'everyone' and the complement *vsyo* 'everything':

(2) a. Vse i vsyo znayut.
everyone$_{nom}$ and everything$_{acc}$ knows

[†]We thank our native informants residing in Moscow, as well as Olga Dmitrieva, Tatiana Nikitina, Petya Osenova, Svitlana Antonyuk-Yudina for various help and discussion. We are also most grateful to the anonymous referees from the HPSG07 programme committee for their comments, as well as to the HPSG07 audience for questions and suggestions. None of the above necessarily endorse or reject the ideas developed in this work, and we alone are responsible for any errors and unclarities.

b. Znayut vse i vsyo.
knows everyone$_{nom}$ and everything$_{acc}$

Note that the NPs bear the expected thematic roles and as such one would not be expected them to be conjoinable. However, when the conjunction marker is present the co-arguments are required to be adjacent. This is illustrated below, and suggests some kind of constituenthood:

(3) *Vse znayut i vsyo.
everyone$_{nom}$ knows and everything$_{acc}$

(4) a. Nikto i nikogo ne pobedit
nobody$_{nom}$ and nobody$_{acc}$ not win
'nobody could beat anyone'

b. *Nikto ne pobedit i nikogo
nobody$_{nom}$ not win and nobody$_{acc}$

This phenomenon has been noted before in Sannikov (1989), and we shall refer to it as *hybrid coordination* (henceforth HC). Although our proposal concerns Russian, our account can in principle be extended to other Slavic languages that also allow for HC, including Ukrainian and Polish. For perspicuity we include some examples from Ukrainian:[1]

(5) a. Vsi i vse pro vsikh znajut'
everybody and all about everyone know)
'everybody knows everything about everyone'

b. Vsi vse i pro vsikh znajut'
everyone all and about everyone know

(6) *vsi vse znayut' i pro vsikh
everyone all know and about everyone
'everybody knows everything about everybody'

One other crucial aspect of HC is that the presence of the conjunction does not alter the meaning of the sentence. In other words, *Nikto i nikogo ne pobedit* has basically the same meaning as *Nikto nikogo ne pobedit*. Consider some more data given in (7). Some of the native speakers that we consulted report that coordinations with indefinite conjuncts like (7c) are degraded, while other speakers accept them as grammatical. The remaining cases were accepted as fully grammatical.

[1]We are very thankful to Svitlana Antonyuk-Yudina for providing help with these data. All other examples given in this paper are from Russian.

(7) a. Vsem i vse do lampochki
everyone$_{dat}$ and everything$_{nom}$ don't care
'nobody cares about anything'

b. Kto i kogo pobedil?
who$_{nom}$ and whom$_{acc}$ won
'Who took over whom?'

c. Kto-to i kogo-to obidel
someone$_{nom}$ and someone$_{acc}$ offended
'someone offended somebody'

The fact that (7c) is degraded for some speakers is odd on itself, given that the non-coordinate counterpart *Kto-to kogo-to obidel* is perfectly grammatical. This may be due to pragmatic and/or information structure underpinnings of HC, which do seem to require contexts in which the 'conjuncts' are salient in some manner. It should be pointed out however that HC does not require any kind of prosodic focus. The exact nature of the pragmatic import associated to this phenomenon is unclear to us, but it does exist.

Our informants also report that HC is intuitively interpreted as a form of conjunction. There are several elements that are involved in a given state of affairs and one can list them by conjoining them. There are also preferential orderings of conjuncts, but the reverse orders are usually also acceptable.

One of the simplest possible analysis that could be pursued is one in which no actual coordination occurs. One may argue that the particle i is just homophonous with the conjunction lexeme, and that no actual coordination is realized. In fact, in Russian and in other Slavic languages the particle 'i' can also be a focus particle with the meaning '*also*' or '*even*'. The example in (8b) shows that the focus 'i' does not form a constituent with the preceding phrase, because [*i Vanya*] need not be adjacent to the other NP [*Petya*]:

(8) a. Petya i Vanyu pobedit
Peter and Vanyu win

b. Petya pobedit i Vanyu
Peter win and Vanyu
'Peter can beat Vania too' / 'Peter can beat even Vania'

Clearly, there is no coordination structure in these cases. The phrase adjacent to '*i*' is focused, and interpreted as an unexpected undergoer of the event, possibly contrasted with some other discourse-salient individual.

The HC data in (7) are rather different however. First, the 'conjuncts' must be adjacent if i is present. Secondly, there is no focus reading for (7a,b) and (7c) is ambiguous between a focus reading (in which *i obidel* can be realized non-adjacently

to the other argument) and the reading one would obtain without the presence of the conjunction i. Thirdly, HC does not arise with proper nouns like (8a). These cases are necessarily interpreted with the focus reading.

This makes it unlikely that i is anything other than a coordination marker in HC because it does not explain the absence of a focus reading nor the fact that the co-arguments cannot appear discontinuously. In fact, the entire sequence of co-arguments behaves like a syntactic block in the presence of the conjunction. It can be fronted, extraposed and in general realized in any position that would be suitable for each of the conjuncts.

In section 2 we discuss the Russian data in more detail, and consider several other idiosyncrasies about HC that further indicate that some kind of syntactic constituency is formed. In section 3 we put forth a constructional account couched in HPSG, using Minimal Recursion Semantics Copestake et al. (2006). The adoption of a semantic underspecification framework will enable us to obtain a uniform syntax-semantics interface.

2 On the Syntactic Properties of HC

We start by pointing out that several of the trademarks of coordination are true of HC phenomena. As one would expect of a coordinate structure, conjuncts must be at least two. This is not surprising because if conjuncts are actually co-arguments then the presence of obligatory arguments is required by the head:

(9) a. Vse i vsyo znayut.
everyone and everything knows
'Everyone knows everything'

b.* I vsyo znayut.
And everything knows

Similarly, it is also natural that this phenomenon only occurs with conjunction, as disjoining co-arguments is nonsensical. Second, HC also allows for 'coordination of unlikes' phenomena (Gazdar et al., 1985) as shown in examples like (10a), in which conjuncts include adverbials:

(10) a. Vsem vezde i vse do lampochki
everyone$_{dat}$ everywhere and everything$_{nom}$ don't care
'nobody cares about anything anywhere'

b. Zdes' vse i vsegda est'
here everything and always is
'you can always find anything here'

c. Vas vse i vsegda ponimayut s poluslova
you$_{acc}$ everybody and always understand from half-word
'everybody always takes your hint'

d. Nikto nichto i nikogda nas ne slomit
noone nothing and never us not break
'Noone and nothing will ever take us over'

Further evidence for HC forming a constituent is that these coordination structures can be realized in virtually any position that a standard argument can. Thus, the 'unlike coordinate' HC structure can be fronted, for instance:

(11) a. etot professor rad pomoch' Vsem i Vsegda
this professor is-eager to-help everyone and always
'this professor is always eager to help everyone'

b. Vsem i vsegda etot professor rad pomoch'
everyone and always, this professor is-eager to-help

Given that adverbial conjuncts are admitted, it is not unexpected that PPs can also be conjoined in HC, although rare these are rare and often marked in some way as seen in (12).

(12) a. Ne sposoben [nikto i [ni s kem]] pomenyat'sya mestami
not able nobody and no with body change places
'nobody is able to change places with anyone'

b. Takim obrazom, [nikto i [nikakih novyh telekanalov]] ne sozdaet.
this way, [nobody and no new TV-channels] not creates
'So, no one creates any new TV channels'

Thus it seems that the apparent identity requirement that exists between conjuncts in HC is semantic or pragmatic in nature, rather than categorial or morphologic.

Another peculiar aspect of this phenomenon is that it is restricted in ways in which the non-coordinate counterpart is not. First of all, in the overwhelming majority of attested cases that were found in the Russian National Corpus, conjuncts were lexical rather than phrasal.[2] One reason for this is that neither of the conjuncts can contain modifier phrases, such as adjectives or prepositional phrases:[3]

(13) a. Vse lysye vsyo znayut
everyone bold everything knows

[2]In fact, Sannikov (1989) dubs this phenomenon as *lexical-semantic coordination*, even though the author uses the same term for other kinds of phenomena also.

[3]Note that one of our 20 informants accepted these data. Even though there is some speaker variability for HC, we were unable to find other informants with the same judgments as the former.

b.*Vse lysye i vsyo znayut
everyone bold and everything knows

(14) a. Vse vsyo interesnoe znayut
everyone everything interesting knows

b.*Vse i vsyo interesnoe znayut
everyone and everything interesting knows

(15) a. *Kto-to vysokii i kogo-to obidel?
someone$_{nom}$ tall and someone$_{acc}$ offended$_{3sg}$

b. *Nikto i nichto interesnoe dal
nobody and nothing interesting said

In general, the cases where an adjective is added to the leftmost conjunct are rendered utterly ungrammatical while the cases where an adjective is added to the rightmost conjunct are somewhat less odd, even if still deemed ungrammatical. Thus, (13b) is worse than (14b), which is in itself puzzling given that the non-coordinate counterparts are fully grammatical. This provides further evidence that some kind of constituency is at stake, which for some reason, possibly pragmatic in nature, disprefers complex conjuncts.

The presence of prepositional modifiers also has a similar effect, even though informants report that adding the modifier to the rightmost conjunct is somewhat less degraded than the adjectival examples. Still, they are deemed less than grammatical:

(16) a. ??Nikto i nikogo iz Odessy ne znaet
nobody and no one from Odessa not know

b. Nikto nikogo iz Odessy ne znaet
nobody no one from Odessa not know
'nobody knows anyone from Odessa'

It is important to note that this is not a matter of weight. If the PPs are larger structures the ungrammatical examples are not ameliorated. Intriguingly, the case of relative clauses is different. Cases involving relative clauses, although very rare and not easy to process, are considered grammatical:

(17) a. Vezde i vse chto mne pokazyvali mne nvavilos.
everywhere and everything that.Rel to-me showed to.me pleased
'I liked whatever was shown to me anywhere'

b. Vezde i vse kto byl dobrozhelatelen pomogali mne.
everywhere and everyone who were friendly helped me
'Everyone benevolent helped me everywhere'

Another aspect of HC is that conjuncts are required to be of the same semantic type. Thus, if one conjunct has universal quantificational force, so must all others, regardless of the part of speech:

(18) a. *vse i chto-to vidyat
everybody and something see

b. *vse i zdes' molyatsya
everybody and here pray

It is unclear to us what is the exact nature of this constraint, if semantic or pragmatic, for instance. It may be the case that this is similar to what Barwise and Cooper (1981) note for English, where conjuncts with different right monotone properties are degraded: *[*No woman and John*] *was/were invited*. It can be argued that hybrid coordination impose an even stronger constraint requiring that the semantics of the head of the conjunct be of the same type.

Many authors have argued that *wh*-constituents with different thematic roles can be coordinated in various languages, ranging from Slavic to English. If so, this would mean that Russian is not so special and that other languages allow for the same kind of phenomenon, but are somewhat more restricted in that only *wh*-conjuncts are allowed for. One example of this is given for English in (19):

(19) a. How many, where, and who are they?

b. Why and how do scientists study climate change in the Arctic?

c. Where and who is the cheapest cosmetic dentist in Manchester?

Whitman (2002) dubs such cases as 'mixed-WH interrogatives' and goes on to argue for a direct coordination analysis. The problem with such an analysis is that the data in (19) can be accounted for as a standard clausal coordination coupled with an ellipsis operation, either Right-Node Raising or backwards Sluicing.[4] In fact Whitman (2002,86) acknowledges that the ellipsis analysis captures all the English data but goes on to claim that a direct coordination analysis is superior on psycholinguistic grounds.

The ellipsis account however, makes correct predictions and dispenses with non-standard coordination assumptions. For example, cases that cannot be reduced to clausal coordination via RNR or Sluicing are ungrammatical:

(20) a. *Who and what found?

b. *Who ~~found~~ and what found?

(21) a. *Who and whom saw?

[4]See for instance Camacho (2003).

b. *Who ~~saw~~ and whom saw?

As far as we can tell, this argument in favor of an ellipsis account for (19) also carries over to all other languages that have been argued to exhibit the same kind of phenomena for the coordination of *wh-* phrases.

At this point one can ask whether ellipsis can also account for Russian hybrid coordination phenomena. The answer to this question is in the negative. First, we have already noted several peculiarities that would otherwise remain unexplained in an ellipsis analysis, such as the fact that only certain conjuncts headed by the same semantic operator can be realized, and the fact that HC conjuncts cannot contain certain modifier phrases. Secondly, clausal coordination and ellipsis simply fail to account for all the data. In particular, cases in which subjects and complement NPs are conjoined because the alleged underlying clausal coordinations are ungrammatical:[5]

(22) a. Vsem, i vsyo do lampochki
everyone$_{dat}$ and everything$_{nom}$ don't care
'nobody cares about anything'

b. *Vsem, do lampochki i vsyo do lampochki
everyone$_{dat}$ don't care and everything$_{nom}$ don't care

(23) a. Tol'ko takuiu vlast' [nikto i nikogda] ne oprokinet.
only such$_{acc}$ power$_{acc}$ nobody$_{nom}$ and never not throw-down
'only such power can never be thrown down by anybody'

b. # Tol'ko takuiu vlast' nikto ne oprokinet i
only such$_{acc}$ power$_{acc}$ nobody$_{nom}$ not throw-down and
(tol'ko takuiu vlast') nikogda ne oprokinet.
(only such$_{acc}$ power$_{acc}$) never not throw-down

In conclusion, hybrid coordination does not lend itself to ellipsis accounts nor to particle accounts and exhibits a number of distributional idiosyncrasies which are best accounted for if a syntactic structure is formed. In what follows we will provide an explicit syntax-semantics account in HPSG, without major revisions to the grammar of Russian.

3 Analysis

Bloomfield (1933) views all constructions as endocentric, and distinguished coordination structures from subordination structures in that the latter contained a *head* daughter from which the category of the mother was obtained. In the case of coordinate structures, the category of the mother was seen as corresponding to the conjuncts. Consider the following passage:

[5]The same applies to hybrid coordination of *wh-* phrases in Russian, as in Kazenin (2001).

> Endocentric constructions are of two kinds, *co-ordinate* (or *serial*) and *subordinate* (or *attributive*). In the former type the resultant phrase belongs to the same form-class as two or more of the constituents. (...) In subordinative endocentric constructions, the resultant phrase belongs to the same form-class as one of the constituents, which we call the *head*.
>
> (Bloomfield, 1933, 195)

The hybrid coordination phenomenon suggests that there is a third kind of construction, exocentric in nature, in which the category of the mother is not determined by neither of the conjuncts. In this view, headedness in Russian can be of one of two kinds: endocentric (in the sense that the grammatical status of the mother is defined by at least one of the daughters) or exocentric (in which case the grammatical status of the mother is not determined by any of the daughters).

In the present account we will therefore capture HC as an exocentric coordination construction. Since conjuncts are co-arguments and do not form a semantic unit, the conjuncts are stored by the construction itself and thus made available to the governing head X as illustrated below:

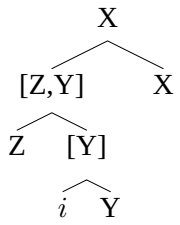

Figure 1: Clause with a hybrid coordination structure

In order to account for the exocentric phrase type and the fact that conjuncts are collected in the hybrid coordination node, we will propose an extra part of speech type *exocentr*(*ic*) that introduces a list-valued feature:

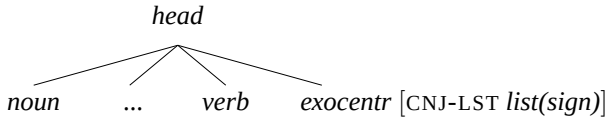

Figure 2: Part of speech hierarchy

The feature CNJ-LST allows the HC construction to collect the conjuncts inside the head value of the mother node, making them accessible to the head. Basically, the unsaturated valence of the head will be required to match the value of CNJ-LST.[6] The above tree structure can be obtained with three grammar rules. Two

[6] Yatabe (2004) proposes a similar feature ARGS, with the goal of accounting for Coordination of Unlikes phenomena. These two features differ only in that the latter takes only HEAD values of each

coordination rules add conjuncts to CNJ-LST, and a third rule allows a head to saturate valents with the elements in CNJ-LST:

(24) *Exocentric Conjunction*

a. [Y] → conj Y

b. [Z, K, . . . , Y] → Z [K, . . . , Y]

(25) *Head-Hybrid-Argument Phrase*

H → [Z, K, . . . , Y] **H**

3.1 Semantic matters

This work adopts Minimal Recursion Semantics (Copestake et al., 2006) for the semantic representations. The syntax-semantics interface will benefit greatly from this move as it will allow for a straightforward analysis of the semantics of HC constructions. We take the semantic representation of any node to quite simply correspond to the concatenation of the semantic representations contributed by each daughter:

(26)
$$cx \rightarrow \left[\begin{array}{l} \textsc{synsem}\,|\,\textsc{cont}\left[\begin{array}{l}\textsc{rels}\ \boxed{R_1}\oplus\ldots\oplus\boxed{R_n}\\ \textsc{cons}\ \boxed{C_1}\oplus\ldots\oplus\boxed{C_n}\end{array}\right] \\ \textsc{dtrs}\left\langle\left[\textsc{synsem}\,|\,\textsc{cont}\left[\begin{array}{l}\textsc{rels}\ \boxed{R_1}\\ \textsc{cons}\ \boxed{C_1}\end{array}\right]\right],\ldots,\left[\textsc{synsem}\,|\,\textsc{cont}\left[\begin{array}{l}\textsc{rels}\ \boxed{R_n}\\ \textsc{cons}\ \boxed{C_n}\end{array}\right]\right]\right\rangle \end{array}\right]$$

In MRS representations, the RELS feature contains a list with the semantic relations contributed by signs and the CONS contains scope restrictions needed for combining the sub-formulas in the RELS list. Given the syntactic analysis that we propose, the semantics of hybrid coordination is obtained the same way as any other structures, without further stipulation: the semantic content of the HC node consists in the concatenation of the semantic content of each daughter.

The next move is to require that the main semantic relation associated to each conjunct is the same. In other words, to make sure that both conjuncts are '∀' (as in *everyone and everywhere*), or '∃' (*someone and something*), or '¬' (*nobody and no news TV channel* or *nobody and nothing*). It is unclear if this is a hard semantic constraint or it results from a different kind of effect, but it can be captured by reformulating the feature HOOK so that it singles out the relation of the semantic head. This is exemplified in the lexical entry for the noun vse (everything), with the new feature H-RELN:

conjunct, but we suspect that if Yatabe (2004) were to account for semantic aspects of coordination of unlikes that ARGS would be required to take lists of signs also. All in all, either feature can be used for the present purpose.

(27)
$$\begin{bmatrix} \textit{word} \\ \text{PHON} \langle\ \textit{vse}\ \rangle \\ \text{SYNS} \begin{bmatrix} \text{CAT} \mid \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{CASE}\ nom \end{bmatrix} \\ \text{CONT} \begin{bmatrix} \text{GTOP}\ \textit{handle} \\ \text{HOOK} \begin{bmatrix} \text{LTOP}\ \textit{label} \\ \text{INDEX}\ \boxed{x} \\ \text{H-RELN}\ \boxed{1} \end{bmatrix} \\ \text{RELS} \left\langle \begin{bmatrix} \text{LABEL}\ \textit{handle} \\ \text{RELN}\ \boxed{1}\textit{every\_rel} \\ \text{ARG}_0\ \boxed{x} \\ \text{RESTR}\ \boxed{h} \end{bmatrix}, \begin{bmatrix} \text{LABEL}\ \boxed{h} \\ \text{RELN}\ \textit{thing\_rel} \\ \text{ARG}_0\ \boxed{x} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST}\ \langle\ \rangle \end{bmatrix}$$

By requiring that HC conjuncts have the same HOOK|H-RELN value one can rule out cases like '*everybody and something*' and '*nobody and someone*'.

We will also make the assumption that the lexical entry for the conjunction marker '*i*' is makes no semantic contribution. The possible ranges of interpretation for conjunction are instead given by the construction in which they occur in. Since hybrid coordination does not yield a complex semantic unit, we do not need to say anything else about it. Note however that this could go either way. Either various lexical entries for conjunction are introduced, or conjunctions are underspecified semantically and it is the construction that determines the meaning. Various examples of conjunction are provided below, to illustrate the need for various different meanings:

(28) a. Suppose that two and two is five.
(arithmetic conj)

b. There were one hundred and thirty UFO sightings.
(numeral conj)

c. The sound became louder and louder.
(intensification conj)

d. Two ham rolls and a glass of milk was all I wanted.
(packaging conj)

3.2 Syntax-Semantics Interface

In this work we will adopt in general terms the feature geometry of Ginzburg and Sag (2000), with the exception of MRS representations, as discussed above. We also follow Bouma et al. (2001) and others in assuming that adjuncts are subcategorized as complements. Nothing in the account crucially hinges on this, but this

allows us to keep the formalization simpler. Finally, we adopt the feature [CRD *bool*] from Beavers and Sag (2004) in order to control conjunct iteration in coordination structures.

The type hierarchy that includes the new grammar rules discussed consists in the following:

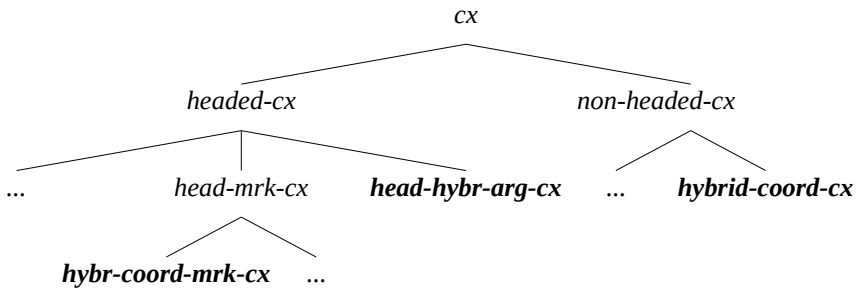

Figure 3: Extended type hierarchy

As discussed above, the feature CNJ-LIST is used to collect the conjoined co-argument signs. This is done via two coordination constructions that also capture a number of idiosyncrasies. In (29) one can observe the base case in which a conjunction marker is allowed to attach to a rightmost conjunct:

(29) *hybr-coord-mark-cx* →

$$\left[\begin{array}{l} \textsc{syns}\left[\begin{array}{l} \textsc{cat}\mid\textsc{head}\left[\begin{array}{l} \textit{hybrid} \\ \textsc{cnj-lst}\ \langle \boxed{1} \rangle \end{array}\right] \\ \textsc{cont}\mid\textsc{hook}\ \boxed{2} \\ \textsc{crd}+ \end{array}\right] \\ \textsc{dtrs}\left\langle \left[\begin{array}{l} \textsc{phon}\ \langle i \rangle \\ \textsc{syns}\left[\begin{array}{l} \textsc{cat}\left[\begin{array}{l} \textsc{head}\ \textit{cnj} \\ \textsc{spec}\ \boxed{1} \end{array}\right] \\ \textsc{cont}\left[\begin{array}{ll} \textsc{rels} & \langle\,\rangle \\ \textsc{hcons} & \langle\,\rangle \end{array}\right] \end{array}\right] \end{array}\right], \left[\textsc{syns}\ \boxed{1}\left[\begin{array}{l} \textsc{cont}\mid\textsc{hook}\ \boxed{2} \\ \textsc{crd}- \end{array}\right]\right] \right\rangle \end{array}\right]$$

The *synsem* value $\boxed{1}$ of the conjunct is placed in the list of conjuncts of the hybrid phrase. The conjunct is the semantic daughter of the construction in the sense that the main semantic components are passed on to the mother via HOOK, which is necessary to guarantee that the other conjuncts are headed by the same semantic relation. The feature CRD is used to require that the conjunct is unmarked by a coordination particle, and states that the mother node is marked. This enables us to rule out various illegal coordination structures such as '*and and X*'. By virtue of the Semantic Inheritance Principle, the semantics of the conjuncts always percolates to the mother node.

The recursive rule for coordination adds more elements to the CNJ-LST. This is formalized with the non-headed construction given in (30). The shuffle '◯' relation from Reape (1994) is employed to allow the arguments of occur in any order.

(30) *hybr-coord-cx* →

$$\left[\begin{array}{l}\textsc{syns}\left[\begin{array}{l}\textsc{cat}\mid\textsc{head}\left[\begin{array}{l}\textit{hybrid}\\ \textsc{cnj-lst}\ \langle\boxed{1}\rangle\bigcirc\boxed{2}\end{array}\right]\\ \textsc{cont}\mid\textsc{hook}\ \boxed{4}\end{array}\right]\\ \textsc{dtrs}\left\langle\left[\begin{array}{l}\textsc{syns}\ \boxed{1}\left[\textsc{cont}\mid\textsc{hook}\mid\textsc{h-reln}\ \boxed{3}\right]\\ \textsc{crd}\ -\end{array}\right],\left[\begin{array}{l}\textsc{syns}\left[\begin{array}{l}\textsc{cat}\mid\textsc{head}\left[\begin{array}{l}\textit{hybrid}\\ \textsc{cnj-lst}\ \boxed{2}\end{array}\right]\\ \textsc{cont}\mid\textsc{hook}\ \boxed{4}\left[\textsc{h-reln}\ \boxed{3}\right]\end{array}\right]\\ \textsc{crd}\ +\end{array}\right]\right\rangle\end{array}\right]$$

The non-deterministic shuffle relation joins lists freely, without changing the relative order by which elements occur in the argument lists. For example in (31) the shuffle of two lists each with two elements yields a total of six possible lists:

(31) $\bigcirc(\langle a,b\rangle, \langle c,d\rangle) =$

$\langle a,b,c,d\rangle \vee \langle a,c,b,d\rangle \vee \langle a,c,d,b\rangle \vee \langle c,a,b,d\rangle \vee \langle c,a,d,b\rangle \vee \langle c,d,a,b\rangle$

For an illustration of these constraints at work, consider the phrase [*vezde i vse*] ('everything and everyone') depicted in the AVM in (32):

(32)
$$\left[\begin{array}{l}\textit{hybr-coord-cx}\\ \textsc{phon}\ \langle\textit{vezde, i, vse}\rangle\\ \textsc{syns}\left[\begin{array}{l}\textsc{cat}\mid\textsc{head}\left[\begin{array}{l}\textit{hybrid}\\ \textsc{cnj-lst}\left\langle\left[\begin{array}{l}\textsc{cat}\mid\textsc{head}\ \textit{noun}\\ \textsc{cont}\left[\begin{array}{l}\textsc{hook}\mid\textsc{index}\ i\\ \textsc{rels}\ \boxed{1}\end{array}\right]\end{array}\right],\left[\begin{array}{l}\textsc{cat}\mid\textsc{head}\ \textit{noun}\\ \textsc{cont}\left[\begin{array}{l}\textsc{hook}\mid\textsc{index}\ j\\ \textsc{rels}\ \boxed{2}\end{array}\right]\end{array}\right]\right\rangle\end{array}\right]\\ \textsc{cont}\left[\begin{array}{l}\textsc{hook}\mid\textsc{index}\ \textit{none}\\ \textsc{rels}\ \boxed{1}\oplus\boxed{2}\end{array}\right]\end{array}\right]\end{array}\right]$$

The next step is to provide a way by which hybrid coordinate structures can satisfy the valence requirements imposed by subcategorizing heads. This can be achieved by a headed construction, typed *head-hybrid-argument-cx*, which basically maps the elements in CNJ-LST to valence lists:

(33) *head-hybrid-argument-cx* →

$$\left[\begin{array}{l}\textsc{synsem}\mid\textsc{cat}\mid\textsc{val}\left[\begin{array}{l}\textsc{subj}\ \langle\rangle\\ \textsc{comps}\ \langle\rangle\end{array}\right]\\ \textsc{head-dtr}\ \boxed{1}\left[\begin{array}{l}\textit{phrasal-cx}\\ \textsc{synsem}\mid\textsc{cat}\mid\textsc{val}\left[\begin{array}{l}\textsc{subj}\ \boxed{2}\\ \textsc{comps}\ \boxed{3}\end{array}\right]\end{array}\right]\\ \textsc{dtrs}\left\langle\left[\textsc{synsem}\mid\textsc{cat}\mid\textsc{head}\left[\begin{array}{l}\textit{hybrid}\\ \textsc{cnj-lst}\ \boxed{2}\oplus\boxed{3}\end{array}\right]\right],\boxed{1}\right\rangle\end{array}\right]$$

The lexical entry of verbs can remain exactly the same since heads are not subcategorizing for any kind of coordinate structure. Rather, subcategorization precedes as usual. The rule in (33) simply offers an additional way by which valents can be saturated.

To illustrate how the proposal works, consider the analysis of the subject-complement coordination in (7c) (repeated below) in Figure 4.

(34) Kto-to i kogo-to obidel
someone$_{nom}$ and someone$_{acc}$ offended

Because variable binding and quantifier scope restrictions are handled lexically, this means that the semantic composition of hybrid conjuncts is obtained for free, without further assumptions. In other words, both (7c) seen above or the non-coordinate counterpart obtain basically the same (scopally underspecified) semantic representation:

(35) a. Kto-to obidel kogo-to
someone$_{nom}$ offended someone$_{acc}$

b.
$$\left[\begin{array}{l}\textsc{hook}\left[\begin{array}{l}\textsc{index}\ \boxed{e}\\ \textsc{ltop}\ \boxed{h2}\end{array}\right]\\ \textsc{rels}\left\langle\left[\begin{array}{l}\textit{someone\_rel}\\ \textsc{arg0}\ \ \boxed{x}\\ \textsc{body}\ \textit{handle}\end{array}\right],\left[\begin{array}{l}\textit{offend\_rel}\\ \textsc{label}\ \boxed{h2}\\ \textsc{arg0}\ \ \boxed{e}\\ \textsc{arg1}\ \ \boxed{x}\\ \textsc{arg2}\ \ \boxed{y}\end{array}\right],\left[\begin{array}{l}\textit{someone\_rel}\\ \textsc{arg0}\ \boxed{y}\\ \textsc{body}\ \textit{handle}\end{array}\right]\right\rangle\end{array}\right]$$

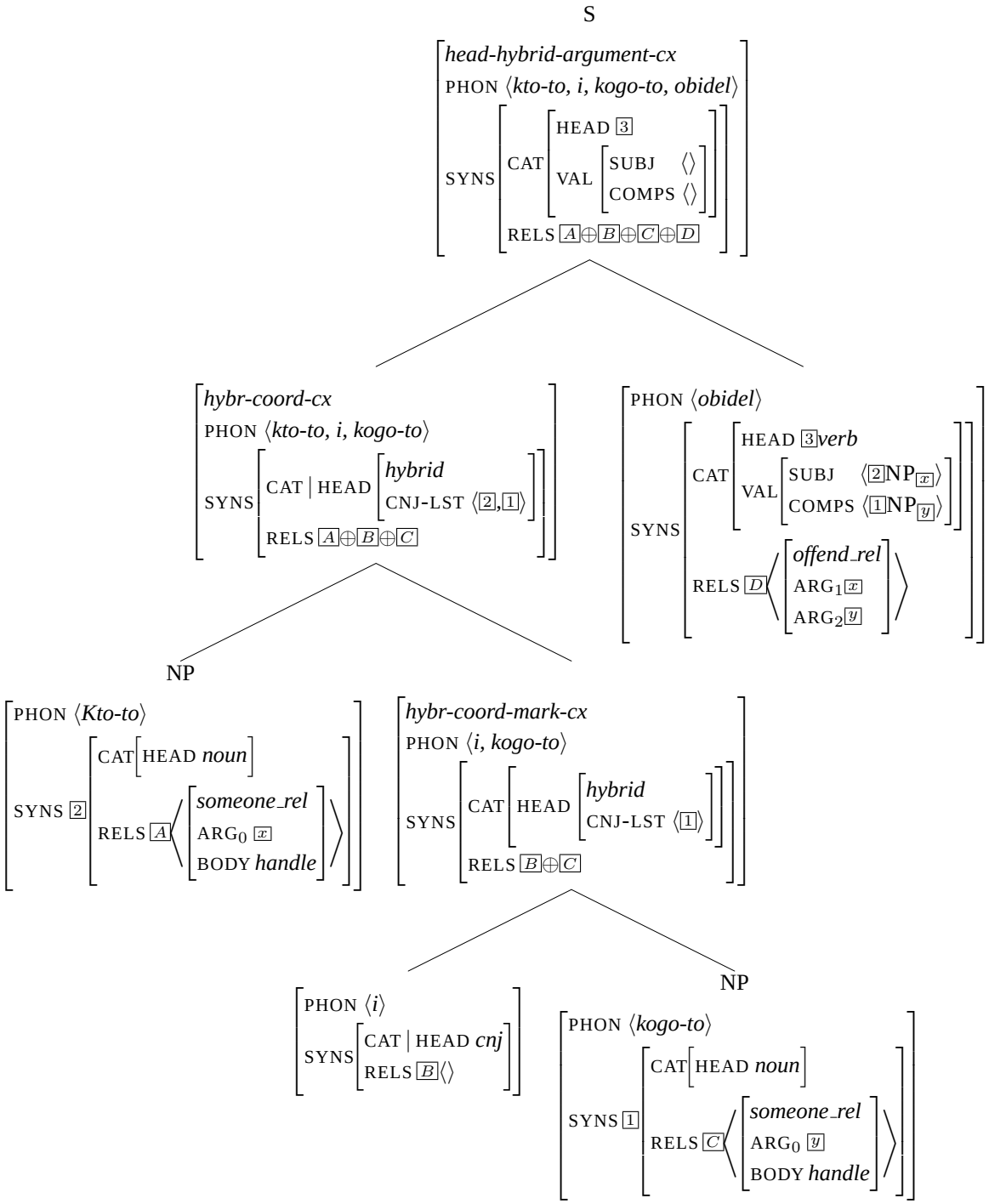

Figure 4: Hybrid coordination

Our account can also cope with cases in which the verbal head itself is conjoined. With a standard coordination construction in which valence is structure-shared, the subcategorization patterns of both conjuncts and the mother become the same. The rest of the analysis proceeds as before, via the constructions presently proposed:

(36) Tancuyut i poyut vezde i vse, dazhe v pravoslavnoi cerkvi
dance and sing everywhere and everyone even in orthodox church
'Everybody dances and sings everywhere, even in the orthodox church.'

We presently have not account for the fact that certain complex conjuncts are allowed while others are not, as seen in (13)–(17) for example. For now we can only offer a condition that states that initial conjuncts are light (possibly lexical) and that non-initial conjuncts need not be light.

(37) *hybr-coord-cx* $\rightarrow \left[\text{SYNS} \mid \text{CAT} \mid \text{CNJ-LST } \textit{ne-list}\Big(\left[\text{LIGHT } +\right]\Big) \oplus \textit{list}\right]$

4 Further Remarks

In this account we have introduced a separate kind of coordination construction, specifically for hybrid coordination. Although our move is empirically motivated, given the various peculiar aspects that HC exhibits, nothing in this account entails that canonical coordinations and headed coordinations need to be modeled by completely different grammar rules. It may be possible to blend the two kinds of construction in a more general construction, allowing coordination structures to be either resolved as standard coordination or as hybrid coordination. By using type-underspecification, the distinction between the two cases would then be recast in terms of different sort resolutions rather than in terms of different grammar rules.

There are some alternatives that we would like to briefly mention. One alternative take on the phenomena would be to adopt the machinery proposed in Penn (1999), where the elements in DOM are structured in terms of hierarchical regions and fields. HC could in principle be modeled in terms of such multi-dimensional domain objects. Put in simplified terms, the presence of a conjunction would enable a sequence of co-arguments to be compacted in the same topological region, without assuming that these are forming any kind of constituent. It is unclear to us however, what is the role of the coordination lexeme in such an analysis, given that no actual coordination would be going on. Our account offers a more natural account given that tries to make sense of the phenomena by analyzing HC as an exocentric coordination construction. Further support for the latter view comes from the fact that although there are various idiosyncrasies about HC, several of the trademarks of coordination are also visible.

A second alternative view on the HC construction would be to allow the conjunction to select the conjuncts as arguments. This way, no HC coordination rules

would be needed. This however seems to entail a number of stipulations, namely that the conjunction lexeme has a non-empty and unbounded valence list. Somehow, the rightmost conjunct would have to be required to be realized after i while all other conjuncts (arbitrarily many) would have to be required to precede the i. In a language that does not exhibit subject and complement word order, one would be hard-pressed to justify endowing a conjunction with non-empty subject and complement lists. There are also issues with regard to anaphora, since having a non-empty argument list on the conjunction would make wrong predictions. All in all, it seems to us that the approach based on the coordinator raises more problems than it solves.

5 Conclusion

This paper provides evidence that Russian has a coordination construction in which conjuncts can have different grammatical roles. These structures are non-canonical and pragmatically marked, but have essentially the same meaning as their non-coordinate counterparts. Conjuncts are also subject to a number of particular constraints that standard coordination structures do not exhibit, and which provide further evidence that this is a special kind of coordination. The phenomena also occur in some other Slavic languages, and thus may be suggested to have some manifestations throughout so-called free word order languages.

The account that we provide makes minimal changes to the overall grammar. It amounts to two coordination rules and one head-argument rule. Semantic composition proceeds exactly in the same way as in other constructions, and no element in the grammar explicitly selects for this kind of coordinate structure. Rather, lexical subcategorization constraints are stated as usual, in a uniform way.

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