Polyadic Quantification in Hybrid Coordination

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Introduction The aim of this paper is to present a semantic part of a new syntactico-semantic analysis of what is known in the HPSG literature as Hybrid Coordination (HC; Chaves and Paperno 2007, Bîlbîie and Gazdik 2012), illustrated with the attested (1)–(2).[1]

(1) Vam nikto i ničego ne predlagal eščë. (Russian)
you.DAT nobody.NOM and nothing.GEN NEG offered yet
'Nobody has offered you anything yet.' (Paperno 2012: 77)

(2) Czego i ile trzeba dostarczyć organizmowi? (Polish)
what.GEN and how much.ACC should.IMPS provide.INF organism.DAT
'What – and how much – should one provide one's organism with?' (Patejuk and Przepiórkowski 2019: 30)

The main feature of HC is that the conjuncts bear different grammatical functions, e.g., subject and object in (1). In Slavic, as well as in some neighbouring languages (including Hungarian and Romanian), the conjuncts may be obligatory arguments, as in the two examples above. By contrast, in English and other Germanic languages, only optional dependents may be coordinated in HC (Browne 1972, Gračanin-Yüksek 2007, Haida and Repp 2011, Citko and Gračanin-Yüksek 2013), as in (3). The common view is that, in Germanic, such constructions are elliptical, so that, e.g., (3) has the underlying structure (4), while in Slavic and at least Hungarian they are not, i.e., different grammatical functions are coordinated directly in (1)–(2).[2]

(3) What and why did you eat? (Citko and Gračanin-Yüksek 2013: 11)

(4) What ~~did you eat~~ and why did you eat?

The Slavic variant of HC will be called HC$_S$ here, and the Germanic variant – HC$_G$.

Within HPSG, Russian HC$_S$ was analysed in Chaves and Paperno 2007, and that analysis was extended to Hungarian and Romanian in Bîlbîie and Gazdik 2012. While that analysis only deals with syntax, we provide an explicit account of the semantics of HC in terms of polyadic quantification; it is this aspect of the analysis that we concentrate on in this abstract. The full syntactico-semantic analysis improves on Chaves and Paperno 2007 also in other aspects, although – for lack of space – this won't be demonstrated in this abstract. First, the analysis of Chaves and Paperno 2007 is untenable as it assumes that all conjuncts are dependents of the same head. This is true of (1), where both conjuncts are dependents of the verb, but not of (2), where only one conjunct is a dependent of the verb, and the other conjunct is a dependent of that conjunct.[3] The syntactic analysis underlying the semantic account presented below is free from this problem. Second, the proposed analysis deals not only with HC$_S$, but also with HC$_G$; while HC$_S$ and HC$_G$ differ syntactically, both involve polyadic quantification of the kind argued for below.

Types of Conjuncts Most of the literature concentrates on HC involving *wh*-items, as in (2) and (3). However, at least since Sannikov 1979–1980, it is clear that many other series of conjuncts are possible in HC$_S$, including: 1) *n*-words, as in (1), 2) universal quantifiers, as in (5), 3) various series of lexical items expressing existential quantifiers, as in (6)–(7), etc.; see Patejuk 2015: ch.5 for similar (and more) examples from Polish.

(5) Zdes' vsem i vsegda kofe podavala ona sama. (Russian)
here all.DAT and always coffee.ACC served.F.SG she.NOM self.NOM
'Here she always served coffee herself to everyone.' (Paperno 2012: 77)

(6) Ponjal li kto-nibud' i čto-nibud'? (Russian)
understood Q anyone.NOM and anything.ACC
'Has anyone understood anything?' (Paperno 2012: 77)

(7) Dopustim, kto-libo i kogo-libo pobedil. (Russian)
assume someone.NOM and someone.ACC defeated
'Assume that someone defeated someone.' (Paperno 2012: 80)

Interestingly, as noted by Sannikov but – with the exception of Paperno 2012 – hardly every discussed subsequently, HC$_S$ may also involve conjuncts introduced by equivalents of the focus particles *only* and *even*, e.g., (8)–(9).

(8) Govorit tol'ko Petja i tol'ko o Vane. (Russian)
speaks only Petja.NOM and only about Vana.P
'Petja speaks about Vana (and nobody else speaks about anybody else).' (Paperno 2012: 88)

(9) Govorit daže Petja i daže o Vane. (Russian)
speaks even Petja.NOM and even about Vana.P
'Petja speaks about Vana (even though it seems unlikely).' (Paperno 2012: 88–89)

Similarly, while almost all discussion of HC$_G$ is limited to coordination of *wh*-items (as in (3)), there is an important exception: Grosu 1987, 1985. Some of the English examples given there parallel the HC$_S$ examples above:

(10) John has written only to smart people and only clever things (so far). (Grosu 1987: 429)

[1] IMPS in (2) and (16) stands for 'impersonal' and P in (8)–(9) stands for 'prepositional case'; other annotations follow the Leipzig Glossing Rules.

[2] Convincing arguments against elliptical analyses in these languages are adduced, e.g., in Kazenin 2001 (for Russian) and in Lipták 2003 (for Hungarian); see also Skrabalova 2007: §§2 and 5 on Czech, Gribanova 2009: 136–137 on Russian, Bîlbîie and Gazdik 2012: §3.3 on Hungarian, and Lipták 2011 for a typological overview.

[3] Specifically, adopting the common assumption that numeral phrases are headed by the numeral in Polish, *ile* 'how much' is a dependent of the verb *dostarczyć* 'provide', and *czego* 'what.GEN' is a dependent of *ile*.

(11) John will steal even worthless objects and even from defenseless orphans (if he is given the chance). (Grosu 1987: 429)
(12) John will drink *any*thing and with *any*body. (Grosu 1987: 445)
(13) John wouldn't drink *any* whisky or with *any* mobsters (if his life depended on it). (Grosu 1987: 445)

Thus, (10)–(11) involve *only* and *even*, just as (8)–(9), and (12)–(13) – acceptable with some stress on *any* – are similar to the other (quantificational) examples above. Note that all the examples given so far, also those involving *wh*-phrases and focus-sensitive particles such as *only* and *even*, may be analysed as involving coordination of qunatificational expressions.[4]

Polyadic Quantification As the proposed analysis and some previous approaches are based on the notion of polyadic quantification, here are a few – simplifying and informal – introductory words about this concept (see also, e.g., Peters and Westerståhl 2006: §§2.4–2.5 and ch.10). Ordinary generalised quantifiers (Mostowski 1957, Barwise and Cooper 1981) are understood as relations on sets. For example, MOST may be understood as a binary relation on sets such that $\textsc{most}(A, B) \overset{\text{df}}{\equiv} |A \cap B| > |A - B|$ (i.e., there are more elements of A which are in B than elements of A which are not in B). The Lindström (1966) type of this quantifier is $\langle 1, 1\rangle$, as the two arguments of MOST are two unary relations (i.e., sets). The type of the quantifier expressed by *most HPSGians*, call it MOSTH, is $\langle 1\rangle$, as it is a property of sets, namely those sets that have most of the HPSGians in them. So, the sentence *Most HPSGians are clever* is true iff the set of clever entities has the property MOSTH, i.e., iff most HPSGians belong to the set of clever entities. These are monadic quantifiers.

Arguments of polyadic quantifiers are not just unary relations (sets), but arbitrary relations. For example, one possible analysis of the phrase *most HPSGians and most LFGians* is as a polyadic quantifier of type $\langle 2\rangle$, call it MOSTHL, whose argument is a binary relation. Assuming that *like each other* expresses the binary (and symmetric) relation $\textsc{like}_r \overset{\text{df}}{\equiv} \lambda x \lambda y.\, like(x, y) \wedge like(y, x)$, the sentence *Most HPSGians and most LFGians like each other* would have the interpretation: $\textsc{most}\text{HL}(\textsc{like}_r)$. Its exact meaning depends on the definition of the polyadic MOSTHL. Keenan and Westerståhl (2011: §19.3.3) hypothesise that polyadic quantifiers in general result from various lifting operations on monadic quantifiers, so the question is: what is the relation of MOSTHL to the monadic MOST?

One way to lift monadic quantifiers to a polyadic quantifier is resumption: n $\langle 1, 1\rangle$ quantifiers *of the same kind* Q can give rise to a polyadic quantifier of type $\langle 1^n, n\rangle$ (i.e., $\langle 1, \ldots, 1, n\rangle$, with n 1s), $Res^n(Q)$, which is equivalent to Q quantifying over n-tuples rather than over entities. For example, such a dyadic ($\langle 1, 1, 2\rangle$) resumptive quantifier $Res^2(\textsc{most})$ would be understood as: $Res^2(\textsc{most})(X_1, X_2, R) \overset{\text{df}}{\equiv} \textsc{most}(X_1 \times X_2, R)$, i.e., it would be true iff most pairs from the Cartesian product $X_1 \times X_2$ were in R. Just as the type $\langle 1\rangle$ quantifier MOSTH can be defined in terms of the $\langle 1, 1\rangle$ quantifier MOST ($\textsc{most}\text{H}(X)$ is equivalent to $\textsc{most}(H, X)$, where H is the set of all HPSGians), so can the type $\langle 2\rangle$ quantifier MOSTHL be defined using the type $\langle 1, 1, 2\rangle$ quantifier $Res^2(\textsc{most})$, namely: $\textsc{most}\text{HL}(R) \overset{\text{df}}{\equiv} Res^2(\textsc{most})(H, L, R)$ (where L is the set of all LFGians). For example, in a bleak world with 3 HPSGians ($H = \{h_1, h_2, h_3\}$) and 3 LFGians ($L = \{l_1, l_2, l_3\}$), the relation $\textsc{like}_r$ must contain at least 5 of the 9 pairs in $H \times L$ for $\textsc{most}\text{HL}(\textsc{like}_r)$ to be true.

Note that resumption targets multiple quantifiers of the same kind Q, so it couldn't be extended, e.g., to the sentence: *Most HPSGians and some LFGians like each other*. In this case the monadic quantifiers may be lifted to a polyadic quantifier via branching or cumulative quantification. The usually assumed definitions (e.g., Keenan and Westerståhl 2011: 901–902, but cf. Sher 1990) give the following result in this case:[5]

(14) $Br(\textsc{most}, \textsc{some})(X_1, X_2, R) \overset{\text{df}}{\equiv} \exists Y_1 \subseteq X_1\, \exists Y_2 \subseteq X_2.\, \textsc{most}(Y_1, X_1) \wedge \textsc{some}(Y_2, X_2) \wedge Y_1 \times Y_2 \subseteq R$
(15) $Cum(\textsc{most}, \textsc{some})(X_1, X_2, R) \overset{\text{df}}{\equiv} \textsc{most}(X_1, Domain(R)) \wedge \textsc{some}(X_2, Range(R))$

This leads to two other understandings of $\textsc{most}\text{HL}(R)$: as either $Br(\textsc{most}, \textsc{most})(H, L, R)$ or $Cum(\textsc{most}, \textsc{most})(H, L, R)$. In the branching case, $\textsc{most}\text{HL}(\textsc{like}_r)$ would be true in our bleak world if, for example, each of $\{h_1, h_2\}$ (which constitutes most of H) reciprocally liked each of $\{l_1, l_2\}$ (which is most of L) and nobody else liked anybody else, i.e., 4 pairs would be sufficient. In the cumulative case, it would also be true if, say, h_1 reciprocally liked l_1 and similarly for h_2 and l_2, i.e., just two pairs would suffice.

Previous Approaches To the best of our knowledge, a comprehensive worked-out account of HC has never been proposed. Within Chomskian syntax, Comorovski 1996: 138–139 speculates in passing that, in Romanian, conjoined *wh*-phrases (cf. (2)–(3)) form one WH operator that binds multiple traces; without explicitly invoking polyadic quantification, this analysis suggests resumption. This suggestion is explicated in terms of the resumptive lift *Res* and extended to other types of HC_S conjuncts in Paperno 2010, and ported to categorial syntax in Paperno 2012: ch.3–4, but ultimately rejected there in favour of a sketch of a game-theoretic analysis (Paperno 2012: ch.5). The two reasons for abandoning *Res* given in Paperno 2012 are compelling. First, HC often does not have the meaning predicted by this kind of lift. Consider the attested (16), with an agent in the instrumental.

(16) O nëm uže mnogoe i mnogimi napisano. (Russian)
about him already much and many.INS write.IMPS
'Many wrote a lot about him.' (Paperno 2012: 143)

On the resumptive interpretation, this should be true if there are many pairs $\langle \textsc{writer}, \textsc{content}\rangle$, which is true even when just a couple of people produced each a vast amount of bits of content. But, intuitively, on this scenario (16) is false; instead, it implies, both, that many people were involved and that a lot of content was produced. Second, it is not always the case

[4] See, e.g., Groenendijk and Stokhof 1982 on *wh*-questions and Beaver and Clark 2003 and references therein on focus-sensitive particles.
[5] When R is a binary relation, $Domain(R) = \{x : \exists y.R(x, y)\}$ and $Range(R) = \{y : \exists x.R(x, y)\}$.

that exactly the same quantifiers are involved in HC; they may involve different modifiers, changing their quantificational force, as in (17).

(17) Lično menja vsë i počti vsegda besit. (Russian)
personally me everything.NOM and almost always drives.nuts
'Everything almost always drives me nuts.' (Paperno 2012: 155)

The intended meaning cannot be expressed either by Res^2(ALL) or by Res^2(ALMOST ALL); rather, (17) implies that ALL things drive me nuts but only at ALMOST ALL times.

Preserving Polyadic Quantification Note that the above two arguments are sufficient to refute the resumptive analysis, but not polyadic quantification in general; in fact, neither argument speaks against branching and cumulative interpretations. However, (16) can be also used to reject the branching analysis: this example does not imply that every writing person was involved in writing every bit of content, as it would if the Br lift were involved. Rather, (16) is understood as describing a situation where many people were involved in writing, some perhaps collaborated, some perhaps created various contents, but generally different bits or groups of content were produced by different individuals or groups of individuals. That is, (16) has the cumulative reading, and other HC examples above are also amenable to an analysis in terms of Cum.

While the resumptive analysis undergenerated and made wrong semantic predictions, the cumulative analysis overgenerates, as it allows arbitrarily different quantifiers to be coordinated. However, as often noted in the literature, all conjuncts in HC normally have the same root expressing the same meaning. One telling contrast, from Sannikov 1989: 16–18, discussed in Paperno 2012: 87–88, is the following:

(18) Ya govoryu s lingvistom i o {lingviste / lingvistike / *jazykovede}. (Russian)
I speak with linguist and about linguist linguistics linguist
'I talk to a linguist about {a linguist / linguistics / *a linguist}.'

The existential quantifier expressed by *(s) lingvistom* '(with) a linguist' may be coordinated with the same quantifier expressed by *(o) lingviste* '(about) a linguist', but also with *(o) lingvistike* '(about) linguistics', which shares the same root. Interestingly, it cannot be combined with *(o) jazykovede* '(about) a linguist', which is based on a different root, even though it is synonymous with the acceptable *(o) lingviste*.

However, the requirement that roots must be the same is too strong, as, e.g., the *wh*-words in (2) have different roots. Another interesting contrast is discussed in Grosu 1987: 446–448 and may be illustrated with the following examples:

(19) John has written *fifteen* articles and to *two hundred* subscribers already! (Grosu 1985: 234)

(20) *John has written *two* pages and to *one* girl today. (Grosu 1987: 446)

According to Grosu (1985, 1987), (19) is acceptable because the two conjuncts, even though they contain different numerical quantifiers (15 and 200), convey a common message: John has written a lot. On the other hand, it is not clear what common message is conveyed by the two conjuncts in (20) – hence the diminished acceptability. In summary, there is a constraint on the similarity of conjuncts in HC, but it is rather subtle and perhaps non-categorical. For this reason we only note the need for stating such a constraint in order to prevent overgeneration but we do not attempt to do it here.

Technicalities The proposed formalisation of the analysis of HC in terms of cumulative polyadic quantification relies heavily on – and generalises – the HPSG approach to polyadic quantification in Iordăchioaia and Richter 2009, 2015 (cf. Iordăchioaia 2010) and Richter 2016, stated within Lexical Resource Semantics (LRS; Richter and Sailer 2004, Richter and Kallmeyer 2009). The main idea of this approach is that quantifiers are lexically underspecified as to their Lindström type. For example, on the analysis of Richter 2016, focused on polyadic quantifiers involving DIFFERENT (as in *Every ape picked different berries*), the universal quantifier ALL (i.e., ∀), instead of being specified in the lexicon as being of type $\langle 1, 1\rangle$ and introducing the form $\text{ALL}(\lambda x.\alpha, \lambda x.\beta)$, is underspecified as contributing to a quantifier of type $\langle 1^n, n\rangle$ (for any $n \geq 1$) of the form $(\ldots, \text{ALL}_i, \ldots)(\ldots, (\lambda x.\alpha)_i, \ldots, \ldots (\lambda x)_i \ldots \beta)$, where the subscript i indicates the ith position on the relevant list of quantifier operators (see ALL_i), on the list of the n restrictor sets (see $(\lambda x.\alpha)_i$), and on the list of the n arguments of the nuclear scope (see $(\lambda x)_i$ in $\ldots(\lambda x)_i \ldots \beta$). Given such underspecification, on one of the possible analyses of a sentence containing two quantifiers, the two quantifiers are token-identical, i.e., they both contribute to a single polyadic quantifier. (The other two analyses are the usual scopal analyses, on which one monadic quantifier outscopes the other.) For example, in the case of the sentence *Most HPSGians and some LFGians like each other*, this approach may result in the polyadic quantifier: $(\text{MOST}, \text{SOME})(\lambda x.H(x), \lambda y.L(y), \lambda x\lambda y.\text{LIKE}_r(x, y))$.

We propose to generalise this approach by introducing an optional slot for the kind of polyadic lift (PL), including Res and Cum, as well as $Diff$ to handle DIFFERENT. Technically,[6] we postulate a sort for possibly lifted quantifiers, *quant* (a subsort of *me*), introducing two attributes: a *nelist*-valued QUANTS (a non-empty list of the monadic *generalized-quantifier*s of Richter and Kallmeyer 2009: §2.2 but without the SCOPE attribute) and SCOPE (the common nuclear scope). The two subsorts of *quant* are *lq* (for lifted – polyadic – quantifiers) and *mq* (for monadic quantifiers, constraining QUANTS to be of length 1). They differ in that *lq* introduces the attribute LIFT, with values of sort *lift*, whose subsorts are *res*, *cum*, *diff*, etc.

Lexical entries of quantifiers normally (perhaps with the exception of n-words in Negative Concord languages; see below) introduce INCONT of the non-maximal sort *quant*: they are not specified for the attribute LIFT, i.e., they leave unspecified whether there is a lift and, if so, what kind of lift is involved. For example, the lexical contribution of ALL, might be represented as $?(\ldots, \text{ALL}(\lambda x.\alpha)_i, \ldots)(\ldots(\lambda x)_i \ldots \beta)$; the initial ? represents the unknown value of LIFT, if any, the first

[6]This requires some modifications to the Ty2 signature and constraints given in, e.g., Penn and Richter 2004: §2.1.

brackets – the value of QUANTS, and the second brackets – the value of SCOPE. It is only particular constructions (or rather lexical items introducing such constructions) that specify the type of lift. For example, extending the approach to DIFFERENT in Richter 2016, in the case of *Every ape picked two different berries* (Richter 2016: 617), *every ape* and *two berries* alone would lead to forms $?(\ldots, \textsc{all}(\lambda x.A(x))_i, \ldots)(\ldots(\lambda x)_i \ldots \beta)$ and $?(\ldots, \textsc{two}(\lambda y.B(y))_j, \ldots)(\ldots(\lambda y)_j \ldots \beta)$, but *different* imposes the constraint that the quantifier expressed by the head of the NP has the LIFT value *diff*, leading to $\mathit{Diff}(\ldots, \textsc{two}(\lambda y.B(y))_j, \ldots)(\ldots(\lambda y)_j \ldots \beta)$. Given a constraint to the effect that if the value of LIFT is *diff* then the list of monadic quantifiers it contains (QUANTS) is of length 2, the only analysis satisfying the relevant part of the EXCONT PRINCIPLE of LRS[7] is the one involving the polyadic quantifier $\mathit{Diff}(\textsc{all}(\lambda x.A(x)), \textsc{two}(\lambda y.B(y)))(\lambda x \lambda y.P(x, y))$. More generally, this extension removes a certain deficiency of the analysis in Richter 2016, which allows for the free formation of polyadic quantifiers whenever there are two or more monadic quantifiers in the sentence, despite the declaration (Richter 2016: 602) that the polyadic analysis is "a special case that presupposes the existence of a triggering element in the syntactic neighborhood". On the current approach there must be a lexical item that explicitly introduces a lift; otherwise the value of LIFT in a polyadic quantifier would not be introduced by any lexical item, contrary to the EXCONT PRINCIPLE.

We claim, and already presupposed above, that one such item is the conjunction *and*. Given that HC often involves coordination of unlike categories[8] and that, in HC_S, this phenomenon is convincingly argued not to involve ellipsis (see fn. 2), the only approach to coordination on the HPSG market that seems applicable is that of Yatabe 2004. On that approach, the HEAD value of the coordinate phrase contains information about HEAD values of all conjuncts and any categorial specifications imposed on the coordinate structure distribute to these different HEAD values. As common in HPSG analyses of coordination (see Abeillé and Chaves 2021: §3), a monosyndetic conjunction such as *and* attaches to the last conjunct and marks it appropriately, but otherwise coordinate structures are flat (in the sense that all conjuncts are sisters).

Yatabe 2004 does not say anything about semantics. Adopting the analysis of *and* as a weak head which shares with its complement (i.e., with the last conjunct) various syntactic features (Abeillé 2003, Abeillé and Chaves 2021: (16)), we also assume that it shares the CONT value with the last conjunct, as well as the values of EXCONT and INCONT.[9] However, *and* also specifies that its EXCONT – and, hence, the EXCONT of the last conjunct – expresses a non-trivially polyadic quantifier, with lift Cum, as well as adds this lift component to its PARTS. This way *and* triggers polyadic quantification. For example, in the case of (17), *počti vsegda* 'almost always' alone may be schematically represented as $?(\ldots, \textsc{almost all}(\lambda t.\, time(t))_i, \ldots)(\ldots(\lambda t)_i \ldots \beta)$, while *i počti vsegda*, with the conjunction *i*, has the form $\mathit{Cum}(\ldots, \textsc{almost all}(\lambda t.\, time(t))_i, \ldots)(\ldots(\lambda t)_i \ldots \beta)$. Moreover, a clause is added to the SEMANTIC PRINCIPLE of LRS to the effect that – perhaps as just one of various options – the EXCONT of the coordinate structure is token-identical to the EXCONT of each conjunct, i.e., that all conjuncts in coordinate structures express the same quantifier. This sounds counterintuitive, but it makes sense given the underspecified approach to quantification of Iordăchioaia and Richter 2009, 2015 and Richter 2016: the only way to satisfy this clause of the SEMANTICS PRINCIPLE is to form a complex polyadic quantifier of the same lift type as that of the last conjunct. In the case of (17), this leads to the following schematic form of *vsë i počti vsegda* 'everything and almost always': $\mathit{Cum}(\textsc{all}(\lambda x.\, thing(x)), \textsc{almost all}(\lambda t.\, time(t)))(\lambda x \lambda t.\beta)$, and the following desired schematic representation of (17): $\mathit{Cum}(\textsc{all}(\lambda x.\, thing(x)), \textsc{almost all}(\lambda t.\, time(t)))(\lambda x \lambda t.\textsc{drives-me-nuts-at-time}(x, t))$. Other examples of HC considered in this abstract receive analogous representations.

Discussion In the full paper we demonstrate that the generalisation of Richter 2016 proposed above extends to the analysis of Negative Concord of Iordăchioaia and Richter 2009, 2015. There, resumption was applied to *n*-words (with meaning like *nobody*, *nowhere*, etc.), analysed via usual monadic quantifiers $\neg\exists x\ldots$ of type $\langle 1, 1\rangle$ (or $\langle 1\rangle$, once they combine with restrictors), and to sentential negation $\neg$, i.e., a generalised quantifier of type $\langle 0\rangle$ (Lindström 1966: 187). However, assuming Davidsonian events (Davidson 1967), sentential negation is naturally analysed as also giving rise to a quantifier of type $\langle 1, 1\rangle$, namely, $\neg\exists e\ldots$, where e is an event; such an analysis is particularly natural on the approach of Champollion 2015, on which event variables are bound not via existential closure, but by the existential quantifier introduced within the lexical entry of the verb. Then, the equivalent of *Nobody not laughed* in Negative Concord languages (i.e., with the meaning 'Nobody laughed') receives the neo-Davidsonian (Parsons 1990) analysis: $\mathit{Res}(\neg\exists(\lambda x.\, person(x)), \neg\exists(\lambda e.\, event(e)))(\lambda x \lambda e.\, laugh(e) \wedge agent(e, x))$.[10]

In summary, we propose a much more comprehensive account of Hybrid Coordination than previous attempts (both within and without HPSG). While it leaves underspecified the exact parallelism condition that conjuncts in HC must satisfy (and we are not aware of an analysis that is more specific than ours in this respect), it provides a fully formal account of the mechanism that leads to the polyadic (cumulative) interpretation of HC, and – although this has not been demonstrated in this abstract – it is coupled with a syntactic analysis which predicts similarities and differences between HC_S and HC_G. Technically, the account presented in this abstract generalises previous HPSG approaches to polyadic quantification so that the analyses of Iordăchioaia and Richter 2009, 2015 and Richter 2016 may be reconstructed as its special cases.

[7]"All components of the logical representation of an utterance are contributed by some lexical element…" (Richter 2016: 613).

[8]This is true even when one adopts the slimmed down approach to categories of Chaves 2013; e.g., conjuncts in HC often differ in the value – or even presence – of CASE, which is one of the category-defining features in Chaves 2013.

[9]This requires a minor modification of the SEMANTICS PRINCIPLE of LRS (the clause dealing with quantifier NPs).

[10]We assume a constraint to the effect that, when the value of LIFT is *res*, then all monadic quantifiers must be of the same sort. (Alternatively, resumptive structures with different monadic quantifiers are not interpretable.) Unlike other quantifiers, *n*-words explicitly introduce a LIFT value, namely, *res*. The – appropriately modified – NEG CRITERION and NEGATION COMPLEXITY PRINCIPLE (see Iordăchioaia 2010: ch.5 and references therein) apply.

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