

The emergence of conjunctions and phrasal coordination in Khanty

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Abstract

Prior to widespread contact with Russian, Khanty (Uralic; Finno-Ugric) did not have overt conjunctions or phrasal coordination. Instead, Khanty texts from late 19th-early 20th centuries use clausal juxtaposition, both for clausal and phrasal coordination. By comparing Khanty texts over the 20th century, we show that overt conjunctions first emerged in the context of clausal coordination; then, coordination of smaller phrases with overt conjunctions became possible. Based on novel data, we demonstrate that, in contemporary Khanty, (i) coordination of sub-clausal phrases arises from phrasal coordination, as opposed to clausal coordination followed by conjunction reduction, and (ii) ellipsis in general is quite restricted. We conclude that, in Khanty, coordination of phrasal constituents only emerged once overt conjunctions became available. We derive this correlation from the Maximize On-line Processing principle (Hawkins 2004).

Keywords: Khanty, Uralic, Finno-Ugric, coordination, conjunctions, conjunction reduction, ellipsis, co-compounds, on-line processing.

1. Goal

This paper demonstrates that phrasal coordination and conjunction reduction appeared in Khanty upon the emergence of conjunctions in the course of the 20th century, and proposes an account for this correlation.

The existence of languages without syndetic coordination is a well-known fact. Mithun (1988) claims that conjunctions have been grammaticized quite recently in languages all over the world, and argues – based on Chafe's (1985) analysis of spoken English, and on evidence from African languages (Welmers 1973), Native American languages (Craig 1977; Cole 1982; Suárez 1983), West-Siberian Chukchee (Bogoras 1922), and Kamchadal (Worth 1961) – that syndetic coordination has arisen parallel with literacy, or parallel with the emergence of bilingualism involving a literary language. This is what we attest in Khanty as well. In Khanty texts recorded at the beginning of the 20th century, prior to general Russian-Khanty bilingualism, coordinated clauses are merely juxtaposed. What is remarkable about Khanty in this respect is that phrasal coordination is practically non-existent, except that noun phrases denoting closely related concepts can be combined in compound-like constructions, called co-compounds by Wälchli (2005). The lack of phrasal coordination also means the lack of ellipsis in coordinated sentences containing partially identical material.

In later texts reflecting the growing influence of Russian, conjunctive and disjunctive particles also appear, first between clauses. With some delay, phrasal coordination also emerges: we attest coordinated VPs, coordinated arguments, and coordinated clausal adjuncts, linked by conjunctive or disjunctive particles in most cases. Coordinated adjuncts may be non-adjacent, which indicates that conjunction reduction has also become part of Khanty grammar. However, NP-internal ellipsis and coordination of nominal heads are still illicit, which suggests that changes penetrate syntactic structures top-down. We also show that the coordination of smaller constituents, in most cases, does not arise from the coordination of clauses followed by ellipsis, and that ellipsis in general is quite restricted in Khanty. Taken together, we interpret these facts as pointing to a correlation between the emergence of conjunctive particles and the emergence of true phrasal coordination. The paper derives the attested correlation from a processing principle, the principle of Maximize On-line Processing proposed by Hawkins (2004).

The paper is organized as follows: Section 2 of the paper introduces the methodology and the sources of our investigations. Section 3 describes coordination in Khanty texts recorded in 1901, displaying no conjunctions and no phrasal coordination except for nominal complexes

called co-compounds. Section 4 demonstrates the gradual evolution of syndetic coordination, i.e., the emergence of conjunctions (4.1), their spreading followed by the emergence of phrasal coordination and conjunction reduction (4.2), and the generalization of these constructions (4.3) by analyzing texts from 1936, from 1964 and from the 1990s. Section 5 discusses coordination in contemporary Khanty. Section 6 proposes an account of the observed phenomena.

2. Sources and methodology

The data from older stages of Khanty come from four corpora.¹ The oldest variety of Khanty considered here is described on the basis of a corpus of 4000 words, including four tales collected by Heikki Paasonen in the eastern Yugan area in 1901 (published by Vértes in 2001, annotated in the Ob-Ugric Database (OUIDB)). We also cite some Khanty examples recorded in the same period from Lewy's (1911) analysis of Finno-Ugric word and clause conjunction.

Next, the 6000-word autobiographical notes of K. M. Marenjanin, a speaker of the northern Sherkaly dialect, written in 1936 and published by Steinitz in 1989, were consulted. Marenjanin's notes are of special significance because, owing to their content, they are presumably closer to everyday speech, and exempt from conventionalized constructions to a greater degree than the folklore texts recorded earlier.

The next stage of Khanty is represented by a 3740-word corpus of texts collected by Rédei during a fieldwork in the northern Kazym area in 1964, annotated in the OUIDB. Finally, we considered a 4200-word corpus of Eastern Khanty texts collected in the 1990s by Márta Csepregi (Csepregi 1998; 2002), also annotated in the OUIDB.

Contemporary Khanty data come from elicitations with three female speakers of Eastern (Surgut) Khanty (age range: 21-69 y.o.). They were asked to rate pre-constructed sentences in Surgut Khanty and/or suggest their own paraphrases. Additionally, a small spoken corpus, collected from two female speakers (age: 29 and 68) in 2017 by Márta Csepregi and Katalin Gugán was consulted for examples of coordination.

3. Coordination in Old Khanty

3.1 *Asyndetic clausal coordination*

In Khanty texts recorded around the beginning of the 20th century, prior to obligatory Russian schooling and Russian-dominant bilingualism, we do not attest syndetic coordination. In the Heikki Paasonen corpus, consecutive or simultaneous events are described by juxtaposed clauses without overt conjunctions. The commas linking these clauses presumably indicate that the juxtaposed clauses represented a single Intonational-Phrase-like prosodic unit in the oral presentation.

- (1) a. [*βv:jəx qu:t kəntf-təyə mənn-əs i:ki*], [*i:mi jaqqən qu:t*].²
 game fish search-INF go-PST.3SG man woman at.home stay.PST.3SG
 'The man went hunting-fishing, the woman stayed at home.' (OUIDB 1316)
- b. [*ru:t βer-t-ətəy*, *βer-t-ətəy*],³ [*ittən torrəm pəttəytə-s*].
 boat do-PRS-SG<3SG do-PRS-SG<3SG at_night heaven darken-PST[3SG]
 'He built [and] built the boat, in the evening the sky darkened.' (OUIDB 1315)

¹ There do not seem to be any differences with respect to the processes described here among the different Khanty dialects. Therefore, 'Khanty' is used to refer collectively to the Khanty varieties that data are available for. The relevant aspects of individual Khanty varieties are described in the context of particular examples.

² We adopt the spelling of the sources of the examples, in most cases the Ob-Ugric Database (OUIDB), which uses IPA transcription. Examples from other sources are provided unaltered.

³ Morpheme complexes of the type SG<3SG cross-reference both an object (in this case, singular) and a subject (in this case, 3rd person singular). Only topical (specific and referential) objects elicit verbal agreement. Since Khanty is a pro-drop language, the second *βer-t-ətəy* in (1b) could also be analyzed as a full clause with a pro subject and a pro object.

- c. [männ-əs], [pon noq tɛ:t-s-i], [qu:t tɛ:t-s-i],
 go-PST.3SG fish_basket up pull-PST-PASS.3SG fish catch-PST-PASS.3SG
 [tɛ:rəy tɛ:t-s-i], [sp:rt tɛ:t-s-i], [jɛ:β tɛ:t-s-i].
 ruff catch-PST-PASS.3SG pike catch-PST-PASS.3SG perch catch-PST-PASS.3SG
 ‘He left, the fish-basket was pulled up, fish was caught, ruff was caught, pike was caught, perch was caught.’ (OUBD 1316)

Since Khanty is a pro-drop language, juxtaposed clauses with a shared null subject are non-distinct from juxtaposed predicate phrases. Such examples behave in the same way as full juxtaposed clauses: they do not have overt conjunctions either:

- (2) [qo:ləm sp:t tʃp:ət mə-ss-əm], [kɛ:rkəm i:mi βə-ss-əm].
 three hundred ruble give-PST-1SG hard-working woman take-PST-1SG
 ‘I paid 300 rubles, I took a hard-working wife.’ (OUBD 1316)

Uncertain quantities are expressed by the asyndetic coordination of complete clauses to be interpreted disjunctively:⁴

- (3) a. [qo:əpti βat-t-ət] [βɛ:nəpti βat-t-ət].
 long live-PRS-3PL short live-PRS-3PL
 ‘They live for a long time, [or] they live for a short time.’ (OUBD 1313)
- b. [männ-əs], [männ-əs], [əj tɛ:ə-nə qv:t-s], [kɛ:t tɛ:ə-nə qv:t-s].
 walk-PST.3SG walk-PST.3SG one place-LOC sleep-PST.3SG two place-LOC
 sleep-PST.3SG
 ‘He walked, he walked, he slept at one place, [or] he slept at two places.’ (OUBD 1313)

The use of adverbs or particles as connectives is extremely rare. We attest a few occurrences of *pɛ:nə/pa:ne*, the locative form of *pa* ‘other’, presumably meaning something like ‘otherwise’, ‘on the other hand’. By now, *pa:ne* has developed into a conjunction corresponding to *and*, but these early texts still show no sign of its grammaticalization into a regular linking element:

- (4) βɛti βɛt, pɛ:nə nʼoβ βɛt.
 reindeer kill-PST.3SG on_the_other_hand/and elk kill-PST.3SG
 ‘He killed reindeer and he killed elk.’ (OUBD 1316)

In disjunctive coordinate clauses expressing approximate quantities, the quantity expression is sometimes preceded by *məβ(ə)/müw*, originally an indefinite pronoun, the equivalent of ‘(some)what’. (5b), with the 2nd *məβə* following a pro-dropped subject and object, represents a context where the indefinite pronoun modifying quantity expressions could be reinterpreted as a disjunctive particle linking clauses.

- (5) a. tot məβ əj qatl βat-s-əyən məβə kɛ:t qatlyən βat-s-əyən.
 there about one day live-PST-3DU about two day-DU live-PST-3DU
 ‘There, they stayed for about one day, they stayed for about two days.’
 (OUBD 1314)

⁴ The coordination of clauses of this kind used to perplex scholars studying traditional Khanty texts, e.g. Steinitz (1941). Szabolcsi (1990) argues that such seemingly contradictory statements, which are typical in Khanty poetry, are coordinate structures covering a semantic space by describing its two subfields.

- b. əj lɛ:pət li:-s-tən, məβə kɛ:t lɛ:pət-ɣən li:-s-tən.
 one week eat-PST-SG<3DU about two week-DU eat-PST-SG<3DU
 ‘They at it for one week, perhaps they ate it for two weeks.’ (OUDB 1316)

Additionally, instead of clausal juxtaposition, propositions describing simultaneous or consecutive actions are often connected by the subordination of one of the propositions in the form of a non-finite verbal projection: a converb (6a), or a present or past participle (6b) (see also Sipos 2015).

- (6) a. jəŋk qv:nəŋ-nə n'e:βər li:β-min su:tfəytə-l-ɣən.
 water bank-LOC foam eat-CVB walk.around-PRES-3DU
 ‘They walk around, eating foam on the river bank.’ (OUDB 1314)
- b. i:mi βɛ:n-ɣə joβt-əm lɛ:t-nə ju:β toj-ɐ qu:ŋt-əs.
 woman near-TRNS come-PTCP.PST time-LOC tree top-LAT climb-PST.3SG
 ‘The woman having come close, he climbed to the tree top.’⁵ (OUDB 1315)

An early description of Khanty coordination by Lewy (1911: 12) is based on fieldwork carried out by Sergiy Patkanov in the southern dialect area, which was most exposed to Russian influence, and which was the first to disappear in the middle of the 20th century. Lewy also mentions the conjunctions *i* ‘and’ and *ali* ‘or’, borrowings of the Russian *i* and *ili*, that may occasionally occur in cases of sentence coordination. In contrast, the Paasonen-corpus we examined contains no instance of them, which is expected, given that they come from Eastern (Yugan) dialects, which did not yet have as much Russian influence.

3.2 Lack of phrasal coordination/conjunction reduction

Coordination via juxtaposition is only common on the sentence level; the juxtaposition of clausal sub-constituents is very rare. Apparently, in the typical traditional Khanty clause, each grammatical function is represented by an expression denoting a single entity. If we described the event in (1c) in English, the catching of different kinds of fish in the same fishbasket at the same time would be described by a single clause involving coordinate noun phrases; in Khanty, however, the same predicate is predicated about each kind of fish in a separate clause. Situations where multiple participants have the same property or perform the same action (7a,b), or multiple objects are affected in a similar way by the same agent (7c) are expressed by multiple juxtaposed clauses. The lack of ellipsis and the resulting repetitiveness exemplified here may, at first sight, seem to be a rhetorical device used in folk tales to give the text a certain rhythm, and perhaps to help its memorization. However, the data in Sections 4.1 and 4.2 will show that the lack of phrasal coordination and conjunction reduction is a general phenomenon in pre-Russification Khanty; it is not restricted to a particular genre or register.

- (7) a. torrəm ji:r βɛr-tɐyə mɔ:st-l, məy ji:r βɛr-tɐyə
 sky animal _sacrifice do-INF need-PRS.3SG earth animal_sacrifice do-INF
 mɔ:st-l.
 need-PRS.3SG
 ‘A sky animal sacrifice needs to be made, an earth animal sacrifice needs to be made.’ (OUDB 1313)
- b. jot-əm pu:pi jaŋqut-s, por βv:jəy jot-əm jaŋqut-s, βoqu jot-əm
 with-1SG bear go-PST.3SG wolf with-1SG go-PST.3SG fox with-1SG

⁵ The disjoint reference of the *pro* subject of the main clause and the lexical subject of the participle is made clear by the context.

janquł-s, tfe:βar jot-vm janquł-s kəmləγ jot-vm janquł-s.
 go-PST.3SG hare with-1SG go-PST.3SG wolverine with-1SG go-PST.3SG
 ‘The bear went with me, the wolf went with me, the fox went with me, the hare went with me, the wolverine went with me.’ (OUDB 1315)

- c. *pro pu:pi toβə qu:j-s-ətəγ, por βv:jəγ toβə qu:j-s-ətəγ, βoqu*
 bear there leave-PST-SG<3SG wolf there leave-PST-SG<3SG fox
toβə qu:j-s-ətəγ, tfe:βar toβə qu:j-s-ətəγ, tʉ:t pu:rnə
 there leave-PST-SG<3SG hare there leave-PST-SG<3SG that after
kəmləγ qu:j-s-ətəγ.
 wolverine leave-PST-SG<3SG
 ‘He left behind the bear, he left behind the wolf, he left behind the fox, he left behind the hare, he left behind the wolverine.’ (OUDB 1315)

When a subject performs multiple actions, clause juxtaposition is usually indistinguishable from vP-juxtaposition, as a repeated subject tends to be represented by a silent *pro*; nevertheless, there are also examples with a repeated overt subject:

- (8) *v:ləŋ lə:tnə o:pi-l li:-s-i. tʉ:t pu:rnə*
 first time older_sister-3SG eat-PST-PASS.3SG that after
pi:tfənyəli kə:tl-s-i, o:s pi:tfənyəli noq li:-s-i jəppəγ-nə.
 little.bird catch-PST-PASS.3SG also little.bird up eat-PST-PASS.3SG owl-LOC
 ‘First her older sister was eaten. After that the little bird was caught, also the little bird was eaten by the owl.’ (OUDB 1314)

When a free choice indefinite subject is involved in disjunction, it is spelled out with each of the disjunctive predicates, as shown in (9). (9) has a complex structure: the juxtaposed clauses form closer units pairwise, with the indefinite subject of the first member of the pair co-referring with the *pro* subject of the second member:

- (9) *qo: əj βəti toj, u:lə βel-təγ, qo: əj lə:β taj-vs,*
 someone reindeer have.PST.3SG kill-PST-SG<3SG someone horse have-PST.3SG
u:lə βeltəγ, qo: əj məs taj-vs, u:lə βeltəγ, qo: əj v:tf
 kill-PST-SG<3SG someone cow have-PST.3SG kill-PST-SG<3SG someone sheep
taj-vs, u:lə βeltəγ pə:ri βer-təγə.
 have-PST.3SG kill-PST-SG<3SG feast do-INF
 ‘Someone had a reindeer, he killed it, someone had a horse, he killed it, someone had a cow, he killed it, someone had a sheep, he killed it to have a feast.’ (OUDB 1313)

A strategy of circumventing the coordination of subject or object NPs participating in the same event is to supply all but one of them with a comitative suffix.⁶

- (10) *tʉ: qo: i:mi-l-nət nje:βrem-əl-nət tot v:məs-l-ət.*
 that man wife-3SG-COM child-3SG-COM there sit-PRS-3PL
 ‘That man is sitting there with his wife, with his children.’ (OUDB 1313)

The corpus of 4000 words does not contain any instance of adjective or adverb coordination. If two modifiers modify the same constituent, the modified constituent is repeated. Example (11a) involves repeated VPs with adverbial modifiers of the same type. As illustrated by (11b),

⁶ Stassen (2003) calls this the comitative strategy of NP-coordination, and claims that it is just as wide-spread crosslinguistically as the *and*-strategy. He argues that its use correlates with other grammatical properties. Namely, if a language employs comitative rather than *and*-type coordination, it is likely to be non-cased and non-tensed. Khanty, and the Ob-Ugric languages, in general, do not support this generalization.

the juxtaposition of two different kinds of adverbial adjuncts (an approximative and a manner adverbial) is also avoided. These types of low adverbials usually represent new information, and as Chafe (1987) observed, speakers typically introduce only one major piece of information at a time in spoken language.

- (11) a. *i:ttən* *li:tot əntem,* *v:ləŋ* *li:tot əntem.*
 in.the.evening food NEG.exist in.the.morning food NEG.exist
 ‘There is no food in the evenings, there is no food in the mornings.’ (OUDB 1313)
- b. *nə:j-nəm* *v:məst-ł* *səjlək* *v:məst-ł.*
 fire-APPR sit-PRS.3SG silently sit-PRS.3SG
 ‘He sits next to the fire, he sits silently.’ (OUDB 1313)

3.3 Co-compounding

In fact, Khanty does have a way of combining expressions sharing the same grammatical function in a clause – as illustrated by *βv:jəx qu:ł*, ‘game fish’, i.e., ‘animals hunted on land and in water’ in example (1); however, this operation, to be called co-compounding, is more restricted than regular phrasal coordination, and results in a closer union. The term co-compound has been adopted from Wälchli (2005), who observed this construction type in the Uralic Mordvin as well as in several Asian languages.

The members of a co-compound display a semantically, structurally and prosodically stronger bond than that attested between coordinated expressions. As for semantics, they denote closely associated concepts. According to Wälchli (2005), the elements of a co-compound consisting of A and B can be in an **additive** relation, denoting a set exhaustively listed by A and B – e.g., *father-mother*, *hand-foot*. In a **generalizing** co-compound, the elements express the extreme opposite poles of which the whole consists – e.g., *day-night*. In the case of **collective** co-compounds, A and B are parts that do not exhaustively list the whole, but the whole comprises all meanings having the properties shared by A and B, and they denote collectives – e.g., *milk butter* in Chuvash means ‘dairy products’. The A and B members of a co-compound can also be in a **synonymic** relation. The semantic types of co-compounds attested in Khanty belong to the categories observed by Wälchli cross-linguistically. Most of them represent the additive relation, denoting either “natural” two-member sets such as *hands- feet* (12a), *rain-wind* (12b), *father-mother* (13a), *woman-man* (13b), *house-barn* (14), or temporary pairs determined by the given situation such as a fox and a hare acting jointly in a fairy tale (13c). The co-compound *game-fish* in (12c) has a collective meaning.

- (12) a. *kət-il* *kər-il* *i:lə* *mo:ritə-min* *təβt-v* *pan-təyə* *mə:st-ł*
 hand-3SG foot-3SG off break-CVB fire-LAT put-INF need-PRS.3SG
nie:βrem-əl-nət.
 child-3SG-COM
 ‘With his hands [and] feet broken, he needs to be put into the fire together with his child.’ (OUDB 1313)
- b. *torrəm* *jom-yə* *βv:t-yə* *jə-s.*
 weather rain-TRNS wind-TRNS become-PST.3SG
 ‘The weather turned into rain [and] wind.’ (OUDB 1313)
- c. *t* *βəlm-əl* *βv:jəx* *qu:ł* *məŋeti* *pi:t*
 so kill-PTCP.PST-3SG game fish we.DAT fall-PRS.3SG
 ‘So the game [and] fish killed by him will fall on us.’ (OUDB 1313)

- d. *ju:β po:m əj tʃe:mə li:-l-təγ*
 wood hay completely eat-PRS-SG<3SG
 ‘It consumes wood [and] hay completely.’ (OUDB 1313)

As regards their form, co-compounds consist of exactly two morphologically parallel juxtaposed nominals. If the two juxtaposed nominals refer to individuals, both members bear a dual suffix, and so does the verb agreeing with them – see (13a–c). In (13c), the event described involves a triplet of referents of the same function. Only two of them can be connected by dual suffixes; the third one figures in a separate clause.

- (13) a. pro *jəγ-γəl-em v:ŋki-γəl-em li:-s-γəl-e.*
 father-DU-1SG mother-DU-1SG eat-PST.DU<2SG
 ‘You ate my father [and] mother.’ (OUDB 1315)

- b. *i:mi-γən i:ki-γən pay taj-s-əγən.*
 woman-DU man-DU son have-PST-DU
 ‘The woman [and] the man had a son.’ (OUDB 1315)

- c. *βoqu-γən tʃe:βər-γən təβ jot-əl jə-s-γən, kəmləγ təβ*
 fox-DU hare-DU he with-3SG come-PST-3DU wolverine he
jot-əl jə-s.
 with-3SG come-PST.3SG
 ‘The fox [and] the hare came with him, the wolverine came with him.’ (OUDB 1315)

Nikolaeva (1999: 44) observed in the Obdorsk dialect of Khanty that two NPs can be coordinated by means of the dual if they denote two animate participants related by a close (typically family) relationship. We have found that the dual is also present on the members of inanimate co-compounds if they have unique singular referents, e.g.:

- (14) *id'at ōməs-ta xōt-eŋen, tabas-eŋen-a jūxtot*
 opposite sit-PTCP.PRS house-DU barn-DU-LAT come.PST.3SG
 ‘He came to the house [and] barn sitting opposite.’ (Lewy 1911: 13)

When the members of a co-compound have no dual suffixes, they have a kind reading. Such co-compounds – e.g., the subject in (12c) and (15), and the object in (12d) – elicit singular verbal agreement.

- (15) *ru:t qantəγ qolnə sə:rnəm βat-l?*
 Russian Khanty how further live-PRS.3SG
 ‘How will the Russians [and] the Khanty live on?’ (OUDB 1315)

Apparently, the dual suffix has an individuating function in co-compounds. Notice, however, that a co-compound with a dual suffix on both of its members denotes two referents rather than four. Both of these facts are predicted if the co-compound is assumed to be dominated by a single NumP, whose [+dual] head elicits agreement on both members of the co-compound. It also follows that the members of a co-compound always have the same number specification. Indeed, when the participants playing the same role in a situation have different cardinalities, they cannot be denoted by a co-compound; the comitative strategy is used (see example (10) above).

The co-compound may be also dominated by a PossP, with possessive agreement spelled out on both nominals – see (12a), (13a), and (16b). The members of a co-compound share the same case, and the case suffix is usually copied on both of them – see (12b) and (16c). In example (16a) cited from Lewy (1911: 21), however, the case ending is only spelled out on the 2nd conjunct (cf. also (14)). According to Lewy, this is possible if the conjoined nominals have

another identical (dual or possessive agreement) suffix repeated on both of them, as in (16a,b). When they have no other suffix to display their morphological parallelism iconically, the case morpheme needs to be spelled out on both nouns (16c).

- (16) a. *t̄me-ŋen* *ige-ŋen-na* *ent t̄vā-i*
 old_woman-DU old_man-DU-LOC not eat-PASS.PST.3SG
 ‘It wasn't eaten by the old woman [and] old man.’ (Lewy 14)
- b. *kur-en* *uč-en-a...* *kerŋemī-taŋen*
 foot-2SG clothes-2SG-LAT fall-IMP.3DU
 ‘They shall fall to your feet [and] clothes.’ (Lewy 1911: 21)
- c. *kur-a* *uč-a* *kerŋentīdāi-ŋen*
 foot-LAT clothes-LAT fall-PST.DU
 ‘They fell on feet, on clothes.’ (Lewy 1911: 21)

Examples (14) and (16a,b) are from the extinct southern (Irtish) dialect of Khanty, but co-compounds of this type are attested in the northern dialects, as well, including our Northern Khanty corpus from 1964 to be discussed in Section 4.3.

The members of the co-compounds in (12c) and (14) share the same modifier. Although the modifier is only spelled out once, it applies to both members of the co-compound, hence it must be left-adjoined to a projection that dominates both nominals, such as the NumP in (14). A bare co-compound, e.g. that in (12c), is presumably dominated by an NP node. A question is what grammatical category the members of these co-compounds represent.

Wälchli (2005) claims that co-compounding is not restricted to nominals. Although the Paasonen tales only contain nominal co-compounds, our Khanty consultants have also produced adjectival, numeral and verbal co-compounds, for example:

- (17) a. *M̄:* *an̄əl βoj̄ən* *sv:rt* *qv:t̄-əm.*
 1SG big fatty pike catch-PST.1SG
 ‘I caught a big-fatty pike.’
- b. *Mi:f̄* *ki:t* *qal̄əm* *sv:rt tu:β.*
 Misha two three pike bring. PST.3SG
 ‘Misha brought two-three pikes.’
- c. *je:ji-γ̄ən* *man̄'i-γ̄ən* *ti:k-k̄ən* *jin̄'θ-γ̄ən*
 elder_brother-DU younger_brother-DU eat-PST.3DU drink-PST.3DU
 ‘The two brothers ate [and] drank.’

Crucially, the members of a co-compound – whether nominal, adjectival or verbal – never have complements of their own. The members of a nominal co-compound occasionally do have modifiers of their own such as *Khanty man* – *Khanty woman* (= the (Khanty) people), *Red folk* – *White folk* – but these modifier + noun complexes form a non-productive class of lexicalized/“frozen” expressions; they do not arise in discourse spontaneously”. Non-lexicalized modifiers can only modify a co-compound as a whole. These facts suggest that the members of a co-compound are juxtaposed lexical heads (nouns, adjectives, numerals, or verbs) rather than juxtaposed phrasal projections. The bound inflectional morphemes (number, possessive agreement, and case suffixes on nominals, and tense and agreement morphemes on verbs) licensed by the functional projections dominating the co-compound appear on the heads as a result of M(orphological)-Merger (Halle & Marantz 1993). This operation lowers the

appropriate inflectional morphemes to the N^0 or V^0 heads post-syntactically, before lexical insertion. The inflectional morphemes are realized on both juxtaposed elements.

A further question is what structural relation the two members of a co-compound bear to one another. Regular coordinated expressions are assumed to have an asymmetric structure in generative theory; for empirical and theoretical arguments, see Munn (1993). In the case of Khanty co-compounds, however, neither the empirical evidence of asymmetry, nor the most powerful theoretical arguments for it are valid. There is no conjunction between the co-compounded elements that would form a closer unit with one of them, thereby establishing an asymmetric c-command relation between them or a hierarchical prosodic unit. Theoretically, symmetric structures are claimed to be avoided by natural languages because the resulting constituent cannot be labelled (e.g. Kayne 1994; Di Sciullo 2002, 2005). The labelling algorithm is looking for a lexical head, but in a symmetric structure minimal search is ambiguous, locating two heads. However, as Chomsky (2013: 43) argues, this problem does not arise if the two heads are (non-accidentally – Marcel den Dikken, p.c.) identical in a relevant respect, providing the same label. In Khanty, the members of a co-compound necessarily share the same category, so that the labelling problem does not arise. A further problem of symmetric structures is that they cannot be linearized. We tentatively assume that the linearization of a co-compound is free in syntax; it may be determined semantically, based on importance or primacy (e.g., in the case of *house-barn* and *eat-drink*), or it can be determined phonologically. (In Hungarian co-compounds, for example, the front-vowel member precedes the back-vowel member – e.g., *üt-vág* ‘beat-chop’, *tejbe-vajba fürdet* ‘in milk – in butter bathe = to provide for luxuriously’, and the shorter member precedes the longer one, e.g., *boldog-boldogtalan* ‘happy-unhappy = everybody’.) Because of these considerations, we do not exclude the possibility that a co-compound is a symmetric structure consisting of two lexical heads, but leave a definite conclusion for further research.

3.4 Interim summary

According to the evidence of texts recorded in 1901, the Khanty language prior to Russification only had asyndetic clausal coordination, i.e., clauses were juxtaposed without any grammaticalized conjunctions. The use of linking adverbs was also extremely rare. The connectedness of juxtaposed clauses (marked by the use of commas in the recordings) was presumably indicated by prosody. Alternatively, propositions describing subsequent or simultaneous events could be connected asymmetrically, with one of them formulated as a participial phrase. The coordination of constituents was avoided – except for pairs of noun phrases representing a single concept or a pair of closely associated concepts, which could be combined in so-called co-compounds, i.e., unified NPs (potentially projecting shared functional projections). One of two noun phrases fulfilling the same (subject or object) function could also be marked by a comitative suffix. Apart from these cases, when an eventuality had multiple distinct participants fulfilling the same role, the description of the eventuality involved a separate proposition for each participant. In other words, if multiple distinct individuals had the same property or were involved in the same action, it was predicated separately about each of them. If an individual was associated with multiple properties or multiple actions, they were predicated about the individual in separate propositions forming separate clauses.

4. The emergence of syndetic coordination

4.1 Maremjanin's autobiographical notes from 1936: the first conjunctions

In the autobiographical notes of K. M. Maremjanin, written in 1936, the typical way of coordinating clauses is juxtaposition, too – see (18), where the two juxtaposed clauses describe consecutive events:

- (18) *Wəš-na kät müj χutəm χät! ut-əs, kara pelək peta*
 city-LOC two or three day be-PST.3SG Kara side in.the.direction.of
kīt-s-a.
 send-PST-PASS.3SG
 ‘He was two or three days in the city, he was sent in the area of Karinsk.’

(Steinitz 1989: 140)

Maremjanin also links sentences that express consecutive or simultaneous events by turning one of them into a past or present participial phrase. The participial phrase often repeats the previous finite clause, as in (19).⁷

- (19) *Tüjt-em jŷk-a nöp-əs. Tüjt-em jŷk-a nöp-əm*
 sledge-1SG water-LAT drift-PST.3SG sledge-1SG water-LAT drift-PTCP.PST
täχə-na nōwə jəχ...
 place/time-LOC white folk
 ‘My sledge drifted into the water. At the time [of] my sledge having drifted into the water, the Whites...’

(Steinitz 1989: 134)

Occasionally, we also attest coordinated clauses linked syndetically, by the conjunctions *i/ij* ‘and’ or *a* ‘but’ borrowed from Russian:

- (20) a. *Jaj-em təw-ŋ-ət kŷr-əs ǐ manət tešət-s-ətte*
 brother-1SG horses-DU-3SG harness-PST.3SG and 1SG.ACC prepare-PST-SG<3SG
wəš-a.
 city-LAT
 ‘My brother harnessed his two horses, **and** he prepared me for the city.’
- b. *tet-öt-na tusa tapət-s-əte, a tumət-səχ-na ǎnt*
 food-LOC well feed-PST-SG<3SG but clothes-overcoat-LOC not
tumpəptə-s-te.
 dress-PST-SG>3SG
 ‘He fed me well with food, **but** he didn't dress me in clothes [and] overcoat.’

(Steinitz 1989: 153)

Whether the coordinated clauses are simply juxtaposed or linked by a conjunctive particle, they still display no conjunction reduction. The juxtaposed clauses of (21), for example, contain the same verb iterated four times; the coordination of the objects is avoided:

- (21) *Jönttə təw-ət wer-s-əm, jönttə uxt-ət wer-s-əm, jönttə*
 playing horse-PL make-PST-1SG, playing sledge-PL make-PST-1SG, playing
sese-t wer-s-əm, jönttə śorkan-ət wer-s-əm.
 looptrap-PL make-PST-1SG, playing bowtrap-PL make-PST-1SG
 ‘I made toy horses, I made toy sledges, I made toy looptraps, I made toy bowtraps.’

The clauses of (22), linked by the Russian conjunction *ǐ*, have different subjects and a shared VP. The VPs are spelled out without ellipsis; they are iterated three times:

⁷ This strategy of clause-chaining has also been pointed out in various Oceanic languages – see Otori (2004) and Terrill (2004).

- (22) *Tām zawod-ət fabrikaj-ət ūw-t-ət ĭ tūtəŋ-tūt-ət ūw-t-ət*
 this works-PL factory-PL roar-MULT-3PL and fiery-sledge-PL roar-MULT-3PL
ĭ awtomobil-ət ūw-t-ət.
 and car-PL roar-MULT
 ‘These works-factories make noise, and railways make noise, and cars make noise.’
 (Steinitz 1989: 145)

The NPs conjoined by *i* in (23) appear to be afterthoughts rather than the remnants of conjunction reduction. (23) cannot involve stripping, i.e., ellipsis removing all material from the clause except one constituent, because the remnant in stripping structures is a narrow focus, however, the postverbal elements in (23) are not narrow foci (they are not contrastive or exhaustive, and they are not the only exponents of new information). Furthermore, stripping would leave a clausal constituent, i.e., the whole *with* PP, pronounced rather than the mere NP complement of P.

- (23) *Ma aňxe-t-am pānna atet χīs-s-əm ĭ aše-m-ɔjka*
 I sister_in_law-PL-1SG with alone remain-PST-1SG and father-1SG-old_man
āŋke-m ĭ aj nāwrem-ət.
 mother-1SG and young children-PL
 ‘I remained alone with my sisters-in-law, **and** old father, mother, **and** young children.’
 (Steinitz 1989: 137)

The conjunction *i* appears sporadically between coordinated noun phrases, as well:

- (24) *Men jāχ-s-amŋ sōta-jōχan-a ĭ muχtəŋ-jōχan-a χūt kās-ta.*
 1DU go-PST-1DU Sōta-river-LAT and Muχtəŋ-river-LAT fish look.for-INF
 ‘We went to Sōta-river **and** to Muχtəŋ-river to catch fish.’ (Steinitz 1989: 139)

In fact, the few instances of nominals linked by *i* still observe the same restrictions as the co-compounds: they denote closely related concepts, and they are morphologically parallel (e.g., *unt mīγ-na ĭ χār mīγ-na* ‘forest-LOC and tundra-LOC’ (Steinitz 1989: 185), *aše-m ĭ satsaše-m* ‘father-1SG and grandfather-1SG’ (Steinitz 1989: 175)). At the same time, the use of co-compounds is still general. Though some of them may be conventionalized or lexicalized, e.g. *təwŋ sūsŋ* ‘in spring - in autumn’, or *mōn təwtəw mistəw* ‘our horses - cows’ in (25a) below, there are also time-bound expressions such as *zawodət-fabrikajət* ‘factories-works’ in (22) or *nōwə jəχ - würtə jəχ* ‘the Whites - the Reds’ in (25b), which suggests that co-compounds are constructed productively.

- (25) a. *mōŋ təwtəw mīstəw sōras χu-na arə pūš*
 we horse-PL-1PL cow-PL-1PL merchant man-LOC many time
χorjat-ij-s-aj-ət.
 seize-FREQ-PST-PASS-3PL
 ‘Our horses [and] cows were many times seized by the merchantman.’
 (Steinitz 1989: 189)
- b. *nōwə jəχ würtə jəχ t’at’əs-ta pīt-s-ət.*
 white folk red folk fight-INF begin-PST-3PL
 ‘The Whites (and) the Reds began to fight.’ (Steinitz 1989: 136)

The members of the co-compound *mōn təwtəw mistəw* ‘our horses - cows’ in (25b) share a single overt possessor eliciting agreement on both of them, and the members of the co-compound *tumət-sōχ-na* ‘clothes-overcoat-LOC’ in (20) share a single case suffix – which supports the assumption that a co-compound consists of two juxtaposed NPs dominated by a single PossP and a single KP projection. The possessive agreement suffix needs to be copied on both NPs; the case suffix, however, sometimes appears only on the second NP. Notice that

unlike in the Irtish dialect illustrated in (16), the case suffix can be spelled out only once whether or not the members of the co-compound bear identical agreement suffixes.

(18) contains coordinated numerals connected by *mǔj*, the Khanty equivalent of the indefinite/approximative pronoun *məβə* (*kāt mǔj χutəm χǎt!* ‘two or three days’). In example (5a) from 1901, a similar approximate timespan (*one or two days*) is still expressed by the juxtaposition of complete clauses (*There, they stayed for one day, they stayed for two days*). It is unclear whether the expression *kāt mǔj χutəm χǎt!* ‘two or three days’ is an instance of phrasal disjunction and conjunction reduction, with *mǔj* functioning as a disjunctive particle, or the pattern ‘numeral *mǔj* numeral’ grammaticalized as a means of expressing approximate numbers. Since other types of DP-internal coordination and DP-internal ellipsis are rejected or only marginally accepted in Khanty to this day, the latter assumption seems more likely.

In sum: the Marenjanin text shows the same basic characteristics as the Paasonen tales: it abounds in juxtaposed clauses and avoids ellipsis, and it only coordinates NPs if they denote closely related concepts. At the same time, we also attest the occasional use of the conjunction *i/ij* between clauses, and sporadically, between noun phrases, as well. In this respect, Marenjanin’s language use is likely to be ahead of the general course of evolution in Khanty because he became balanced Khanty-Russian bilingual before the majority of Khanties did. As we learn from his autobiography, he worked for Russian merchants since the age of 9 and received several years of Russian schooling as a Komsomol cadre in Soviet times.

4.2 Northern Khanty texts from 1964: spread of conjunctions, emergence of phrasal coordination

In the 3740-word corpus of Khanty texts collected by Rédei during a fieldwork in the northern Kazym area in 1964 (Rédei 1968; OUDB 878, 883, 1022, 1117, 1228), consisting of three fairy tales, as well as an account of the religious beliefs of the Khanty and a brief account of the bear cult, the juxtaposition of clauses without an overt conjunction is still common:

- (26) *βuli sox jeməŋ taxi-ja ixət-t-a, s'ata xaj-t-a.*
 reindeer skin sacred place-LAT hang-PRS-PASS.3sg there leave-PRS-PASS.3SG
 ‘The reindeer hide is hung up at the sacred place, it is left there.’ (OUDB 878)

At the same time, we attest the spreading of a native conjunction, *pa:*, a cognate of the adverb *pə:nə* ‘otherwise’, a few instances of which were pointed out in the Paasonen tales. Since the Rédei corpus of 1964 is similar in size to the Paasonen corpus of 1901, numerical comparisons can be made between them. Whereas the texts collected by Paasonen in 1901 display 4 occurrences of *pə:nə*, and a single occurrence of *məβə* functioning as a linking adverb, the Rédei texts contain 56 instances of *pa:*, and 5 instances of *muj*, the northern equivalent of *məβə*, most of which clearly function as conjunctions. Note that the Rédei corpus represents the same register as the Paasonen corpus (fairy tales and descriptions of religious practices), but, nonetheless, there was a marked increase in the use of overt conjunctions in the Rédei corpus. This means that the lack of overt conjunctions in the Paasonen corpus is not attributable to the register (alone) – if that was the case, we would expect to see few overt conjunctions in the Rédei corpus as well.

Pa: appears both between clauses (27a), and in the initial or post-topic position of independent sentences (27b), i.e., it functions as an additive particle with an adjacent or distant (or implicit) first associate.

- (27) a. *n'ɔ:-t juβtəsəl pa: mɔ:jpər xɔ:j-t-a.*
 arrow shoot-PRES.3SG and bear hit-PRS-PASS.3SG
 ‘The arrow shoots **and** the bear is hit.’ (OUDB 1022)

b. *ikil-el it ol-əs. imile-l letot-lat pasan-a*
 man-3SG down lie-PST.3SG woman-3sg food-PL<3SG table-LAT
*ʃaβi-s-əlle. luβ pa: iti ol-əs.*⁸
 arrange-PST-PL<3SG she also down lie-PST.3SG

‘The man lay down. The woman arranged the food on the table. She **also** lay down.’
 (OUDB 1117)

Because of pro-drop, clausal coordination is often indistinguishable from VP-coordination:

(28) [*ʃepan [sʰart-ət]*] *pa:* [pro [*lop-ət, muj kanʃə-l jin βə:rt*]]
 shaman shamanize-PRS.3SG and tell-PRS.3SG what search-PRS.3SG water spirit
 ‘The shaman shamanizes **and** tells what the water spirit is searching for.’ (OUDB 878)

Adversative parallel clauses are linked by *a*, borrowed from Russian:

(29) *je:tn-a ji-l, pasan-ən isiiti letoti xaj-l-əm,*
 evening-LAT become-PRS.3SG table-LOC same.way full-of-food leave-PRS-SG<1SG
a: min ant ol-l-əmən la:βət-ti pit-l-əmən.
 but 1DU NEG lie-PRS-1DU wait-INF will-PRS.1DU
 ‘Evening is coming, I leave food on the table again, **but** we won't sleep, we will wait awake.’ (OUDB 1117)

We also attest a disjunctive connective, grammaticalized from *muj* ‘what’ (the equivalent of the Eastern Khanty *məβ*), originally an indefinite used as an approximator. A similar pair of sentences in the Paasonen tales, cited under (3a), are still juxtaposed without a connective.

(30) *pro xuβ man-əs muj βa:n man-əs*
 long go-PST.3SG or short go-PST.3SG
 ‘He went for a long time, **or/perhaps** he went for a short time.’ (OUDB 1117)

Whereas phrasal coordination was barely present in the Maremjanin notes, the texts recorded in 1964 already contain different types of constituents conjoined by *pa:*, among them modified NPs (31a) and predicative adjectives (31b).

(31) a. *luβ sorm-a ji-te-l jupijən sʰar-lat me:t a:j*
 he death-LAT become-PTCP.PRES-3SG after shaman-PL.3SG most small
pox-lat-a pa: met a:j e:βi-lat-a pit-l-ət.
 son-PL.3SG-LAT and most small daughter-PL.3SG-LAT pass-PRS-3PL
 ‘After he dies, his shamanic skills go to his youngest sons **and** youngest daughters.’
 (OUDB 878)

b. *jə:xət-lat mɔ:jpər βoxəltə-ti pata βerən-s-aj-ət [βə:na-fək]*
 bow-PL<3SG bear overcome-PTCP.PRES for make-PST-PASS-3PL big-COMP
pa: [ta:ka-fək].
 and fast-COMP
 ‘His bows for shooting a bear were made bigger **and** faster.’ (OUDB 1022)

Pa: sometimes appears before both conjuncts – see (32) (which also contains a third *pa:*, linking the clause to the previous one):

(32) ... *pa: jə:f pa: xuβ pa: ta:βərt.*
 and path both long and difficult
 ‘... **and** the path is **both** long **and** difficult.’ (OUDB 1228)

⁸ The 3rd person singular possessive suffixes can cross-reference a possessor, or they can function as markers of definiteness (see Nikolaeva 2003, É. Kiss & Tánzos 2018).

Pa: still does not occur NP-internally, e.g., between attributive adjectives. If a nominal is modified by two adjectives of the same semantic type, two NPs are projected (33):

- (33) *sʲi βe:sʲəŋ nɛŋ-ət, xorasəŋ nɛŋ-ət pɪla aŋk-ət a:sʲe-t*
 this pretty woman-3SG beautiful woman-3SG with mother-3SG father-3SG
xosʲa joxi man-əs.
 to home go-PST.3SG
 ‘With this pretty woman, this beautiful woman, he went home to his mother and father.’ (OUDB 1117)

The corpus contains several instances of disjunctive phrasal coordination by means of *muj*. In most of these cases, *muj* has already lost its approximator function. *Muj* is sometimes strengthened by *pa:*. If *muj* precedes both disjuncts as in (34b), only the one between the two conjuncts is combined with *pa:*.

- (34) a. *atmənti ki sʲi βuti is-ət [semsajot-ət-a] muj pa: [tə:rəm-a]*
 as if that reindeer soul-3SG spirit-PL-LAT or else god-LAT
man-ət.
 go-PRS.3SG
 ‘supposedly that reindeer's soul goes to the spirits **or else** to god.’ (OUDB 878)

- b. *liβ pro fɛpan-lət-ən muj [ta:jəm ixət-man] muj pa:*
 they them shamanhood-3PL-LOC either axe hang-CVB or else
[pe:nisʲar-ən seŋk-man] ofa βerənt-t-ətlat.
 shaman.drum-LOC beat-CVB learn-PRS-PL<3PL
 ‘They get to know these through their shamanhood, **either** by hanging an axe **or else** by beating a shaman drum.’ (OUDB 878)

We also attest structures with non-adjacent disjuncts, which are likely to be the results of conjunction reduction. Thus the most likely derivation for (35a) is stripping, as represented in (35b), unless the constituent preceded by *muj* has been extraposed, or is an afterthought.

- (35) a. *pro joxt-əm jɔ:x-lət-ən jɪŋk-ən tɛm-t-aj-ət muj pa:*
 come-PTCP.PST people-PL-LOC water-LOC pour-PRS-PASS-3PL or else
tɔ:sʲ-ən.
 snow-LOC
 ‘They are splattered by the coming people with water **or else** with snow.’
 (OUDB 1022)
- b. *pro joxt-əm jɔ:x-lət-ən [jɪŋk-ən tɛm-t-aj-ət muj pa:*
 come-PTCP.PST people-PL-LOC water-LOC pour-PRS-PASS-3PL or else
[tɔ:sʲ-ən tɛm-t-aj-ət].
 snow-LOC pour-PRS-PASS-3PL

Phrasal coordination and conjunction reduction also occur sporadically in constructions with idiosyncratic coordinating elements, which suggests that the role of conjunctions in licensing these phenomena is pragmatic rather than formal. In (36), the context shows that the clause-initial *isʲiti* ‘in the same way’ is not anaphoric but cataphoric; it refers to the NPs following it, indicating that they have the same (subject) function:

- (36) *is'iti βɔ:j sox-ət, s'afkan sa-xət oxfam-ət, s'afkan-ət tut-a*
 same.way animal fur-PL calico coat-PL headscarf-PL calico-PL fire-LAT
a.ptijəl-s-aj-ət.
 feed-PST-PASS-3PL
 ‘In the same way, furs, calico coats, headscarves, calico cloths were fed into the fire.’
 (OUDB 878)

In (37), three parallel clauses are juxtaposed. They are linked by the numeral modifiers *one*, *second*, *third* at the beginning of the clauses. The verb is only spelled out in the first clause, i.e., the 2nd and 3rd clauses involve gapping. Gapping is defined for SVO languages as an elided verb(al complex) flanked by the subject and a remnant (the object, an oblique argument, or an adjunct) in the non-initial conjunct of a coordinate construction. In SOV languages like Khanty, the elided verb is final (and ellipsis can also take place in the first conjunct – see Ross (1970)).

- (37) [pro *ij sə:n xint-əŋ imi jə:f kutəp-a ɔ:məs-s-əlle*],
 one vessel knapsack-ADJ woman path middle-LAT place-PST-SG<3SG
 [*kimət sə:n kə:rt xɔ:nəŋa*], [*xə:łmit sə:n ɔ:β kimpija*].
 second vessel village beside third vessel door outside
 ‘He placed one of the vessels in the middle of the path of the woman with the knapsack,
 the second vessel at the border of the village, the third vessel in front of the door.’
 (OUDB 883)

The spreading of conjunctions and the emergence of phrasal coordination have not rendered co-compounding obsolete; on the contrary, we attest more co-compounds (and less repetition of clauses with identical constituents) than in the earlier texts. For example:

- (38) a. *jiŋk-ət muβ-ət jaŋx-əm βurəs tə:xs-əm iki*
 water-PL land-PL go-PTCP.PRS Wures friend-1SG old_man
 ‘my old friend Wures, who has crossed waters [and] lands.’ (OUDB 1117)
- b. *ox-ət sem-ət montəlmə-s*
 head-3SG eye-3SG wrap-PST.3SG
 ‘He covered his head [and] eyes.’ (OUDB 883)
- c. *xɔ:t-ət łopas-ət βerən-s-aj-ət*
 house-PL storehouse-PL make-PST-PASS-3PL
 ‘Houses [and] storehouses were made.’ (OUDB 878)

In (39), the juxtaposed nominals share a single locative suffix:

- (39) *lə:ŋ tur ka:t tur-ən xojat*
 male_protective_spirit's_voice femal_protective_spirit's_voice-LOC somebody
uβ-te-t sa:t-ət
 shout-PTCP.PRES-3SG be_heard-PRS.3SG
 ‘Somebody was heard shouting in the male protective spirits's voice [and] the female
 protective spirit's voice.’ (OUDB 1117)

In sum: the 1964 Kazym Khanty corpus shows the emergence of the conjunctions *pa:* ‘and’ and *muj* ‘or’, grammaticalized from native words. Parallel with the spreading of conjunctive particles, phrasal coordination and ellipsis (gapping and stripping) also appeared in the language.

- (43) *jv: tu: aβəl-v təl-əm, tʲaqə pɐ:n jaqə sv.γəltə-m.*
 well that sledge-LAT sit_down-PST.1SG well and home gallop-PST.1SG
 ‘Well, I sat down on the sledge and galloped home.’ (OUDB 730)

Sporadically, NPs conjoined by *pɐ:nə* are also attested (44a). There is evidence that *pɐ:nə* is not restricted to binary combinations of nominals, unlike co-compounding (44b):

- (44) a. *ke:r-nə βer-l-i kɐ:t pəkət-γən nʲe:nʲ: ru:tʲ nʲe:nʲ pɐ:nə qantəy*
 oven-LOC do-PRS-PASS.3SG two kind-DU bread Russian bread and Khanty
nʲe:nʲ.
 bread
 ‘In the oven, two kinds of bread are made: Russian bread and Khanty bread.’
 (OUDB 1076)

- b. *əj mətv tɐ:t-nə [tu:ʃəŋ v:γən] pɐ:nə [βe:tʲ kʷr βejγən] pɐ:n*
 one some time-LOC Bearded_Chin and Two_Thin_Legs and
[o:γ lətəŋkən] βat-l-ət.
 Two_Temples live-PRS-3PL
 ‘There once lived Bearded Chin and Two Thin Legs and Two Temples.’
 (OUDB 1346)

Remarkably, *pɐ:nə* has appeared as an alternative to the dual suffix. One of the best-known Khanty tales has the title *pi:tʃiŋγəli-γən o:pisv:-γən* ‘little.bird-DU older.sister-DU’ in the 1901 version and in one of the versions from the 1990s; however, in a version recorded in 1993, it is entitled *pi:təŋkəli pɐ:nə o:pi*, i.e., the dual suffixes of the noun phrases have been replaced by the conjunction *pɐ:nə*. The disappearance of the dual indicates that the co-compound projection, with a single NumP subsuming the juxtaposed NPs, has been replaced by an Indo-European-type coordination construction. However, this process has barely begun; the general way of coordinating NPs is still co-compounding, e.g.:

- (45) a. *mʉβ li:tot-ət qu:t-ət əntə tɐ:pət-l-o?*
 what food-INS fish-INS not feed-PRS-PASS.2SG
 ‘Aren't you fed with food [and] fish?’ (OUDB 737)
- b. *nʉŋ ju:s v:rəyju:s mʉ:nʲtʲ mu:nʲtʲ-v!*
 you old song old tale tell-IMP.2SG
 ‘Tell me old songs [and] old tales!’ (OUDB 934)
- c. *tʲi i:ki tɐ:s-ət βay-ət jaqə i:lt-ət*
 this old_man wealth-PL money-PL home take-PST.3PL
 ‘They took home this old man's riches [and] money.’ (OUDB 734)

Disjunctive coordination is fairly frequent at the phrase level. In this dialect, no unique disjunctive particle has grammaticalized. The most common disjunctive coordinator is *mʉβ* (in addition to disjunctive meaning, it still preserves its adverbial meaning that indicates uncertainty or approximate quantity).

- (46) *mɐ: paqqə βat-m-vm-nə [je:ŋ ʉrəkkə qo:-ləm v:t-nə] mʉβ*
 I little.boy-TRNS live-PTCP.PST-1SG-LOC thirteen year-LOC or
[je:ŋ ʉrəkkənʲətə v:t-nə] βat-m-vm-v
 fourteen year-LOC live-PTCP.PST-1SG-LAT
 ‘Me being a little boy, thirteen years old **or** fourteen years old, ...’ (OUDB 730)

Kʉtʃ seems to be a disjunctive particle with a free-choice component:

4.4 Prosodic facts

With the appearance of high-quality recordings of Khanty speech towards the end of the 20th century, some generalizations may be made about the prosodic properties of coordinated constituents and co-compounds.

Overtly coordinated constituents, but not co-compounds, (i) may include pauses between the constituents, (ii) may have a pitch reset between the constituents, and (iii) may not be prosodically parallel. The sub-constituents in co-compounds, in contrast, have a tighter prosodic connection, no pauses or pitch reset. Each of the sub-constituents carries the same pitch contour, often downstepped on the second constituent (i.e., with lower absolute F0 values)

The typical prosodic realization of two coordinated nominals is illustrated in (52) and Figure 1: there is a pause and a pitch reset between the constituents, and they are not prosodically parallel to each other.

- (52) (*əj mətə t̪:t-nə*) *tu:fəŋ ɐ:γən p̪:nə β̪e:t̪ k̪ər β̪ejɣən p̪:n o:γ t̪otəŋkən*
 one some time-LOC Bearded_Chin and Two_Thin_Legs and Two_Temples
β̪at-t-ət.
 live-PRS-3PL
 ‘There once lived Bearded Chin and Two Thin Legs and Two Temples.’
 (OUIDB, 1346)

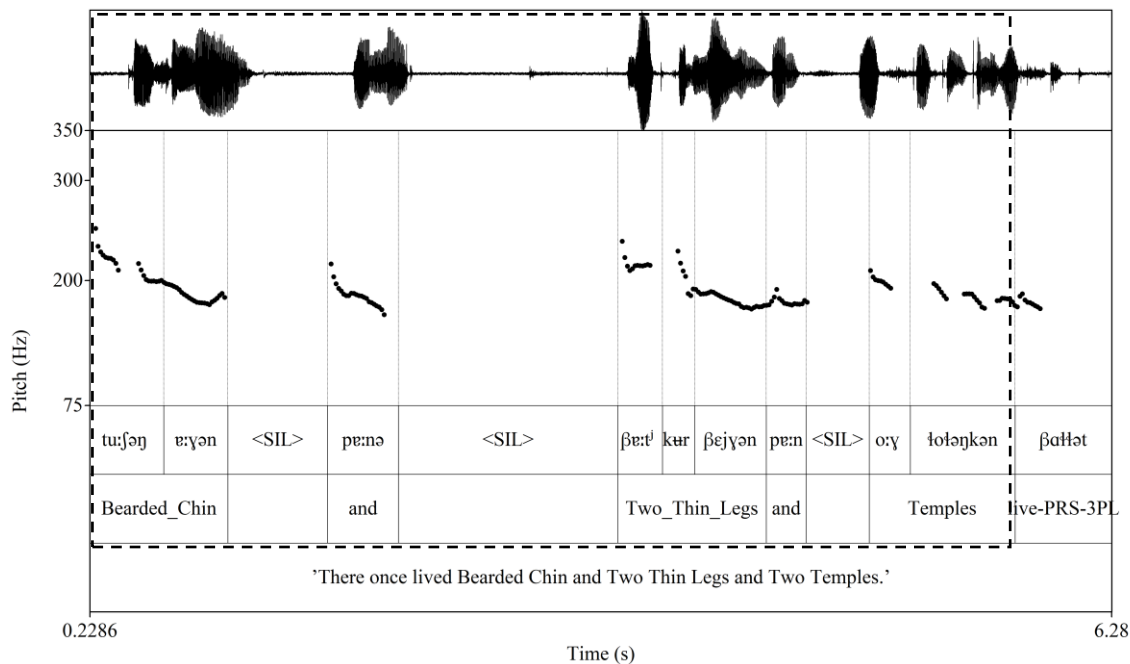


Figure 1. Realization of overtly coordinated nominals in (52) (boxed)

In turn, co-compounds include no pitch reset or pauses, and carry the same pitch contour on both constituents, downstepped on the second one:

- (53) [_{DP} *β̪oqu-ən t̪f̪e:β̪ər-γən*] *t̪əβ j̪ot-v̪t̪ j̪ə-s-γən.*
 fox-DU hare-DU 3SG with-3SG come-PST-3DU
 ‘The fox and the hare came with him.’ (OUIDB, 1315: 129)

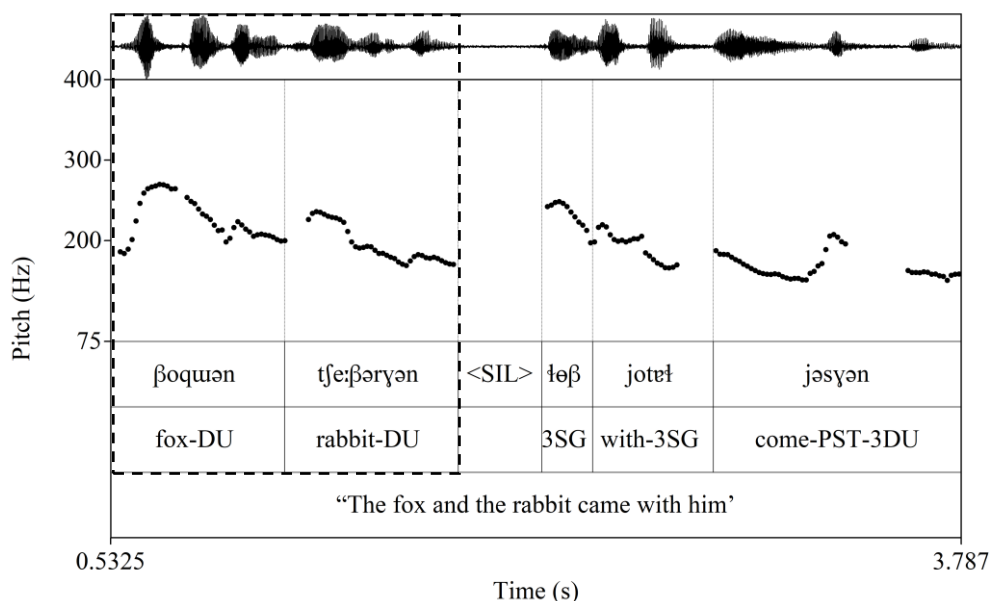


Figure 2. Realization of a nominal co-compound in (53) (boxed)

To sum up, the prosodic facts lend additional support to the intuition that the sub-constituents of a co-compound or juxtaposed parallel clauses/verbal projections are more tightly connected to each other than overtly coordinated constituents. In the absence of a coordinator, prosody alone is relied upon to signal that two adjacent constituents form a higher-order one. In contrast, the presence of a coordinating head allows for a less rigid prosodic realization.

4.5 Interim summary

In the course of the 20th century, the Khanty language has been subject to the increasing dominance of Russian. Parallel with the advancement of Khanty-Russian bilingualism, the Khanty texts recorded in 1936, in 1964, and in the 1990's show the gradual emergence of clausal coordination by means of conjunctive and disjunctive morphemes. Whereas in the document from 1936, we only find sporadic occurrences of the conjunctions *i* and *a* borrowed from Russian, the texts recorded in 1964 already show the recurring use of conjunctive and disjunctive morphemes grammaticalized from native words. In the texts from the 1990s, their use is already systematic, albeit the mere juxtaposition of coordinate clauses is also common.

In the document from 1936, conjunction reduction and phrasal coordination are practically absent except that morphologically parallel NPs representing closely associated concepts can be combined in co-compounds. In the later texts, we attest a growing number of coordinated VPs and coordinated clausal adjuncts, which tend to involve an overt conjunction. In the most recent texts, the first signs of the attrition of co-compounding (the replacement of double dual marking by a conjunction) have also appeared. Non-adjacent coordinates also occur. In such cases, the second coordinate, preceded by a conjunction, is likely to be the result of conjunction reduction (gapping or stripping). Phrasal coordination and conjunction reduction below the NP level are not attested.

5. Coordinated constructions in 21st century Khanty

In today's Eastern (Surgut) Khanty, overt conjunctions are ubiquitous. In a fashion familiar from many better-studied languages (e.g. English), overt conjunctions are not only possible but also preferred with both clausal and phrasal conjuncts, as shown in Section 5.1 and 5.2.

Evidence provided in Section 5.3 suggests that phrasal coordination in contemporary Khanty, in different contexts, may result either from clausal coordination accompanied by

conjunction reduction, or by genuine phrasal coordination that does not involve ellipsis. The latter is attested with so-called symmetric predicates (Lakoff & Peters 1966), such as *intertwine* or *be alike*; multiple subjects that such predicates appear with cannot result from conjunction reduction. Similarly, non-singular agreement on verbs in clauses with multiple singular subjects suggests that they cannot result from conjunction reduction. Additional evidence against the wide-spread use of conjunction reduction in Khanty comes from the rather limited use of structures that are commonly analyzed as relying on ellipsis, such as gapping and stripping.

At the same time, co-compounding is also productive in today's Khanty. In many contexts it may be used interchangeably with phrasal coordination, though it can only be used with constituents that are semantically related and morphologically parallel; more on this in Section 5.6.

5.1 Syndetic clausal coordination

In today's Eastern Khanty, there is a strong preference for full clauses to be coordinated by an overt conjunction. Examples without overt conjunctions, according to the speakers, sound incomplete (though not strictly speaking ungrammatical). The choice of conjunction corresponds to the relative order of events described by the conjoined clauses: *pɛ:nə* is used for consecutive events, and *o:s*¹⁰ for contemporaneous ones. This fits well with the fact that these conjunctions can also be used as adverbials, *o:s* meaning 'also', and *pɛ:nə* meaning 'otherwise', 'again', 'also', 'additionally'.

- (54) *I:t i:ttən. Mɛ:fɛ nɛ:j ʉl-əl, (i)o:s/ (ii)pɛ:nə Mi:fɛ jəŋk*
 now evening Masha fire light-PRS.3SG and Misha water
tu:-l.
 bring-PRS.3SG

⁽ⁱ⁾ 'It is evening now. Masha is making a fire, and Misha is bringing water.'

⁽ⁱⁱ⁾ 'It is evening now. Masha makes a fire, and (then) Misha brings water.'

Similarly, disjunctions between clauses are obligatorily overt – otherwise, the disjunctive reading is not rendered:

- (55) *Tem qatəl-nə ɛ:ŋk-em sɔ:rt tɔ:rt-l antɔ ɛ:t'-em qu:l qatfəm*
 this day-LOC mother-1SG pike fry-PRS.3SG or father-1SG fish hot
ji:nk βar-l.
 water cook-PRS.3SG
 'Today, either mother fries pike or father cooks fish soup.'

An initial *pɛ:nə* in today's Khanty may also be used in its adverbial meaning, 'also/otherwise/then':

- (56) *I:t i:ttən-γə jə-y. Pɛ:nə Mɛ:fɛ nɛ:j ʉl o:s*
 now evening-TRANS become-PST.3SG and Masha fire light-PST.3SG and
Mi:fɛ jəŋk tu:β.
 Misha water bring.PST.3SG
 'Evening came now. Then Masha made a fire and Misha brought water.'

¹⁰ There is considerable variability with respect to vowel pronunciation both between subtypes of the same dialect spoken in different villages and even between individual speakers of Khanty. To facilitate recognition of lexical items, the data in this section is transliterated based on standard Surgut Khanty orthography, with differences between individual speakers overlooked. In order to ensure consistency with the previous sections, words of particular interest (conjunctions *o:s* and *pɛ:nə*) are rendered in the form that is standard in the OUDB, in line with the preceding sections of the paper, as opposed to transliteration based on standard orthography.

As Khanty is a pro-drop language, conjoined clauses that share a non-overt subject may result either from clausal coordination with *pro* subjects or VP coordination (with overt objects). Similarly, coordinated verbs that share both a subject and an object may be analyzed either as coordination of verbs or that of larger projections (VP/TP/CP) with non-overt arguments.

There is a strong preference for an overt conjunction in these contexts, as shown in (57). In (57a), non-topical objects, not cross-referenced on the verbs, are repeated in each conjunct. This is consistent with Nikolaeva (1999: 68), who showed that only an object that elicits agreement on the verbs can be shared between them. In (57b), the object agreement suffixes on the verbs license object drop.¹¹

- (57) a. *Mi:fə qu:t qv:təp-i noq βəj, qu:t-ət v:r-yə pan*
 Misha fish net-ABL up take.PST.3SG fish-PL many-TRA put.PST.3SG
pə:nə qu:t i:tə n'aqəs.
 and fish away scale.PST.3SG
 'Misha took the fish out from the net, sorted it and scaled it.'
- b. *Mi:fə sv:rt qv:təmt-əy, jaqə tu:β-təy pə:nə ni:k*
 Misha pike catch-PST.3SG home bring-PST.3SG<SG and to_water
mo:t-təy.
 boil-PST.3SG<SG
 'Misha caught a pike, brought it home and cooked it in a cauldron.'

Similarly to conjunctions, disjunctions in clauses with a shared subject need to be overt. In the context of a disjunction, though, the second iteration of the shared object is optional, even in the absence of agreement. This is the case with different markers of disjunction:¹²

- (58) a. *Qv:ntəy jv:y qu:t βer-tət ante (qu:t) tar-tət.*
 Khanty people fish boil-PRS.3PL or fish fry-PRS.3PL
 'The Khanty people boil or fry fish.'
- b. *v:ŋki qatəl jatfə (maβət) li:tə pətə:n muβə sv:rt mə:l-ət muβə*
 mother day middle for food due.to or pike boil-PRS.3SG or
(sv:rt) tar-t.
 pike fry-PRS.3SG
 'Mum is either boiling or frying pike for lunch.'

To recap, both conjunctions and disjunctions are strongly preferred to be overt with coordinate clauses in contemporary Khanty.

¹¹ In a different set of examples, the generalization about object agreement as necessary for object drop did not hold, speakers judged coordinated verbs without object agreement as felicitous. This option seems to be more marked in conjunction constructions though.

(i) *Mi:fə ne:βi βe:li kv:tət pə:nə βeł.*
 Misha white reindeer catch.PST.3SG and kill.PST.3SG
 'Misha caught and killed a white reindeer.'

¹² There are multiple disjunctions in today's Khanty, all of which derive from adverbials: *ante* 'or', *antəqv* (*pə*) 'or, perhaps, alternatively', *antəqv ... antəqv* (*pə*) 'either ... or', *muβ(ə)* 'or', *muβə* (*pə*) 'or', *muβə ... muβə* (*pə*) 'either ... or', *mu:j* (*pə*) 'or', *βəs* 'or'. Usage is determined by the semantics of the utterance, dialectal and idiolectal preferences. The examples preserve the respective speaker's choice of a disjunction and also list several options where available.

5.2 Phrasal coordination

Phrasal coordination in contemporary Khanty is as ubiquitous as the coordination of clauses/VPs. First, consider coordinated nominals. Subjects and direct and indirect objects in contemporary Khanty are used with overt conjunctions and disjunctions (in many contexts, co-compounding is still used as an alternative to coordination; more on this in Section 5.6).

Example (59) shows subjects (agents and patients) coordinated with the help of an overt conjunction; dropping the conjunction is degraded. When two (as opposed to more) nominals are conjoined, the verb carries dual agreement; unlike in co-compounding, the dual morpheme does not appear on either of the conjuncts.

- (59) a. *Mɛ:fɛ(*-ɣən) pɛ:nə Mi:fɛ(*-ɣən) i:rək-kən.*
 Masha-DU and Misha-DU sing-PST.3DU
 ‘Masha and Misha sang/used to sing (together or not).’
- b. *Mɛ:-nə sɔ:rt pɛ:nə jɛβ əj qu:tʰəŋ-v pəsən aβti-jɛ*
 I-LOC pike and perch one space.near-LAT table top-LAT
pan-iɣən.
 put-PASS.PST.3DU
 ‘(A) pike and (a) perch were put beside each other on the table by me.’

In contrast, in the context of disjunction, the verb bears singular agreement; it may also accompany both disjuncts.

- (60) *Mɛ:fɛ (v:rəɣ-ət) muβə (pə)/βəs Mi:fɛ v:rəɣ-ət.*
 Masha sing-PRS.3SG or Misha sing-PRS.3SG
 ‘Masha or Misha is singing/sings.’

Direct and indirect objects, too, are readily coordinated with overt conjunctions and disjunctions:

- (61) *Mɛ: sɔ:rt pɛ:nə/muβə jɛβ qv:təmt-əm.*
 I pike and/or perch catch/get-PST.1SG
 ‘I caught (a) pike and/or (a) perch.’¹³
- (62) *v:tʰi Mi:fɛ-ɣv pɛ:nə/muβə Pe:tʰv-ɣv βɛt tʰarəs məj.*
 father Misha-LAT and/or Petja-LAT five thousand give.PST.3SG
 ‘Father gave Misha and/or Petja 5000 rubles.’

With a prominent patient, one accompanied by a demonstrative, agents may be coordinated either in active or passive voice (preferred):

- (63) *Te:m sɔ:rt Sɛ:fɛ-nə muβə Mi:fɛ-nə kɛ:tʰ-i.*
 that pike Sasha-LOC or Misha-LOC catch-PASS.PST.3SG
 ‘That pike was caught by Sasha or Misha.’

Like nominals, adjectives that apply to the same referent are coordinated with an overt conjunction. This is true of attributive adjectives, if they describe different dimensions of the same referent, as in (64a), as well as predicative adjectives, as in (64b). Disjunction works in a parallel way to conjunction, as shown in (65).

¹³ There is no mass vs. count distinction with nouns like those denoting fish, so this utterance may be interpreted as catching one fish of each species or catching an unspecified amount of fish of each species.

- (64) a. *Qoβ pɛ:nə norəq ju:γ noβ ojɛɣlə-tɛɣə ru:pək.*
 long and straight wood branch find-INF difficult
 ‘It is difficult to find a long and straight stick.’
- b. *I:ttən li:tot ke:βrəm pɛ:nə ɛpləŋ βv:l.*
 evening meal hot and tasty be.PST.3SG
 ‘The dinner was hot and tasty.’
- (65) a. *Mɛ:nt-əm pə:ɣtə antɛ βastə qantʃfə ot mɔ:səl.*
 I-ACC-1SG black or blue draw thing necessary
 ‘I need a blue or a black pencil.’
- b. *Qantʃfə ot pə:ɣtə βəs βastə βot (mɛ: əntə nom-ləm).*
 draw thing black or blue be.PST.3SG I NEG remember
 ‘The pencil was black or blue (I don’t remember).’

Adverbs that describe different dimension of an action are overtly coordinated, too:

- (66) *Ke:fkɛ ju:γ-ɐ pɛstɛɣə pɛ:nə sɯj-ləɣ qu:ŋəl.*
 cat tree-LAT quickly and sound-ABESS climb.PST.3SG
 ‘A cat quickly and quietly climbed up a tree.’

The same is true for numerals:

- (67) *Mi:fɛ kɛ:t-ɣən βəs/antəqɛ (pə) qo:ləm sv:rt tu:β.*
 Misha two-DU or/possibly three pike bring.PST.3SG
 ‘Misha brought two or three pikes.’

PP-coordination facts are considered in Section 5.4, in the context of coordination within nominal phrases.

Is it still possible to coordinate individual phrases via coordinating full clauses, as was the case in earlier varieties of Khanty? Speakers report that that such constructions sound cumbersome and redundant, and come across as old-fashioned. Moreover, full coordinated clauses/TPs in contemporary language do not have the same meaning as single clauses that contain phrasal coordination. According to speakers, (68) cannot be used interchangeably with a clause *I caught (a) pike and (a) perch*. Instead, it can be uttered to emphasize that catching (a) pike was a more significant event, that there were more pikes than perches caught, or that the speaker’s primary intention was to catch (a) pike. In other words, the second clause is interpreted as communicating something that is an addition to the main message of the utterance.

- (68) *Mɛ: sv:rt qv:ləmt-əm pɛ:nə jɛβ qv:ləmt-əm.*
 I pike catch-PST.1SG and perch catch-PST.1SG
 ‘I caught (a) pike and caught (a) perch.’

Similarly, (69) cannot be interpreted in such a way that the adjectives apply to a single entity – that is, this sentence cannot mean that a stick that is both long and straight is hard to find. Instead, it can only mean that long sticks are hard to find, and so are straight sticks; cf. (64a) above.

- (69) a. *Qoβ ju:γ noβ ru:pək ojɛɣlə-tɛɣə (pɛ:nə) norəq ju:γ noβ ru:pək*
 long wood branch difficult find-INF and straight wood branch difficult
ojɛɣlətɛɣə.
 find-INF
 ‘It is difficult to find a long stick, it is difficult to find a straight stick.’

5.3 Conjunction reduction or phrasal coordination?

As the data in the previous section showed, phrasal coordination is possible in today's Khanty, and overt coordinators in phrasal coordination are ubiquitous. The question that this fact gives rise to is what syntax phrasal coordination has. There are several options, which can be grouped according to whether they take phrasal coordination to result from coordination of two individual phrasal constituents, or a process that takes two full clauses and renders unpronounced certain parts of them, such that the result is a single clause with two phrasal constituents coordinated. The 'phrasal' approaches include those that take individual phrases to be coordinated, be it with the help of a dedicated projection, such as &P (Munn 1987; Kayne 1994; Johannessen 1996), or phrasal adjunction (Munn 1992; 1993). In turn, according to clausal-coordination approaches, coordination of two phrases may result from coordination of two full clauses followed by ellipsis of all material other than the conjunct in one of them (both the &P- and adjunction-style options are logically possible here as well) (Gleitman 1965; Wilder 1994; Schwarz 1999). Alternatively, in so-called parallel-structure approaches, the two clauses that the two conjuncts are part of undergo the process of Union, whereby the identical constituents in them (e.g., all other than the conjuncts) are fused and only spelled-out once (Goodall 1987).

The data from today's Khanty may not necessarily provide definitive support for any one of these approaches. As the data in this section shows, though, phrasal coordination is more readily attested in Khanty, while ellipsis in the context of clausal coordination is considerably more restricted.

A line of argumentation traditionally taken to tease apart phrasal coordination from clausal coordination followed by conjunction reduction is based on agreement facts. If the verb in a clause with conjoined singular subjects takes singular agreement, this is compatible with a conjunction reduction approach, as in (70a). On the contrary, if the verb carries non-singular agreement, these facts support a phrasal coordination approach, as in (70b)

- (70) a. [S ~~V.SG~~] and [S V.SG]
 b. [S and S V.PL/DU]

Both agreement patterns are attested, which suggests that both structural configurations are possible:

- (71) a. *Pu:pi, oβar kʉrəp ot, βoqu, tʃe:βər pɛ:nə kəmləɣ mɛ: jv:tam*
 bear wolf fox hare and wolverine I with-1SG
janq-ɛt.
 go-PRS.3SG.
 'The bear, wolf, fox, hare and wolverine go with me.'
- b. *Sv:rt, jεβ pa:nə v:ɣərnə pi:ryi ji:ŋk-a ne:βrəm-ət.*
 pike perch and ide back water-LAT jump-PST.3PL
 'A pike, a perch, and an ide jumped back into the water.'

In contrast with (71), other coordination constructions can only be analyzed as resulting from phrasal coordination. First, phrasal coordination in Khanty is possible with so-called collective/symmetrical predicates, such as *be alike*, *get divorced*, or *mix (together)*. Such predicates cannot be used with a semantically single argument, and, accordingly, underlying clausal coordination in their context is ill-formed (Curme 1931; Peters 1966; Lakoff & Peters 1966; Wilder 2019):

- (72) a. *John and Mary are alike.*
 b. **John is alike and Mary is/are alike.*

The availability of such constructions in today's Khanty, as illustrated in (73), attests to the possibility of phrasal coordination that does not result from ellipsis. Note that dual marking on the verbs in (73a-b) cannot be omitted.

- (73) a. [Mɛ:fɐ pɛ:nə Pe:tʲɐ] ki:t-γə mən*(-γən).
 Masha and Petja two-TRANSLAT go-PST.3DU
 'Masha and Petja got divorced.'
- b. [Mɛ:fɐ pɛ:nə Pe:tʲɐ] əj qorɛsəp*(-γən).
 Masha and Petja one alike-DU
 'Masha and Petja are alike.'
- c. Mɛ: (əj) ɛ:nəγ-ɐ [qu:t mɛ:rən pɛ:nə qu:t βoj] n'u:tɐ ruβt-əm.
 I one bowl-LAT fish caviar and fish oil together mix-PST.1SG
 'I mixed caviar and fish oil together in a bowl.'

The same argument can be made for some postposition-like lexical items, such as *between*: they also cannot take a singular argument and, accordingly, must rely on coordination of phrases that identify the two arguments of *between*. Such postpositions exist in Khanty and apply to coordinated constituents, as in (74). Note that these postposition-like constructions result from the grammaticalization of a noun with spatial semantics (*kɛ:təp* 'middle'), and, accordingly, we take them to have the corresponding syntactic structure; more on this in the next section.

- (74) Pu:γət qarə [pɐ qv:t pɛ:nə jaβən kɛ:təp-nə] βət-ət.
 village space house and river middle-LOC be-PRS.3SG
 'The yard is between the house and the river.'

In a similar vein, a single focus particle, such as *only*, can apply to two coordinated nominals in Khanty. An underlying structure with ellipsis, either with a single or iterated *only*, would also be infelicitous here:

- (75) a. *Only Masha and Katja saw a fox.*
 b. **Only Masha saw a fox and only Katja saw a fox.*
 c. **Only Masha saw a fox and Katja saw a fox.*

- (76) Top Mɛ:fɐ pɛ:nə Kɛ:tʲɐ βoqi βu:j-γən.
 Only Masha and Katja fox see-PST.3DU
 'Only Masha and Katja saw a fox.'

To recap, contemporary Khanty allows for coordination of phrasal constituents as well as clausal coordination followed by conjunction reduction. The next sections provide further evidence that the latter is more restricted, as is ellipsis in general. Iteration of overt larger structures, such as clauses or TPs, is no longer a felicitous way to coordinate smaller constituents in Khanty.

5.4 Coordination within nominal phrases

Conjunction reduction within nominal projections in Khanty is not allowed. Three contexts are considered here: (i) phrases with grammaticalized nouns acting as postpositions, (ii) possessive constructions, and (iii) nouns modified by adjectives. In all of these, ellipsis of the head noun is banned.

First, consider postposition-like phrases with spatial semantics that evolved from grammaticalized nouns such as *space*, *inner space* or *other side*.¹⁴ Given that spatial nouns in these constructions preserve their semantics, carry a locative or lative case-marker, and, with a pronominal possessor, carry a possessive suffix, we take them to be nominal phrases, as opposed to P⁰-heads. The nominal referent of the spatial specification is a modifier of the spatial noun and acts as a possessor.

- (77) a. [DP *sʰymət* [NP *tɔmpi-nə*]]
 birch_tree other_side-LOC
 ‘behind the birch tree’ (Lit.: ‘on the birch tree’s other side’)
- b. [DP *hʉβ* [NP *qu:tʰi-t-nə*]]
 he nearby_space-3SG-LOC
 ‘next to him/her’ (Lit.: ‘in her/his nearby space’)

In a coordination, both spatial nouns must be spelled out:

- (78) *Ju:γ-ət* [[DP *qɔ:t* [NP *(*qu:tʰəŋ-nə*)]] *pɛ:nə* [DP *ki:βri* [NP *(*qu:tʰəŋ-nə*)]]]
 tree-PL house nearby_space-LOC and well nearby_space-LOC
oβr-et.
 tall-PL
 ‘The trees in the vicinity of the house and in the vicinity of the well are tall. (=two distinct groups of trees)’

If one of the spatial nouns is omitted, the resulting phrase is interpreted as both nominal referents/modifiers applying to the same spatial noun. Accordingly, these contexts rely on coordination of the modifiers, as opposed to ellipsis of the spatial noun; cf. also (74) above.¹⁵

- (79) *Ju:γ-ət* [DP *qɔ:t pɛ:nə ki:βri* [NP *qu:tʰəŋ-nə*]] *oβr-et.*
 tree-PL house and well nearby_space-LOC tall-PL
 ‘The trees in the vicinity of the house and the well are tall. (=a single group of trees)’
 NOT: ‘The trees in the vicinity of the house and in the vicinity of the well are tall. (=two distinct groups of trees)’

In a similar way, ellipsis of the head noun is banned in possessive constructions. Possessors in Khanty have no overt marking. If the possessor is a noun, the possessum is not overtly marked either, with the two nouns simply juxtaposed; if the possessor is pronominal, the possessum is overtly inflected for the person of the possessor (Csepregi 2017):

- (80) a. [DP *I:βen* [NP *ruut*]]
 Ivan boat
 ‘Ivan’s boat’
- b. [DP *mɛ:* [NP *qu:t-əm*]]
 1SG house-1SG
 ‘my house’

Possessive constructions may be coordinated as in (81a). If one of the possessors is omitted, as in (81b), the only available interpretation is that of a single possessum being shared by the

¹⁴ The other type of postpositions in Khanty evolved from grammaticalized adverbs (Nikolaeva 1999: 36). They have non-spatial meaning.

¹⁵ Note, though, that these constructions are undergoing further change; younger speakers may allow for constructions like (79) to be interpreted as resulting from ellipsis of one of the spatial nouns.

two possessors. Structurally, this reading relies on coordination of the possessors. The other reading, according to which each possessor would have their own possessum, with the first of the possessa elided, is not available. Accordingly, ellipsis of the head nominal is also impossible in possessive constructions.

- (81) a. [DP *I:βen* [NP *ru:t*]] *pɐ:nə* [DP *Mɛ:fɐ* [NP *ru:t*]]
 Ivan boat and Masha boat
 ‘Ivan’s boat and Masha’s boat (=two boats)’
- b. [DP *I:βen* *pɐ:nə* *Mɛ:fɐ* [NP *ru:t*]]
 Ivan and Masha boat
 ‘Ivan and Masha’s boat (= a single boat that belongs to both)’
 NOT: ‘Ivan’s boat and Masha’s boat (=two boats)’

Finally, consider nominals that have other kinds of modifiers, such as demonstratives or adjectives, and are coordinated, as in (82). Here, too, neither head noun may be omitted, which attests to the impossibility of head noun ellipsis.

- (82) *Mi:fɐ* [DP *tɛ:m nɛ:βi* [NP *(*βe:ti*))] *mɯβə* [DP *tom pəytə* [NP *(*βe:ti*)]]
 Misha this white deer or that black deer
βɛt-təy.
 kill-PST.3SG<SG
 ‘Misha killed this black deer or that white one.’

There are, nevertheless, two contexts that allow for coordinated modifiers to apply distributively to two head nouns if only one head noun is present: (i) with a non-singular head noun and (ii) in the context of disjunction. A single head noun with dual marking may be used to indicate that each of the modifiers applies to one of the two head nouns:

- (83) a. [DP *nɯy pɐ:nə nɯy* [NP *qu:tʃi-n-nə*]].
 you and you nearby_space-2DU-LOC
 ‘next to you_i and you_j’ (felicitous if accompanied by gesturing; lit.: ‘in your_i and your_j nearby space’)
- b. *Mɛ:* [DP *I:βen pɐ:nə Mɛ:fɐ* [NP *ru:t*(-yən)*]] *kəntf-t-əm.*
 1SG Ivan and Masha boat-DU seek-PRS-1SG
 ‘I am looking for Ivan’s and Masha’s boats (=each has a boat).’
 ‘I am looking for Ivan and Masha’s boats (=two shared boats).’
- c. *Mɛ:* [DP *pəytə pɐ:nə nɛ:βi* [NP *βe:ti*(-yən)*]] *βətɐ ki:tʃəm βv:t.*
 1SG black and white deer-DU take.INF desire be.PST.3SG
 ‘I wanted to buy a black and a white deer. (=two distinct deer)’

In the context of disjunction, the nominal head carries singular but may be modified by disjoint modifiers (arguably, because there is a single referent: only one of the modifiers may apply at a time):

- (84) a. *Mɛ:fɐ βv:njtj-ent-əl* [DP *ʃari antɐ sɛ:βən* [NP *təyɣi-jɐ*]].
 Masha berry.pick-RES-PRS.3SG bucket or basket inner_space-LAT
 ‘Masha is picking berries into a bucket or into a basket.’
- b. *Mɛ:* [DP *I:βen antɐ Mɛ:fɐ* [NP *ru:t*]] *kəntf-t-əm.*
 I Ivan or Masha boat seek-PRS-1SG
 ‘I am looking for Ivan’s or Masha’s boat. (=each has one boat)’

- c. *Mv:* [DP *pəytə antv ne:βi* [NP *βe:ti*] *βətv ki:tfəm βv:t.*
 I black or white deer-DU take.INF desire be.PST.3SG
 ‘I wanted to buy a black or a white deer.’

To recap, ellipsis of head nouns within nominal phrases is banned, while coordination of modifier phrases (possessors and adjectives) is allowed. At the same time, it can be shown that the nominal constituents that undergo coordination are full DPs: this is demonstrated by the fact that coordinated nominals cannot share a modifier – instead, the modifier only applies to the first of the coordinated nominals. This is true of adjectives and nominal referents with spatial postpositions:

- (85) a. *Mv:* [DP *ənəl* [NP *sv:rt*] *pv:nə* [DP *v:γərnə*] *qv:t-əm.*
 I big pike and ide catch-PST.1SG
 ‘I caught a big pike and an ide.’
 (Not: ‘I caught a big pike and a big ide.’)
- b. *Mv:* [DP *təm* [NP *sv:rt*] *pv:nə* [DP *v:γərnə*] *qv:t-əm.*
 I this pike and ide catch-PST.1SG
 ‘I caught this pike and (an) ide.’
 (Not: ‘I caught this pike and this ide.’, ‘I caught these pike and ide.’)
- (86) a. *Mv:* *i:mp-əm mē:-nt* [DP *qv:t* [NP *i:lpi-nə*] *βəs/antəqv (pə)*
 I dog-POSS.1SG I-ACC house front_space-LOC or/conversely
 [DP *(*qv:t*) [NP *tompi-nə*] *tē:γət-ət.*
 house back_space-LOC wait-PRS.3SG
 ‘My dog is waiting for me in front of the house or behind the house.’

The examples in this section and the preceding one show that Khanty has developed true phrasal coordination by now but has adopted only very limited use of ellipsis.

5.5 Other kinds of coordination

Certain types of coordinate structures – notably, coordination of unlike constituents and coordination that involves ellipsis, such as stripping and forward and backward gapping are easier to account for under conjunction reduction approaches. However, even these contexts in Khanty do not provide strong evidence for ellipsis, which is needed for conjunction reduction.

First, let us consider evidence that comes from coordination of unlike constituents. Generally, coordination requires for both conjuncts to be semantically and/or syntactically parallel, which has come to be known as the *Law of Coordination of Likes* (LCL) (Williams 1981). Violating this rule commonly results in ungrammaticality:

- (87) a. **The scene [of the movie and that I wrote] was in Chicago* (Chomsky 1957: 36)
 b. **John drank [whisky and on Sunday].* (Wilder 2019)

At the same time, certain ‘unlikes’ can be felicitously coordinated, as in (88). Accounting for the apparent violation of LCL becomes possible if coordination is analyzed as resulting from coordination of phrases of the same type, followed by conjunction reduction (Beavers & Sag 2004; Chaves 2006; for criticism, cf. Levine 2011):

- (88) *John [[is a Republican] and [~~is~~ proud of it]].*

Coordination of unlike constituents is allowed in Khanty, as shown in (89). However, in contrast with English, because copulas are null in present tense in Khanty, examples like (89a) may not, in fact, contain elided copulas, but just phonologically null ones. Stronger evidence

comes from similar constructions with semi-copulas (89b): both must be overt, suggesting that conjunction reduction is not an option in such constructions, unlike in English.

- (89) a. *Pe:tʃv* – [[*pioneer* Ø] *pɛ:nə* [*tʃu:t-ət-nət* *jarəŋ* Ø]].
 Petja pioneer and DEM-3SG-with proud
 ‘Petja is a pioneer and proud of that.’
- b. *Pe:tʃv* – [[*pioneer-γə* *(*jəγ*)] *pɛ:nə* [*tʃu:t-ət-nət* *jarəŋ-kə* *(*jəγ*)]].
 Petja pioneer-TRNS become.PST.3SG and DEM-3SG-with proud-TRNS
 become.PST.3SG
 ‘Petja became a pioneer and became proud of that.’

Next, consider gapping, a kind of ellipsis that happens in coordinated clauses and targets the iterated verb (Ross 1968). The remaining lexical material in the clause that contains the ellipsis site is contrasted with its correlates in the preceding clause; one of the remaining constituents is typically the subject, while the other one may be an object or an adjunct (Johnson 1996; Winkler 2005). (90) illustrates forward gapping, where the ‘gapped’ verb is found in the second conjunct. Many verb-final languages also allow for backward gapping, where the ellipsis site is in the first clause.

(90) *John likes ice-cream, and Mary ~~likes~~ chocolate cake.*

In Khanty, the felicity of forward gapping varies by speaker: some speakers accept it, while others insist that the lack of an overt verb in the second conjunct is most readily interpreted as a null copula, as shown in (91a). Younger speakers accept forward gapping more readily than older ones. An overt coordinator is preferred in these contexts, but it may also be dropped. The choice of *o:s* as a coordinator in these contexts indicates juxtaposition between the two clauses and is similar to the Russian particle/complementizer *a* ‘whereas, while, as for’. Only a non-reduced sentence, as in (91b), is judged as felicitous by all speakers.

- (91) a. %*Mi:χv sv:rt qv:təl*, (*o:s*) *ʃv:ntu* - *jεβ*.
 Mikha pike catch.PST.3SG and Shonty perch
 ‘Mikha caught a pike, and Shonty [caught] a perch.’
 ‘Mikha caught a pike, and Shonty [is] a perch.’
- b. *Mi:χv sv:rt qv:təl*, *pɛ:nə ʃv:ntu jεβ qv:təl*.
 Mikha pike catch.PST.3SG and Shonty perch catch.PST.3SG
 ‘Mikha caught a pike, and Shonty caught a perch.’

Similar variation is found in forward gapping with intransitive predicates, where the remnants in the second conjunct consist of a subject and an adverb, as opposed to a subject and a direct object, as in (91). Here, the correlation between age and ellipsis ease did not hold: an older speaker offered an utterance with forward gapping, as in (92a), while a younger one preferred a paraphrase without ellipsis, as in (92b).

- (92) a. *Sɛ:fɛ kənəkkə sɛ:p u:lti ne:βrəm-əγ*, *o:s pɛ:tʃv – ru:pəkkə*.
 Sasha easily creak across jump-PST.3SG and Petja with_effort
 ‘Sasha easily jumped over the creak and Petja did so with effort.’

- b. *ʃp:ntu pɛ:stɐ sɛ:p-əli ɯ:ti ne:βrəm-əɣ, o:s pɛ:tʃɐ əntə ti:kim*
 Shonty quickly creak-DIM across jump-PST.3SG and Petja NEG that
lɛ:tək βv:ʔ.
 dexterous be.PST.3SG
 ‘Sasha quickly jumped over the creak but Petja wasn’t so dexterous.’

Backward gapping/RNR, in contrast, is overall judged as more felicitous, though an overt verb in the first conjunct is still preferred. There is also a preference for an overt conjunction, which in this case may be either *o:s* or *pɛ:nə*.

- (93) a. *?Mi:ʃɐ sv:rt, Sɛ:ʃɐ jɛβ qv:təl.*
 Misha pike, Sasha perch catch.PST.3SG
 ‘Misha caught a pike, and Sasha caught a perch.’
- b. *Mi:ʃɐ sv:rt qv:təl, (pɛ:nə/ o:s) Sɛ:ʃɐ jɛβ qv:təl.*
 Misha pike catch.PST.3SG, and Sasha perch catch.PST.3SG
 ‘Misha caught a pike, and Sasha caught a perch.’

Backward gapping is judged as more felicitous with intransitive predicates and adjuncts:

- (94) *ʃp:ntu latəqqə, o:s pɛ:tʃɐ tap sɛ:p-əli ɯ:ti ne:βrəm-əɣ.*
 Shonty handily and Petja barely creak-DIM across jump-PST.3SG
 ‘Shonty easily jumped over the creak and Petja barely did so.’

The contrast between gapping with objects and adjuncts is likely rooted in their structure: examples like (93a) rely on the ellipsis of the V⁰-head, while examples like (94) involve VP-ellipsis. The former process is marginal in Khanty, while the latter is less restricted. One of the reasons for this distinction may be the fact that ellipsis of the verb results in a string of nominals, as in (93a). Lack of overt case marking may lead to ambiguity and higher processing cost, which is why such structures are avoided.

Finally, consider stripping, or bare argument ellipsis: here, all constituents in the second clause are deleted under identity with the first one, except for a single constituent, which may be accompanied by an adverb (*perhaps, as well, too*) or negation (Ross 1969; Hankamer & Sag 1976):

- (95) a. *John left yesterday, and Mary too.*
 b. *John drank whisky last night, or maybe tequila.*
 c. *Mary likes oysters, but not John.*

Stripping is not considered fully felicitous in Khanty. Stripping with the subject as the remnant (VP ellipsis) sounds somewhat colloquial to some speakers, but hard to interpret to others. The preferred version spells out the second conjunct in full; an overt conjunction is preferred too.

- (96) a. *??Mi:ʃɐ sv:rt qv:təl, Sɛ:ʃɐ ətʃə.*
 Misha pike catch.PST.3SG, Sasha too
 ‘Misha caught a pike, Sasha too.’
- b. *Mi:ʃɐ sv:rt qv:təl, (pɛ:nə) Sɛ:ʃɐ ətʃə sv:rt qv:təl.*
 Misha pike catch.PST.3SG, and Sasha too pike catch.PST.3SG
 ‘Misha caught a pike (and) Sasha caught a pike too.’

Stripping with the subject as the remnant in the second clause is equally bad with disjunction:

- (97) **Sɤ:fɛ təm sɔ:rt qɛ:təl mʌβə Mi:fɛ.*
 Sasha this pike catch.PST.3SG or Misha
 ('Sasha or Misha caught this pike.')

Stripping with an object remnant is even more restricted: here, only two fully spelled out clauses, coordinated with an overt *pɛ:nə* are judged as fully felicitous, while various more reduced options are less so:

- (98) a. **Mi:fɛ sɔ:rt qɛ:təl pɛ:nə jɛβ ətʰə.*
 Misha pike catch.PST.3SG and perch too
 ('Misha caught a pike and a perch, too.')
- b. ?*Mi:fɛ sɔ:rt qɛ:təl pɛ:nə jɛβ ətʰə qɛ:təl.*
 Misha pike catch.PST.3SG and perch too catch.PST.3SG
 'Misha caught a pike and a perch, too.'
- c. *Mi:fɛ sɔ:rt qɛ:təl pɛ:nə lʌβ jɛβ ətʰə qɛ:təl.*
 Misha pike catch.PST.3SG and 3SG perch too catch.PST.3SG
 'Misha caught a pike and he caught a perch, too.'

In a parallel fashion, stripping with an object remnant is infelicitous in the context of disjunction.

- (99) **Mi:fɛ sɔ:rt qɛ:təl mʌβə jɛβ.*
 Misha pike catch.PST.3SG or perch
 ('Misha caught a pike or a perch.')

As was the case with gapping, stripping with adjuncts is, in contrast, considered felicitous:

- (100) *Mi:fɛ tɛ:m qatəl qu:l kəntʃʃʃɛ-ɣə mənə-l muβə qoltɔyil.*
 Misha this day fish hunt-TRANS go-PRS.3SG or tomorrow
 'Misha is going fishing today or tomorrow.'

As was the case with gapping, stripping with adjuncts may be less restricted since it relies on VP-deletion as opposed to ellipsis of the verb.

5.6 Co-compounding

Widespread use of overt conjunctions in phrasal coordination in Khanty did not obliterate the traditional use of co-compounds instead of overt coordination. Nouns (as well as adjectives, numerals, verbs) and larger phrases, such as nouns modified by adjectives, can form co-compounds in Khanty. In terms of meaning, co-compounds in most contexts can be used interchangeably with overtly coordinated constituents:

- (101) a. *Mɤ:fɛ-ɣən (*pɛ:nə) Mi:fɛ-ɣən ɛ:rəɣ-ləɣən.*
 Masha-DU and Misha-DU sing-PRS.3DU
 'Masha and Misha sing (in general, they have good singing voices).'
 'Masha and Misha are singing now.'
- b. *Mɤ:fɛ(*-ɣən) pɛ:nə Mi:fɛ(*-ɣən) ɛ:rəɣ-ləɣən.*
 Masha-DU and Misha-DU sing-PRS.3DU
 'Masha and Misha sing (in general).'
 'Masha and Misha are singing now.'

Like phrasal coordination, co-compounding can be used with collective predicates:

- (102) a. *Mv:fə-yən Pe:tʃə-yən ki:t-yə mən-yən.*
 Masha-DU Petja-DU two-TRANSLAT go-PST.3DU
 ‘Masha and Petja got divorced.’
- b. *Mv:fə-yən Pe:tʃə-yən əj qorəsəp-yən.*
 Masha-DU Petja-DU one alike-DU
 ‘Masha and Petja are alike.’

Co-compounding and overt coordination also behave similarly with respect to distributivity: both strategies can have an interpretation whereby the predicate applies to each of the conjuncts either separately or together:

- (103) a. *Mv:fə ke:fkə pə:nə v:mp-əli məs ji:ŋk-ət ji:nʹət-əy.*
 Masha cat and dog-DIM cow water-INSTR water-PST.3SG
 ‘Masha gave the cat and the little dog milk (together/separately).’
- b. *Mv:fə ke:fkə-yən v:mp-əli-yən məs ji:ŋk-ət ji:nʹət-əy.*
 Masha cat-DU dog-DIM-DU cow water-INSTR water-PST.3SG
 ‘Masha gave the cat and the little dog milk (together/separately).’

The preferred interpretation is determined pragmatically and is consistent between the two structures:

- (104) a. *ʃv:ntu pə:nə Pe:tʃa rə:pitlətə maβəl βet tʹarəs-ət məj-at.*
 Shonty and Petja work for five thousand-INSTR give-PASS.PST.3PL
 ‘Shonty and Petja were given 5000 [rubles] for their work (altogether).’
- b. *ʃv:ntu-yən Pe:tʃa-yən rə:pitlətə maβəl βet tʹarəs-ət məj-at.*
 Shonty-DU Petja-DU work for five thousand-INSTR give-PASS.PST.3PL
 ‘Shonty and Petja were given 5000 [rubles] for their work (altogether).’

There are some differences between co-compounding and overt coordination, though. First, phrasal coordination and co-compounding behave differently with respect to the two types of disjunction, which yield alternative questions or yes/no-questions, respectively (Romero & Han 2003; Han & Romero 2004; Pruitt & Roelofsen 2013). With low disjunction (alternative questions), phrasal coordination is used, while co-compounding is used with high disjunction (yes/no-questions):

- (105) a. *Mi:fə sv:rt muβə jeβ qv:təmt-əy?* (alternative questions)
 Misha pike or perch catch-PST.3SG
 ‘Did Misha catch a pike or a perch?’
- b. *Mv:fə v:ləŋ kv:pə ante fə:j ji:nʹtʃ?*
 Masha morning coffee or tea drink.PST.3SG
 ‘Did Masha drink coffee or tea in the morning?’
- (106) a. *Mi:fə sv:rt-moqsəŋ qv:təmt-əy?* (yes/no-questions)
 Misha pike-muksun catch-PST.3SG
 ‘Did Misha catch a pike or a muksun (i.e., did he catch some fish)?’
- b. *Mv:fə v:ləŋ kv:pə-fə:j ji:nʹtʃ?*
 Masha morning coffee-tea drink.PST.3SG
 ‘Did Masha drink coffee or tea in the morning (i.e., did she drink something)?’

These facts are consistent with the intuition that, more generally, co-compounds cannot be used to express disjunction of the *either... or* type, where only one of the disjuncts can be

true at a given time. This is compatible with the structural analysis of co-compounds proposed in Section 3.3: co-compounds share functional projection(s) that combines two element(s), but there is no room for a dedicated head that can express a disjunctive reading. In contrast, a conjunctive reading can be expressed with iconic means, such as the iterated dual suffix and prosodic parallelism, even in the absence of a dedicated head.

5.7 Summary

The data from contemporary Khanty presents a natural continuation of the process that started and gained speed in Khanty during the second half of the 20th century. First, overt coordination became commonplace. In the traditional varieties of Khanty, there were no overt coordinators, and conjunction reduction was not allowed. Gradually, adverbials meaning ‘then’ and ‘also’ came to be used as coordinators, while still retaining their adverbial meaning in other contexts. The change from no overt coordinators to a strong preference for overt coordinators in most contexts is by now complete. Second, coordination by now also applies to constituents smaller than clauses. We have demonstrated that many of these contexts rely on the coordination of phrasal constituents, as opposed to clausal coordination followed by conjunction reduction, based on some of the agreement facts, the availability of collective predicates, and patterns of coordination within nominal constituents. Third, we have shown that the use of ellipsis in Khanty is quite restricted (marginal within the VP and prohibited within the DP), based on data from gapping, stripping, and VP-ellipsis. Finally, co-compounds are still in use in today’s Khanty, and, for the most part, are used interchangeably with overtly coordinated constituents.

6 Accounting for the correlation of overt conjunctions and phrasal coordination

The data surveyed above outline an evolutionary path from a stage of Khanty where it had no conjunctive/disjunctive particles, no phrasal coordination other than co-compounding, and no conjunction reduction, to a stage with conjunctive/disjunctive particles, as well as phrasal coordination and conjunction reduction at the higher levels of sentence structure. This diachronic process suggests an intrinsic correlation between overt conjunctions and phrasal coordination (including coordination resulting from conjunction reduction). The question arises what motivates the attested correlation.

The language of the Khanty texts recorded in 1901, displaying no conjunction reduction in partially identical parallel clauses and phrases, involves plenty of repeated material. These texts are folklore texts, which might suggest that repetition is a rhetorical means in them; however, it is also present in Marenjanin’s autobiographical notes from 1936, which represent an informal register. The Principle of Economy is such a basic grammatical principle that repetitiveness is expected to be licensed only if it pays off elsewhere. We argue that this is indeed the case: in the language type represented by traditional Khanty, the lack of the ellipsis of repeated material in parallel structures, or, more generally, the lack of phrasal coordination facilitates processing.

In Khanty, an SOV language with un-casemarked subjects and objects, with unmarked possessors and possessa, and with both subject and object pro-drop, an NP1 NP2 V string can, in principle, be analyzed in multiple ways: (i) NP1 is subject, NP2 is object; (ii) NP1 is possessor, NP2 is subject; (iii) NP1 is possessor, NP2 is object (with the subject represented by a dropped pro). The grammatical functions of the NPs can be disambiguated on the basis of the selectional properties of the verb, the agreement morphemes on it, and the context, i.e., their disambiguation is not complete until the verb has been processed. As traditional Khanty only had asyndetic coordination, the replacement of NP1 or NP2 or both in the NP1 NP2 V sentence by a coordinated expression would have extended the string of juxtaposed un-casemarked NPs, thereby multiplying the interpretive options. The NP1 NP2 V string could also be analyzed so that (iv) both NP1 and NP2 are subjects, or (v) both NP1 and NP2 are objects. In the case of

NP1 NP2 NP3 V, the possibilities would multiply, resulting in garden-path situations, i.e., misinterpretations necessitating the reanalysis of the string.

Under these conditions, asyndetic phrasal coordination must have been blocked to ensure processing efficiency, as required by Hawkins' (2004) principle of Maximize On-line Processing:

(107) **Maximize On-line Processing**

The human processor prefers to maximize the set of properties that are assignable to each item X as X is processed, thereby increasing On-line Property to Ultimate Property ratios. The maximization difference between competing orders and structures will be a function of the number of properties that are unassigned or misassigned to X in a structure/sequence S, compared to the number in an alternative. (Hawkins 2004: 51)

Hawkins claims that the failures of assigning syntactic properties and structural relations to constituents in the course of the online parsing of a sentence can be quantized, counted and compared. The following factors need to be added up:

(108) *Unassignment factors*

- a. the number of words and phrases that undergo some temporary unassignment of properties on-line, compared with an alternative structure/sequence in which the relevant properties are immediately assignable;
- b. the number of any mother–daughter attachments that are temporarily unassignable to the words and phrases in (a);
- c. the number of any relations of combination or dependency that are temporarily unassignable to the words and phrases in (a).

(109) *Misassignment factors*

- a. the number of words and phrases that undergo some temporary misassignment of properties on-line;
- b. the number of any additional dominating nodes that must be introduced into the syntactic tree when correcting the misassignments in (a);
- c. the number of any mother–daughter attachments that are temporarily misassigned to the words and phrases in (a);
- d. the number of any relations of combination or dependency that are temporarily misassigned to the words and phrases in (a);
- e. the number of mother–daughter attachments that replace those misassigned in (c);
- f. the number of relations of combination or dependency that replace those misassigned in (d) undergo some temporary misassignment of properties on-line

In traditional Khanty, the structural relations or grammatical functions of the NPs in an NP1 NP2 V sequence, e.g. that corresponding to *Masha children watch+AGR*, cannot be assigned for sure until the listener has parsed the clause-final verb and the agreement suffix on it. If the agreement suffix cross-references a singular subject, *Masha* is subject, *children* is object. If the agreement cross-references a plural subject, *children* is the subject and *Masha* is the possessor of the subject. If the context suggests that the subject-topic is identical with that of the preceding sentence and is represented by a pro, then *Masha* is to be interpreted as the possessor of the object. In the hypothetical version of Khanty that has asyndetic phrasal coordination, the number of NPs with temporarily unassigned or misassigned properties would increase. The two NPs of the string *Masha children watch+AGR* could also represent either the subject, or the object (assuming a pro subject). If the string included three or four caseless NPs, the possibilities and the potential misalignments would multiple. The delayed assignments and the rounds of property misassignment + reassignment would impose an excessive load on working

memory. The lack of phrasal coordination reduces the chance of garden-path situations. The price to pay is some repetitiveness – which actually may not be high. Structural parallelism has been shown to facilitate both comprehension and production (see Frazier et al. (2000) and the experimental studies cited there). The advantage of parallel forms is assumed to be due to the reuse of templates, and/or shortcuts in the mapping of form and meaning. Lexical parallelisms are likely to further increase these effects.

Coordination can be unavoidable – e.g. in the case of two agents jointly performing a collective action such as fighting or shaking hands. In such cases, traditional Khanty used co-compounding, i.e. it unified noun phrases of the same grammatical function in a single extended nominal projection, marking their unity by parallel morphology.

The emergence of conjunctions has licensed the use of coordinated maximal projections, including coordinated noun phrases, because a conjunction linking two constituents indicates that the two NPs share the same grammatical function and the same mother nodes, and thereby it eliminates several unassignment and misassignment possibilities. In the sentence corresponding to *Masha and children watch+AGR*, *Masha* cannot be a possessor; and the possibility of *Masha* being the subject and *children* being the object is also excluded. The expression is parsed as the subject of the clause – unless the context determines a pro subject, in which case it is interpreted as the object.

The diachronic process observed in Khanty also has a further theoretically relevant implication. The use of conjunctions is spreading top down; they first appeared between clauses, then between VPs, between subjects and between adjuncts. The syndetic coordination of VP-internal objects and that of NP-internal constituents are even more recent developments. NP-internal ellipsis is still rejected. A similar top-down direction has also been observed in languages undergoing a change of the head–complement order. Hungarian, a descendant of SOV Proto-Ugric, for example, has developed a head-initial VP and head-initial functional projections (CP, TopP, FocP, NegP, and DP), but the NP and PP projections still preserve the Ugric (and Uralic) head-final structure. The top-down direction of word order change has been related to the Final-Over-Final Condition, a syntactic constraint disallowing structures where a head-initial phrase is contained in a head-final phrase in the same extended projection (Biberauer 2018) – but it is unclear how this principle could be involved in the evolution of syndetic coordination. In the most widely accepted theory of coordination, &P is head-initial, but it is an adjunct hence it is not part of the extended projections that constitute the spine of clause structure. Furthermore, the Khanty clause is still mostly head-final, hence even if &P was the extension of a lexical projection, the Final-Over-Final Condition would only allow it above the clause level. The direction of diachronic changes affecting several levels of syntactic structures appears to be controlled by a more general principle.

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