

Comitative Coordination in Q'anjob'al

Denis Paperno

I argue that the cross-linguistic morpho-syntactic diversity of expressions for 'and' corresponds to a diversity of semantic interpretations. My work is based on a case study of Q'anjob'al (Mayan, Guatemala) which presents several ways of expressing 'and'. Q'anjob'al employs both a comitative conjunction *yetoq* 'with', and a European-style conjunctions *k'al* and *i* 'and', freely applicable to various syntactic categories. While some coordinators like Q'anjob'al *i* and English *and* can be given a unified order-theoretic denotation (Keenan and Faltz 1985; Rooth and Partee 1983), where NP coordination is a pointwise extension of the clausal case, I propose to treat the sentential usage of *yetoq* as a metaphorical extension of its basic sum meaning from the NP case to discourse units. This analysis of *yetoq* supports the hypothesis that sentential and NP coordination can be related in different ways in different languages.

Keywords coordination, comitative, linguistic typology, Mayan, conjunction, semantic diversity

1 Overview of the paper

The paper argues for semantic diversity of conjunction patterns, based on a case study of Q'anjob'al, a Mayan language spoken in Guatemala. In particular, I argue that the sum operation, as a denotation of *and*, can be extended metaphorically to sentence denotations, producing an equivalent of JOINT schema from Mann and Thompson (1988).

Noun phrase conjunction like *John and Bill* or *every student and most professors* shows considerable cross-linguistic diversity (Haspelmath 2004). Some languages use the same word 'and' for combining noun phrases (*John and Bill*), verbs (*John sings and dances*), sentences (*John left and Bill arrived*), and more. Other languages use different conjunctions for different kinds of phrases; for example, Beng (a Mandé language from Côte d'Ivoire) uses one conjunction for nouns and adjectives and others for sentences; Malagasy makes a similar distinction between its conjunctions.

Some languages have been reported not to allow conjoining noun phrases at all (Stassen 2000). To express the meaning of *John and Bill are talking*, one has to phrase the idea differently: *John is talking with Bill*, so that 'with' is used to paraphrase 'and'. There is also an option to use an adposition meaning 'with' not just to paraphrase 'and' but in the function of a conjunction; is such a language,

the sentence *John and Bill are talking* is expressed literally as *John with Bill are talking*, containing a plural-referring phrase *John with Bill*. This option can be called comitative coordination, and is in the focus of this paper. Still other languages use adposition doubling to form coordinated noun phrases, glossed as *with John with Bill are talking*.

The syntactic diversity of conjunction briefly outlined above poses a challenge to the semantic theory of conjunction. Are all the diverse conjunction patterns compositionally interpreted in the same way? Or is syntactic diversity reflected in semantic diversity? In cases when the same conjunction can conjoin sentences and noun phrases, how is it interpreted in these two usages? Is the semantic relation between sentential and nominal conjunction the same in all languages? To put all these questions more generally, how much semantic unity is behind the morphosyntactic diversity?

Q'anjob'al presents a suitable testing ground for these questions. It employs both a comitative conjunction *yetoq* 'with', and a European-style conjunctions *k'al* and *i* 'and', freely applicable to various syntactic categories. I argue that *and*- and *with*-coordination patterns in Q'anjob'al have different meanings: comitative conjunction in Q'anjob'al is inherently non-Boolean in all of its uses, while *i* 'and' has the Boolean denotation of the English *and*. The arguments for NP conjunction follow Louise McNally's arguments on Russian (McNally 1993), supporting crosslinguistic validity of comitative conjunction phenomenon.

This allows us to establish tentative answers to the semantic questions raised by the typology of conjunction. I provide a core semantics for comitative constructions which extends naturally to comitative coordination as sum formation. I show, contra Dalrymple et al.'s critique of McNally's analysis of comitative coordination in Russian, that, though subtle, there is a distinction between comitative coordination and ordinary boolean coordination. A major piece of new evidence comes from extensions of comitative coordination to the predicative and clausal case, beyond coordination of NPs. I show that the basic system of double coordination in Q'anjob'al and Russian is very much the same, despite very different typological profiles of the two languages. This heightens the typological interest of comitative coordination as a source of coordination independent of the purely boolean one.

Q'anjob'al comitative coordination generally follows a pattern known from other languages, but is unique in one theoretically important respect. In many languages, *with*-coordination can conjoin only noun phrases but not sentences. In Q'anjob'al, however, *yetoq* 'with' can combine sentences and other kinds of phrases.

But in this function, comitative coordination is still different from *i*. *Yetoq* is not acceptable in most contexts where *i* 'and' can be used. I derive semantic restrictions on sentential *yetoq* from its basic meaning of sum formation, and argue that the semantic relation between clausal and nominal *with*-coordination is special, distinct from the relation between Boolean conjunction of clauses and NPs.

Examples in this paper come from the collection of over 9,000 Q'anjob'al words and sentences compiled by the Q'anjob'al project members (Bervoets, Foster, Fowlie, Kalin, Kuang, McPherson, Munro, O'Flynn, Paperno, Tseng, Ward, and Wemhaner 2011). With Q'anjob'al examples, I give references to these notes identified by name

of the contributor and date, followed by example number(s).

The paper starts with a brief typological characterization of Q'anjob'al, and a discussion of the usage of the comitative marker *-etoq*, section 2. I analyze Q'anjob'al comitative coordination patterns in section 4. I argue that in Q'anjob'al, as in Russian, comitative coordination contrasts with ordinary coordination, denoting group/sum formation on type e but extending to other types in different ways.

2 Background information

2.1 *Some Features of Q'anjob'al Morphosyntax*

Q'anjob'al is a predominantly head-initial language — verb-initial, with prepositions rather than postpositions, and possessors following the head nouns. The basic word order in a clause is Aux-V-S-DO-Obl, but the surface order varies due to various fronting constructions, including WH-movement, focalization, and topicalization. Topicalized NPs (but not focalized ones or interrogatives) are doubled with a resumptive element in situ. A special verb suffix (“agent focus marker”) marks transitive verbs whose subject has been fronted, but the suffix has other uses as well.

Q'anjob'al has rich person agreement: predicates agree with subjects and direct objects, prepositions and possessed nouns with their dependent NPs. There are two series of agreement markers, traditionally called “A” and “B”. Series “B” expresses agreement with intransitive subjects and direct objects (“absolutive”); series “A” is “ergative”, expressing agreement with transitive subjects, possessors, and dependent NPs in prepositional phrases.

NPs usually have classifiers on the left edge, e.g. *naq* ‘male human’, *te'* ‘plant or plant-derived object’, *no'* ‘animal or animal-derived object’. Classifiers also form a noun phrase on their own, functioning as 3rd person pronouns.

The reflexive pronoun is *b'a*. It can occupy normal nominal positions, but in the most common direct object function, it appears immediately after the verb, similarly to incorporated objects. This construction has the surface order VOS, in exception to the general VSO pattern of Q'anjob'al.

2.2 *Coordinating conjunctions of Q'anjob'al*

There are several coordinating conjunctions in Q'anjob'al. The most common translations of *and* and *or*, at least in the dialect spoken by our consultant, are Spanish borrowings, *i* and *o*; as well as *ni*, which is found in negative contexts. There are also several indigenous conjunctions, including *palta* ‘but’, *k'al* ‘and’, and *apax* (contrastive) ‘and’. Literature also reports some conjunctions that our consultant did not confirm: *kax* ‘and’ (Baquix Barreno, Juárez Mateo, Rodríguez Mejía, and Pérez 2005:208), *haxpax* ‘and’ and *mi* ‘or’¹ (Montejo and de Nicolás Pedro 1996:97). *Ik'al*, a combination of native and Spanish words for ‘and’, is also used as a conjunction.

¹Ms. Francisco widely uses *mi* as a modal marker of uncertainty, including in the contexts of the disjunction *o*, but does not employ *mi* as a disjunction proper.

There seem to be subtle differences between *i*, *ik'al*, and *k'al*, on which I can say nothing definite.

In addition to these conjunctions, the comitative preposition *-etoq* can serve as a coordination marker. Comitative constructions in Q'anjob'al use the preposition *yetoq*. Many prepositions in Q'anjob'al agree with their sister noun phrases, so morphologically *yetoq* consists of the stem *-etoq* and a personal prefix; I call it by the most frequent form (3rd person), marked *y-*, but *yetoq* does have a full personal paradigm:

	Sg	Pl
(1) 1st	wetoq	jetoq
2nd	hetoq	he yetoq
3rd	yetoq	

Here is one example of such comitative coordination in Q'anjob'al:²

- (2) Xh-b'ei ix Malin y-etoq naq Xhun.
 INC-walk 3WOMAN Malin A3-with 3MAN Xhun
 'Mary and John walk' (Mel 02-07:3)

NPs coordinated with *yetoq* are found in all major syntactic positions – as subjects ((2)), objects, possessors ((3)) etc.

- (3) Toq no' tz'ikin ix Niki y-etoq naq Michael.
 go 3ANIMAL bird 3WOMAN Niki A3-with 3MAN Michael
 Niki and Michael's bird should go. (Mel 03-07:3)

While comitative constructions are a frequent source of nominal coordination

²Q'anjob'al orthography is transparently phonemic, with letters generally corresponding to the familiar IPA values. Still, I need to note several less obvious orthographic conventions. ' marks glottalized plosives (*b'*, *t'*, *tz'*, *tx'*, *ch'*, *k'*, *q'*) or stands for a glottal stop; to avoid redundancy, word-initial glottal stops are not marked. *h* marks beginnings of words that start with a vowel when in a phrasal context; a glottal stop is epenthesized in such words phrase-initially. *ch* and *xh* are an alveopalatal affricate and fricative, respectively. *tx* and *x* stand for a retroflex affricate and fricative, respectively. *tz* is an alveodental affricate. *q* and *q'* are voiceless uvular fricative and glottalized stop, respectively. *j* stands for a velar fricative and *y* for a palatal glide.

Glosses for grammatical morphemes include: KAL (Q'anjob'al original word for 'and', as opposed to borrowed *i*), INC (incompletive aspect), POT (potential aspect), COMP (completive aspect), PROG (progressive aspect), 3WOMAN (3rd person classifier/pronoun for female humans), 3MAN (3rd person classifier/pronoun for male humans), 3OLD (3rd person classifier/pronoun for old/respected men), 3ROCK (3rd person classifier/pronoun for stonelike objects), 3ANIMAL (3rd person classifier/pronoun for animals), 1s (1st person singular pronoun), A3 (3rd person ergative prefix), A1s (1st person singular ergative pronoun), OWN (contrastive/reflexive possessive marker), A2p (2nd person plural ergative pronoun), B2s (2nd person singular absolutive clitic), B1p (1st person plural absolutive clitic), 2s (independent 2nd person singular pronoun), 1s (independent 1st person singular pronoun), A2s (2nd person singular ergative pronoun), A1p (1st person plural ergative pronoun), A2s (2nd person singular ergative pronoun), HUMAN (numeral suffix for counting humans), NMLZ (nominalizing suffix), PL (plural marker or pronoun, or plural agreement), SG (singular agreement), F (feminine agreement), IRR (irrealis marker), AF (agent focus suffix), LOC (locative morpheme), DIR (directional morpheme), ST (status marker), PASS (passive voice), REFL (reflexive anaphor), NOM (nominative case), ACC (accusative case), INSTR (instrumental case), GEN (genitive case).

(Mithun 1988:339), this pattern rarely generalizes to other categories³. E.g. in Russian, *i* ‘and’, like its English counterpart, can conjoin a variety of categories; in contrast, *s* ‘with’ is generally restricted to conjoining noun phrases. For example, *i* but not *s* coordinate verb phrases, while both can coordinate noun phrases:

- (4) a. Petja plačet i / *s smeëtsja.
 Peter.NOM cries and / with laughs
 Peter cries and laughs.
 b. Petja i Maša – idioty.
 Peter.NOM and Mary.NOM idiots
 Peter and Mary are idiots.

But in Q’anjob’al *with*-coordination does generalize to other kinds of constituents. This usage is restricted and peripheral, but crucial for the theoretical questions raised in this paper. Uses of *yetoq* with adjectives and sentences will be analyzed in detail below.

In what follows, I will call constructions with *i*, *ik’al*, and *k’al* *ordinary coordination*, or *and*-coordination. In contrast, coordinated structures using *yetoq* are called *comitative coordination*, or *with*-coordination. Although these markers are presumably of different syntactic categories (*yetoq* is at least originally a preposition), I will call them uniformly *coordinators* (Haspelmath 2004).

2.3 *Yetoq*: Range of uses

This paper is dedicated to the use of *yetoq* as a coordinator, but it also lives a full life as a preposition. *Yetoq* allows various oblique uses, most commonly instrumental and comitative:

- (5) a. X-chuk naq w-ichin y-etoq q’oqoch.
 COMP-poke 3MAN A1S-back A3-with stick
 ‘He poked my back with a walking stick.’ (instrument)
 (Kathleen 05-25:1)
 b. x-in jay-k’ b’ay q’in y-etoq jun boteya tekila
 COMP-hin come-LOC to party A3-with one bottle tequila
 ‘I came to the party with a bottle of tequila.’ (comitative)
 (Denis 04-06:49)

But *yetoq* also marks symmetric co-arguments of certain predicates, such as the argument introduced by reciprocal predicates like ‘same’ and ‘different’:

- (6) a. lajan q-yun q-jay-k’ ix Ewul yetoq naq Xhun
 same POT-way POT-come-LOC 3WOMAN Ewul A3-with 3MAN Xhun
 yek’al.
 tomorrow
 ‘Ewul and Xhun will come tomorrow at the same time’ (Denis 05-31:22)

³Such generalization is attested, cf. Cook (1984:97), and is observed, with some limitations, in Q’anjob’al. For discussion, see sections 3.4 and 4.4 below.

- b. tx'ojtx'oj x-yun lak-on ix Malin ch'en ch'en yetoq naq
 different COMP-way lift-AF 3WOMAN Malin 3ROCK rock A3-with 3MAN
 Xhun.
 Xhun
 'Malin and Xhun lifted a rock at different times.' (Denis 05-31:47)

Not that while English translations in (6) feature a coordinate structure, the Q'anjob'al uses a comitative adjunct. In this last usage, English *as* is the closest translation equivalent to *yetoq* (*Ewul will come at the same time as Xhun*).

3 *Yetoq* as a coordinator

3.1 *The problem of constituency*

How do we know that cases of coordination we talk about aren't only apparent? Perhaps there is no coordinate structure involved but rather a collocation of a subject NP and a comitative adjunct, which do not form a constituent but merely occur next to each other thanks to the verb-initial syntax of Q'anjob'al. Indeed, the core examples are often ambiguous between a comitative proper and a coordination construction, e.g. (2) could be construed alternatively as 'Malin and Xhun walk' and 'Malin walks with Xhun'. The two parses are even near synonymous. But they are not fully synonymous, as has been noticed: for *Malin walks with Xhun* to be true, the two need to walk together; for *Malin and Xhun walk*, there is no 'togetherness' requirement, they could walk at different locations and the sentence is still true. The separation test shows that the two interpretations correspond to different structures. In Q'anjob'al, an NP immediately followed by a comitative PP can receive the meaning of English *and*, but a comitative PP separated from another NP can only be interpreted as an adjunct, similar to English *with* phrases. The change in interpretation that follows changes in linear order suggests a difference in constituency:

- (7) a. q-jay-k' ix Ewul y-etoq naq Xhun yek'al
 POT-come-LOC 3WOMAN Ewul A3-with 3MAN Xhun tomorrow
 'Ewul and Xhun will come tomorrow.' (Denis 5-31:21)
- b. q-jay-k' ix Ewul yek'al y-etoq naq Xhun
 POT-come-LOC 3WOMAN Ewul tomorrow A3-with 3MAN Xhun
 'Ewul will come tomorrow with Xhun.' (Denis 5-31:20)

The difference between the two sentences is the same as between their English translation. In (7-b), there is a single event in which Ewul and Xhun came together; *with*-phrase is a comitative adjunct (and so is the prepositional phrase *yetoq naq Xhun*). In (7-a), where *yetoq* (and *and*) are immediately framed by NPs on both sides, the coordinate interpretation is possible, so that unity of event is not required; Ewul and Xhun don't necessarily come together.

3.2 *Loss of agreement in comitative coordination*

There are further properties of *yetoq* used as coordinator that move it away from the original prepositional status. One of these is *optional* agreement. Prepositions that have person prefixes always agree with their objects, and *-etoq*, in its preposition function, is no exception. Yet the agreement pattern can be disrupted in the coordination construction: while *-etoq* can agree with the second conjunct ((8-b)), another option is for *-etoq* to bear the default 3rd person agreement prefix when the conjunct after it is a 1st or 2nd person (locutor) pronoun:

- (8) a. naq Xhun y-etoq ayach / hach ch-in he kaq-a'
 3MAN Xhun A3-with 2s / B2s INC-1s A2P hate-ST
 'Xhun and you (sg) hate me.' (Denis 05-24:58)
- b. ayin hetoq x-j-il jun no' lab'aj
 1s A2Ptoq COMP-A1P-see one 3ANIMAL snake
 'I and you(sg) saw a snake' (Denis 05-10:57)

(Ms. Francisco hesitated between the independent and the clitic forms of the pronoun after *yetoq*.)

3.3 *Binding facts*

A coordinated noun phrase with *yetoq* can antecede a reflexive pronoun *b'a* or a reflexive possessor. This is evidence that a *with*-conjoined phrase and not just the first NO is the subject, so the NP and the comitative PP form a syntactic unit, as opposed to a collocation of syntactically unrelated phrases. There is no overt dedicated reflexive possessor morpheme, but there is, one could say, a phonologically null one. Whenever a noun marked for 3rd person possessor (*y-* or emphatic 3rd person possessor *s-*), or an unmarked relational (inherently possessed) noun (e.g. *mam* 'father') occurs without an overt possessor DP, the possessor is interpreted as coreferent with the subject:

- (9) a. ch-'ek' tzunon-oq naq Yakin y-intaq (s-)y-istil
 INC-LOC follow-IRR 3MAN Yakin A3-after (OWN-)A3-wife
 Yakin_i follows his_{i,*j} wife. (Denis 05-17:8)
- b. x-'ok wayich naq Xhun y-in (s)-mam
 COMP-LOC sleep 3MAN Xhun A3-in (OWN-)-father
 Xhun_i had a dream about his_{i,*j} father. (Denis 05-17:32)

With-coordinated DPs can antecede such reflexive possessors, note the contrast with adjunct comitative:

- (10) a. yan low-on ix Malin y-etoq naq Xhun s-tx'ix
 PROG eat-AF 3WOMAN Malin A3-with 3MAN Xhun OWN-tamale
 '[Malin and Xhun]_i are eating their_{i,*j} tamales' (Denis 05-31:36)
- b. ch-lo' ix Malin s-tx'ix y-etoq naq Xhun
 INC-eat 3WOMAN Malin OWN-tamale A3-with 3MAN Xhun
 Malin_i is eating her_{i,*j} tamales with Xhun. (Denis 05-31:41)

There is no such contrast with other coordinators in this respect, compare:

- (11) a. x-y-il b'a ix Malin y-etoq/ i/ k'al/ i-k'al naq
 COMP-A3-see REFL 3WOMAN Malin A3-with/ and/ KAL/ and-KAL 3MAN
 Xhun yul ch'en nen
 Xhun A3-on 3ROCK mirror
 Malin and Xhun saw themselves in the mirror (Denis 05-31:33)

This is another argument for treating *yetoq*-coordinated NPs as a syntactic constituent.

3.4 Clausal coordination

Finally, one sometimes finds *yetoq* as a sentential coordinator. In these cases *yetoq* can not be regarded as a comitative adjunct marker. This usage is relatively peripheral; other sentential coordinators (e.g. *palta* 'but', *apax* (contrastive) 'and') are much more common.

But in this function, comitative coordination is still different from *i*. *Yetoq* seems to be more restricted than *i*; *yetoq* is only acceptable between clauses which contribute to a common topic. This usage of *yetoq* can be roughly paraphrased in English as *and in addition to that*:

- (12) a. x-kankan naq Xhun b'ay na ^{OK}i / *y-etoq x-toq y-istil
 COMP-stay 3MAN Xhun to house ^{OK}and / *A3-with COMP-go A3-wife
 naq b'ay txomb'al
 3MAN to market
 'Xhun stayed home and (^{OK}in addition to that) his wife went to the market'
 (Denis 4-21:7,9)
- b. x-k'ayil naq Xhun masanil s-tumin i / y-etoq
 COMP-lose 3MAN Xhun all OWN-money and / A3-with
 x-b'eq-lay-kan naq y-uj y-istil
 COMP-leave-PASS-LOC 3MAN A3-by A3-wife
 (discussing how Xhun is unhappy)
 'Xhun lost all his money and (^{OK}in addition to that) his wife left him.'
 (Denis 4-21:4,5)
- c. merwal ch-kus naq Xhun y-uj tol x-k'ayil naq masanil
 very INC-sad 3MAN Xhun A3-by that COMP-lose 3MAN all
 s-tumin y-etoq x-kam masanil yawb'ejal naq
 OWN-money A3-with COMP-die all crops 3MAN
 'Xhun is sad because he lost all his money and (^{OK}in addition to that) his crops died.'
- d. k'am tzetalyetal ch-w-aq'a y-etoq k'am maktxel b'ay ch-w-aq'a
 no what INC-A1S-give A3-with no who to INC-A1S-give
 'I have nothing to give and (^{OK}in addition to that) nobody to give things to'
 (Denis 04-14:1,9)

In (12-b,c), the common topic is Xhun's lack of luck; in (12-b), Xhun is also the grammatical subject. In (12-c), Xhun is a possessor in one clause and a grammatical subject in the other. In clausal coordination, *yetoq* can be translated roughly as 'and also' or 'and in addition to that'. As (12) illustrates, two clauses conjoined with *yetoq* must *share a common topic*, and cumulatively contribute to that topic; no such requirement exists for *i* 'and'.

For (12-b), the common theme is 'John is out of luck'. The two clauses together elaborate on the topic.

This usage of *yetoq*, with associated pragmatics, extends to coordinating phrases smaller than clauses, i.e. to predicates, in a natural way:

- (13) *mextol yetoq anlom naq Xhun*
 teacher A3-with doctor 3_{MAN} Xhun
 'Xhun is a doctor and (in addition to that) a teacher.' (Denis 04-06:30)

A similar expansion of comitative coordination was found in Sarcee (Cook 1984:97), where *mih(ìlà)* (the comitative postposition *ihìlà* affixed to 3sg "specified" pronoun *mi-*) can function as a clause coordinator.

Note that in Q'anjob'al we observe the generalization of the comitative pattern in a purer form, which does not involve a pronoun. One questions whether *mih* indeed functions as a conjunction or rather a sentence modifier 'with that', compare Russian *vmeste s tem*:

- (14) *Vmeste s tem v nej projavljajutsja drugie čerty.*
 together with that in it appear other traits
 'At the same time, it shows other traits as well.' (Grigory Revzin, Neoklassicism v russoj arxitekture načala XX veka. Arxiv arxitektury: vyp. II. Obščestvo istorikov arxitektury pri Sojuze arxitektorov Rossii. Moscow, 1992. p. 110)

Russian, unlike Q'anjob'al, does not extend *with*-coordination beyond nominals, cf. (4)

4 Analysis

In this section I adapt McNally's proposal about Russian comitative coordination to Q'anjob'al (McNally 1993). While certain aspects of McNally's analysis have been challenged (Dalrymple, Hyrapetian, and King 1998), her core arguments for a semantic difference between *and*- and *with*-coordination remain convincing. I accept that idea, but make a slight digression from McNally's original analysis by taking the denotation of comitative coordination to be sum formation rather than group formation (the difference between sums and groups will not be relevant for our discussion). I follow Keenan and Faltz (1985) in attributing a boolean denotation to ordinary coordination. I cite data in support of distinct denotations of *and*- and *with*-coordination, and show how the contrasts follow from the postulated denotational difference. Supporting data from Q'anjob'al are mostly parallel to

McNally's Russian data. Then I move on to establish the semantic link between the two uses of comitative marker, as a preposition and as a coordinator. Finally, I analyze uses of comitative coordination beyond noun phrase coordination. I show that in these uses *with*-coordination still contrasts with *and*-coordination. I then derive the meanings of *yetoq* as a clausal and adjectival coordinator from its basic sum denotation, explaining the contrasts with *and*-coordination.

4.1 Sums and comitatives: the semantic connection

Sum/group formation as a denotation for comitative coordination makes perfect sense as a development of the comitative marker proper; comitative coordination is a natural semantic generalization from the core comitative use. In recent typological research, the function of a comitative marker is defined as adding a co-participant to a predicate so that "the same type of participation is ascribed to each member of the participant set" (Arkhipov 2009). One way to formalize "the same type of participation" is by forming a plurality of the comitative participant and the subject, and apply the predicate to that plurality:

- (15) a. dance with John' = $\lambda x.\text{dance}(j' \oplus x)$
 b. with John' = $\lambda P\lambda x.P(j' \oplus x)$

The denotation of comitative coordinate NP may be taken to be a plural Montagovian individual:

- (16) a. Mary with John' = $\lambda P.P(j' \oplus m')$
 b. with John' = $\lambda x\lambda P.P(j' \oplus x)$

Given this formalization of comitative adjunct construction (*John sings with Mary*), it is expected to be synonymous with the coordinate construction (*John and Mary sing*). But we saw these are not fully equivalent. The difference can be captured by the optional distributivity operator, applicable to coordinate NPs but not to comitative adjunct structures which do not involve a plural-denoting phrase in their semantic composition, hence no phrase with which the distributivity operator can combine.

We see that the meaning of the comitative PP in both cases is quite similar, differing only in the order of arguments taken (compare (16-b) vs. (15-b)). On the other hand, (16-a) is precisely the Montagovian lift of the plural individual $j' \oplus m'$. Sum operator and comitativity operator are just two easy semantic steps apart, the steps being type lift and argument permutation; see also Ionin and Matushansky (2003) for an attempt at *syntactic* unification of different comitative constructions.

Note though that comitative adjuncts always contribute a collective readings while coordination, including comitative can be interpreted distributively. This difference in meaning can be attributed to the difference in structural position. In particular, one can argue that comitative adjuncts always scope below aspect operators, which can be thought of a mediators of distributivity (see last subsection).

4.2 *Yetoq* in NP conjunction4.2.1 *Distributivity*

In most contexts, our consultant judged *yetoq* to be the most natural way to conjoin two referential NPs, more neutral than other coordinators with similar meanings (*i*, *k'al*, *ik'al*). In some contexts where a coordinate phrase crucially involves forming a group rather than simple boolean combination of generalized quantifiers, *yetoq* is preferable over *i*, and *k'al* is degraded.⁴ The following example, roughly translated with *both Xhun and Yakin*, in fact literally means ‘the two of Xhun and Yakin’; with three conjuncts, one would use *oxwanil* ‘three’ instead of *kawanil* ‘two’, etc. The expression combines the group-denoting coordinate DP *heb' naq Xhun y-etoq naq Yakin* with a nominalized numeral *kawanil*:

- (17) ka-wan-il heb' naq Xhun ?i / ^{OK}y-etoq naq Yakin mextol heb'
 two-HUMAN-NMLZ PL 3_{MAN} Xhun ?i / ^{OK}A3-with 3_{MAN} Yakin teacher PL
 naq
 3_{MAN}
 ‘Both Xhun and Yakin are teachers’. (Denis 04-06:33)

Reciprocals are a clear case of plural predicates, and there *yetoq* is a preferred conjunction, *i* also being acceptable:

- (18) ch-y-ochej b'a naq Xhun y-etoq / i / *k'al / *i-k'al ix
 INC-A3-like REFL 3_{MAN} Xhun A3-with / and / *KAL / *and-KAL 3_{WOMAN}
 Malin.
 Malin
 ‘Xhun and Malin like each other’. (Denis 5-10:41)

In Q'anjob'al as in Russian, while cases of neutralization are common, in some contexts comitative coordination (*yetoq*) is associated with a collective reading, where the ordinary coordination (*i*) would be ambiguous between the collective and the distributive interpretation:

- (19) a. x-a sa jun chej b'ay naq Xhun y-etoq naq Yakin.
 COMP-A2s give one horse to 3_{MAN} Xhun A3-with 3_{MAN} Yakin
 ‘You gave a horse to Xhun and Yakin.’ (they share a horse)
 (Denis 08-01)
- b. x-a sa jun chej b'ay naq Xhun i / k'al naq Yakin.
 COMP-A2s give one horse to 3_{MAN} Xhun and / KAL 3_{MAN} Yakin
 ‘You gave a horse to Xhun and Yakin.’ (possibly different horses)
 (Denis 08-01)

If a predicate is neither distributive nor plural and can combine with both, this is indeed a pattern we expect. The simplest semantic computations give the collec-

⁴We are left to wonder why the kinds of type shifting we discussed above are not available in these contexts. A distant analogy that comes to mind is the emphatic *both... and* which does not allow a plurality reading even though generally synonymous to simple *and*, or pure distributive quantifiers.

tive reading for comitative coordination and the distributive reading for ordinary coordination:

- (20) a. $\lambda z. \exists h \in \text{horse}' : \text{gave}(\text{you}', h, z)(x' \oplus y') =$
 $\exists h \in \text{horse}' : \text{gave}(\text{you}', h, x' \oplus y')$
 b. $(I_{x'} \wedge I_{y'}) \lambda z. \exists h \in \text{horse}' : \text{gave}(\text{you}', h, z) =$
 $I_{x'}(\lambda z. \exists h \in \text{horse}' : \text{gave}(\text{you}', h, z)) \wedge$
 $\wedge I_{y'}(\lambda z. \exists h \in \text{horse}' : \text{gave}(\text{you}', h, z)) =$
 $\exists h \in \text{horse}' : \text{gave}(\text{you}', h, x') \wedge \exists h \in \text{horse}' : \text{gave}(\text{you}', h, y')$

If one assumes that the reading obtained via the simplest semantic computation, using as few type shifting operators as possible, is also the most natural, this predicts the distributive reading to be more natural with *and*-coordination and the collective reading more natural with comitative coordination.

The collective reading of ordinary conjoined NPs, if it is indeed a separate reading, can be obtained through Winter's operator_c (Winter 2001:52ff.):

- (21) $c = \lambda Q \lambda P \exists x \in \min(Q). P(x)$

Here, $x \in \min(Q)$ means x is a minimal set that Q is true of, i.e. $Q(x) = 1$ and $\forall x' \subset x, Q(x') = 0$. The generalized quantifier $\lambda P.P(m') \wedge P(j')$ (*John and Mary*) is true of all sets that include John and Mary. There is just one minimal set satisfying $\lambda P.P(m') \wedge P(j')$, and that set is $\{m', j'\}$. For $\lambda P.P(m') \wedge (P(b') \vee P(j'))$ (*Mary and Bill or John*), there are two minimal sets: $\{m', j'\}$ and $\{m', b'\}$. In these examples minimal sets correspond well to the possible plural referents of coordinated noun phrases. Our assumptions also predict (correctly) that the distributive reading for comitative coordination is not available here: the operator *dist* that produces these readings is a type shifter employed with distributive predicates (type *ettt*), while in this simple case we deal with ordinary one-place predicates (type *et*).

This concludes our first pieces of evidence, albeit suggestive, that in Q'anjob'al as in Russian *yetoq* differs from other coordinators semantically and not just syntactically.

4.2.2 Distributive Markers

Perhaps the most convincing piece of evidence in McNally's article comes from the interaction of distributive marker with complex coordinate NPs. The first piece of evidence is examples with coordination of NPs that are in turn coordinate. For the lack of a better label I will call these 'counting bottles' examples. Thus, compare (McNally 1993:376):

- (22) a. Anna s Petej i Maša s Borej prinesli
 Anna.NOM with Peter.INSTR and Masha.NOM with Boris.INSTR brought
 po butylke vina k užinu.
 PO bottle wine.GEN to dinner
 'Anna and Peter and Masha and Boris each brought a bottle of wine
 to dinner'
 (natural reading: a situation in which two bottles total were brought)

- b. Anna i Petja i Maša i Borja prinesli po
 Anna.NOM and Peter.NOM and Masha.NOM and Boris.NOM brought PO
 butylke vina k užinu.
 bottle wine.GEN to dinner
 ‘Anna and Peter and Masha and Boris each brought a bottle of wine
 to dinner’
 (natural reading: a situation in which four bottles total were brought)

This example constitutes the most substantial argument by McNally for treating the comitative coordination as group formation, as opposed to sums that she attributed to ordinary coordination.⁵

In these kinds of examples, one finds the exact same semantic contrast in Q’anjob’al as in Russian:

- (23) a. ix Ewul y-etoq naq Xhun i ix Malin y-etoq naq
 3WOMAN Ewul A3-with 3MAN Xhun and 3WOMAN Malin A3-with 3MAN
 Yakin x-y-i-teq heb’ jujun sab’ejal.
 Yakin COMP-A3-bring-DIR PL one.each present
 ‘Ewul and Xhun and Malin and Yakin brought a present each’
 (2 presents total) (Denis 5-31:50)
- b. ix Ewul i naq Xhun i ix Malin i naq Yakin
 3WOMAN Ewul i 3MAN Xhun and 3WOMAN Malin i 3MAN Yakin
 x-y-i-teq heb’ jujun sab’ejal.
 COMP-A3-bring-DIR PL one.each present
 ‘Ewul and Xhun and Malin and Yakin brought a present each’
 (4 presents total) (Denis 5-31:49)

One may think that we deal here with simply a structural contrast, rather than semantic. Perhaps in (23-b) the coordinate structure is ‘flat’ rather than recursive: not a conjunction of two coordinate NPs, with four structurally equal conjuncts and *i* repeated three times. In contrast, in (23-a) the structural grouping can’t be flat, due to the different coordinators used. The same logic could be used to undermine McNally’s original Russian argument. Q’anjob’al, I argue, provides means to test and reject the idea of a ‘flat’ structure. If *yetoq* is replaced with *k’al*, the ‘flat’ structure is still excluded (coordinators are different). Yet the truth conditions remain the same

⁵Dalrymple et al. (1998) can not explain the contrast in such examples. They refrain from argument but suggest that the contrast may be prominence-driven (on their account, *with*- and *and*- coordinations are denotationally equivalent but sums named using comitative coordination are more prominent than sums named using *and*-coordination). This argument, however, does not go through because distributive constructions with the preposition *po* are not sensitive to prominence of discourse referents. For example,

- (i) Mal’čiki polučili po medali
 boys got PO medal
 ‘The boys go a medal each’

is false in the situation of two soccer teams of boys winning a medal for each team. For (i) to be true, each boy has to get a medal, no matter how prominent the teams are in the context.

as in (23-b):

- (24) x-y-i-teq ix Ewul k'al naq Xhun i ix Malin k'al
 COMP-A3-bring-DIR 3WOMAN Ewul KAL 3MAN Xhun and 3WOMAN Malin KAL
 naq Yakin jujun sab'ejal
 3MAN Yakin one.each present
 'Ewul and Xhun and Malin and Yakin brought a present each'
 (4 presents total) (Denis 06-08:1)

The interpretational properties of 'counting bottles' examples follow immediately from the denotations of *and*- and *with*-coordinators. Distributive numerals in Q'anjob'al and *po* in Russian require a quantified or plural term in the sentence, and force a distributive reading of that quantifier or plurality. Quantifiers may be thought of as one of the denotations of plural noun phrases, so the role of *po* in Russian and *jujun* in Q'anjob'al is to force a quantifier reading ('distributive') as opposed to a plurality reading ('collective'). This includes shifting the type of a predicate: a predicate over entities becomes a predicate over quantifiers.

So the predicate *xyiteq ... jujun sab'ejal* 'bring a present each' denotes

- (25) $\lambda Q.Q(\lambda x.\exists p.\text{present}(p) \wedge \text{brought}(x,p))$

(defined just for distributive generalized quantifiers Q). Note that distributive contexts, which require a quantifier, contrast with collective contexts which require a plural argument but exclude distributive quantifiers (**Each man gathered*). The denotations of the long conjoined NPs are both distributive quantifiers:

- (26) a. $I_E \wedge I_X \wedge I_M \wedge I_Y$ (*and*-coordination)
 b. $I_{E \oplus I} \wedge I_{M \oplus Y}$ (comitative coordination)

(individual-denoting NPs, including *with*-coordinated ones, are of type e , and are raised to Montagovian individuals when entering *and*-coordinate structures in order to be conjoinable (Rooth and Partee 1983). This is due to type mismatch with *and*, which combines with Boolean types only.) This predicts the following denotations for the 'counting bottles' examples in (25):

- (27) a. (*and*) $[I_E \wedge I_X \wedge I_M \wedge I_Y] (\lambda x.\exists p.\text{present}(p) \wedge \text{brought}(x,p))$
 b. (*with*) $[I_{E \oplus I} \wedge I_{M \oplus Y}] (\lambda x.\exists p.\text{present}(p) \wedge \text{brought}(x,p))$

equivalent, respectively, to

- (28) a. $\exists p.\text{gift}(p) \wedge \text{brought}(E,p) \wedge \exists p'.\text{gift}(p') \wedge \text{brought}(X,p') \wedge \exists p''.\text{gift}(p'') \wedge \text{brought}(M,p'') \wedge \exists p'''.\text{gift}(p''') \wedge \text{brought}(Y,p''')$
 b. $\exists p.\text{gift}(p) \wedge \text{brought}(E \oplus X,p) \wedge \exists p'.\text{gift}(p') \wedge \text{brought}(M \oplus Y,p')$

These denotations seem to be correct. It is clear from the formulas above that (28-a) introduces four and (28-b) two existentially bound gift entities.

4.2.3 Referentiality

Now let us turn to another argument of McNally's that Dalrympe et al. left unchallenged. McNally argued that comitative coordination applies only to NPs of a particular semantic type - type *e*. This formalizes the observation that NPs in comitative coordination are referential; properly quantified NPs are excluded.⁶

In Q'anjob'al, too, DPs with the distributive universal quantifier *jujun* 'every' can't be conjoined with *yetoq*, suggesting that *yetoq* operates on type *e* but not *ett*:

- (29) miman ix jujun heb' kuywom ^{OK}i / *y-etoq jujun heb' ulawom
 big woman every PL student ^{OK}and / *A3-with every PL guest
 'every student and every guest is fat' (lit. 'is a big woman')
 (Denis 3-30:42,44)

No such contrast is found with the cumulative universal quantifier *masanil* 'all', which can be analyzed as yielding the name of the maximal group (type *e*):

- (30) miman ix masanil heb' kuywom i / y-etoq masanil heb' ulawom
 big woman every PL student and / A3-with every PL guest
 'all students and all guests are fat' (Denis 3-30:40,41)

Another example of nonreferential DP comes in a negative existential sentence:

- (31) k'am hin tx'i ^{OK}ni / ^{OK}i / ^{OK}o / *y-etoq hin mis
 no 1s dog nor / and / or / *A3-with 1s cat
 'I have neither a dog nor a cat' (Denis 6-27:59-62)

4.3 Extending sums: flexible function application

Yetoq can coordinate adjectives, and is preferable over *i*, in certain contexts. Compare the following examples from Q'anjob'al and Russian:

- (32) ch-w-il jun q'eqin i / y-etoq saqin uk'b'al
 INC-A1S-see one black and / A3-with white cup
 'I see a black and white cup' (Denis 04-06:46,47)
- (33) a. Èta čaška belaja s čěrnym
 this cup.NOM white.NOM with black.INSTR
 'this cup is black and white'
- b. #Èta čaška belaja i čěrnaja
 this cup.NOM white.NOM and black.INSTR

Examples (33), (32) do not represent boolean coordination of predicates. Indeed, Boolean \wedge would yield a contradictory predicate 'be simultaneously black and white'. This contradiction is apparently the source of decreased acceptability of *i* 'and', which

⁶For Russian, I supported this generalization with additional data from predicative NPs. But Q'anjob'al allows *with*-coordinated predicative NPs because comitative coordination extends far beyond the NP domain, see 3.4, 4.4.

I treat as boolean.⁷ So what exactly is the meaning of coordination in such examples?

Intuitively, an object x is *black and white* iff x consists of white parts and black parts, and no parts of any other color. If we take the denotation of a coordinator to be that of sum/group formation, the desired reading is derived straightforwardly under Flexible Function Argument Application (Hagstrom 1998) (similar sentences puzzled Link (1987)), assuming adjectives in question have a basic denotation in type et .

(34)	expression	q'eqin yetoq	saqin
	denotation	black $\lambda z.\lambda y.y \oplus z$	white
	semantic type	et	$e(ee)$

yetoq saqin	q'eqin yetoq saqin
$\lambda F.\exists z.white(z) \wedge F = \lambda y.y \oplus z$	$\lambda x.\exists y,z.black(y) \wedge white(z) \wedge x = y \oplus z$
$(ee)t$	et

(For a different approach to non-Boolean coordination of adjectives and other categories, see Krifka (1990).) The non-Boolean coordination of adjectives, as we have just seen, invites comitative marking. It comes at no surprise that if conjunction of adjectives is interpreted as Boolean, it can not be marked with the comitative coordinator, both in Q'anjob'al and in Russian:

- (35) a. q-in q'ajab' b'ay jun cham jelan^{OKi} / *y-etoq icham mextol
 POT-1s talk to one 3OLD wise^{OK}and / *A3-with old teacher
 'I'll talk to a wise and old teacher.' (Denis 04-06:26,27)
- b. Ètot učitel' – staryj i mudryj
 this teacher.NOM old.NOM and wise.NOM
 'This teacher is old and wise.'
- c. *Ètot učitel' – staryj s mudrym
 this teacher.NOM old.NOM with wise.INSTR

Adjective coordination thus provides a novel piece of evidence for treating comitative coordination as denotationally different from ordinary coordination – more precisely, as denoting the sum operator as opposed to Boolean 'and'.

4.4 Clausal case: Towards formalization

I mentioned above that *yetoq* as a clausal coordinator has a peculiar component to its meaning. For *yetoq* to be used felicitously, the clauses it conjoins must have a common topic to which they make a joint contribution. *Yetoq* as a clausal coordinator can be compared to clausal connectives like English *also*, *in addition to that*, or (colloquial) *plus*. These connectives are used to add new a point that serves to the same effect as the preceding piece of discourse. I believe that the function (*adding a new clause to the preceding discourse unit*) and the idea of summation (transparent

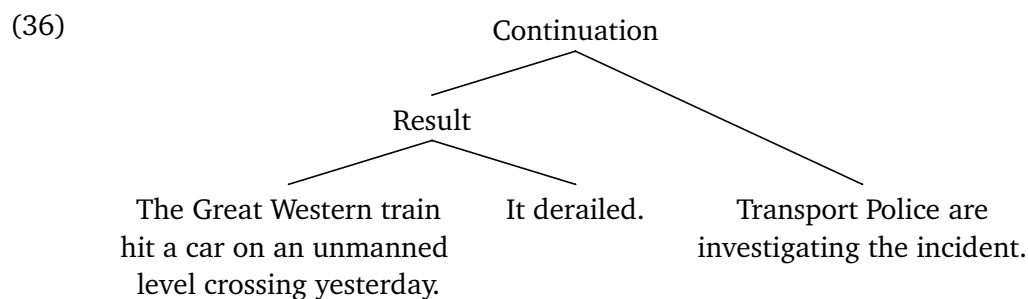
⁷The predicate can be construed as noncontradictory if *black* is coerced to mean 'partially black' and *white* is coerced to mean 'partially white'.

in *plus* and *in addition to that*) are immediately related to *sum* operation as the denotation of coordinator *yetoq*.

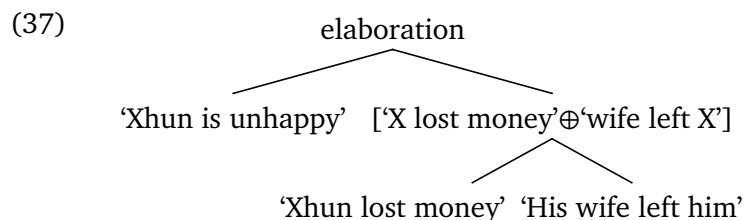
Following this line, I propose to formalize the property of *yetoq* to require a common topic from the clauses it conjoins by analyzing the sentential usage of *yetoq* as a metaphorical extension of group/sum formation. Assume that each clause can denote a minimal illocutionary act (Searle and Vanderveken 1985); then a comitative coordination of clauses denotes a sum of two illocutionary acts (e.g. two assertives), and this sum relates to the rest of the discourse as a unit.

4.5 Proposal

I assume here the idea that discourse is not a mere sequence of utterances but has internal structure. Parts of discourse, starting from clauses as minimal elements, are connected with each other through *rhetorical relations* (aka discourse relations) such as *background*, *motivation*, *conclusion*, etc. (Mann and Thompson 1988). Rhetorical relations define a hierarchical structure of the discourse, similar to the hierarchical syntactic structure of sentences. I take a simple discourse from Sporleder and Lascarides (2008) as an example:



Intuitively, what I labeled above informally as “contributing to the same topic” can be represented as bearing the same (discourse) relation to the rest of the discourse structure, e.g. tho (sub)utterances can be *elaborations* on the same preceding discourse. The role of *yetoq* then is to guarantee that the clauses it links stand in the same relation to the rest of the discourse. A natural implementation of this role, provided that *yetoq* otherwise denotes sum formation, is to assume that *yetoq* as a clausal linker forms a sum of two utterances. They, as a sum, are linked with a single discourse relation, schematically:



The rhetorical relations of this minidiscourse can be paraphrased roughly in the following way: ‘Xhun is unhappy *because* of the *sum* of two facts, that he lost money

and that his wife left nim.' Sum operation on elements of discourse structure can tentatively be identified with the JOINT schema of Mann and Thompson (1988), which is also a symmetric structural connective (in contrast to the many antisymmetrical rhetorical relations that Mann and Thompson establish).

Conclusion

This paper supports the idea that coordination is semantically diverse, both within a language and crosslinguistically. The special value of Q'anjob'al data is determined by two facts. First, Q'anjob'al, a language without genetic or geographic links to the better-studied Russian, shows exactly the same contrasts as in Russian. Second, comitative coordination in Q'anjob'al is a primary pattern of DP coordination, while in Russian it is relatively marginal.

More importantly, my analysis of *yetoq* supports the hypothesis that sentential and NP coordination can be related in different ways in different languages. While some coordinators like Q'anjob'al *i* and English *and* can be given a unified order-theoretic denotation (Keenan and Faltz 1985; Rooth and Partee 1983), where NP coordination is a pointwise extension of the clausal case, I propose to treat the sentential usage of *yetoq* a metaphorical extension of its basic sum meaning from the NP case to discourse units.

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Affiliation

Denis Paperno
Department of Linguistics
University of California, Los Angeles
paperno@ucla.edu