

CAN GAPPING ALWAYS BE CONSTITUENT COORDINATION?

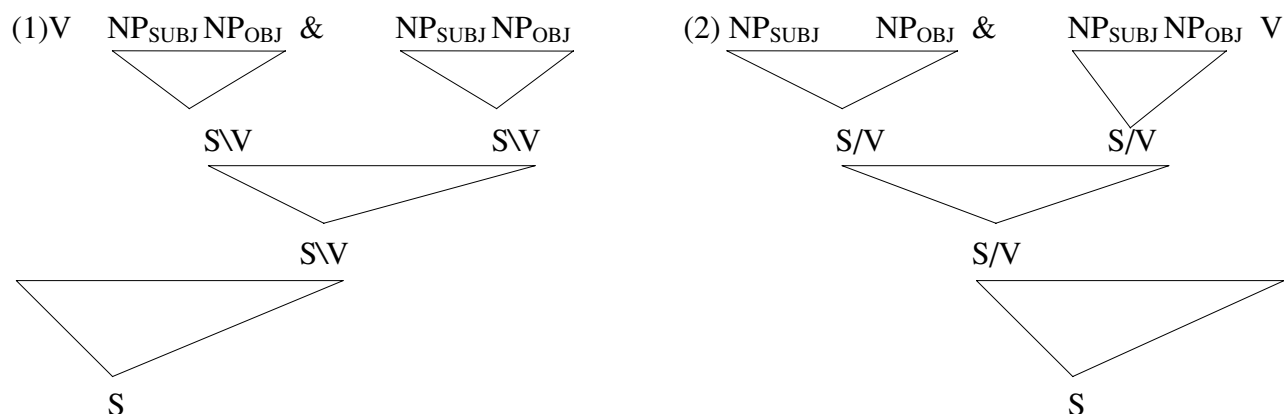
Konstantin I. Kazenin
(Moscow State University and University of Tübingen)

Steedman (2000, Ch.7; see also Steedman 1990), studying Gapping within the framework of the Categorical Grammar (henceforth CG), suggests an account of this phenomenon which treats it as coordination of non-standard constituents, whose building is allowed in the CG. In this squib, I will consider some data on Gapping in one of Turkic languages, Chuvash (Volga basin, Russia), which, as I will attempt to show, poses a problem for an analysis uniformly treating Gapping as constituent coordination.

1. Gapping without deletion

CG possesses an apparatus for representing so-called non-standard constituents, which are constituents whose categorial symbol contains a slash, marking that some material lacks which would have been necessary for a "complete" constituent. Direction of slash shows whether the constituent which is absent is to be «picked up» from the right or from the left. For example, a sequence of a subject and a direct object can be treated as a nonstandard constituent of the category S/V , i.e. sentence lacking its verb, if the verb is further "picked up" on the right side; alternatively, i.e. if the verb is picked up on the left side, this sequence gets the category $S\backslash V$.

The above mentioned symbols find their use in Steedman's representation of Gapping. It is well known since Ross (1970) that direction of Gapping correlates with word order type of the language where it occurs. Specifically, in verb-initial languages Gapping always operates forwards, yielding the sequence $V NP_{SUBJ} NP_{OBJ} + NP_{SUBJ} NP_{OBJ}$ ¹, whereas in verb-final languages the prevalent direction is backward ($NP_{SUBJ} NP_{OBJ} + NP_{SUBJ} NP_{OBJ} V$). The diagrams below, simplifying greatly the CG formalism, show the constituent structures Steedman assigns to Gapping in verb-initial and verb-final languages, respectively:



In both cases, the two constituents including a subject and a direct object are coordinated. Then according to the rule " $X \text{ conj } X \Rightarrow X$ " operative in CG two coordinated constituents of one and the same category are unified into a single constituent of that category, viz. $S\backslash V$ in (1) and S/V in (2). Further on, the $S\backslash V$ or S/V constituent is combined with the verb, occurring respectively to the left and to the right of it. Here Functional Application, another rule acknowledged in the CG, comes into play. This rule eliminates categorial symbols in the following two ways: $Y + X\backslash Y \Rightarrow X$, $X/Y + Y \Rightarrow X$. Obviously, the former type of this rule is operative in (1), and the latter in (2). In both cases the derivation ends up with assigning of the symbol S to the whole sentence. This is the wanted result,

¹ I avoid wherever possible the standard abbreviations SOV, SVO, etc., in order to avoid the mixture with the abbreviations used in the CG, where S means 'sentence', not 'subject.'

because in the CG the "bottom-up" derivation exemplified in (1)-(2) must result in assigning the symbol S to all and only grammatical sentences.

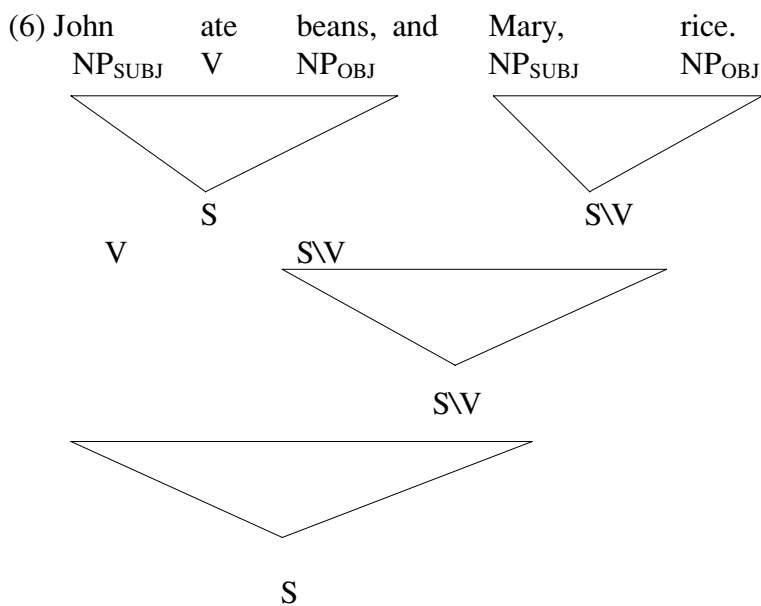
A serious problem which this analysis faces concerns representation of Gapping in SVO languages, where, like in (3) from English, in the sequence NP_{SUBJ} V NP_{OBJ} + NP_{SUBJ} NP_{OBJ} we do not get a sequence of non-standard constituents staying in contact position with each other, and thus coordination of non-standard constituents cannot be viewed here, at least in an obvious way:

(3) John ate beans, and Mary, rice.

The same problem is observed in some verb-final languages. Verb-final languages are known to be the only language type which may allow both directions of Gapping (see Maling 1972, Zoerner 1995:211ff.). Chuvash is an example of such language. In (4), forward Gapping in Chuvash is illustrated, and in (5), backward Gapping:

- (4) *vasja kanaS-a kaja-T, petja SupaSkar-a.*
 Vasja Kanash-DAT go-PRS.3SG Pete Cheboksary-DAT
 Vasja goes to Kanash [the name of a town], and Pete to Cheboksary [the name of a town].
- (5) *vasja kanaS-a, petja SupaSkar-a kaja-T.*
 Vasja Kanash-DAT Pete Cheboksary-DAT go-PRS.3SG
 Vasja goes to Kanash [the name of a town], and Pete to Cheboksary [the name of a town].

Steedman (2000:179ff.), however, suggest a solution to this problem (he discusses it only for SVO languages, but as we will immediately see his solution can be expanded for forward Gapping in verb-final languages as well). Under the procedure which Steedman proposes for, e.g. in (3) the gapped sentence is represented as a constituent of the category SV, in the same way as in (1). This, however, results in a coordination of the type «S + SV», which is illegal as it affects constituents of different categories. In order to tackle this problem, Steedman introduces a rule which he calls Decomposition. The effect of Decomposition is kind of reverse to that of Functional Application. Specifically, Decomposition disintegrates the category S into a sequence of categories to which Functional Application can be applied, resulting in S. Noteworthy, the categories which Decomposition gives rise to are not obliged to have lexical correlates. Therefore, it is legal to decompose S of the first clause of (3) into «V + SV», though the verb does not take the leftmost position in this clause. After Decomposition operates, the resulting sequence of symbols can be «gathered» into a single symbol S, thus yielding grammaticality of the whole sentence:



At the first glance, the representation in (6) seems to be an unnecessary complication of things in comparison with the analysis proposed or assumed by other theories of grammar, under which Gapping is derived by mere deletion of the verb in the standard constituent structure (see e.g. Chao 1987, Jayaseelan 1990, Abe & Hoshi 1999). However, the structure in (3) allows Steedman to maintain a unified treatment of Gapping in SVO languages and in languages with other word order types: in each case Gapping results from coordination of constituents rather than from deletion. In this way Steedman succeeds to eliminate all rules of coordinate deletion, achieving a theory of coordination under which «everything that can coordinate, including medially ‘gapped’ conjuncts, is a constituent under the generalized definition of that notion that is afforded by categorial grammars» (Steedman 2000:198). Structurally uniformed treatment of Gapping in different word order types also enables one to account for various similarities between Gapping in SVO languages as it verb-final/verb-initial languages. E.g. in all these word order types it is required that the highest verb of the sentence be affected by Gapping (although some other material, of course, may undergo Gapping together with the verb). The equivalents of (7) (from Steedman (2000)), ungrammatical in English, are known to be ungrammatical in languages with different word orders as well:

(7) *I know that Dexter read *Ulysses*, and you say that Warren, *Dr. Zhivago*.

In whatever way this restriction is accounted for, the very existence of this and some other restrictions commonly obeyed by Gapping in different word order types strongly suggests that Gapping in SVO languages and in languages with other word order types should get a unified structural account.

Although Steedman does not state this explicitly, Decomposition will also be needed in those verb-final languages which allow forward Gapping, like Chuvash. In the sequence [NP_{SUBJ} + NP_{OBJ} + V] + [NP_{SUBJ} + NP_{OBJ}], the first conjunct is assigned the category S, which may be further decomposed into V+ SV; then the sequence V + S\V + SV becomes V + SV according to the coordination rule, and finally the former is successfully transformed into S by means of Functional Application..

As it stands, Steedman’s analysis of Gapping brings in the following expectation: if in some language Gapping can operate both forward and backward, the two types of Gapping should obey identical restrictions. Indeed, if a language allows non-standard constituents to be coordinated both on the left and on the right margin of a sentence, it is expected that all categories of non-standard constituents allowed in that language would enjoy this freedom. If some types of non-standard constituents can be coordinated only on the right (or only on the left) margin, some special stipulations will be required to explain this asymmetry, but this of course will undermine simplicity and elegance of the analysis.

In order to see whether this expectation is borne out, we have to turn to languages which allow both directions of Gapping. As mentioned above, they occur almost only among verb-final languages, and Chuvash is one of such examples. As will be immediately shown, the expectation we are considering turns out to be false for that language.

2. Asymmetries between forward and backward Gapping in Chuvash

In (3), we have seen examples of forward and backward Gapping in Chuvash. It turns out, however, that there are a number of restrictions obeyed solely by forward, but not by backward Gapping.

First, only backward, but not forward Gapping can "eat into" a noun phrase. This becomes obvious from the comparison between (7) and (8). In (7), backward Gapping leaves a bare adjective (8a) or a bare genitive (8b), whereas the head noun they depend upon is not retained. The respective sentences with forward Gapping in (9) are ungrammatical:

(8)a. *vasja vyrAsla, petja cAvaSla kEneke -ne il-c-E.*
Vasja Russian Petja Chuvash book-ACC buy-PST-3
 Vasja bought a Russian book, and Pete a Chuvash book.

b. *vasja puSkin-An, petja tolstoj-An kEneke-ne il-c-E.*
Vasja Pushkin-GEN Petja Tolstoj-GEN book-ACC buy-PST-3
 Vasja bought a book by Pushkin, and Pete a book by Tolstoj.

(9)a. *vasja vyrAsla kEneke-ne il-c-E, petja cAvaSla *(kEneke-ne).*
Vasja Russian book-ACC buy-PST-3 Petja Chuvash book-ACC
 Vasja bought a Russian book, and Pete a Chuvash book.

b. *vasja puSkin-An kEneke-ne il-c-E, petja tolstoj-An *(kEneke-ne).*
Vasja Pushkin-GEN book-ACC buy-PST-3 Petja Tolstoj-GEN book-ACC
 Vasja bought a book by Pushkin, and Pete a book by Tolstoj.

The sentences in (9) contrast with those in (10). In (10), the nominal head is absent in the second clause, where the verb is gapped. The difference between the grammatical sentences in (10) and the ungrammatical ones in (9) is that in (10) the retained nominal modifiers get the suffix *-(n)y* followed by a case marker. In (10a) the adjective is marked for accusative case. In (10b), kind of "case stacking" is observed: the accusative marker is attached to the genitive form ('of Tolstoj'):

(10) a. *vasja vyrAsla kEneke-ne il-c-E, petja cAvaSI-y*
Vasja Russian book-ACC buy-PST-3 Petja Chuvash-SUFF
 Vasja bought a Russian book, and Pete a Chuvash book.

b. *vasja puSkin-An kEneke-ne il-c-E, petja tolstoj-An-n-e*
Vasja Pushkin-GEN book-ACC buy-PST-3 Petja Tolstoj-GEN-SUFF-ACC
 Vasja bought a book by Pushkin, and Pete a book by Tolstoj.

In general, case marking of Chuvash NPs occurs only on their heads, not being repeated on dependents. Noteworthy, the sentences in (10) become ungrammatical if the head noun is overtly expressed in the second clause:

(11) a. **vasja vyrAsla kEneke-ne il-c-E, petja cAvaSI-y kEneke-ne.*
Vasja Russian book-ACC buy-PST-3 Petja Chuvash-NOM book-ACCIN
 Vasja bought a Russian book, and Pete a Chuvash book.

b. **vasja puSkin-An kEneke-ne il-c-E, petja tolstoj-An-n-e*
Vasja Pushkin-GEN book-ACC buy-PST-3 Petja Tolstoj-GEN-SUFF-ACC
kEneke-ne.
book-ACC
 Vasja bought a book by Pushkin, and Pete a book by Tolstoj.

The accusative case marking on the adjective and the genitive in (10) thus points to the fact that here these constituents are not dependents of an NP whose head is deleted under Gapping, but rather head their own NP subordinate to the gapped verb. If this is the case, Gapping in (10) does not eat into an NP.

Additional evidence that the case marked modifiers in (10) are subordinate to the verb comes from sentences like (12). Here the head noun ('book') is not present at all in the sentence, being construable from the situation (both sentences can be addressed to a person walking around in a bookstore and choosing a book to purchase):

(12) a. cAvaSl-y il
 Chuvash-SUFF take.IMP
 Take the Chuvash one!

b. tolstoj-An-n-e il
 Tolstoj-GEN-SUFF-ACC take.IMP
 Take the one by Tolstoj!

It is plausible, therefore, to treat the suffix *-(n)y* as a substantivizer which turns a modifier into a noun capable to head its own NP. The necessity of substantivization of the adjective and the genitive in (10), but not in (8), is well accounted for on the assumption that only backward, but not forward Gapping can eat into an NP deleting its head but retaining its dependents.

Adnominal modifiers, however, are not the only type of constituents which may be «stranded» by forward, but not by backward Gapping. Another difference between the two directions of Gapping concerns relative clauses. Backward Gapping can affect a participle retaining its dependents; for forward Gapping, however, it is not allowed:

(13) a. petja kanaS-ran, vasja SupaSkar-an kel-e-ken avtopus-a kur-t-A.
 Pete Kanash-ABL Vasja Cheboksary-ABL go-PRES-PART bus-ACC see-
 PAST-3sg
 Pete saw a bus which went from Kanash, and Vasja saw a bus which went from Cheboksary.

b. *petja kanaS-ran kel-e-ken avtopus-a kur-t-A, vasja SupaSkar-an.
 Pete Kanash-ABL go-PRES-PART bus-ACC see-PAST-3sg Vasja Cheboksary-ABL
 Pete saw a bus which went from Kanash, and Vasja saw a bus which went from Cheboksary.

The grammaticality of (13a) is remarkable by itself, as it illustrates the often denied possibility for Gapping to eat into a relative clause. The contrast in grammaticality between (13a) and (13b), recognized by most speakers whom I have consulted, points to another fact: forward Gapping obeys certain restrictions which backward Gapping does not obey.

3. A hypothesis

The technique proposed by Steedman (2000) allows to treat as constituent coordination even those types of Gapping for which such analysis looks problematic, including forward Gapping in SOV languages. However, we have seen that forward and backward Gapping can obey different restrictions in a given language, somewhat unexpected result if Gapping is treated as a structurally uniform phenomenon.

The observed discrepancy will not constitute a problem in Chuvash if the two types of Gapping have different structural representation. There is, in fact, some additional evidence that the two phenomena are not identical in structure. With backward Gapping, the verb and the noun(s) which are «shared» by the two conjuncts are optionally put in plural even when their category in each conjunct should be singular. Thus, in (5) and (8) the plural forms may occur in place of the singular ones (for some speakers the plural and the singular agreements are interchangeable; others strongly prefer the plural agreement):

(5') *vasja kanaS-a petja SupaSkar-a kaja-C-C-e.*
Vasja Kanash-DAT Pete Cheboksary-DAT go-PRS-PL-3
 Vasja goes to Kanash, and Pete to Cheboksary.

(8b)' *vasja puSkin-An, petja tolstoj-An kEneke-se-ne il-c-E-C.*
Vasja Pushkin-GEN Petja Tolstoj-GEN book-PL-ACC buy-PST-3-PL
 Vasja bought a book by Pushkin, and Pete a book by Tolstoj.

The plural agreement is very difficult to account if Gapping is represented as a deletion process. Indeed, in verbs in (5) and (8) (as well as the noun in (8)) must be singular in both conjuncts. If these sentences are derived in a result of deletion, we will have to make a rather unnatural stipulation that some elements of the second conjunct become plural after deletion takes place in the first conjunct. In contrast, the plural agreement falls out for free if Gapping in these sentences is represented as coordination of non-standard constituents in the spirit of Steedman. Thus, in (5') the single verb will be combined with two coordinated subjects. The only difference between (5') and e.g. (14) will be that in the latter bare subjects are coordinated, but in the former non-standard constituents containing the subjects are coordinated:

(14) *vasja tata petja SupaSkar-a kaja-C-C-e.*
Vasja and Pete Cheboksary-DAT go-PRS-PL-3
 Vasja and Pete go to Cheboksary.

In this way, the proper condition for plural agreement of the verb is coordination either of subjects or of constituents containing subjects². In the same fashion, plural form of a noun is triggered either by coordination of it modifiers or constituents containing its modifiers, as in (8b'). (See Kazenin (2001) on plural agreement in constructions similar to (5') and (8b') in Russian.)

Noteworthy, in the respective sentences with forward Gapping plural agreement is impossible:

(15) (cf.(4)) **vasja kanaS-a kaja-C-C-e, petja SupaSkar-a.*
Vasja Kanash-DAT go-PRS-PL-3 Pete Cheboksary-DAT
 Vasja goes to Kanash, and Pete to Cheboksary.

The difference of agreement patterns can be accounted for if it is assumed that forward Gapping result from deletion in the construction where full-fledged sentences are coordinated. Deletion of the verb in the second conjunct, as expected, does not trigger its plural agreement in the first conjunct. If this hypothesis is on the right track, it will be possible to conclude that the process of deletion cannot eat into NPs or relative clauses, whereas non-standard constituents can involve separate dependents of NPs or relative clauses in Chuvash.

All in all, the data from Chuvash suggests that Gapping is a phenomenon different varieties of which can require different structural representations even within one language.

References

Abe, Jun, and Hiroto Hoshi (1999). Directionality of Movement in Ellipsis Resolution in English and Japanese. In: Lappin, Shalom, and Elabbas Benmamoun (eds.). *Fragments: Studies in Ellipsis and Gapping*. New York, Oxford: Oxford University Press

² Of course, a separate explanation will be needed for the fact that under coordination of bare subjects, the verb is obligatorily plural, but when non-standard constituents containing subjects are coordinated, the verb can be singular, at least for some speakers. I do not possess an explanation to this fact in present.

- Chao, Wynn (1987). *On Ellipsis*. PhD Diss. University of Massachusetts
- Jayaseelan, K.A. (1990). Incomplete VP deletion and Gapping. *Linguistic Analysis* 20:60-81
- Kazenin, Konstantin (2001). *Gapping and Some Agreement Puzzles*. Ms., University of Tübingen
- Maling, Joan (1972). On 'Gapping and the Order of Constituents.' *Linguistic Inquiry* 3:101-108
- Ross, John Robert (1970). Gapping and the Order of Constituents. In: Bierwisch, Manfred, and K.Heidolph (eds.). *Progress in Linguistics*. The Hague: Mouton
- Steedman, Mark (1990). Gapping as Constituent Coordination. *Linguistics and Philosophy* 13:207-263
- Steedman, Mark (2000). *The Syntactic Process*. MIT Press
- van Oirsouw, Robert (1987). *The Syntax of Coordination*. New York: Croom Helm
- Zoerner, Cyril Edward (1995). *Coordination: The Syntax of &P*. PhD dissertation. University of California, Irvine