Verbal number is syntactic agreement

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Nutshell Verbal number (Corbett 2000) is a grammatical category that may refer either to event number, to participant number or to both. Previous analyses consider it as lexical selection (Durie 1986) or semantic cooccurrence (Mithun 1988), but these interpretations cannot explain some mismatches between the number values on the verb and on its arguments. I propose an *agreement* relation between *v* and a constituent bearing a number (#) feature (DP: participant number, AdvP: event number). To the best of my knowledge, no other syntactic approach to verbal number has been proposed yet. The analysis is couched in Minimalist Syntax and Distributed Morphology.
Data Mupun (Frajzyngier 1993) is a West Chadic language from Nigeria. It shows verbal number as a productive category and it expresses it through several morphological devices (such as suppletion (1) and suffixation (2)).

(1)	a.	*wu **nas** mo*	3SG.M hit.PST.PL 3PL.M	'He hit them.'
	b.	**wu **cit** mo*	3SG.M hit.PST.SG 3PL.M	'He hit them.'
	c.	*wu **cit** wur*	3SG.M hit.PST.SG 3SG.M	'He hit him.'
	d.	*wu **nas** wur*	3SG.M hit.PST.PL 3SG.M	'He hit him many times.'
(2)	a.	*wu **su** seet*	3SG.M run.PST.SG away	'He ran away.'
	b.	*mo **su-e** seet*	3PL.M run.PST-PL away	'They ran away.'

Examples (1) show the two suppletive allomorphs for the root $\sqrt{\text{HIT}}$, /cit/ and /nas/, which only differ for the values of the #-feature. In (1a-b), a plural feature on the internal argument requires a plural feature on the verb. However, (1c-d) point out that a singular argument does not always require a singular verb. Note that in (1d) the verb is plural, but there is no overt constituent bearing a plural #. Moreover, what is quantified are events rather than participants.
(2a-b) show that (i) verbal number can be encoded by morphology (suppletion is actually the exceptional case) and that (ii) for unergative verbs, the number marked on the verb depends on the number on the external argument.
Proposal I derive through *agreement* (i) the ambiguity between event and participant number (1a,d), (ii) the ungrammaticality of mismatches such as (1d) and (iii) the pattern of unergative verbs (2a-b). I claim that *v* bears an uninterpretable feature for number [u#], which can be satisfied by an interpretable feature [i#] on a DP or on an AdvP (which may be a covert constituent). Verbs are not born with a #-feature, but rather the number is present either on the DP (participant #) or on the AdvP (event #). In the nominal domain, the values for # are [sg]/[pl], whereas adverbial phrases may either be underspecified for # or contain a plural value [pl] (adverbs may be plural in Mupun, since they can be derived from adjectives through reduplication, which is used to inflect adjective for plural, too). Adv[pl] is merged as an adjunct to VP when the intended meaning is *(x times)(VP)*. Since Mupun often drops the plural marker on plural DPs, the difference in meaning between sentences such as (1a,d) hints at a covert plural constituent in pluractional cases (1d).
Analysis I assume the following lexical entries for (1a-d).

(3)	a.	$\sqrt{\text{HIT}} \leftrightarrow$ /nas/ / *v*[pl] _	f. $v \leftrightarrow \emptyset$
	b.	$\sqrt{\text{HIT}} \leftrightarrow$ /cit/	g. T $\leftrightarrow \emptyset$
	c.	[Adv, pl] $\leftrightarrow \emptyset$	h. [3, m] $\leftrightarrow$ /wu/
	d.	[3, m, pl] $\leftrightarrow$ /mo/	i. [Adv, pl] $\leftrightarrow \emptyset$
	e.	[3, m, acc] $\leftrightarrow$ /wur/	

In the derivation of (1a-c), *v* agrees with the internal argument DP_{obj}. If this is plural (4), *v* matches its #-feature with this plural value and, at vocabulary insertion, the complex head T +

v + V is spelled out as /nas/ (3a). If the DP_{obj} bears a singular number, v matches its #-feature with the value [sg] and at the point of lexical insertion the default /cit/ (3b) is inserted, since no specific form for [sg] is available.

(4) $[_{TP}\ T\ [_{vP}\ DP_{subj}{}^{[i\#:\ sg,\ i\pi:\ 3,\ i\gamma:\ m]}\ v^{[\boxed{u\#:\ \square}]}\ [_{VP}\ V\ DP_{obj}{}^{[\boxed{i\#:\ pl},\ i\pi:\ 3,\ i\gamma:\ m]}\ ]\ ]\ ]$

For (1d), a covert AdvP (3c) is merged as an adjunct to the VP. v matches its feature with the plural number on this adverbial phrase (5). At vocabulary insertion, the most specific exponent /nas/ (3a) wins the competition.

(5) $[_{TP}\ T\ [_{vP}\ DP_{subj}{}^{[i\#:\ sg,\ i\pi:\ 3,\ i\gamma:\ m]}\ v^{[\boxed{u\#:\ \square}]}\ [_{VP}\ AdvP^{[\boxed{i\#:\ pl}]}\ V\ DP_{obj}{}^{[i\#:\ sg,\ i\pi:\ 3,\ i\gamma:\ m]}\ ]\ ]\ ]$

Mupun does not seem to have the possibility to express plural participant number and plural event number at the same time (as it happens in Mwaghavul, a Chadic language that is close to Mupun). Thus, the sentence *wu nas mo* is ambiguous on the surface and could mean 'he hit them' / 'he hit them many times'.

Examples (2) can be explained through these lexical entries:

(6) a. $\sqrt{\text{RUN}} \leftrightarrow$ /su/ c. [Adv, $\sqrt{\text{AWAY}}$] $\leftrightarrow$ /seet/

b. v[pl] $\leftrightarrow$ /e/ / $\sqrt{\text{RUN}}$

The probe v tries to enter in an agreement relation downwards, but there is no suitable goal bearing a # feature. Thus, after the external argument is introduced by v, the probe tries again upwards and can finally agree with the DP_{subj} (7). Then, if v has matched with a plural feature, the head T + v + V is spelled out by the morphemes (6a) and (6b). Otherwise, (6a) and (3f) are inserted.

(7) $[_{TP}\ T\ [_{vP}\ DP_{subj}{}^{[\boxed{i\#:\ pl},\ i\pi:\ 3,\ i\gamma:\ m]}\ v^{[\boxed{u\#:\ \square}]}\ [_{VP}\ Adv\ V\ ]\ ]\ ]$

Discussion Under this account, the two functions (event number vs. participant number) are not due to different semantic interpretations of v. Instead, (i) the different goals for the probe v are responsible for these two meanings, (ii) v looks for a #-feature that is underspecified and refers to *many x*, *x* being either an event or a participant. It is the distribution of the number features in the structure that give rise to one meaning or to the other one.

More generally, the morphological realization (at PF) is independent from the interpretation (at LF). Also, the differences within languages and between languages are located in the morphology and phonology modules rather than in the syntax.

Conclusion I have proposed a morphosyntactic account of verbal number in Mupun (and in other Chadic languages, such as Mwaghavul). Under this approach, the difference between participant number and event number is due to the syntactic structure and not to the feature on v. This analysis can explain problematic issues for previous approaches: (i) the realization of verbal number through morphology, (ii) the difference between event number and participant number, (iii) the external argument of unergative verbs as a goal for verbal number. Further research is aimed at extending the proposal to other languages that have the possibility to mark event and participant number on v.

References • Corbett, G. G. (2000): *Number*. Cambridge University Press. • Durie, M. (1986): *The Grammaticization of Number as a Verbal Category*. Proceedings of the Twelfth Annual Meeting of the Berkeley Linguistics Society, pp. 355-368. • Frajzyngier, Zygmunt (1993): *Grammar of Mupun*. D. Reimer Verlag. • Mithun, Marianne (1988): *Lexical categories and the evolution of number marking*, in Theoretical Morphology, New York: Academic Press, pp. 211-234.