"I didn't drink and drove a car": Neg expresses Eccentric Triplets

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Synopsis: This paper aims to propose a Distributed Morphology (**DM**: Halle & Marantz 1993)-based account on the scope between NEG and VP-Coordination (**VP&**) in Japanese. We investigate a scope puzzle between NEG and VP&, which has been left unexplained: How can interpretations (1a) and (1b,c) be derived from the sentence (1), though it seems that NEG scopes over the whole &P?

(1) John-ga sake-o nomi, kuruma-o untensi-**nakat**-ta
J.-Nom sake-Acc drink & car-Acc drive-**NEG**-Past
a. $VP_1 \wedge \neg VP_2$: '[$_{VP1}$ John had alcohol] and [$_{VP2}$ he didn't drive a car].'
b. $\neg VP_1 \wedge \neg VP_2$: '[$_{VP1}$ John didn't have alcohol] and [$_{VP2}$ he didn't drive a car].'
c. $\neg VP_1 \wedge VP_2$: '[$_{VP1}$ John didn't have alcohol] and [$_{VP2}$ he drive a car].'

Given that a VP is interpreted as a proposition (cf. Kato 2007), $\neg (p \wedge q)$ is not equivalent to $\neg p \wedge \neg q$ in the propositional-logic sense (De Morgan's Law (**DML**: $\neg(p \wedge q) \Leftrightarrow \neg p \vee \neg q$)). We argue that the structure of (1) is ambiguous in a way that NEG surfaces as a *Suspended Affix* (**SA**) (2a)/(3a), or the sentence is underlyingly a VP/NegP-coordination (2b)/(3b).

(2) a. [[$_p$ …X +t_{affix}] & [$_q$ … X+t_{affix}] affix] (SA reading: affixation via the PF-movement)
b. [[$_p$ … X] & [$_q$ … X+ affix]] (Non-SA reading)

(3) a. [John [sake drink-**NEG**] & [kuruma drive-**NEG**] Past] (*Suspended Affixation*(**SA**)-reading)
→[John [sake drink-~~NEG~~] & [kuruma drive-~~NEG~~]-**NEG**-Past] (**NEG** affixed via PF-movement)
b. [John [sake drink] & [kuruma drive-**NEG**] Past] (VP/NegP-coordination: Kato 2007)

We show that our analysis correctly predicts the scopal interaction in between NEG and other operators (e.g.$\Diamond$), the latter of which do not obey DML. The structure of VP& in Japanese has been analyzed as a bare-verb coordination (Takano 2004), as in (4).

(4) John-ga sono-ronbun-o copi-si, fairu-si-ta.
John-Nom the-paper-Acc copy-do & file-do-Past 'John copied and filed the paper.'

Coordination in (5a-b) involves two or more independent events, each of which licenses the *sentential internal reading* (Carlson 1987). Note that expressions like *betsubetsu-no* 'different' induce the sentential internal reading, while it does not in non-coordination examples (5c).

(5) a. John copied and filed different papers. (John copied the paper-*A* and filed the paper-*B*)
b. John-ga betsubetsu-no ronbun-o copi-si fairu-sita.
John-Nom different-Gen paper-Acc copy-do & file-do-Past
'John copied and filed different papers.' [He copied *the paper-A* and he filed *the paper-B*].
c. *John-ga betsubetsu-no eiga-o mi-ta 'John saw a different movie.' (Takano 2004:174)

Let us look at examples that involve voice morphemes (6). Nishiyama (2012) and Yoda (2015) show that underlying structures of (6a) are ambiguous between (6b) with SA and (6c) without SA (Non-SA). The reading in (6b) becomes available via the ATB-movement of *Cause* from both conjuncts, while the reading in (6c) is possible under the Non-SA environment (6c). The reading in (6d) cannot be yielded simply because the movement of *Cause* violates the Coordinate Structure Constraints (**CSC**: Ross 1967).

(6) a. John-ga betsubetsu-no ronbun-o copi-si & fairu-**sase**-ta.
John-Nom different-Gen paper-Acc copy-do file-**Cause**-Past
b. John different:paper [$_{VP1}$ copy-**Cause**] & [$_{VP2}$ file-**Cause**] Past. (SA reading: Cause > &P)
→ ... [$_{VP1}$ copy-~~Cause~~] & [$_{VP2}$ file-~~Cause~~]-**Cause**-Past. (**Cause** affixed via PF-movement)
'John made someone copy and file different papers.'
c. John different:paper [$_{VP1}$ copy] & [$_{VP2}$ file-**Cause**]-Past (Non-SA reading)
'John copied, and made someone file different papers.' (**Cause** has scope only on *fairu-s* 'file')
d.*John different:paper [[$_{VP1}$ copy t_{caus}] & [$_{VP2}$ file]]-**Cause**]-Past (the impossible reading)
'J. made someone copy, and he filed different papers.' (**Cause** has scope only on *copi-s* 'copy')

Proposal: We propose that when NEG is involved, the results we obtain become different from those with other heads such as *-sase* 'Cause' in (6). The NEG-counterpart of (6d) suddenly becomes acceptable, marginally at least: (7a) can be true even when *John did**n't** copy, but he did file different papers* ($\neg$VP1$\wedge$VP2), as in (7d). Likewise, with a careful introspection, the VP& in (1) *John-ga sake-o nomi kuruma-o untensi-**nakat**-ta* can also be true even when *John did**n't** drive a car, but he*

drank sake. (7d) cannot be an underlying structure for the interpretation where the only VP1 is negated, since if the structure (7a) were derived from (7d), it would definitely violate the CSC.

(7) a. John-ga betsubetsu-no ronbun-o copy-si & fairu-si-nakka-ta.
John-Nom different-Gen paper-Acc copy-do file-do-NEG-past
b. John different:paper [[$_{VP1}$ copy-do-**NEG**] & [$_{VP2}$ file-do-**NEG**]] (SA-reading)
→ ... [$_{VP1}$ copy-~~NEG~~] & [$_{VP2}$ file-~~NEG~~]-**NEG**-Past. (**NEG** affixed via PF-movement)
'John didn't copy and didn't file different papers.'
c. John different:paper [[$_{VP1}$ copy-do] & [$_{VP2}$ file-do-**NEG**]]. (Non-SA-reading)
'John copied but didn't file different papers.' (**NEG** has scope only on *fairu-s* 'file')
d.?John different:paper [[$_{VP1}$ copy-do-t_{NEG}] & [$_{VP2}$ file-do] **NEG**. (another Non-SA-reading)
'John didn't copy, but filed different papers.' (**NEG** has scope only on *copi-s* 'copy')

In order to account for the relevant asymmetry observed between NEG and other heads such as *Cause*, we argue that the VP& with NEG in Japanese is ambiguous between *v*P-coordination, NegP-coordination and *v*P/NegP-coordination, as in (8).

(8) a. *v*P-Coordinaiton: …[$_{\&P}$ [$_{vP1}$…*v*] & [$_{vP2}$…*v*]]-**NEG**-T: $\boxed{\neg(VP1 \wedge VP2) \Leftrightarrow \neg VP1 \vee \neg VP2}$
b. NegP-Coordination: …[$_{\&P}$[$_{NegP1}$ …*v*-**NEG**] & [$_{NegP2}$ …*v*-**NEG**]]-T: $\boxed{(\neg VP1 \wedge \neg VP2)}$
➔…[$_{\&P}$[$_{NegP1}$ …*v*-~~NEG~~] & [$_{NegP2}$ …*v*-~~NEG~~]]-**NEG**-T (SA-reading)
c. *v*P/NegP-Coordination: …[$_{\&P}$ [$_{vP}$…*v*] & [$_{NegP}$ …*v*-NEG]]-T: $\boxed{(VP1 \wedge \neg VP2)}$

We further argue that following Yoda (2015), each conjunct must be a *Phase*. In Japanese, *-sase Cause* is an exponent of *v*, and it is a cyclic head (Embick 2010); hence a Phase. Japanese negative sentences are construed by negative *a*(djective)^0 and this negative a^0 triggers suppletion on an existential verb, which is directly dominated by a^0 as in (9) (Yoda 2014). Following Bobaljik and Wurbrand's (2013), we assume that the *v*-*a* amalgam triggers the Phase extension from v^0 to a^0; hence the *v*P and NegP can be coordinated since both are now Phases.

(9) a. SPE-wa [$_{vP}$ tana-ni ar-] u
SPE-Top shelf-on be$_{[-animate]-}$ pres
'SPE is on the shelf.'
b. SPE-wa [$_{aP}$[$_{vP}$ tana-ni- {*ar-a]-nai] / ~~ar-a~~] nai]}
SPE-Top shelf-on {be-a-neg/neg}
'SPE is not on the shelf'(cf. /ar/ → ø / ___+Neg)

Now in (9), SA and Non-SA readings are syntactically available, as in (10a) and (10b) respectively.

(10) a. [$_{CP}$ Koji-wa [migite-ni wain-o moti] & [hidarite-ni ciizu-o moti-soo-zya]-**nakka]**-ta.]
K.-Top right:hand-on wine-Acc take left:hand-on cheese-Acc take-seem-Cop-**NEG**-Past
Lit. 'Koji did not seem to take wine in his right hand and cheese in his left hand.'
b. [$_{CP}$ Koji-wa [migite-ni wain-o moti]&[hidarite-ni ciizu-o mot]-**ana**-soo-dat-ta].
K.-Top right:hand-on wine-Acc take left:hand-on cheese-Acc take-**NEG**-seem-Cop-Past
Lit. 'Koji seemed not to take wine in his right hand and cheese in his left hand.'

Analysis: Then, how can we derive the reading in (7d)? Logically speaking, $\neg(p \wedge q) \Leftrightarrow (\neg p \vee \neg q)$ becomes true if the one of two conjuncts get negated ($\neg p \wedge q$, $p \wedge \neg q$) or both of them involve a negative operator ($\neg p \wedge \neg q$) as in the table on the left. Just as in the case of propositional logic, we claim that DML is only applicable to NEG in natural languages. The other operators/morphemes on the other hand, obey the *Distributive Law* (**DisL**): $Op(p \wedge q) \Leftrightarrow Op(p) \wedge Op(q)$. Hence, we obtain the reading in (7d) as an entailed reading from the (8a) ($\neg VP1 \wedge VP2 \rightarrow \neg VP1 \vee \neg VP2$) where NEG scopes over the whole &P. This entailment cannot be yielded in (6), since DML cannot apply to it; hence only the two readings (6b) and (6c) are possible.

$\neg p$	$\vee$	$\neg q$
1	1	1
1	1	0
0	1	1
0	0	0

Consequences: We further observe the interactions between NEG and a modal operator. Here we take the sentences that involve *-soo* 'seem,' which introduces speakers' intensionality on C. In (10a), NEG is directly attached to the Phase and thus it cannot enter into the computation of the previous phase due to **PIC** (Chomsky 2001). Thus, we obtain the SA and Non-SA readings, while the $\neg \Diamond VP1 \wedge \Diamond VP2$ is not available, since NEG may not enter into the computation of the already *Spelled-Out* Phase to scope over the whole &P. On the other hand, in (10b), the entire sentence is within the CP domain thus, NEG can scopaly interact with conjuncts; hence $\neg(\Diamond VP1 \wedge \Diamond VP2) \Leftrightarrow \neg\Diamond VP1 \vee \neg\Diamond VP2$. Thus, as an entailment of it, $\neg\Diamond VP1 \wedge \Diamond VP2$ becomes available in LF. The prediction is borne out that (10a) is incompatible with a continuation like (11): ($\Diamond\neg VP1 \wedge \Diamond VP2$).

(11) #Koji-wa migite-ni wain-o mota-**zu**, & hidarite-ni ciizu-o moti-soo-dat-ta.
K.-Top right:hand-on wine-Acc take-**NEG**, left:hand-on cheese-Acc take-seem-Cop-Past
'K. seemed not to have wine in his right hand, but seemed to take cheese in his left hand.'