Shallow resultatives in sign language Yuko Asada (Showa Women's University)

Research questions. It has been reported that sign languages (**SLs**) allow resultative constructions with the word order S(ubject)-O(bject)-V(erb)-R(esult) (**SOVR**) (see Loos [2] for German SL (**DGS**), Pasalskaya [3], Kimmelman et al. 2020 for Russian SL (**RSL**)). Japanese SL (**JSL**), an SOV language, also exhibits this order to express a result state, as illustrated in (1a–b). However, upon closer examination, these data raise two research questions (**RQ**):

RQ1: Typological studies of resultatives in spoken languages (Nedjalkov 1988, Haider 2016) have shown that SOV languages have the **SORV** order, and the **SOVR** does not seem to be attested. If **SOVR** is observed only in SLs, it raises the question of why this should be so.

RQ2: In **SOVR** sentences in JSL, resultative predicates can appear recursively (see (1a–b)) to describe one single change-of-state event (not conjoined separate events). However, the unbounded occurrences of resultative expressions are not subject to Tenny's (1994) ([4]) "single delimiting constraint," stating that the event described by a verb may be delimited only once, which bans examples such as (2) in English. What explains this violation?

Inchoative sentences in JSL. JSL has inchoative/implicit causative sentences that express temporarily telic events such as (3), in which adjectival predicates appear in clause-final position without an overt verb such as BECOME or MAKE. Importantly, the predicates in this construction may occur recursively as shown in (3), in a similar manner to the **SOVR** examples in (1a–b). There are two other similarities with **SOVR** sentences. First, the two constructions require non-manual markers (NMMs) that mark the degree or intensity of the result state of the event, such as widened eyes and eyebrow furrowing, as shown in (3)–(4). Second, both inchoative and **SOVR** sentences typically occur with sentence-final pointing (IX) that refers to the theme argument of a change-of-state event (and not the causer subject), as seen in (3)–(4). These observations suggest that the two constructions are related.

Analysis. Adopting the functional layering approach to resultatives (Embick 2004, Folli & Harley 2020), I propose that **SOVR** sentences in JSL are structurally analyzed as VoiceP-vP_{CAUSE} coordination as shown in (5). The first conjunct, VoiceP, represents the manner of a causing event such as *painting the car*. The second conjunct is headed by v_{CAUSE}, which selects a small clause Res(ult)P to represent a caused change-of-state event such as *the car becoming red*. This apparently "heavy" coordinate structure is not as heavy when realized in phonology. This is because Voice and v_{CAUSE} heads and the predicative coordinator & may be covert in JSL, and crucially, signers can consecutively represent the direct object of the causing verb in VoiceP, which becomes the subject of the result predicate in ResP, using a well-known strategy in SLs: weak hand (h2) holds. As shown in (6), the theme argument in the vP that appears on the h2 may be held as a classifier or a fragment buoy (Liddell 2003) until it reaches the end of the clause. The proposed bi-phrasal analysis is supported by two observations: i) **SOVR** allows both narrow and wide scope readings with the repetitive modifier AGAIN (7), which can take the whole resultative event in its scope (in the context "the man painted the car red before.") or scope solely over the causing event ("the man painted the car before.") (cf. Hopperdietzel 2021); ii) the rightward *wh*-movement of a subject across VoiceP and vP_{CAUSE} is available (8), just as we expect (this type of *wh*-movement is also possible in DGS ([2]) and RSL ([3])).

Answer to RQ2. This proposal captures the recursion of result states, as found in (1a–b), because these examples are instances of coordination, in which resultative predicates can be adjoined unboundedly. In this sense, these **SOVR** sentences differ from "standard" resultative constructions of the type *He painted the car red* in English, generally assumed to be mono-clausal, as analyzed as in (9) (Ramchand 2008, Folli & Harley 2020, Hopperdietzel 2021). The violation to Tenny's generalization in **SOVR** examples (1a–b) is therefore not surprising.

Answer to RQ1. Why are **SOVR** sentences attested in SLs? While further cross-linguistic investigations are needed, as a tentative answer to this question, I would attribute the presence of **SOVR** in SLs to the general preference for shallow structures in the process of linearization in the visual modality. It has been argued that center-embedding of heavy constituents in SLs is substituted for other strategies such as the use of signing space, role shift, or movement to

the right or left periphery to reduce the processing overload (Geraci et al. 2008, [1], and others). I suggest that coordination, such as in JSL resultatives proposed here, is another option to flatten an otherwise heavier **SORV** structure into a shallower, bi-phrasal one. In the case of **SOVR** in JSL, I do not adopt the movement analysis that moves the predicate in ResP out of the VoiceP to its right as in **SORVR**, based on evidence such as scope interpretation data (see (7)).

SOVR in spoken languages. Why, then, is the **SOVR** order not attested in spoken languages? A bi-clausal structure as in (5) should be available in all languages, but I would argue that in spoken languages, this type of structure does not yield an **SOVR** surface order but instead to a longer **SOV&ORV** sequence of the type "The man painted the car **and turned it** in red." because they lack phonologically null forms of elements in this construction, such as a theme argument or a causative verb. In contrast, in sign languages, these elements may remain covert since multiple articulators such as h2 or NMMs are available to recover the semantics of the null elements. As seen above, in JSL (6), the theme argument in the first conjunct, 'the car,' becomes covert in the second conjunct, but the weak hand hold of this sign helps to convey the meaning. The causative verb v_{CAUSE} is also covert, but the clause-final NMMs deliver the telic, resultative reading of the sentence. Spoken languages do not have these strategies. This is why phonologically shorter—more economical—**SORV** sentences are selected for resultatives.

How deep we can go. The proposed analysis has implications for the exact structural "depth" permitted for complementation to survive the process of externalization in the SL modality without resorting to rescue strategies such as role shift or movement. Previous studies provide evidence that in several SLs, the number of phase-defining functional heads (henceforth, **F-heads**) permitted inside a complement of a VoiceP is limited to one, as shown in (11)–(12) from Italian SL (see also Göksel & Kelepir 2016 for Turkish SL, Loos 2018 for DGS), assuming that F-heads include C, Voice, v_{CAUSE}, and Res. Interestingly, this threshold depth—one F-head inside a complement of a VoiceP—also seems to apply to **SOVR** in JSL: instead of a complementation structure embedded inside an **SORV**, resultatives opt out for a coordination structure that can contain two F-heads, v_{CAUSE} and Res. The question of whether this restriction generally holds with other complementation phenomena in SLs is left for further research.

Data (based on unanimous judgments by four native signers in one-on-one interviews)

(1) a. MAN CAR PAINT RED, (BRIGHT, CLEAR). 'The man painted the car red, (bright, clear).'
b. WOMAN CLOTH WASH CLEAN, (WHITE). 'The woman washed the clothes clean, (white).'

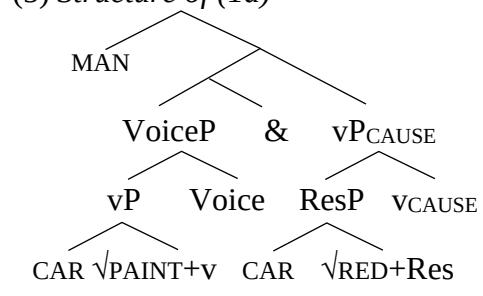
(2) *John washed the clothes clean white. ([4]:154)

(3) ***Inchoative*** eye widening
TWO DAYS LATER CAR RED, BRIGHT, $IX_{(*man/car)}$.
(The man had been painting the car and…)
'Two days later, the car became red, bright.'

(4) ***SOVR*** eye widening
MAN CAR PAINT RED, BRIGHT, $IX_{(*man/car)}$.
'The man painted the car red, bright.'

(6) h1: MAN CAR PAINT CAR RED ($IX_{(car)}$)
h2: CAR CAR.CL----------
'The man painted the car red.'

(5) *Structure of (1a)*



Shaded signs are phonologically covert.

(7) IX_3 CAR AGAIN PAINT RED. 'He painted the car red again.' <wide & narrow readings>

(8) WHO CAR PAINT RED WHO? 'Who painted the car red?' (NMMs omitted)

(9) [VoiceP he [Voice' **Voice** [vPCAUSE **vCAUSE** +√paint [ResultP the car [Res' [**Res** [aP red]]]]]]]

(10) MAN CAR RED (BRIGHT) PAINT. 'The man painted the car to turn it in red, (bright).'

(11) *[**VoiceP** GIANNI [**CP** [**VoiceP** PIERO BIKE FALL]] TELL]. (cf. [PIERO BIKE FALL] GIANNI TELL.)
'Gianni said that Piero fell off the bike.' <*sentential-like complement*> ([1]: 103)

(12) a. [**VoiceP** COOK [**VoiceP** MARIA [vP MEAT EAT]] FORCE].
'The cook forced Maria to eat meat.' <*object control complement*> ([1]: 105)
b. *[**VoiceP** GIANNI [**VoiceP** MARIA[**VoiceP** MARIA MILK BUY] WARN] FORGET].
'Gianni forgot to remind Maria to buy milk.' <*sentential-like complement*> ([1]: 109)

Selected references

[1] Geraci, C., & V. Aristodemo. 2016. An in-depth tour into sentential complementation in Italian Sign Language. In *A matter of complexity: Subordination in sign languages*, 95–150. Berlin: De Gruyter Mouton.

[2] Loos, C. 2017. The syntax and semantics of resultative constructions in Deutsche Gebärdensprache and American Sign Language. PhD. dissertation.

[3] Pasalskaya, E. 2018. Syntactic properties of resultative constructions in Russian Sign Language. In *SLE 2018 Book of abstracts*, 311.

[4] Tenny, C. L. 1994. *Aspectual roles and the syntax-semantics interface.* Dordrecht: Kluwer Academic Publishers.