

**Spell Out before You Merge:
Parse Right and Merge Left Is No Paradox**

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1. A paradox: Parse Right and Merge Left

- (1) Alice loves small hamsters.
 (2) a. [small hamsters]
 b. [loves [small hamsters]]
 c. [Alice [loves [small hamsters]]]
 (3) a. Alice
 b. Alice loves
 c. Alice loves small
 d. Alice loves small hamsters.
 (4) a. [small hamsters]
 b. [loves [small hamsters]]
 c. [*v* [*VP* loves [small hamsters]]] -- Spell-Out 1: [*VP* loves hamsters] -> PF
 d. [Infl [*v* [*VP* ...]]]
 e. [*IP* Alice [Infl [*v* [*VP* ...]]] -- Spell-Out 2: [*IP* Alice [Infl [*v* [*VP* ...]]] -> PF
 (5) a. [*VP* loves small hamsters]
 b. * [*VP* loves small hamsters] [*IP* Alice [Infl [*v* [*VP* ...]]]
 (6) a. [*VP* loves small hamsters]
 b. [*IP* Alice [Infl [*v* [*VP* ...]]] [*VP* loves small hamsters]
 cf. [[John woke up] ... [& [[He washed his face] [& [He went out]]]]]

2. Branch Right and its problems

- (7) a. [Mary saw]
 b. [Mary [saw John]]
 (7') a. [[The girl] [saw John]]
 b. [The [girl [saw John]]]

3. Spell-Out before Merge

- (8) a. [*Alice*
 b. [*Alice* [*loves*
 c. [*Alice* [loves [*small*
 d. [*Alice* [loves [small [*hamsters*
 (9) a. [*Alice* [loves [small hamsters]
 b. [*Alice* [loves [small hamsters]]
 c. [*Alice* [loves [small hamsters]]]]

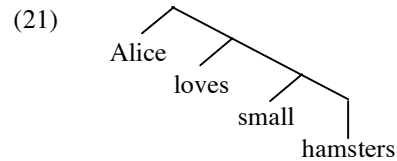
4. Spell-Out of brackets as silent demibeats

- (10) Add a silent demibeat at the end (right extreme) of the metrical grid aligned with a word, a word that is the head of a nonadjunct constituent, a phrase, and a daughter phrase of S.
 a. [_S [_{NP} [_N Mary]] [_{VP} [_V finished] [_{NP} her [_A Russian] [_N novel]]]]
 b. Mary xxx finished xx her Russian x novel xxxxx (Selkirk 1984)
 a, b, d a, b a a, b, c, d
 (11) $\left\{ \begin{array}{l} [] \\ \end{array} \right\} \rightarrow \underline{x}$ (cf. Tokizaki 1999)
 (12) a. [Alice [loves [small [hamsters]]]]
 b. x Alice x loves x small x hamsters xxxx
 (13) syntax - Spell Out -> PF
 a. [
 b. [*Alice*
 c. [*Alice* [

 h. [Alice [loves [small [*hamsters* x Alice x loves x small x *hamsters*
 i. [Alice [loves [small [hamsters] x Alice x loves x small x hamsters x
 j. [Alice [loves [small [hamsters] x Alice x loves x small x hamsters xx
 k. [Alice [loves [small [hamsters]] x Alice x loves x small x hamsters xxx
 l. [Alice [loves [small [hamsters]]] x Alice x loves x small x hamsters xxxx

5. Parsing of pause and tree building

- (14) x --> $\left\{ \begin{array}{l} [] \\ \end{array} \right\}$
 (15) x --> [
 (16) PF Parsing
 a. x *Alice* [*Alice*
 b. x *Alice* x *loves* [*Alice* [*loves*
 c. x *Alice* x *loves* x *small* [*Alice* [loves [*small*
 d. x *Alice* x *loves* x *small* x *hamsters* [*Alice* [loves [small [*hamsters*
 (17) x *Alice* x *loves* x *small* x *hamsters* xxxx [*Alice* [loves [small [hamsters []]]
 (18) xx -->]x
 (19) x α --> [α (α: a lexical item)
 (20) PF Parsing
 a. x *Alice* x *loves* x *small* x *hamsters* x [*Alice* [loves [small [hamsters
 b. x *Alice* x *loves* x *small* x *hamsters* xx [*Alice* [loves [small [hamsters]
 c. x *Alice* x *loves* x *small* x *hamsters* xxx [*Alice* [loves [small [hamsters]
 d. x *Alice* x *loves* x *small* x *hamsters* xxxx [*Alice* [loves [small [hamsters]]]
 e. x *Alice* x *loves* x *small* x *hamsters* xxxxx [*Alice* [loves [small [hamsters]]]]]



6. Marked direction of branching

(22) [[Alice Walker] [loves hamsters]]

(23) syntax PF Parsing
[[XX]x

(24) syntax PF Parsing
[[XX]x

(25) a. ... Walker] [... Walker xx ... Walker] x
b. ... Walker] [loves ... Walker xx loves ... Walker] [loves

7. Left branching languages

(26) [[[Umeda-no ane-no] omiyage-ga] [marude amai]]
Umeda-Poss sister-Poss souvenir very sweet
'The souvenir of my sister living in Umeda is very sweet.'

(27) $\alpha \underline{x} \beta \rightarrow \alpha \beta$

(28) $\underline{xx}(\underline{x}...) \rightarrow] [(\dots)$

(29) \underline{xxx} Umeda-no ane-no x omiyage-ga xx marude amai xx

(30)][[Umeda-no ane-no] omiyage-ga] [marude amai]]

(31)][[Umeda-no ane-no] omiyage-ga] [marude amai]]

8. Compounds in right branching languages

(32)][[waste disposal] plan]

(33) xx waste disposal x plan x

(34)][[waste disposal [plan]

(35)][[waste disposal] plan]

(35*) a. $\underline{x} = \underline{xx} \quad \underline{x} \alpha \rightarrow \} \alpha$ (α : a lexical item)

b. \underline{xx} waste disposal x plan x \rightarrow [waste disposal} plan}

9. Phonological evidence for the analysis

(36) a. [Jeffrey [hit [the [cop]]][with [a stick]]] (Jeffrey had the stick) [127.7 msec]

b. [Jeffrey [hit [the [cop [with [a stick]]]]]] (The cop had the stick) [97.1 msec]

(37) a. x Jeffrey x hit x the x cop xxx with x a stick xxxx

b. x Jeffrey x hit x the x cop x with x a stick xxxxxx

(38) The spies [_{VP} informed # [_{NP} the guards] (#) [_{PP} of NP]]

(39) a. The spies [informed [the [guards [of [the palace]]]]]

b. The spies [informed [the [guards]]] [of [the conspiracy]]]

(40) PFParsing

a. ... guards x of guards [of ... (= (39a))

b. ... guards xxx of guards]] [of ... (= (39b))

10. Consequences

- Avoid Pause and “end-weight” (Hawkins 1994, Wasow 2002)
- The rightmost word is non-branching (Kayne’s LCA, contra Chomsky (1995)).
- Eliminating labels is possible (cf. Chomsky 1995, Collins 2002, Tokizaki 2005).

11. Summary

- No paradox between Parse Right and Merge Left if Spell-Out is before Merge.
- A right bracket triggers Merge, enclosing a constituent with a preceding left bracket.
- A speaker Spells Out a word and a bracket to PF stepwise as sound and silence.
- Hearers interpret the silent demibeats as syntactic brackets to build a syntactic tree.

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