

Deletion by Phase: A Case Study of Gapping

[Introduction] This paper aims to propose a new analysis of Gapping under Chomsky’s (2000:MI) Cyclic Spell-Out (hereon CSO). I claim: [1] Deletion as a consequence of CSO can optionally apply phase by phase: whether a Spell-Out domain is pronounced or deleted is determined upon Spell-Out, [2] [1] makes it possible to derive Gapping without appealing to the movement of the remnant assumed in Johnson (2009) and Coppock (2001).

[Cyclic Spell-Out] Since MI, it has been assumed that syntactic derivation proceeds phase by phase, and Spell-Out takes place cyclically to send the complement of a phase to the PF and LF interfaces. One immediate consequence of CSO for the operation Delete at the PF is that only complements of phase heads can undergo deletion (Takahashi 2002, a.o.):

- (1) John bought something, but I don’t know [_{CP} what_i C [_{TP} ~~John bought t_i~~]] (phase head = C)
 Since Delete is, by definition, an optional operation, the elements inside the Spell-Out domain may not be deleted; rather they are freely pronounced in it:
 (2) John bought something, but I don’t know [_{CP} what_i C [_{TP} John bought t_i]]

[Proposal] One unclear issue of the phase-based approach to deletion is when Delete is applied under CSO. I thus put forward the *DELETION BY PHASE HYPOTHESIS (DBPH)* (3), which is originally suggested by Goto (2012), and propose to implement it under the mechanism of (4), which is developed by Abe & Tancredi (2012) in terms of the DBPH:

- (3) Whether a Spell-Out domain is pronounced or deleted is determined upon Spell-Out.
 (4) At a phase level, the phase head assigns a [+Delete] feature to its domain upon Spell-Out.
 a. At the PF side: all the elements inside a [+Delete]-marked phrase get deleted.
 b. At the LF side: the whole phrase must be properly identified as GIVEN (Rooth 1992).

One striking consequence of the DBPH is that a “gap” is nothing but a result of deletion by phase: non-constituent deletion is obtained by optionally applying Delete phase by phase, as schematically shown in (5) (the box indicates Spell-Out, and strike-through deletion):

- (5) ... [W [_{ZP} ... [_Z [_{YP} [+Delete] ... [_Y Y] [_{XP} ... X]]]]]] (phase head = W/Z/Y)

In (5) the complement of Y (XP) is spelled-out and pronounced; the complement of Z (YP) is spelled-out and deleted through [+Delete]-assignment; and the complement of W (ZP) is spelled-out and pronounced. Obviously, what we do in (5) is just constituent deletion at each phase level; hence apparent non-constituent deletion can be regarded as an illusion.

[Gapping] Importantly, the DBPH allows us to yield elliptical constructions *in situ*: we do not have to apply movement operations in the course of derivation to derive them. This is in fact a significant departure from the previous approaches to Gapping, for example:

- (6) Some had ordered mussels, and others swordfish.

There has been much controversy whether (6) involves the across-the-board (ATB) VP-movement, as in (7) (Johnson 2009, a.o.) or VP-ellipsis, as in (8) (Coppock 2001, a.o.) (see Johnson 2009 for arguments for the vP-coordination approach to Gapping):

- (7) Some_i had [_{Pred} [_{VP} ordered t_i] [_{VP} t_i [_{VP} t_{VP} mussels_j]]], and [_{VP} others [_{VP} t_{VP} swordfish_j]]

- (8) Some_i had [_{VP} t_i [_{VP} [_{VP} ordered t_j] mussels_j]], and [_{VP} others [_{VP} [~~t_k~~ swordfish_k]]

Irrespective of the meaningful difference between them, both approaches similarly and crucially stipulate movement of remnants to VP: Prior to the ATB movement or VP-ellipsis, the remnant *swordfish* and the correlate *mussels* have raised rightward from their respective VPs. Apparently, there is no motivation for this movement except that it feeds a constituent movement/deletion, and hence it would be better to dispense with it. Worse, the movement of the remnant gives rise to “word-order problems.” As Johnson (2009) states, examples like (9) cannot be derived by both approaches: the ATB movement approach requires a complex suite of movements to derive (9a), while the VP-ellipsis approach ends up allowing ungrammatical examples like (9b), contrary to fact.

- (9) a. Ice cream gives me brain-freeze and beans ~~give me~~ indigestion.
 b. *Ice cream gives me in the morning brain-breeze.

As Johnson confesses, the main culprit for this problem is the movement of the remnant.

[Analysis] Since it is a common observation that the remnants in Gapping contrast with their correlates in the first coordinate, I assume following Abe & Tancredi (2012) that [+F] is assigned to any phrase in the course of a derivation, and at the PF side, a phrase marked with [+F] instantiates its effect by accenting it or a certain word included in it (cf. the nuclear stress rule); and at the LF side, it undergoes a focus interpretation a la Rooth's (1992) alternative semantics of focus. Under this assumption and the DBPH, therefore, Gapping can be derived as follows (I adopt the vP-coordination approach to derive certain properties of Gapping; see Johnson 2009 and Toosarvandani 2012 for discussion of the unique properties of Gapping):

- (10) a. $[_{nP} n \text{ } \boxed{[_{DP[+F]} \text{ swordfish}]}]$ (Spell-Out of DP with [+F]-assignment)
 b. $[_{vP} v \text{ } \boxed{[_{VP[+Delete]} \text{ ordered } nP}]]$ (Spell-Out of VP with [+Delete]-assignment)
 c. $[_{\&P} \& \text{ } \boxed{[_{vP[+F]} \text{ others } v}]]$ (Spell-Out of vP with [+F]-assignment)

First, at the nP phase level (Chomsky 2007), the complement of n (DP) is spelled-out with [+F]-assignment. Second, at the vP phase level, the complement of v (VP) is spelled-out with [+Delete]-assignment. Lastly, at the &P phase level (Kitada 2007), the complement of & (vP) is spelled-out with [+F]-assignment. As a result, Gapping is derived without appealing to the movement of the remnant. In the same way, (9a) can be easily accommodated in the DBPH:

- (11) ... $[_{\&P} \& \text{ } \boxed{[_{vP[+F]} \text{ beans} \text{ } \boxed{[_{VP[+Delete]} \text{ give me} \text{ } \boxed{[_{DP[+F]} \text{ indigestion}]}]}]}]]]$

In our analysis, the word-order in the phrase with the gap is just the same as would arise if there were no gap; hence the word-order problem does not arise to begin with.

[Consequences] The DBPH-based analysis of Gapping straightforwardly explains why Gapping is insensitive to Left Branch Condition (LBC) that is imposed on movement:

- (12) I make too strong an espresso, and Fred too weak.

That is, Gapping is insensitive to the LBC, because the remnant does not move, period. Moreover, adopting an economy condition like (14), which has been suggested in various forms (den Dikken et al. 2000, a.o.), locality effects in Gapping (Neijt 1979), as exemplified in (13), can be explained as a consequence of derivational economy:

- (13) *Max said that you should buy bread and Peter ~~said that you should buy~~ wine.

- (14) * $[_{XP[+Delete]} \dots [_{YP[+Delete]} \dots] \dots]$ where YP cannot be assigned [+Delete] if the larger phrase XP that contains YP is assigned this feature.

If (14) is applied to (13), it follows that $[_{CP} \text{ that}]$, $[_{TP} \text{ you should}]$, and $[_{VP} \text{ buy}]$ cannot be assigned [+Delete] since the larger phrase $[_{VP} \text{ said}]$ that contain them is assigned this feature:

- (15) ... $[_{\&P} \& \text{ } \boxed{[_{vP[+F]} \text{ Peter } v \text{ } \boxed{[_{VP[+Delete]} \text{ said} \text{ } \boxed{[_{CP} \text{ that} \text{ } \boxed{[_{TP} \text{ you should} \text{ } \boxed{[_{VP} \text{ buy} \text{ } \boxed{[_{DP[+F]} \text{ wine}]}]}]}]}]}]}]}]]]]]$

Here, it is important to notice that while the economy condition dictates that the effect of Delete is to be maximized, CSO regardlessly proceeds to reduce memory load in computation. Hence it is too late to apply Delete to the elements inside the previously Spelled-Out domains:

- (16) ... $[_{\&P} \& \text{ } \boxed{[_{vP[+F]} \text{ Peter } v \text{ } \boxed{[_{VP[+Delete]} \text{ said} \text{ } \boxed{[_{CP} \text{ that} \text{ } \boxed{[_{TP} \text{ you should} \text{ } \boxed{[_{VP} \text{ buy} \text{ } \boxed{[_{DP[+F]} \text{ wine}]}]}]}]}]}]}]}]}]]]]]$

As predicted from (16), (13) is improved if only the verb inside the $VP_{[+Delete]}$ is deleted:

- (17) Max said that you should buy bread and Peter ~~said~~ that you should buy wine.

All relevant constraints on Gapping like “islands” can be explained in the same way.

[Conclusion] Given the DBPH, what is deleted or what is pronounced can be determined upon Spell-Out at each phase level. To explain elliptical constructions, all we have to do is Spell-Out. The DBPH can give rise to a particular formalization of non-constituent deletion.

[Selected References] Abe, J. & C. Tancredi. 2012. Non-constituent deaccenting and deletion: A phase-based approach. Ms., Tohoku Gakuin U. & Keio U. | Chomsky, N. 2000. Minimalist inquiries. In *Step by Step*, 89-155. | Coppock, E. 2001. Gapping: in the defense of deletion. *CLS* 37:133-148 | den Dikken, M. et al. 2000. Pseudoclefts and ellipsis. *Studia Linguistica* 54:41-89. | Goto, N. 2012. A note on particle stranding ellipsis. *SICOGG* 14:78-97 | Johnson, K. 2009. Gapping is not (VP-)ellipsis. *LI* 40:289-328. | Takahashi, D. 2002. Phase no recycle (Recycling phases). *The Rising Generation* 8:270-273.