

The Syntactic OCP

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1. The Syntactic OCP

Languages abound with repetition. The most striking case comes from reduplication (see Marantz 1982, McCarthy and Prince 1995, Raimy 2000, Frampton 2009 among many others). Examples from Japanese onomatopoeia, plural formation, and verbal repetition are given in (1)–(3).

(1) pika-pika

‘shining’

(2) ie-ie

house-house

‘houses’

(3) tabe-te tabe-te tabe-makut-ta.

eat-CONT eat-CONT eat-repeat-PST

‘(I) ate and ate and ate.’

Yet, simultaneously, languages exhibit amazing resistance against repetition under adjacency. In the area of phonology, this universal generalization is well known as the Obligatory Contour Principle (OCP) (see Leben 1973, Goldsmith 1979, McCarthy 1986, Odden 1986, and subsequent work), but some linguists have even extended the notion of the OCP to syntax (see Perlmutter 1971, Menn and MacWhinney 1983, Yip 1998, van Riemsdijk 1998, Ackema 2001; see also Neeleman and van de Koot 2006 for a survey research on syntactic haplology). Richards (2010) proposes a much more generalized ban on adjacent non-distinct elements.

Mohanan (1994b) proposes a generalized version of the OCP that holds in phonology, morphology, as well as in syntax, given below.

(4) The Generalized OCP: Universal (Mohanan 1994b: 212)

Identical elements (melodic units/formatives) are disallowed in adjacent units. (not absolute)

Hiraiwa (in press) argues that the Double-*o* Constraint (DoC) should be formulated within a phase theory (see Harada 1973, 1975, Shibatani 1978, Kuroda 1992, Hiraiwa, 2002, among others).

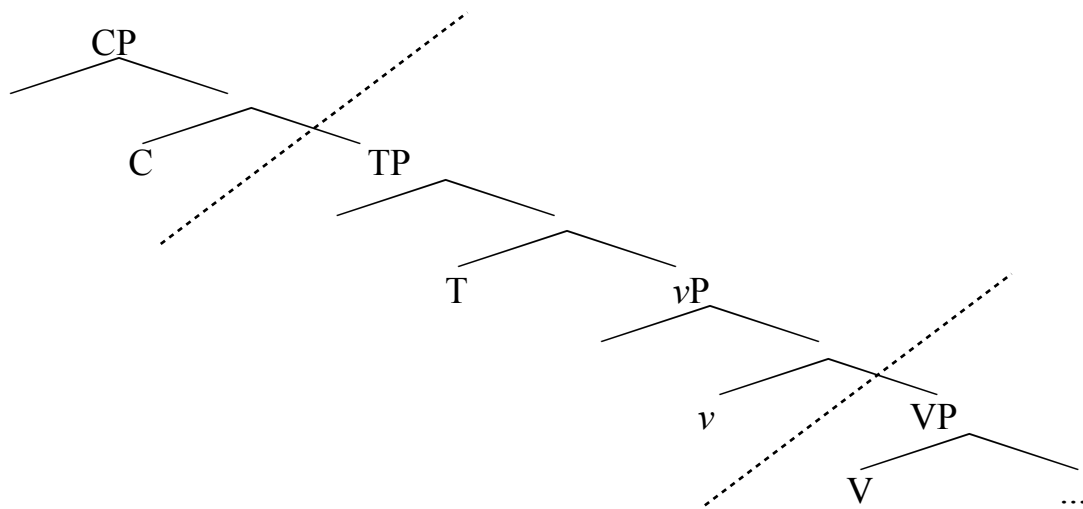
(5) The Double-*o* Constraint (DoC) (Hiraiwa, in press)

Multiple identical occurrences of the structural accusative Case value cannot be morphophonologically realized within a single Spell-Out domain at Transfer.

Narrow syntactic derivation sends syntactic object to the interfaces *phase by phase* and this operation is called Transfer. The term Spell-Out specifically refers to the process in which syntactic object is sent to the PF side of the interfaces. Morphological case is taken to be a reflex of abstract Case that is assigned (“valued”) in narrow syntax, and such morphological realization takes place in the PF component after Transfer (see Chomsky 2001, Hiraiwa 2005, Legate 2008).

A Spell-Out domain is defined as the complement of each phase head (C, *v*) (Chomsky 2001, 2004, 2008). Thus, a typical simplex sentence has three Spell-Out domains, as delineated by the dotted lines below: the complement of *v* (the VP Spell-Out domain), the complement of C (the TP Spell-Out domain), and the rest.

(6) Multiple Spell-Out in the phase theory



It follows from the DoC that in Japanese only one accusative Case particle can be morphophonologically realized within each Spell-Out domain. An immediate consequence of the theory is that the domain is determined not by syntactic or phonological constituents. Rather, each domain is defined as syntactic object between the sister of a phase head and the lower phase head (if any): a Spell-Out domain. A stronger thesis from the architecture of grammar is that this is the only meaningful unit for interface conditions to operate on.

The DoC formulated in (5) is obviously reminiscent of the OCP. Thus, in this article, building on Mohanan's insight, I propose to generalize the OCP to a syntactic principle, *the Syntactic OCP*. Thus, the Syntactic OCP (7), which is a syntax-phonology interface condition, is naturally relativized to the notion of phase.

(7) The Syntactic OCP

Multiple elements with an identical morphophonological specification are disallowed in the same Spell-Out domain at PF.

Thus, the DoC in Japanese is just one manifestation of the universal principle (7). From a perspective of language acquisition, therefore, it is

expected that the following machinery is innately present in UG.

- (8) a. Multiple Spell-Out
- b. Phases
- c. Multiple Agree (between v and goals) (Hiraiwa 2005)
- d. The Syntactic OCP

This article consists of two main parts. Section 2 illustrates various consequences of the DoC and shows that it covers all the data elegantly. Section 3 discusses various manifestations of the Syntactic OCP in other languages: Hindi, Dutch, and Old French. Section 4 is the conclusion.

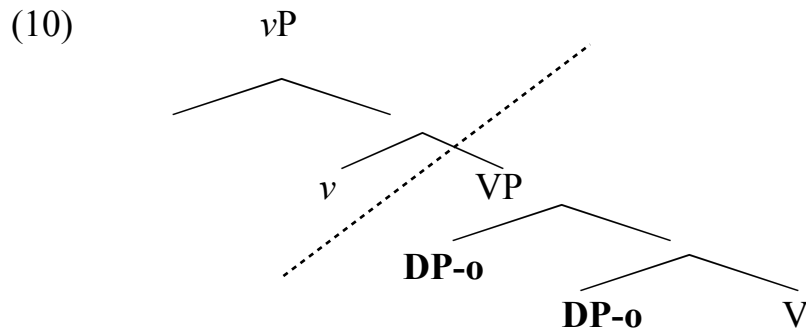
2. The Double-*o* Constraint

In this section, I overview crucial properties of the DoC, based on Hiraiwa (in press) and show how the theory explains them. For reasons of space, I will restrict myself to examples of possessor raising for the rest of the discussion.

A typical construction in which the effects of the DoC emerge is a so-called object possessor raising construction. As shown in (9a), if the possessor and the possessed are marked in the genitive Case and accusative Case, respectively, the sentence is fine. When the possessor is raised and marked in the accusative Case as in (9b), however, the sentence is degraded.

- (9) Possessor raising
 - a. Ken-ga [Naomi-**no** atama]-**o** tatai-ta.
Ken-NOM Naomi-GEN head-ACC hit-PST
'Ken hit Naomi's head.'
 - b. ??Ken-ga Naomi-**o**_i [_i atama]-**o** tatai-ta.
Ken-NOM Naomi-ACC head-ACC hit-PST
'Ken hit Naomi on the head.'

This is naturally explained by the DoC (5), because in (9b), both the accusative possessor DP and the possessed DP are spelled out in the same VP Spell-Out domain.



As the theory states, the DoC is not a mere ban against multiple identical phonological segments appearing too close to each other. Thus, the following example is perfectly fine, despite the five consecutive segments *o*.

- (11) Ken-ga satoo-o ookina hukuro-ni ire-ta.
 Ken-NOM sugar-ACC big bag put-PST
 ‘Ken put the sugar in a big bag.’

This shows that the DoC is not a prohibition against multiple identical phonological segments *-o*. Rather it refers to multiple identical accusative Case morphemes *-o*.

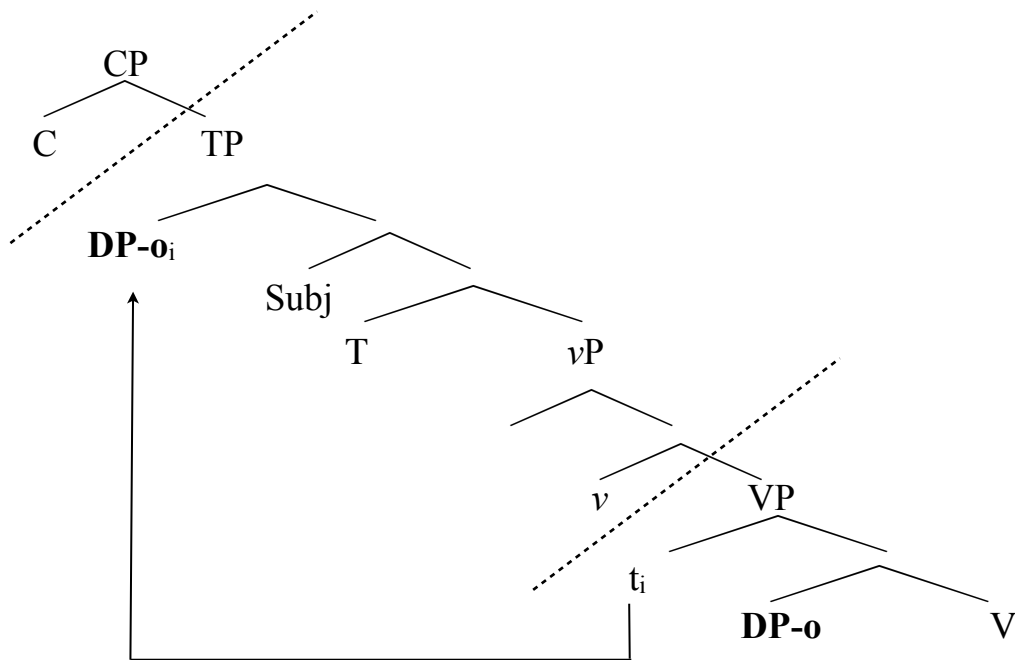
The phase theory of the DoC makes a prediction that the sentence becomes grammatical if one of the accusative DPs is moved to a different Spell-Out domain. The prediction is borne out as shown in (12b), where the accusative possessor DP is scrambled to the sentence initial position, as originally observed by Shibatani (1978).

(12) Scrambling

a. ??Ken-ga omoikkir Naomi-o atama-o tatai-ta.
 Ken-NOM hard Naomi-ACC head-ACC hit-PST
 ‘Ken hit Naomi hard on the head.’

b. Naomi-o_i Ken-ga omoikkiri t_i atama-o tatai-ta.
 Naomi-ACC Ken-NOM hard head-ACC hit-PST
 ‘Ken hit Naomi hard on the head.’

(13)



The accusative possessor DP does not have to move to the position above the subject in order to be spelled out in the next higher domain. Instead, scrambling to the edge of vP suffices and this is confirmed by the grammaticality of (14) and (15).

(14) Scrambling

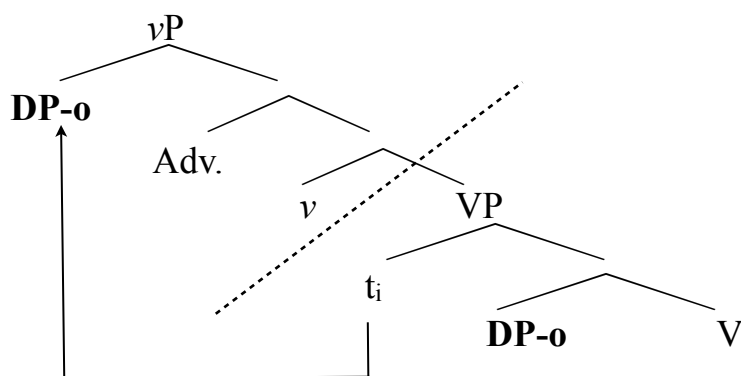
Ken-ga Naomi-o_i omoikkiri [e_i atama]-o tatai-ta.
 Ken-NOM Naomi-ACC hard head-ACC hit-PST
 ‘Ken hit Naomi hard on the head.’

(15) Prosodic boundary

Ken-ga Naomi-**o**_i, (pause) [_e_i atama]-**o** tatai-ta.
Ken-NOM Naomi-ACC head-ACC hit-PST
'Ken hit Naomi on the head.'

This is because the higher accusative DP is now spelled out in the TP Spell-Out domain, assuming the presence of the adverb or the prosodic break is an indication for a phase boundary.

(16)



The prediction is, then, that multiple scrambling of both of the accusative DPs maintains the degree of deviance because they end up being spelled out in the same TP Spell-Out domain, which is confirmed by (17).

(17) Multiple Scrambling

??Naomi-**o**_i atama-**o**_j Ken-ga omoikkiri t_i t_j tatai-ta.
Naomi-ACC head-ACC Ken-NOM hard hit-PST
'Ken hit Naomi hard on the head.'

Similarly, Harada (1973, 1975) observed that clefting also circumvents the violation of the DoC.

(18) Cleft

Ken-ga t_i amata-o tatai-ta no]-wa Naomi-o_i da.
Ken-NOM head-ACC hit-PST C-TOP Naomi-ACC Cop
'It is Hanako that Ken hit on the head.'

Regardless of particular analyses of cleft constructions, it is obvious that the possessor accusative DP is outside the Spell-Out domain for the possessed accusative DP.

Again, multiple clefting results in ungrammaticality because it will bring the accusative DPs to the same Spell-Out domain.

(19) Multiple cleft

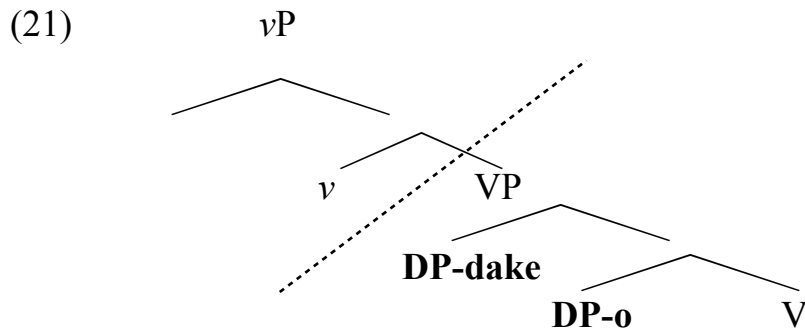
??[Ken-ga t_i t_j tatai-ta no]-wa Naomi-o_i atama-o_j da.
Ken-NOM hit-PST C-TOP Naomi-ACC head-ACC Cop
'(Lit.) It is Naomi, on the head that Ken hit.'

Movement is not the only way to avoid the DoC violation. The phase-based formulation predicts that "ellipsis" of one of the accusative Case particle or the entire DP will do. This is the case, as shown by the grammaticality of (20). In (20), the accusative Case particle is replaced with topic/focus particles or the overt DP undergoes pro-drop.

(20) PF-suppression

a. Ken-ga Naomi-mo/dake/sae/wa/pro_i [e_i atama]-o
Ken-NOM Naomi-also/only/even/TOP/pro head-ACC
tatai-ta.
hit-PST
'Ken hit also/only/even Naomi on the head.'

- b. Ken-ga Naomi-oi [e_i atama-mo/dake/sae/wa/pro] tatai-ta.
 Ken-NOM Naomi-ACC head-also/only/even/TOP/pro hit-PST
 ‘Ken hit Naomi also/only/even on the head.’



Relativization of one of the accusative DPs works as well, as it will remove the Case particle of the relativized head noun.

(22) Relativization

- [Ken-ga e_i atama-**o** tatai-ta] hito $_i$
 Ken-NOM head-ACC hit-PST person
 ‘the person who Ken hit on the head.’

Another clear and significant prediction from the proposed theory is that the DoC is not a linear adjacency constraint. Thus, (23a) is perfectly fine even though the two accusative DPs are adjacent. This is predicted because there is a clear clause boundary between them. Multiple scrambling, in contrast, puts them in the same TP Spell-Out domain and (23b) and (23c) are expectedly degraded.

(23) Accusative DPs and clause boundary

- a. Ken-ga Naomi-o [PRO eiga-o mi-ni]
Ken-NOM Naomi-ACC movie-ACC watch-INF
sasot-ta.
invite-PST
'Ken invited Naomi to watch the movie.'
- b. ??eiga-o_j Naomi-o_i Ken-ga t_i [PRO t_j
movie-ACC Naomi-ACC Ken-NOM
mi-ni sasot-ta.
watch-INF invite-PST
'Ken invited Naomi to watch the movie.'
- c. ??Naomi-o_i eiga-o_j Ken-ga t_i [PRO t_j
Naomi-ACC movie-ACC Ken-NOM
mi-ni sasot-ta.
watch-INF invite-PST
'Ken invited Naomi to watch the movie.'

Another striking prediction is that two accusative DPs should induce the DoC violation even if they are made non-adjacent by an intervening element, as long as they are in the same Spell-Out domain. This is most clearly seen in the cleft strategy that we have seen above. Notice that (24b) does not dramatically improve, although the two accusative DPs are separated by an adverb in the Spell-Out domain.¹

(24) Multiple Cleft and adjacency

- a. ??[Ken-ga omoikkiri t_i t_j tatai-ta no]-wa Naomi-o_i
Ken-NOM hard hit-PST C-TOP Naomi-ACC
atama-o_j da.
head-ACC Cop
'(Lit.) It is Naomi, on the head that Ken hit hard.'

- b. ??[Ken-ga t_i t_k t_j tatai-ta no]-wa Naomi-o_i
 Ken-NOM hit-PST C-TOP Naomi-ACC
 omoikkiri_k atama-o_j da.
 hard head-ACC Cop
 ‘(Lit.) It is Naomi, on the head that Ken hit hard.’

Finally, it should be noted that the DoC only applies to accusative Case particles in Japanese. As shown (25)–(29), nominative and genitive Case particles and postpositions such as *de*, *ni*, *kara* are all immune to the effects.

- (25) Ken-**ga** se-**ga** taka-i.
 Ken-NOM hight-NOM high-PRES
 ‘Ken is tall.’
- (26) Ken-**no** himitu-**no** kiiro-**no** hako
 Ken-GEN secret-GEN yellow-GEN box
 ‘Ken’s secret yellow box’
- (27) Ken-ga sushiya-**de** te-**de** sushi-o tabe-ta.
 Ken-NOM sushi.bar-at finger-with sushi-ACC eat-PST
 ‘Ken ate sushi with his fingers at a sushi bar.’
- (28) Ken-ga Naomi-**ni** hoppe-**ni** kisu-s-are-ta.
 Naomi-ni hoppe-ni Ken-ga kisu-s-are-ta.
 ‘Ken was kissed on the cheek by Naomi.’
- (29) Ken-ga 4-gatu-**kara** Tokyo-**kara** Boston-ni hikkosi-simas-u.
 Ken-NOM April-from Tokyo-from Boston-to move-do-PRES
 ‘Ken will move from Tokyo to Boston from April.’

I do not have a deeper explanation for the question of why the DoC exists in UG, while there are no such counterparts for the other particles and postpositions, but at least, we will expect the existence of phenomena similar to

the DoC cross-linguistically, as long as the DoC is a constraint ultimately derived from the universal Syntactic OCP (7). In the next section, I will demonstrate that this final expectation is also fulfilled.

3. Syntactic OCP Phenomena Cross-linguistically

In this section, I will apply the Syntactic OCP to three different phenomena outside Japanese: identical case constructions in Hindi, colliding complementizers in Dutch, and pro-drop in Old French.

Let us first examine the syntactic OCP phenomena in Hindi discussed in Mohanan (1994b).² Mohanan (1994b) argues that two *-ko* or *-se* DPs cannot appear too close to each other, as shown in (30) and (31).

(30) Hindi (Mohanan 1994b, 186)

??raam- ko	baccõ- ko	samhaalnaa	padaa.
Ram-DAT	children-ACC	take.care.of.-NF	fall.PERF

‘Ram had to take care of the children.’

(31) Hindi (Mohanan 1994b, 188)

??ravii	raam- se	c ^h adii- se	piitaa	gayaa.
Ravi-NOM	Ram-INST	cane-INST	beat.PERF	go-PERF

‘Ravi was beaten with a cane by Ram.’

This is surprisingly similar to the DoC in Japanese, but the parallel does not end here. Mohanan (1994b) shows that the sentences improve if the two DPs in question are separated by an intervening element or a prosodic break.

(32) Hindi (Mohanan 1994b, 187)

a.	raam- ko	kal	baccõ- ko	samhaalnaa	padaa.
	Ram-DAT	yesterday	children-ACC	take.care.of.-NF	fall.PERF

‘Ram had to take care of the children yesterday.’

b. raam-**ko** (pause) baccō-**ko** samhaalnaa padaa.
 Ram-DAT children-ACC take.care.of.-NF fall.PERF
 ‘Ram had to take care of the children.’

(33) Hindi (Mohanan 1994b, 188)

ravii raam-**se** bahut baar c^hadii-**se**
 Ravi-NOM Ram-INST many times cane-INST
 piitaa gayaa.
 beat.PERF go-PERF
 ‘Ravi was beaten with a cane by Ram many times.’

Finally, adjacent *-ko* DPs are fine when there is a clausal boundary. In the following complex verb construction, *raam-ko* is an argument of the verb *b^hejegii* while *baccō-ko* is an argument of the embedded verb *bulaane*.

(34) Hindi (Mohanan 1994b, 200)

ilaa araam-**ko** baccō-**ko** bulaane b^hejegii.
 Ila-NOM Ram-DAT children-ACC call-NF send-FUT
 ‘Ila will send Ram to call the child.’

Thus, there are striking parallels between the DoC in Japanese and the prohibition against two identical case endings in Hindi.³

Syntactic OCP phenomena in Dutch are even more interesting and revealing. Ackema (2001) and Neeleman and Van de Koot (2006) observe that the interrogative complementizer *of*, which is identical to the disjunction particle *of*, cannot co-occur adjacent to each other. (35a), which is a coordination of two matrix clauses, is fine as the disjunction particle *of* is separated from the embedded interrogative complementizer *of*. In (35b), on the other hand, conjunction reduction applies and the two instances of *of* become adjacent, which is ungrammatical. This violation is circumvented by the suppletion of *of* with the declarative complementizer *dat*, as shown in (35c). As a side note,

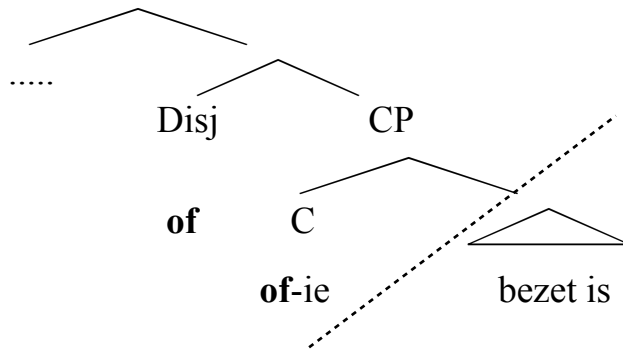
(35d) shows that the null complementizer is not an option available in Dutch.

(35) Dutch (Neeleman and Van de Koot 2006, 697)

- a. Vroeg je nou of die plaats vrij is **of**
asked you now if that seat free is or
vroeg je nou **of**-ie bezet is.
asked you now if-it taken is
'Did you ask whether that seat is free or did you ask whether it is
taken?'
- b. *Vroeg je nou of die plaats vrij is **of**
asked you now if that seat free is or
of-ie bezet is.
if-it taken is
- c. Vroeg je nou of die plaats vrij is **of**
asked you now if that seat free is or
dat-ie bezet is.
that-it taken is
- d. *Vroeg je nou of die plaats vrij is **of**
asked you now if that seat free is or
∅-ie bezet is.
∅-it taken is

The second *of*, which is a complementizer and a phase head, is spelled out at the next phase level and hence it is spelled out in the same phrase domain as the disjunction particle *of*. Therefore, the suppletion of the second *of* saves the derivation.

(36)



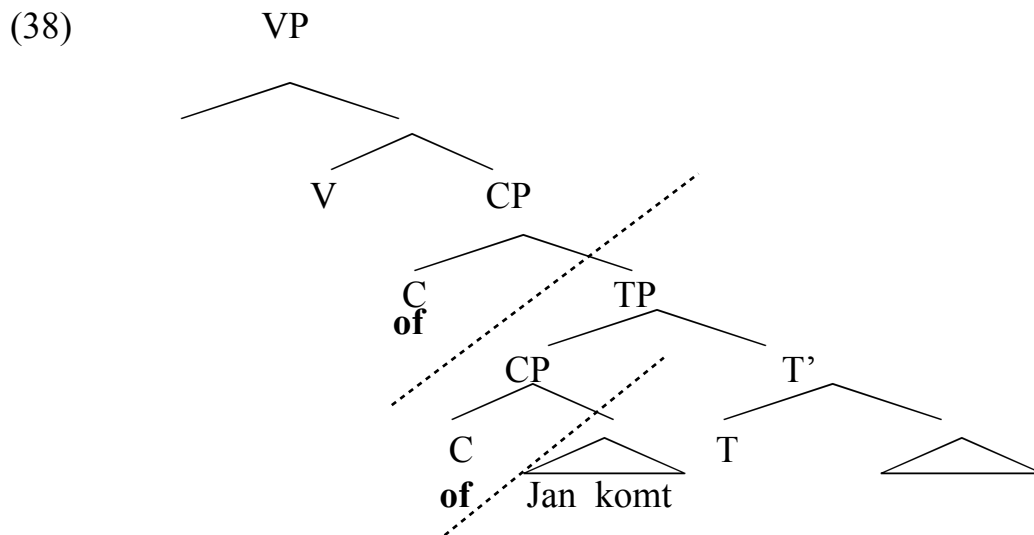
Interestingly, Neeleman and Van de Koot (2006) make a significant observation about a puzzling case of colliding complementizers. According to them, the examples with the adjacent non-distinct complementizers (37a) and (37b) are as grammatical as the examples with distinct complementizers (37c) and (37d) to many Dutch speakers.

(37) Dutch (Neeleman and Van de Koot 2006, 698)

- a. Hij zei **dat** [CP **dat** Jan Komt] het feest wel
he said that that John comes the party no-doubt
zal opluisteren.
will enhance
'He said that John's coming will certainly enhance the party.'
- b. Hij vroeg **of** [CP **of** Jan komt] veel
he asked whether whether John comes a.lot
uit zal maken.
out will make
'He asked whether it will matter a great deal whether John will come or not.'
- c. Jij vroeg **of** [CP **dat** Jan komt] een
you asked whether that John comes a
probleem is.
problem is
'You asked whether John's coming would be a problem.'

- d. Hij zei **dat** [CP **of** Jan komt] niet zeker is.
 he said that whether John comes not sure is
 ‘He said that it is uncertain whether John will come.’

The grammaticality of (37a) and (37b) might appear to be unexpected given the emergence of suppletion as we have seen above. However, it is indeed perfectly expected under the phase theory of the syntactic OCP. Let us look at the syntactic structure carefully.



Notice that there is a crucial difference between (36) and (38). In the former, the colliding complementizer and disjunction particle are in the same Spell-Out domain. In the latter, they are not, however. In this derivation (38), the second *of*, which is the complementizer of the subject embedded clause, is spelled out at the next higher phase, namely, the TP Spell-Out domain. In contrast, the higher *of*, is spelled out at the next higher phase, the VP domain. Therefore, (37a) and (37b) are perfectly grammatical even though the identical complementizers are adjacent on the surface. The contrast would be mysterious if the ban on colliding complementizers were a linear adjacency constraint.

Finally, let us examine another phenomenon discussed by Ackema and Neeleman (2003). Old French was a verb second language and pro-drop was

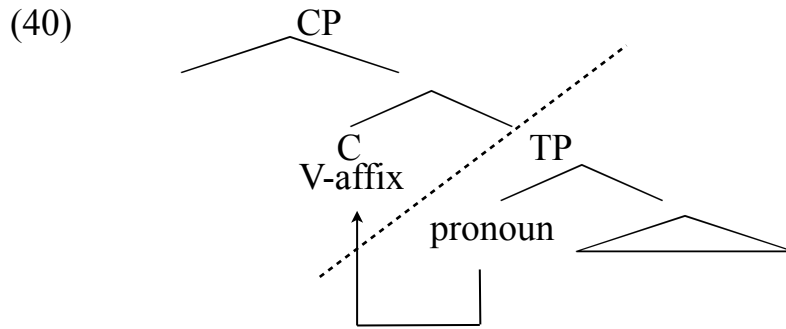
condition by word order: it was allowed in matrix subject-verb inversion contexts. Thus, pro-drop is grammatical in the inversion derivation (39a), although it is ungrammatical in the embedded clause (39b) and in the non-inversion declarative matrix sentence (39c).

(39) Old French (Ackema and Neeleman 2003, 722)

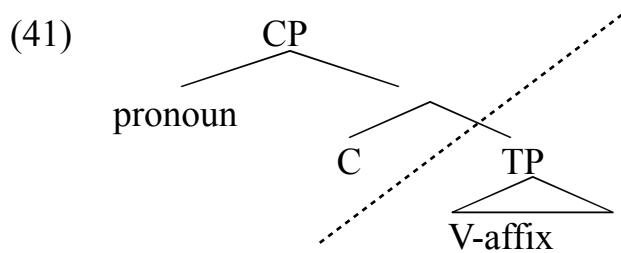
- a. Einsi corurent \emptyset par mer tant que il vindrent
 thus ran.3PLR by sea until C they came.3PLR
 à Cademelée.
 to Cadée
- b. *Einsi corurent li Grieu par mer tant que \emptyset
 thus ran.3PLR the Greeks by sea until C
 vindrent à Cademelée.
 came.3PLR to Cadée
- c. * \emptyset corurent einsi par mer tant que il vindrent
 ran.3PLR thus by sea until C they came.3PLR
 à Cademelée.
 to Cadée

Neeleman and Van de Koot (2006), building on Ackema and Neeleman (2003), reformulate the generalization that the subject pronoun can and must be deleted when it is adjacent to the agreement affix.

We can analyze the data in the following way. In the inversion context, the verb moves to C. The subject pronoun is in [Spec, TP], but because it is a weak pronoun, it cliticizes onto the adjacent c-commanding host. If the cliticization takes place, then the V-affix and the subject weak pronoun form a complex head and hence are spelled out in the same phrase. Therefore, pro-drop is licensed as a way to avoid the Syntactic OCP.



On the other hand, I assume that in non-inversion contexts, the verb remains at T, while the subject raises to [Spec, CP]. If this is the case, the weak pronoun and the V-affix are spelled out in separate Spell-Out domains and hence pro-drop is unnecessary and not licensed.



4. Conclusion

In this article, I have generalized the Syntactic OCP and demonstrated that it operates on phase units (more specifically, Spell-Out domains), which indeed follows from the architecture of grammar if Chomsky (2001, 2004, 2008) is correct.

I have argued that the proposed phase theory of the syntactic OCP is applicable not only to the DoC in Japanese, but also to multiple case endings in Hindi, colliding complementizers in Dutch, and the postverbal subject pro-drop in Old French.

As we have seen, actual manifestations of the proposed Syntactic OCP vary from language to language. Even though I do not have a fundamental theory of how the Syntactic OCP manifests itself in what languages yet, the study presented above indicates, at least, the existence of the universal principle,

the Syntactic OCP, and shows a future direction of research that awaits to be done.

Notes

* This article can be viewed as a further extension of Hiraiwa (in press), to which readers are referred for details of the DoC. I would like to thank Noam Chomsky, Tomo Fujii, Hisa Kitahara, Koji Sugisaki, the participants at the TCP 2010, and especially, Akira Watanabe for valuable comments.

¹ The cleft test is perhaps the clearest test because the focused position is unambiguously a single Spell-Out domain. Hisa Kitahara pointed out that the following classical example of *tokoro* relative clauses (i) originally due to Harada (1973) may sound unexpectedly better with multiple scrambling (ii) (cf. (17)).

(i) *Tokoro* relative clause

??Keisatu-ga	doroboo- o	[<i>e</i> _i	nigeyoo	to	si-ta	
police-NOM	thief-ACC		run.away	C	do-PST	
tokoro]- o	tukamae-ta					
TOKORO-ACC	catch-PST					

‘The police arrested the thief as he tried to run away.’

(ii) Multiple scrambling

#doroboo- o	[<i>e</i> _i	nigeyoo	to	si-ta	tokoro]- o
thief-ACC		run.away	C	do-PST	TOKORO-ACC
keisatu-ga	tukamae-ta				
police-NOM	catch-PST				

‘The police arrested the thief as he tried to run away.’

Although I still find (ii) degraded, the clefting test makes it clearer that the sentence is still bad with multiple movement.

(iii) Cleft

??[Keisatu-ga tukamae-ta no]-wa doroboo-o
police-NOM catch-PST C-TOP thief-ACC
[e_i nigeyoo to si-ta tokoro]-o da.
run.away C do-PST TOKORO-ACC

‘(Lit.) It is the thief, as he tried to run away, that the police arrested.’

² I follow Mohanan (1994ab) in glossing *-ko* to be dative/accusative marker. But Richards (2010) treats it as a non-specific marker. Object marking in Hindi is dependent on animacy as well as specificity. See Mohanan (1994a) for details of the case marking system in Hindi.

³ Mohanan (1994b, 187) gives an example that is apparently problematic for the approach taken in this article.

(i) Hindi (Mohanan 1994b, 187)

Raam-**ko** apnii bahin-ke baccō-**ko**
Ram-DAT self’s sister-GEN children-ACC
samhaalnaa padaa.
take.care.of.NF fall-PERF

‘Ram had to take care of his sister’s children.’

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