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Masanori Nakamura
Senshu University

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Global Issues*

Masanori Nakamura

Senshu University

Collins (1997), advocating a strictly local characterization of economy, claims that the theory of grammar should dispense with global economy. More specifically, he argues against Kitahara's (1997) Shortest Derivation Condition. In light of Collins' work, this paper addresses the following two issues surrounding the globality of economy conditions: (i) Does the grammar include the Shortest Derivation Condition?, and (ii) Does it include any global conditions at all? I argue that Collins is partially correct; although the Shortest Derivation Condition is not part of the grammar, the Minimal Link Condition (Chomsky 1993, 1994, Chomsky and Lasnik 1993), as a global economy condition independent of Move/Attract, is.

The organization of this paper is as follows. Section 1 is a summary of Collins' (1997) argument against the Shortest Derivation Condition. Section 2 presents further arguments against the condition, which are stronger than Collins' original argument. They are based on hyper-raising (Ura 1994), Preposition Incorporation (Baker 1988), and extraposition. Section 3 argues for the global nature of the Minimal Link Condition. The condition is shown to account for otherwise unexplainable interactions between hyper-raising and Preposition Incorporation on the one hand and *wh*-movement on the other. Section 4 consists of concluding remarks.

1. Local Economy

Collins (1997) puts forth the interesting thesis that economy conditions are evaluated at each step in the derivation without any reference to further computation. In

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discussing movement operations, he argues for the two economy conditions in (1) and (2).

- (1) *Last Resort*
Move raises α to the checking domain of a head H with a feature F only if the feature F of H enters into a checking relation with a feature F of α .
- (2) *Minimality*
 α can raise to a target K only if there is no operation (satisfying Last Resort) Move β targeting K, where β is closer to K.

According to Collins, each movement operation must satisfy (1) and (2).¹ The notion of closeness used in (2) is given in (3) (taken from Chomsky 1995:356).

- (3) *Closeness*
If β c-commands α , and τ is the target of movement, then β is closer to τ than α unless β is in the same minimal domain as (i) τ or (ii) α .²

Collins claims that the local economy condition in (2) provides an adequate account of inverted structures such as locative and quotative inversion in English, which he argues are problematic for previous proposals like Kitahara's (1995, 1997) making crucial use of global economy. Kitahara (1995, 1997) presents the economy condition in (4).

- (4) *Shortest Derivation Condition (SDC)*
Minimize the number of operations necessary for convergence.

Let us consider Collins' argument based on inverted constructions. Observe the pair in (5):

- (5) a. John rolled down the hill.
b. Down the hill rolled John.

Assuming that unaccusative verbs like *roll* do not have external arguments (see for example Burzio 1986), the structural representations for (5a-b) are (6a-b) respectively,

¹ Collins (1997) presents generalized versions of (1) and (2) that are intended to cover not only movement but also building of phrase structure.

² Chomsky (1995:299) presents the following definitions, where α is a feature or an X^0 category, and CH is the chain (α, t) or (the trivial chain) α :

- (i) a. $\text{Max}(\alpha)$ is the smallest maximal projection including α .
b. The *domain* $\delta(\text{CH})$ of CH is the set of categories included in $\text{Max}(\alpha)$ that are distinct from and do not contain α or t .
c. The *minimal domain* $\text{Min}(\delta(\text{CH}))$ of CH is the smallest subset K of $\delta(\text{CH})$ such that for any $\gamma \in \delta(\text{CH})$, some $\beta \in K$ reflexively dominates γ .

where TrP stands for Transitivity Phrase.³

- (6) a. [TP [DP John]_i T [TrP rolled [VP *t*_i *t*_V [PP down the hill]]]]
 b. [TP [PP down the hill]_i T [TrP rolled [VP [DP John] *t*_V *t*_i]]]

(6a) satisfies the economy conditions in (1) and (2). (6b), according to Collins (1997:27-28), satisfies them too. Last Resort is observed because either the D-feature of *the hill* or the P-feature of *down* enters into a checking relation with the strong feature of T. Minimality is also observed because *John* in the Spec of VP and *down the hill* are in the same minimal domain (see footnote 2) and hence they are equally close to the Spec of TP.

Now let us focus on the derivational steps taken in (6). The non-inverted derivation has the steps in (7).

- (7) a. V raises and adjoins to Tr
 b. DP raises to Spec TP
 c. Tr raises and adjoins to T covertly

The inverted derivation, on the other hand, takes the steps in (8).

- (8) a. V raises and adjoins to Tr
 b. PP raises to Spec TP
 c. Tr raises and adjoins to T covertly
 d. FF(*John*) raise and adjoin to T covertly

Under the crucial assumption that the two derivations belong to the same reference set because they share the same numeration (see (9) and (10) taken from Chomsky 1995:225) (cf. Collins 1997:134, fn. 27), the SDC incorrectly expects the non-inverted one to block the inverted one.

- (9) *Reference set*
 A reference set is a set of derivations that arise from the same numeration.

- (10) *Numeration*
 A numeration is a set of pairs (LI, *i*), where LI is an item of the lexicon and *i* is its index, understood to be the number of times that LI is selected.

The reason is that the extra step in (8d) makes (5b) more costly than (5a). Collins thus argues that locative inversion provides good evidence against global economy, the SDC in

³ Collins (1997:15) assumes that for transitive verbs, Tr checks accusative Case and assigns the external θ -role to its specifier and that for unaccusative verbs, it, though present, checks no Case and assigns no θ -role (cf. Chomsky's (1995) "light" verb). In the structural representations that follow, I will use TrP throughout for the sake of consistency.

particular.⁴

Of course, for Collins' argument to go through, it is crucial that (5a) and (5b) compete for economy. If they did not, his argument would just collapse. Given the independently motivated notion of reference set, which I will get to later in section 3, they do compete. Therefore, I conclude that his argument against the SDC does hold.

2. Against the SDC

Notice that his argument, though valid, is the weakest kind of empirical argument against the SDC. We can distinguish between the two types of counterarguments in (11).

- (11) Given competing derivations D_1 and D_2 ,
- a. D_1 and D_2 are both legitimate, but the SDC rules out one of them in favor of the other.
 - b. D_1 is legitimate and D_2 is not, but the SDC rules out D_1 in favor of D_2 .

(11a) is the kind of situation discussed by Collins (1997) in connection to inverted constructions. He (1997:61) points out correctly, however, that one unsatisfactory aspect of his argument is that the relevant operations that make one derivation longer than another are covert, as illustrated in (8); a stronger counterargument would involve a case where all operations in question are overt. (11b) is the situation where the SDC makes exactly the opposite prediction. Then (11b), if it exists at all, would provide stronger evidence than (11a).

Now I would like to turn to the two kinds of arguments against the SDC which I believe are stronger than Collins' argument.

2.1. Hyper-Raising

Let us begin with the argument in (11a), where the relevant operations that make one derivation longer than another are overt. In particular, let us consider what Ura (1994) calls overt "hyper-raising." Observe the pair in (12) from Chichewa, a Bantu language

⁴ Collins constructs a similar argument against the SDC on the basis of pairs like (i) (but see Collins 1997:135, fn. 6). (ib) is an example of quotative inversion.

(i) a. "I am so happy," Mary said.
b. "I am so happy," said Mary.

(Trithart 1977:88).⁵

- (12) a. Ndi-ganiz-a [kuti **m-nyamata** a-ma-lim-a chi-manga].
 SP-think-ASP COMP **boy** SP-HAB-farm-ASP corn
 'I think that the boy farms corn.'
 b. Ndi-(mu)-ganiz-a **m-nyamata** [kuti a-ma-lim-a chi-manga].
 SP-(OP)-think-ASP **boy** COMP SP-HAB-farm-ASP corn
 'I think that the boy farms corn.'

In (12a) the thematic subject *m-nyamata* 'boy' appears in the embedded clause following the complementizer. In (12b), on the other hand, it has raised into the matrix clause, preceding the complementizer. Since it belongs to the matrix clause, it can optionally trigger the object agreement *-mu-* on the matrix verb. Note that unlike familiar raising in languages like English, the kind of raising shown in (12b) takes place out of the tensed clause. Following Ura (1994), I assume that the raising in (12b) is forced because the embedded T takes the option of not assigning Case.

The kind of raising construction exemplified in (12) can also be found in languages like Tagalog (Austronesian) and Quechua (Andean Equatorial), as shown in (13) (taken from Kroeger 1993) and (14) (based on Cole and Hermon 1981).⁶

- (13) a. Inasah-an ko [na awitin ni Linda **ang pambansan.awit**].
 expect(LT) 1SG.ERG COMP sing(TT) ERG-Linda **ABS-national anthem**
 'I expect that Linda will sing the national anthem.'
 b. Inasah-an ko **ang pambansan.awit** [na awitin ni Linda].
 expect(LT) 1SG.ERG **ABS-national anthem** COMP sing(TT) ERG-Linda
 'I expect that Linda will sing the national anthem.'
- (14) a. Maria cri-n [**Francisco** aicha-ta micu-shca-ta].
 Maria believe-3 **Francisco** meat-ACC eat-PAST.NMLZ-ACC
 'Maria believes that Francisco ate meat.'
 b. Maria **Francisco-ta** cri-n [aicha-ta micu-shca-ta].
 Maria **Francisco-ACC** believe-3 meat-ACC eat-PAST.NMLZ-ACC
 'Maria believes that Francisco ate meat.'

⁵ The following abbreviations are used in the glosses:

ABS-absolutive	ACC-accusative	ACCID-accidental mood
APPL-applicative morpheme	ASP-aspect marker	COMP-complementizer
ERG-ergative	HAB-habitual	LT-Locative Topic
NMLZ-nominalizer	OBL-oblique case	PAST-past tense
OP-object agreement prefix	Q-question marker	SG-singular
SP-subject agreement prefix	TR-transitive marker	TT-Theme Topic
1-first person	3-third person	

⁶ As the glosses in (13) indicate, an ergative analysis of Tagalog is assumed here (see Maclachlan and Nakamura 1997 and references cited there).

As in the case of the Chichewa examples, we can see that the overt raising of the DP *ang pambansan.awit* 'national anthem' in (13b) takes place out of the embedded clause with the same verbal morphology as the one in (13a). In (14a) the DP *Francisco* stays within the embedded clause, where it gets (covert) nominative Case. In (14b) it raises overtly into the matrix clause, where it gets accusative Case, as shown by the presence of the accusative marker *-ta* on it.

Let us take the Chichewa examples in (12). Given the notion of reference set justified and adopted here (see section 3 below), (12a-b) compete. Roughly speaking, they compete since we can ignore their Case difference which is not interpretable. Focusing on the thematic subject 'boy' of the embedded clause, (12a) involves the single step in (15), whereas (12b) involves the two steps in (16).

(15) DP_{Agent} raises to embedded Spec TP

(16) a. DP_{Agent} raises to embedded Spec TP
b. DP_{Agent} in embedded Spec TP raises to matrix Spec TrP

I assume that in Bantu languages like Chichewa, the verb raises overtly up to T, and both Spec TP and outer Spec TrP must be filled at Spell-Out (cf. Nakamura 1997). In (12a) the DP moves to Spec TP in the embedded clause in overt syntax, eliminating the strong feature of T. In (12b) it first raises to embedded Spec TP and then further to matrix Spec TrP for accusative Case checking.⁷ It is the latter overt raising which makes (12b) more costly than (12a) in terms of the SDC, leading to the wrong prediction that the former should be ill-formed. The same line of argument can be constructed on the basis of Tagalog (13) and Quechua (14).

2.2. Preposition Incorporation

A second case of the argument (11a) concerns constructions involving Preposition Incorporation (PI) in the sense of Baker (1988a). Observe the pair from Kinyarwanda (Bantu) in (17) (Kimenyi 1980:94).

- (17) a. Úmwáalimu y-oohere-je igitabo kw'iishuûri.
teacher SP-send-ASP book to school
'The teacher sent the book to school.'
b. Úmwáalímu y-oohere-jé-ho ishuûri igitabo.
teacher SP-send-ASP-APPL school book
'The teacher sent the book to school.'

⁷ In accusative constructions like Chichewa (12b), Spec TrP is a structural Case position. In ergative constructions like Tagalog (13b), on the other hand, Spec TrP is not a Case position and the Case feature of the absolutive DP must enter into a checking relation with T in covert syntax (see for example Maclachlan and Nakamura 1997).

In (17a) the locative phrase *kw'iishuûri* 'to school' is expressed by a prepositional phrase. (17b) is the applicative version of (17a), where the applicative morpheme *-ho* appears on the verb and the Locative *ishuûri* 'school' appears adjacent to the verb. Pairs similar to the one in (17) are also found in Austronesian languages like Indonesian and Bajau, as shown in (18) (Chung 1976) and (19) (Donohue 1996).

- (18) a. Orang itu me-masak ikan **untuk** perempuan itu.
 man the TR-cook fish **for** woman the
 'The man cooked fish for the woman.'
- b. Orang itu me-masak-**kan** perempuan itu ikan.
 man the TR-cook-**APPL** woman the fish
 'The man cooked fish for the woman.'
- (19) a. Tagu-ku garang **ma** pario'.
 put-1SG.ERG salt **OBL** pot
 'I put salt in the pot.'
- b. Tagu-**ang**-ku pario' garang.
 put-**APPL**-1SG.ERG pot salt
 'I put salt in the pot.'

(18a-b) both contain the Benefactive *perempuan itu* 'the woman'. In (18a) the Benefactive follows the preposition *untuk* 'for'. In (18b) it immediately follows the verb with the applicative morpheme *-kan*. In (19a) the Locative *pario'* 'pot' is accompanied by the oblique-marker *ma*, whereas in (19b) the applicative morpheme *-ang-* is attached to the verb and the Locative appears adjacent to the verb.

Following Baker (1988a) and Nakamura (1997), I assume that the applicatives in the (b) examples involve syntactic PI, which triggers the overt movement of the applied object to Spec TrP, since Tr has a strong D-feature.⁸ In the applicatives, the thematic object is assumed to get inherent Case within VP (Baker 1988a,b). For example, let us consider Kinyarwanda (17). Ignoring the verb movement shared by (17a-b), (17a) takes the steps in (20) and (17b) those in (21).

- (20) a. DP_{Theme} raises to Spec TrP
 b. DP_{Agent} raises to Spec TP
- (21) a. P raises and adjoins to V
 b. DP_{Locative} raises to Spec TrP
 c. DP_{Agent} raises to Spec TP

Assuming that (17a-b) compete for the purpose of economy, the SDC makes the wrong

⁸ The raising of the applied DP across the theme DP into Spec TrP is permitted since they come to belong to the same minimal domain due to the PI (the effect of Baker's (1988) Government Transparency Corollary). See footnote 7.

prediction that (17b) should be blocked by (17a), for the former involves one extra step, i.e., the overt PI. Thus, the alternation in (17) goes against the SDC. The same remark applies to the Indonesian and Bajau pairs in (18) and (19).

To summarize so far, we have seen two cases where the argument in (11a) can be constructed, i.e., the cases of hyper-raising and applicatives involving PI. They provide stronger arguments against the SDC than Collins' (1997) argument, since the relevant operations that make one derivation longer than another take place in overt syntax.

2.3. Extraposition

Now I would like try to construct an argument that is even stronger and discuss a case where the argument in (11b) applies. Before going into it, however, let us consider briefly how the SDC deals with strict cyclicity and the Subject Condition.

Observe the familiar subject-object asymmetry in (22).

- (22) a. *Who_i were [pictures of *t_i*] taken?
 b. Who_i did you take [pictures of *t_i*]?

Under the SDC analysis, the ill-formedness of (22a) can be handled in the following way. Consider the two derivations for (22a) in (23) and (24).

- (23) a. [TP [α pictures of who]_j were [VP taken *t_j*]] (cyclic derivation)
 b. [CP who_i were [TP [α pictures of *t_i*]_j [VP taken *t_j*]]]
 (24) a. [CP who_i were [TP [VP taken [α pictures of *t_i*]]]] (noncyclic derivation)
 b. [CP who_i were [TP [α pictures of *t_i*]_j [VP taken *t_j*]]]

(23) illustrates the cyclic derivation, where the *wh*-movement takes place out of the subject position, whereas (24) illustrates the noncyclic one, where the *wh*-movement takes place out of the object position. (23) and (24) belong to the same reference set (see (9) and below). (24) is blocked by (23) in terms of the SDC: the noncyclic movement of α in (24), according to Kitahara 1997, involves two operations (concatenation and replacement in his terminology), whereas the cyclic one in (23) involves only one operation (concatenation). The extraction out of the subject position in (23b) is excluded by Huang's (1982) Condition on Extraction Domain (CED).⁹ Crucial to this SDC account is the assumption that derivations with CED violations converge: if (23) results in a crashed derivation and is irrelevant for economy considerations, (24) without a CED violation would not be blocked and hence (22a) would incorrectly be expected to be well-formed (see also Takahashi 1997). (22b) is well-formed since it violates neither the strict cycle condition nor the CED.

⁹ Huang (1982:505) states the CED as follows: "A phrase A may be extracted out of a domain B only if B is properly governed." Deriving the CED from minimalist principles is beyond the scope of this paper. For relevant proposals, see Takahashi 1994, Ochi to appear, Agbayani 1997, Toyoshima 1997.

With this in mind, let us turn to extraposition. I assume following Johnson (1985) and Büring and Hartmann (1997) (but contra Kayne (1994)) that (one kind of) extraposition does involve syntactic movement. I assume further following Rochemont (1986) that extraposed phrases must be focused and that extraposition is obligatory movement triggered by a focus feature. Johnson (1985:115) presents the generalization that syntactic extraposition is possible only from “D-structure” objects. It captures the contrasts in (25) and (26) (Johnson 1985).

- (25) a. *[A rumor t_i] means that Gary is wrong [that Mary knew Godel well]_i.
 b. [A rumor t_i] was spread [that Mary is in town]_i.
- (26) a. *[A man t_i] screamed [from China]_i.
 b. [A book t_i] arrived at the store [about Hammett’s life]_i.

In (25) the complement clause of the DP *a rumor* has been extraposed. In ill-formed (25a), the DP *a rumor* is the thematic as well as the structural subject. In well-formed (25b), on the other hand, it is a thematic object, though it occupies the structural subject position at Spell-Out. (26a-b) involve the extraposition of PPs from DPs. In (26a), where the unergative verb *scream* is used, the DP *a man* is the “D-structure” subject. In (26b), where the unaccusative verb *arrive* is used, the DP *a book* is the “D-structure” object (see Burzio 1986 among others).

Let us assume with Johnson (1985) that the extraposition out of the structural subject in Spec TP is adjunction to TP.¹⁰ Now consider, for example, the possible derivations for (25a-b). We saw above that a noncyclic derivation is blocked in terms of the SDC if there is a cyclic counterpart of it. The SDC demands that as in the case of (22a), the extraposition follow the raising of the DP *a rumor* into Spec TP. Thus the ill-formedness of CED-violating (25a) is expected. The well-formedness of (25b), however, seems problematic for the SDC analysis: (25b) would be expected to be ill-formed on a par with (22a), a wrong result.

The well-formedness of (25b) suggests that the extraposition takes place out of the properly governed “D-structure” object position, circumventing a CED violation. Let us assume then that the extraposition proceeds in two steps: the first step is adjunction to TrP (cf. Baltin 1982 and others) and the second one is adjunction to TP.¹¹ The legitimate derivation of (25b) would be as in (27).

¹⁰Within the framework of Chomsky 1995, the feature-driven adjunction of the extraposed phrase must be reanalyzed as movement into a specifier position, because adjoined elements do not enter into a checking relation.

¹¹ TrP-adjunction in question is supposed to be triggered by a strong feature, analogous to the one that triggers movement of a *wh*-phrase into [-WH] Spec CP in successive-cyclic *wh*-movement. See footnote 10.

- (27) a. [spread [DP a book [CP that...]]]
 b. [TrP [TrP [spread [DP a rumor t_i]]] [CP that...]_i] (TrP-adjunction)
 c. [TP [DP a rumor t_i]_j was [TrP [TrP [spread t_j]] [CP that...]_i]] (movement of DP)
 d. [TP [TP [DP a rumor t_i]_j was [TrP [TrP [spread t_j]] t'_i]] [CP that...]_i] (TP-adjunction)

The first step of extraposition in (27b) observes the CED since it takes place out of the object position. The second step in (27d) is also allowed. The strict cycle condition is not violated in (27).¹²

Crucially, under the present concept of reference set, the derivation in (27) compete with the following derivation:

- (28) a. [spread [DP a book [CP that ...]]]
 b. [TP [DP a rumor [CP that ...]_j] was [TrP [spread t_j]]] (movement of DP)
 c. [TP [TP [DP a rumor t_i]_j was [TrP [spread t_j]]] [CP that ...]_i] (TP-adjunction)

(28) differs minimally from (27) in that it lacks the TrP-adjunction. The difference, however, is immaterial as far as the determination of the reference set is concerned, for the feature that triggers the TrP-adjunction is not interpretable (see footnote 11). Notice that the SDC favors CED-violating (28) over (27). This is because (27) contains one extra operation (concatenation), i.e., the TrP-adjunction. Since (27) is more costly than (28) in terms of the SDC, the latter is expected to block the former, which leads to the incorrect prediction that (25b) should be ill-formed (recall that derivations with CED violations do not crash). In order to rule (25b) in then, we must conclude that the SDC should be abandoned. The same line of argument can be pursued with respect to (26a-b).¹³

¹² The derivation in (27) contains what Collins (1994) calls "chain interleaving." Since the interleaving of a NP-chain and a *wh*-chain is prohibited (Collins 1994), there is no way to save (22a) from violating the CED. Within the feature-driven theory of movement, the reason for the prohibition has to do with the impossibility of a *wh*-phrase entering into a checking relation with Tr in English. Unlike *wh*-phrases, extraposed phrases are assumed to be able to check a strong feature of Tr (footnote 11).

Note that (27c) violates the Generalized Proper Binding Condition, which states that traces must be bound throughout a derivation (Lasnik and Saito 1992). There is nothing wrong with (27) as far as Last Resort in (1) and Minimality in (2) are concerned. All the traces in (27) are bound at LF, where the Proper Binding Condition (or whatever replaces it) is assumed to apply in the minimalist framework.

¹³ One might suggest along the lines of Fukui 1993 (but contra Rochemont 1986) that rightward extraposition is totally optional and cost-free in English and that (27) and (28) are equally economical, accounting for the well-formedness of (25b). Then it would be interesting to see if there are cases where costly leftward movement exhibits the same pattern as extraposition in English. It seems that null operator constructions are a case in point. As noted by Browning (1987) and others, there are some speakers for whom the kind of contrast in (25) and (26) obtains in null operator constructions.

(i) a. ?*John is easy to believe to have kissed Mary.
 b. John is easy to believe to have been arrested by the police.

Extrapolation out of “D-structure” subjects is doomed. Spec TrP, like Spec TP, is not a properly governed position. Thus extrapolation at issue necessarily violates the CED, whether it occurs out of Spec TrP or Spec TP. Hence the ill-formedness of (25a) and (26a).

In short, Johnson’s (1985) generalization about extrapolation offers one argument of the kind in (11b) and implies that the SDC is incorrect.

The next section discusses and defends the modified version of the reference set and the Minimal Link Condition as a global condition.

3. Global Economy

3.1. Hyper-Raising Revisited

In the above discussion of hyper-raising, I made the crucial assumption that the non-raised sentence and its hyper-raised counterpart belong to the same reference set. The support for this assumption comes from the interaction between hyper-raising and *wh*-extraction. Chichewa and Tagalog turn out to be uninformative, because in these languages, hyper-raising does not require obligatory morphological reflex. Fortunately, Quechua is. Let us consider (29), where the embedded thematic subject has been extracted (Cole and Hermon 1981).

- (29) a. ***Pi-taj** Maria cri-n [aicha-ta micu-shca-ta]?
who-WH.Q Maria believe-3 meat-ACC eat-PAST.NMLZ-ACC
 (‘Who does Maria believe ate meat?’)
- b. **Pi-ta-taj** Maria cri-n [aicha-ta micu-shca-ta]?
who-ACC-WH.Q Maria believe-3 meat-ACC eat-PAST.NMLZ-ACC
 ‘Who does Maria believe ate meat?’

Interestingly, the *wh*-phrase can be extracted only after it has undergone hyper-raising, as we can tell from the presence of the accusative-marker *-ta* on the *wh*-phrase in well-formed (29b). The derivations for (29a-b) are given in (30a-b), respectively (irrelevant details are omitted, and English glosses are used).

- (30)a. *[CP who_j [TP Maria_i [TrP t_i [VP believe [CP t_j′ [TP t_j′ [TrP meat_k [TrP t_j [VP
 |_____||_____|
 t_k ate]]]]]]]]]]
 b. [CP who_j [TP Maria_i [TrP t_j′ [TrP t_i [VP believe [CP [TP t_j′ [TrP meat_k [TrP t_j [VP
 |_____||_____|
 t_k ate]]]]]]]]]]

Takahashi (1997) presents a feature-raising analysis of null operator movement and explains the ill-formedness of (ia) in terms of the CED. From the present perspective, (ib), like (25b) and (26b), can be taken to involve an extra derivational step which avoids a CED violation.

Notice that the contrast in (29) is problematic for locality conditions such as the Empty Category Principle (ECP) (see among others Chomsky 1981, Lasnik and Saito 1984, Rizzi 1990). In particular, there is nothing wrong with the *wh*-chain in (30a) whose tail occupies the embedded Spec TP. The Spec TP is properly head-governed, as hyper-raising can take place out of that position. Regarding antecedent government, the embedded CP is not a barrier in (30). Moreover, there is no element in an A'-specifier position that would block the *wh*-movement.

The kind of contrast exemplified in (29) can be accounted for if we assume with Nakamura 1997 that the grammar contains the Minimal Link Condition (MLC) as a global economy condition (see also Chomsky and Lasnik 1993, Chomsky 1994, Fox 1995, in press). The intuition is that (29a) compete with and is blocked by (29b), because the raising in the latter makes the relevant *wh*-chain shorter. Let us adopt (31)-(34) ((31)-(33) taken from Nakamura 1997).

- (31) *Reference Set (revised)*
A reference set is a set of derivations that arise from *nondistinct* numerations.¹⁴
- (32) *Nondistinctness:*
Numerations N and N' are *nondistinct* if and only if there is a one-to-one correspondence C between their members, such that if (LI, *i*) ∈ N and (LI', *i*') ∈ N' and (LI, *i*) corresponds to (LI', *i*') in C then LI and LI' have the same *interpretable* features and *i* = *i*'.
- (33) *Minimal Link Condition (MLC)*
Derivation D blocks derivation D' if there exist chain links CL ∈ D and CL' ∈ D' such that CL and CL' are *comparable* and CL is shorter than CL'.
- (34) *Chain Link Comparability:*
Chain links CL and CL' are *comparable* if and only if derivations D and D' belong to the same reference set, such that if CL ∈ D and CL' ∈ D' then items of the lexicon LI ∈ CL and LI' ∈ CL' have the same *interpretable* features, and K and K' attracting LI and LI' are merged with some elements in phrase markers PM and PM' at the same point.¹⁵

The notion of reference set in (31) combined with (32) has the effect of putting (29a) and (29b) in the same reference set, because they share the same set of sets of interpretable features. The notion of chain link comparability states basically that chain links are

¹⁴ (31) is to be interpreted derivationally as the nondistinctness of numerations throughout the computation (cf. Chomsky 1995).

¹⁵ "The same point" is defined on the basis of how many times the operation Merge (Chomsky 1995) has applied. Nakamura (1996) presents a generalized version of (34) which is intended to cover not only dependencies created by Move/Attract but also those established by binding, discussed, for example, by Fox (in press).

comparable only if they are created by attraction of nondistinct elements by equivalent heads. The length of a chain link can be measured in terms of the number of maximal projections that dominate the tail but not the head (see Collins 1994, Baker 1996). Bearing these notions in mind, let us now focus on the *wh*-chain links in (30), which are indicated by the connecting lines. The lower link in (30a) does not have a comparable link in (30b). The higher link in (31a) and the link in (31b) are comparable with each other, because they are both formed by the matrix C attracting the *wh*-phrase. The length of the former is 4, whereas that of the latter is 2 (assuming that the tail in the outer Spec TrP is dominated by the TrP). The MLC in (33) asserts that (30a) should be blocked by (30b), which is indeed the case.

Given that the notion of reference set in (31) is well-motivated, the above argument against the SDC based on hyper-raising is justified: the derivation with hyper-raising and its counterpart without hyper-raising belong to the same reference set and compete for the purpose of economy. They are both well-formed since they are equally economical in terms of the MLC: the chain link created by the hyper-raising into the matrix clause does not have any comparable chain link in the derivation lacking such raising.

3.2. Preposition Incorporation Revisited

If the nonapplicative and its applicative counterpart we saw earlier belong to the same reference set, as I assumed, we predict that the movement of the thematic object for structural Case checking in the nonapplicative, just like the hyper-raising in (29b), should count as a free ride. The thematic object cannot take this free-ride in the applicative where it gets inherent Case within VP (Baker 1988a,b). Then, it must be that the thematic object can be extracted in the nonapplicative but not in the applicative.¹⁶ The prediction is borne out by the examples in (35) (Kinyarwanda; Kimenyi 1980 and personal communication), (36) (Indonesian; Chung 1976) and (37) (Bajau; Donohue 1996 and personal communication).

- (35) a. Y-a-tw-eerets-e igitabo úmwáalímu y-oóhere-je **kw'**iishuûri.
 SP-PAST-OP-show-ASP book teacher SP-send-ASP **to** school
 'He showed us the book that the teacher sent to school.'
 b. *Y-a-tw-eerets-e igitabo úmwáalímu y-oóhere-jé-**ho** ishuûri.
 SP-PAST-OP-show-ASP book teacher SP-send-ASP-**APPL** school
 ('He showed us the book that the teacher sent to school.')

¹⁶ This is certainly not to say that none of thematic objects in applicative constructions can undergo *wh*-movement. Nakamura (1997:255) argues for the following generalization:

(i) *Generalization*

Extraction of Theme in an applicative is prohibited only if

a. the applicative is derived by Preposition Incorporation, and

b. there is an analytic equivalent of the applicative containing an independent preposition.

Thus, there are numerous applicative constructions which readily allow their thematic object to be extracted (see Nakamura 1997 for examples of such applicative constructions).

- (36) a. Djaket yang saya djahit **untuk** Hasan ter-letak di atas medja.
 coat COMP I sew **for** Hasan ACCID-lie on top table
 'The coat that I sewed for Hasan is lying on the table.'
 b. *Djaket yang saya djahit-**kan** Hasan ter-letak di atas medja.
 coat COMP I sew-**APPL** Hasan ACCID-lie on top table
 ('The coat that I sewed Hasan is lying on the table.')
- (37) a. Garang tagu-ku **ma** pario'.
 salt put-1SG.ERG **OBL** pot
 'It is salt that I put in the pot.'
 b. *Garang tagu-**ang**-ku pario'.
 salt put-**APPL**-1SG.ERG pot
 ('It is salt that I put in the pot.')

(35) and (36) involve relativization of the thematic object, *igitabo* 'book' in the former and *djaket* 'coat' in the latter. I assume what has been extracted in these examples is a null operator. In (37) the thematic object *garang* 'salt' has been fronted to the sentence-initial position. The relevant parts of derivations for (35a-b), for instance, are (38a-b), respectively.

- (38) a. [_{CP} *OP*_i [_{TP} the teacher_j sent [_{TrP} *t*'_i [_{TrP} *t*_j [_{VP} *t*_i *t*_v [_{PP} to school]]]]]]]
 |
 b. *[_{CP} *OP*_i [_{TP} the teacher_j sent-to₁ [_{TrP} school_k [_{TrP} *t*_j [_{VP} *t*_i *t*_v [_{PP} *t*_k]]]]]]]
 |

In (38a) the null operator raises first into the outer Spec TrP for accusative Case checking, and from there it raises further into the Spec CP.¹⁷ In (38b) the null operator gets inherent Case and raises directly into the Spec CP. Given the modified version of the reference set, the derivations in (38) compete. Since the *wh*-chain links in (38) are comparable, (38b) is blocked by (38a) in terms of the MLC. As has been pointed out by Nakamura 1997, the ill-formedness of (35b) poses a problem for the ECP, because (i) the *wh*-trace in the object position is properly governed, (ii) there is no barrier intervening the *wh*-trace and its antecedent, and (iii) there is no element in an A'-specifier position intervening the *wh*-trace and its antecedent. The MLC-based economy analysis extends naturally to the Indonesian and Bajau pairs in (36) and (37).

It follows from this discussion that the present argument against the SDC based on PI is also valid: the applicative and its nonapplicative counterpart in (17), (18), and (19) compete for economy. As in the hyper-raising case, they are equally economical in terms of the MLC: the PI in the applicative is not comparable to anything in the nonapplicative, and the raising of the applied object in the applicative and that of the thematic object in the nonapplicative are not comparable either, since the elements attracted by the Tr are distinct.

¹⁷ The null operator movement is presumably feature raising (see Takahashi 1997).

It is worth pointing out that the present notion of reference set supports Collins' (1997) argument against the SDC, because under the notion, the non-inverted and inverted constructions we saw earlier do compete. In addition, the preceding argument based on extraposition holds; (27) and (28) are indeed in the same reference set.

It is also worth pointing out that if it is correct to maintain that the grammar contains the MLC as an economy condition, we are forced into the claim that the SDC cannot be part of the grammar. As has been noted in the literature (Chomsky 1993), there is a tension between the SDC and the MLC: they impose conflicting requirements on derivations. Chomsky's (1993) solution was to take the transformational operation to be Form-Chain, which applies in a single step to yield a multi-membered chain. This solution, however, is no longer available in the local theory of movement where each and every instance of movement must involve feature checking (Chomsky 1995, Collins 1997; see (1)). Then, the paradox regarding the two conditions surfaces again: the grammar can contain either of them, but not both.¹⁸ Then the success of the present MLC-based analysis counts as an additional argument against the SDC.

4. Concluding Remarks

In summary, I have addressed the major issues surrounding the globality of economy conditions. I have argued that Collins (1997) is correct in saying that the grammar does not include the SDC by presenting arguments stronger than his original argument. I have also argued that the grammar includes the MLC as an economy condition, which selects among convergent derivations. We noted that these claims reinforce each other.

One obvious consequence of the present analysis is that the various kinds of phenomena which have been accounted for in terms of the SDC or its variants need to be reanalyzed in different ways. I shall not undertake this task here.¹⁹

If the arguments given in this paper are sound, it must be that the grammar contains both local and global aspects. This is perhaps disappointing news for hard-line minimalists who would like all grammatical principles (except Full Interpretation) to apply strictly locally. Recognizing the existence of global conditions, one may ask why we have the MLC but not the SDC. The intuitive idea is that no conditions need to refer to derivational

¹⁸ In addition, there is of course the possibility, advocated by Collins (1997), that the grammar contains neither, which raises no paradox.

¹⁹ Examples of works, other than Kitahara 1995, 1997, whose analyses depend heavily on counting derivational steps include Epstein 1992 and Collins 1994. For a critical examination of Epstein 1992, see Müller and Sternefeld 1996. The problems of "chain interleaving" (in the case of NP-movement and *wh*-movement) and downward movement discussed by Collins (1994) dissolve within the framework of Chomsky (1995). Kitahara (1995, 1997) attempts to derive the effects of strict cyclicity and Procrastinate from the SDC. Alternative analyses of these can be found in Chomsky 1994, 1995.

operations as long as they are motivated by Last Resort and permitted by Minimality. What the SDC does, it appears, is to double-check syntactic operations already justified in the course of a derivation. It seems natural to say that the grammar does not tolerate such redundancy. I speculate that the following is true:

(39) No global conditions refer to local operations.

In other words, it can be suggested that there exists a pretty effective division of labor between local economy and global economy; the former is concerned exclusively with derivational operations (driven by feature checking), whereas the latter is concerned exclusively with resultant legitimate objects such as chains required for interpretative purposes. From this point of view, it is hardly surprising that the MLC qualifies as a global condition. The conclusion reached here then may not be awfully disappointing after all.

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School of Business Administration
Senshu University
2-1-1 Higashi-Mita, Tama-ku
Kawasaki 214-80
Japan

masanori@green.an.egg.or.jp

