

OPTIMALITY IS FOR “UNMARKED CONFIGURATIONS”: THE DISTRIBUTION OF *THERE*, DPs AND PPs

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The aim of this paper is twofold: (i) to provide an analysis that explains all possible sentence patterns for each type of verb, and (ii) through examining the necessary assumptions for (i), to present an alternative concept of the optimality of syntactic design. The exploration for (i) makes it clear that EPP(-inheritance) is a lexical property of each EPP-bearer. EPP therefore persists even when it is not associated with φ -/Case-features, inducing superfluous movement or merger. Although the persistence of EPP apparently does not fit the popular idea of optimality, it ensures another kind of optimality: minimizing the number of derivable configuration patterns.*

Keywords: optimality of syntactic design, EPP, there, A-movement

1. Introduction

As reviewed by Miyagawa (2006) and Boeckx (2006), studies on movement have contributed in large measure to the development of generative grammar. In the earliest stage, movements observed in various constructions were identified and described as such. As it became increasingly clear that movements observed in different constructions/languages are subject to similar constraints, attempts were made to transform linguistic theory itself from construction-based to constraint-based. In the GB framework, the well-formedness of a sentence is determined by principles and constraints in different modules. In this sense, constructions have become what are to be explained; however,

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principles and constraints have continued to be irreducible givens.

The minimalist program aims to explain principles and constraints in terms of the optimality of language design. For example, successive-cyclic movement may be explained in the following way: (i) an XP moves via the edge position of each phase since (ii) (the complement domain of) a phase is spelled out and forgotten soon after it is completed (iii) for minimal computation. That is, (i) a property of movement is an inevitable consequence of (ii) the design of the computational system of human language (C_{HL}), which is (iii) optimally designed.

From this minimalist perspective, let us consider how we can explain the motivation of movement. We can no longer say that an XP moves in order to receive such-and-such an interpretation, which would cause a look-ahead problem. Rather, a lexical item (LxI) carries some uninterpretable feature in the lexicon, and the movement of the LxI (or a phrase containing the LxI) takes place in syntax in an effort to delete the problematic feature. (More precisely, movement deletes the uninterpretable feature of the host, not of the moving LxI.) These movement-inducing features are so justly associated with LxIs that syntax automatically generates legitimate representations. This line of argument seems convincing in the explanation of A'-movement. For instance, a *wh*-word, carrying a *wh*-feature, moves in order to value and delete the problematic feature. As a result of the short-sighted decision, the *wh*-word/phrase ends up occupying SPEC-C, where it is assigned question-operator interpretation.

The motivation of A-movement/EPP, however, seems hard to explain. (In this paper, "EPP" is used in a narrow sense: an inducer of internal or external merge in an A-position.) Since "the EPP of T" means "SPEC-T must be filled," it is a tautology to say "SPEC-T must be filled in order to satisfy the EPP of T." The existence of expletive *there* makes it difficult to claim that subject raising takes place for Case. One might suggest that a sentence must have subject for some semantic reasons (Kobayashi (2001b)), or for "canonical surface forms" (Chomsky (2007: fn. 35)). However, how can we verify these suggestions, when semantic consequence of subject movement is not at all clear or when the canon is not at all clear?

This paper, through investigating the distribution of EPP-features, attempts to show what type of optimality is built in the syntactic design. I begin by considering what sentence patterns are allowed for each type of verb in English. Next, modifying Bowers (2002), I identi-

fy what elements need to bear EPP-features in order to derive all the observed patterns without deriving any illegitimate patterns. Then, I consider what EPP has to do with the optimality of syntactic design.

Specifically, I propose that *syntax is so designed as to derive agentive configurations in an optimal way*. The obligatorily-prepared EPP-positions, coupled with locality conditions, make only one type of agentive configuration derivable. Such a derivation is considered economical in that there are no alternatives to be considered. The derivations of non-agentive sentences, on the other hand, are less economical in that they involve obligatory, but noneffective movement(s). Such movements do not have to do with semantics or morphology, but take place merely because there is an EPP-feature to be satisfied. Since such EPP-positions can be filled by any syntactic object (SO), there is more than one possible sentence pattern for non-agentive verbs.

The organization of this paper is as follows. Section 2 shows possible sentence patterns for each type of verb. In section 3 I point out problems with the current theory of A-movement. Section 4 presents a list of assumptions necessary for the explanation of the observed data. Section 5 demonstrates how the given assumptions account for the derivation of the data and how the deviant derivations are blocked. Section 6 considers what kind of optimality is built in the design of syntax. Section 7 concludes the discussion.

2. Word-Order Variation in English

It is well known that non-agentive predicates, i.e. lexical unaccusative verbs or passivized verbs, allow several possible sentence patterns.¹

- (1) a. *A ball*₁ rolled *t*₁ down the hill. (Raising)
 b. *There* rolled a ball down the hill. (Expletive)

¹ As an anonymous reviewer pointed out, there is another possible word order, which is obtained by shifting a participial phrase to an apparent subject position.

(i) [_{XP} Sitting on the fence] was a crow *t*. (Bowers (2002: 203))

If the XP is raised to SPEC-T, this type of movement should be discussed and explained as well. At present I have no evidence to decide whether the XP is raised to subject position or displaced to some A'-position.

Here I only mention a possible explanation: a participial phrase might be able to undergo A-movement when it is analyzed as an argument of a predicate NP (*a crow*).

- c. *Down the hill*₁ rolled a ball *t*₁. (Locative Inversion (LI))
- (2) a. *A bridge*₁ was built *t*₁ over the river. (Raising)
 b. *There* was a bridge₁ built *t*₁ over the river. (Expletive)
 c. *Over the river*₁ was built a bridge *t*₁. (LI)

On the other hand, the word order of agentive sentences is fixed:

- (3) a. *Someone*₁ *t*₁ rolled a ball down the hill. (Raising)
 b. **There* someone rolled a ball down the hill. (Expletive*)
 c. **Down the hill*₁ rolled someone a ball *t*₁. (LI*)
- (4) a. *Someone*₁ *t*₁ laughed in the garden. (Raising)
 b. **There* someone laughed in the garden. (Expletive*)
 c. **In the garden*₁ laughed someone *t*₁.² (LI*)

A question naturally arises why agentive verbs cannot appear in expletive or locative inversion (LI) sentences. Given the Predicate-Internal

² Several researchers have claimed that LI occurs with unergatives as well. The following example is from Levin and Rappaport Hovav (1995: 224):

- (i) On the third floor *worked* two young women called Maryanne Thomson and Ava Brent, who ran the audio library and print room.

Culicover and Levine (2001, henceforth C&L), however, argue against this claim. According to them, (i) is derived by the displacement of the “heavy” subject and the topicalization of the PP. (Here “heavy” includes a H*L intonation as well, which means that even a syntactically simple DP can undergo Heavy NP Shift (HNPS).) In genuine LI sentences, in contrast, PPs undergo A-movement to SPEC-T. C&L show that fronted PPs in genuine LIs show A-properties. For example, a quantifier in the PP does not cause a WCO effect. Compare the genuine LI sentence (ii) with the topicalization counterpart (iii).

- (ii) Into every dog_i's cage peered its_i owner.

- (iii) *Into every dog_i's cage its_i owner peered. (C&L p. 289)

As for post-V DPs in genuine LIs, examples (iva, b) reveal that they must remain in VP. It follows that SPEC-T must be filled by the fronted PP. Example (ivc), on the other hand, shows that a heavy DP can be dislocated to the right of a VP-adverb. C&L argue that the DP is dislocated from SPEC-T.

- (iv) a. Into the room walked *Robin* carefully.

- b. *Into the room walked carefully *Robin*.

- c. Remember Robin? Well, into the room walked carefully, ... *ROBIN!*

(C&L p. 292)

Sentences like (i) and (ivc), which contain dislocated heavy NP subjects, are not instances of genuine LIs, but derived by topicalizing the PP to some A'-position and dislocating the heavy NP from SPEC-T.

Distinguishing between the two seemingly identical configurations, C&L conclude that genuine LIs do not occur with unergative verbs. Here I follow their conclusion and assume that apparent counterexamples are derived by PP-topicalization and HNPS. See C&L for further arguments.

Subject Hypothesis, the subject should be raised from v(*)P. It would therefore be expected that the external argument could stay in situ, with SPEC-T being filled either by *there* or the raised PP, deriving (3b, c) and (4b, c).

3. Semantics and Morphology of Subject Movement

As shown in section 2, the raising of an external argument is obligatory. However, it is not clear why this is so. In this section I show that this movement does not necessarily have to do with semantics (interpretation) or morphology (Case). The same kind of obligatory, noneffective A-movement is observed in object shift (OS) as well. The existence of obligatory, noneffective A-movement poses a problem for the theory of syntax.

3.1. Two A-positions and Two Readings

Let us begin with a brief review of Diesing's (1992) Mapping Hypothesis. Milsark (1977) observes that indefinite subjects can have either a generic or an existential reading, but the former reading is lost in expletive constructions, as shown in (5).

- (5) a. *Firemen* are available. (Generic or Existential)
 b. There are *firemen* available. (Existential)

Sentence (5a) states either that all firemen are available, or that more than one fireman is available. Sentence (5b) allows only the latter reading.

Milsark also observes that sentences with individual-level predicates allow only a generic reading, and that these predicates are unacceptable in expletive constructions, as illustrated in (6).

- (6) a. *Firemen* are intelligent. (Generic)
 b. *There are *firemen* intelligent.

Milsark provides a semantic account for the contrast between (5b) and (6b). Since *there*-sentences introduce to the discourse the existence of some entity as new information, the logical subject must be existentially interpreted. Hence the logical subject has to be interpreted existentially in (5b). The same is true for (6b) as well, but the existential reading is not available in individual-level sentences. Hence (6b) is deviant.

This explanation leaves the question why a stage-level predicate allows two readings while an individual-level predicate allows only one.

- (11) a. ?The DA proved [*the defendants* to be guilty] during *each other's* trials.
 b. *The DA proved [that *the defendants* were guilty] during *each other's* trials. (Lasnik (1999: 40))

The contrast between (11a) and (11b) demonstrates that the ECM subject is raised to the matrix clause, presumably for Case. Chomsky (2005) assumes that the object moves to SPEC-V:

- (12) [_{V*P} the DA v*-prove [_{VP} *the defendants*_I t_V [_{TP} ... t_I ...] during each other's trials]]

The assumption that OS is motivated by (or, related to) Case is apparently natural, since only an accusative object can be an ECM subject.

In fact, however, OS-like movement is observed as well where accusative Case is not involved. Consider the following examples:

- (13) a. *A bridge* was built over the river.
 b. *There was built *a bridge* over the river.
 c. There was *a bridge* built over the river.

(Lyle and Gamon (1998: 272))

The passivized verb *built* has lost a Case-assigning property. Hence *a bridge* is assigned nominative Case under Agree with T. Sentence (13a) is obtained if the EPP of T is satisfied by raising the goal.

Alternatively, the EPP may be satisfied by *there*-insertion. In that case, too, the Case-feature of *a bridge* should be valued by T under Agree. So *a bridge* is expected to stay in its merged position as in (13b). In fact, however, it must move to some pre-V position, as in (13c). Seemingly, OS takes place in passive constructions as well, as illustrated in (14).³

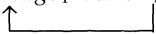
³ Chomsky (2001: 20) regards this kind of movement not as OS but as displacement. According to him, English unaccusative VP does not allow the configuration [V-DO]. The internal argument therefore has to be displaced. The following examples are thus deviant:

- (i) *There was placed a large book on the table.
 (ii) *There came several angry men into the room.
 (iii) *There arrived a strange package in the mail. (Chomsky (2001: 20))

This explanation, however, leaves a question why the [V-DO] configuration is illegitimate. It also encounters empirical problems. The following sentences, structurally equivalent to (ii) and (iii), are acceptable:

- (iv) There appeared a ghostly face at the window.
 (v) There will soon arrive one of our representatives at your door.

(Bowers (2002: 194))

- (14) [TP there T [VP v(was) [VP a *bridge*₁ built *t*₁ over the river]]]
- 

The obligatory OS in (14) is clearly not for Case, but for some other reason yet to be clarified.

3.4. Obligatory, Noneffective A-Movement

To recapitulate, both external and internal arguments must undergo A-movement even when there is no obvious reason for it. Raising of the external argument is always chosen over *there*-insertion even when it is interpreted in its merged position. Similarly, the internal argument must undergo OS even when no Case is assigned. Such A-movement is apparently problematic in the minimalist program. If the movement does not have effect on morphology (Case) or on semantics, what is A-movement for?

4. Requisites for the Explanation of the Data

In this section I provide a set of assumptions necessary for the explanation of the observed sentence patterns. Core assumptions adopted here are modifications of Bowers's (2002).⁴ First I briefly introduce Bowers's assumption about EPP, *there* and locality, and then show how my assumptions are different from his.

4.1. Bowers's (2002) Assumptions

Bowers's assumptions that are relevant to the present discussion are summed up below:

- (15) a. EPP: T, Tr (the equivalent for Vt), and Pr (the equivalent for v/v*) bear an EPP-feature.
 b. *There*: *There* is merged in SPEC-Pr; *there* cannot be a goal of Agree since it lacks ϕ -/Case-features.

Sentences (iv) and (v) show that the unaccusative [V-DO] configuration is not by itself a problem. It seems more likely that the deviance in (ii) and (iii) results from some other violation yet to be known.

With this observation, this paper assumes that [V-DO] configuration is not a problem, and the deviance of (13b) demonstrates that the transitive verb forces OS even if it has lost a Case-assigning property.

⁴ There is a similar account of passive expletives and LIs based on Bowers (2002). See the appendix.

- c. The Minimal Link Condition (MLC): The EPP of a probe is satisfied by the closest *argument*, not by the closest *goal*.

Given the above assumptions, sentences of all verb types contain two or more EPP-positions. The structures of four verb types are schematically illustrated in (16), with Bowers's original terminology "Tr" and "Pr" changed to "Vt" and "v/v*," respectively.

- (16) a. Agentive Vt: [TP \square T [_{v*P} John v*-roll [_{vIP} \square t_{Vt} a ball]]]
 b. Agentive Vi: [TP \square T [_{v*P} John v*-laugh [_{vIP} t_{Vi}]]]
 c. Unaccusative V: [TP \square T [_{vP} \square v-appear [_{vP} t_V a man at the door]]]
 d. Passivized Vt: [TP \square T [_{vP} \square v(be) [_{vIP} (\square) rolled a ball]]]

EPP-positions are shown by squares. SPEC-V is an OS position, hence available only for transitive verbs. Bowers (2002: 211, fn. 33) does not decide whether the passivized transitive verb retains its EPP-feature or not. SPEC-V in (16d) is hence put in parentheses.

In Bowers's analysis, the variability of word order depends on whether SPEC-v(*) is θ -related or not. For agentive verbs, as in (16a, b), SPEC-v* must be filled by merging an Agent argument. Otherwise the resulting structure is not assigned a proper interpretation. As for SPEC-T, it cannot be filled by inserting *there*, which is prohibited by assumption (15b). The MLC (15c) requires *John* to be raised to SPEC-T in (16a, b). Accordingly, in agentive sentences like (16a, b), there is only one option available to satisfy each EPP position, and hence there is only one type of sentence derivable.

In the derivation of non-agentive sentences like (16c, d), on the other hand, SPEC-v is not θ -related, and hence may be filled either by inserting *there* or by moving an internal argument. When there are two internal arguments, DP and PP, Bowers maintains that either can be moved since they are equidistant. Therefore, any of (17a), (17b) or (17c) can be derived from (16c).

- (17) a. [TP \square T [_{vP} there v-appear [_{vP} t_V a man at the door]]]
 b. [TP \square T [_{vP} a man₁ v-appear [_{vP} t_V t₁ at the door]]]
 c. [TP \square T [_{vP} at the door₂ v-appear [_{vP} t_V a man t₂]]]

In each configuration Agree (T, *a man*) holds. Neither *there* nor the PP enters into an agreement relation since neither argument has ϕ -features ((15b)). The MLC requires that the EPP of T be satisfied by

moving the closest argument, which is the element occupying SPEC-v in each example. Consequently, unaccusative verbs can occur in the three types of sentences, i.e. expletive, raising and LI constructions, as exemplified in (18).

- (18) a. There appeared a man at the door. (Expletive)
 b. A man appeared at the door. (Raising)
 c. At the door appeared a man. (LI)

So far, so good. However, Bowers's analysis does not correctly predict the grammaticality of passive expletive sentences. Consider the following examples:

- (19) a. *There was built a bridge₁ over the river₂. (= (13b))
 b. There was a bridge₁ built *t*₁ over the river₂. (= (13c))
 c. *There was over the river₂ built a bridge₁ *t*₂.
 d. Over the river₂ there was *t*₂ built a bridge₁ *t*₂.
 ((19d) from Lyle and Gamon (1998: 272))

Although Bowers does not decide whether or not the passivized V retains its EPP-feature, examples (19a, b) indicate that SPEC of a passivized V needs to be filled. With the added assumption that a passivized verb obligatorily bears an EPP-feature, the grammaticality of (19a, b) would be explained in his analysis. However, it would then wrongly rule in (19c): EPP can be filled by the PP-argument as well as by the DP-argument since they are equidistant. To exclude (19c), one might argue that EPP for OS, unlike EPP for subject raising, must be satisfied by DPs for some unclear reason. However, the grammaticality of (19d) reveals that this is not correct. In (19d) the DP-argument remains in situ and the PP-argument is dislocated to the left of *there*. Since OS position must be satisfied, the PP should have dropped in at the OS position on the way. Bowers's analysis thus has difficulty in explaining the grammaticality of (19a-d) in a uniform way.

4.2. My Proposal

The set of assumptions adopted in the present paper is given in (20)-(24). The assumptions that are different from Bowers's are indicated by underlining.

- (20) EPP:
 a. Phase heads (C, v(*)) bear an EPP-feature.
 b. T and Vt obligatorily inherit an EPP-feature.
- (21) *There*:

- a. *There* is merged in SPEC-v(*).⁵
 b. *There* bears defective φ -/Case-features.
- (22) PP-arguments optionally bear defective φ -/Case-features.
- (23) Locality (I): the MLC
 The EPP of a probe (P) is satisfied
 a. by the closest goal if any;
 b. if not, by the closest argument that bears φ -features.
- (24) Locality (II): the Intervention Condition (IC)
Agreement relations are evaluated at LF.⁶ Agree (P, α) is legitimate iff there is no intervening A-chain head β .

I explain how my proposals are different from Bowers's. First, following Chomsky (2005, 2007), I assume that only phase heads can carry EPP-features, and that the EPP-features that T and Vt bear are inherited from C, v(*), respectively.⁷ Chomsky also assumes that finiteness of T and transitivity of V are also determined by C and v(*).

⁵ An anonymous reviewer commented that unless there is evidence that *there* is merged in SPEC-v, (21a) would be only a stipulation, just like Lasnik's (1999) partitive Case analysis, which I criticized in section 3.2. At present I have no empirical evidence for this assumption. Still I believe that this assumption is better than Lasnik's since it opens up the way to deal with cross-linguistic variation of expletive constructions. If the merge position of an expletive is defined in the lexicon, cross-linguistic variation will be expected. That is, in some languages an expletive is merged in SPEC-C/T ("topic expletive"), and in others in SPEC-V ("object expletive"). And both of them are claimed to exist. Icelandic is said to be the former type of language.

(i) *það* *klaruðu* *margar* *mýs* *ostinn* *alveg*.
 there finished many mice cheese-the completely

(Richards and Biberauer (2004: 2))

The existence of transitive expletive constructions can be explained if we assume that the expletive is merged in SPEC-C/T. (For a detailed argument, see Richards and Biberauer (2004) and references therein.) The existence of object expletive is argued for by Belletti and Shlonsky (1995). In Italian, the base complement ordering is NP PP, and the inverse order is achieved by inserting expletive *pro* in object position (although the inverse order may be derived by other operations as well). In the partitive Case analysis, on the other hand, it would be difficult to give a simple account for this cross-linguistic variation of the distribution of an expletive.

⁶ Under Chomsky's (2001) phase theory, (the complement of) each phase is transferred and evaluated at the CI interface. By "LF" I mean a phasal representation to be evaluated.

⁷ I assume that vP as well as v*P constitutes a phase. As pointed out by Epstein and Seely (2006), there is no reason to exclude vP if we define a phase as a "propositional" unit.

Specifically, the VP is the same either in active or passive configuration. The V is passivized by being selected by a passive *v* (*be* + *-en*). The accusative-assigning property and the selectional property for an external argument are absent in passive configurations since they are properties of agentive *v**. An EPP-feature of a *Vt*, on the other hand, is retained since EPP-inheritance is a lexical property of the verb ((20b)).⁸

Second, I postulate that *there* bears φ -/Case-features, hence entering into Agree with T ((21b)).⁹ I also assume with Chomsky (2001) that *there*'s φ -features are defective, i.e. not carrying enough information to values T's φ -features. In the following structure, for example, T undergoes Agree with *there* and with *a ball*, and the latter goal assigns φ -values to T:¹⁰

- (25) [_{TP} [_{VP} [_{VP} [_V there] *v-roll*] [_{VP} [_V *t_V*] [_{DP} *a ball*]]] [_{PP} *down the hill*]]]]

Third, I assume that PP-arguments optionally bear defective φ -/Case-features ((22)).¹¹ The validity of this assumption is attested by the fol-

⁸ I am grateful to an anonymous reviewer for suggesting the idea of feature inheritance. If this line is on the right track, then infinitive T should also inherit an EPP-feature. This paper does not deal with infinitive T's EPP. I just point out that Chomsky (2005: 20) develops an argument that relies on this assumption.

⁹ This assumption is not a novel one. Lasnik (1999) makes the same assumption, and Chomsky (2004) also refers to this possibility.

An anonymous reviewer pointed out to me that if *there* bears a Case-feature, it would predict that it can be assigned a genitive value as well, contrary to fact:

(i) *She was upset by *there*'s being nobody to help her. (Radford (2004: 300))
I attribute the deviance of (i) not to genitive Case of *there*, but to the merger of *there* in SPEC-D. Consider the following examples:

(ii) a. Mary was upset by *there*/**there*'s being nobody to help her.
b. Mary was shocked by *the law*/**the law*'s being laid down by her father.
c. Mary was surprised by *the boot*/**the boot*'s being on the other foot.

The above examples reveal that *there* as well as idiom chunks cannot be genitive subjects. This fact suggests that the genitive subject should be base-generated in the surface position, while the accusative subject can be raised from within the *vP*. Since *there* is merged in SPEC-*v*(*) by definition, it cannot be a genitive subject.

¹⁰ I assume with Chomsky (2005: 9) that a probe can undergo Agree more than once, "as far as a goal with no unvalued features, which blocks further search."

¹¹ An anonymous reviewer commented that the optional φ -features of PP might be problematic in terms of the optimality of language design. It would indeed be problematic if φ -features were randomly assignable to PPs. In fact, however, it seems that only locative and temporal PPs can bear φ -features and hence become a

It might be the case that there is one fundamental locality principle, and (23) and (24) are two surface forms of that principle. This possibility I leave for future research.

5. Explanation

5.1. Sentence Patterns for Agentive Verbs

Let us now consider what sentence patterns occur with what type of verb. First I consider why agentive verbs allow only one sentence pattern. What is crucial is that SPEC- v^* is θ -related. Suppose that the following structures have been formed at some point of derivation:¹²

- (28) a. Transitive: [v^*P \square v^*-V [VP \square [t_V DP2] PP3]]¹³
[φ] ([φ_{def}])
 b. Intransitive: [v^*P \square v^*-V [VP t_V PP3]]
([φ_{def}])

Putting aside how SPEC- V in (28a) should be filled, let us first consider how SPEC- v^* is filled in (28a, b). Syntax provides the following three options: (i) moving an internal argument (DP2, or PP3 if it bears [φ_{def}]), (ii) merging *there*, or (iii) merging an external argument. Only the last option leads to a legitimate LF representation since otherwise the agentive sentence would contain no Agent argument.

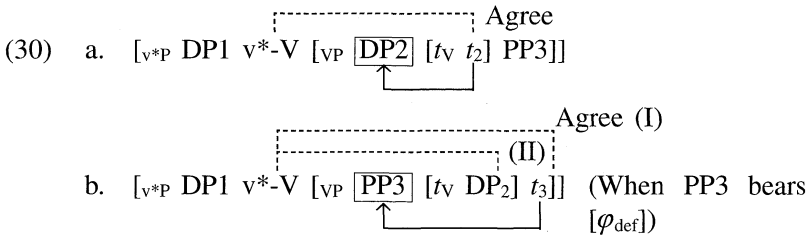
In the next phase, T bears an EPP-feature to be satisfied. The MLC (23a) requires that SPEC-T is occupied by *the closest goal*, i.e. the SO in SPEC- v^* . (Recall that assumption (21) prevents *there*-insertion to SPEC-T.) In agentive configurations, therefore, subject raising of the agent DP is the only option to satisfy the EPP of T.

- (29) a. [TP $\boxed{DP1}$ T [v^*P $\boxed{t_1}$ v^*-V [VP \square t_V DP2 PP3]]
[φ] ([φ_{def}])
 b. [TP $\boxed{DP1}$ T [v^*P $\boxed{t_1}$ v^*-V [VP t_V PP3]]
([φ_{def}])

¹² This is not a precise formulation under Chomsky's (2005, 2007) phase theory, though I use it throughout this paper. Since all operations within a phase occur in parallel, there is no fixed “point of derivation.” Similarly, I do not mean by structures like (28a, b) that each SPEC position is occupied by an empty category for which some syntactic object has to be substituted. Structures (28a, b) merely illustrate that when deriving the v^*P phase, v^* and V each have an EPP-requirement to be satisfied before (the complement domain of) the v^*P phase is transferred.

¹³ I assume that V-to- v^* raising takes place in narrow syntax. Matushansky (2006) argues convincingly for this claim.

Let us then consider how SPEC-V is filled in (28a)/(29a). This position is filled before the v*P phase is spelled out. In narrow syntax, there are two possible candidates. When PP3 does not bear [φ_{def}], the only goal that agrees with v*-V is DP2. Hence DP2 is raised to SPEC-V. When PP3 bears [φ_{def}], on the other hand, both DP2 and PP3 agree with v*-V. In this case, PP3 is attracted to SEPC-V since it is the closer goal. SPEC-V in (28a) can therefore be satisfied either as in (30a) or as in (30b).

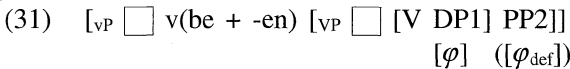


Syntactically, both types of OS are legitimate. However, it does not guarantee that they both lead to legitimate LF representations. At LF, (30b) violates the IC (24): Agree (v*-V, DP2) is blocked by the intervening A-chain head PP3. Consequently, the only convergent option is to raise DP2 as illustrated in (30a).

To wrap up, in the derivation of agentive configurations, the object position (for transitive verbs) must be filled by raising the internal DP-argument, and the subject position must be filled by raising the external argument. The suggested analysis thus accounts for the fact that there is only one sentence pattern for agentive verbs, as shown in (3) and (4).

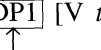

5.2. Sentence Patterns for Passivized Verbs

Let us then consider the derivation of passive configurations. Suppose that the derivation has constructed (31).

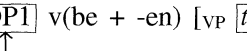
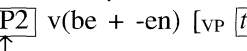


I have assumed that the lexical verb carries only semantic contents and an EPP-inheriting property (if it is transitive) ((20b)). The verb functions as active when selected by active v* and as passive when selected by passive v. Since EPP-inheritance is part of Vt's lexical property, it is not eliminated in syntax. Hence even in a passive configuration, SPEC-V has to be filled, as illustrated by the square in (31). Since passive v, lacking φ -/Case-features, does not undergo Agree, the MLC (23b) requires that SPEC-V be filled by *the closest φ -bearing argument*.

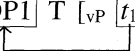
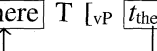
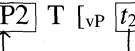
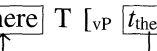
The attractee should be DP1 if PP2 does not bear $[\varphi_{\text{def}}]$, and PP2 otherwise. Accordingly, SPEC-V in (31) can be filled as in either (32a) or (32b).

- (32) a. $[_{\text{VP}} \square v(\text{be} + \text{-en}) [_{\text{VP}} \text{DP1} [V t_1] \text{PP2}]]$

 b. $[_{\text{VP}} \square v(\text{be} + \text{-en}) [_{\text{VP}} \text{PP2} [V \text{DP1}] t_2]]$ (When PP2 bears $[\varphi_{\text{def}}]$)


Then let us consider how SPEC-v is filled. I assume in (20a) that v as well as v^* bears an EPP-feature for its SPEC (see note 7). The merger of the external argument, although it is a possible option in syntax, causes illegitimacy at LF since the position is not θ -related. But it can be filled by any other way, i.e. by raising the SO in SPEC-V, or by inserting *there*. Therefore, from (32a) either (33a) or (33b) is derived, and from (32b) either (34a) or (34b) is derived.

- (33) When PP2 does not bear $[\varphi_{\text{def}}]$:
 a. $[_{\text{VP}} \text{DP1} v(\text{be} + \text{-en}) [_{\text{VP}} t_1 [V t_1] \text{PP2}]]$

 b. $[_{\text{VP}} \text{there} v(\text{be} + \text{-en}) [_{\text{VP}} \text{DP1} [V t_1] \text{PP2}]]$
 (34) When PP2 bears $[\varphi_{\text{def}}]$:
 a. $[_{\text{VP}} \text{PP2} v(\text{be} + \text{-en}) [_{\text{VP}} t_2 [V \text{DP1}] t_2]]$

 b. $[_{\text{VP}} \text{there} v(\text{be} + \text{-en}) [_{\text{VP}} \text{PP2} [V \text{DP1}] t_2]]$

When T is merged with each of the configurations above, T agrees with all the arguments that bear φ -features. What is to be attracted is the highest goal, i.e. the SO in SPEC-v. Consequently, from (31) any of the following four configurations can be derived:

- (35) When PP2 does not bear $[\varphi_{\text{def}}]$:
 a. $[_{\text{TP}} \text{DP1} T [_{\text{VP}} t_1] v(\text{be} + \text{-en}) [_{\text{VP}} t_1 [V t_1] \text{PP2}]]$

 b. $[_{\text{TP}} \text{there} T [_{\text{VP}} t_{\text{there}}] v(\text{be} + \text{-en}) [_{\text{VP}} \text{DP1} [V t_1] \text{PP2}]]$

 (36) When PP2 bears $[\varphi_{\text{def}}]$:
 a. $[_{\text{TP}} \text{PP2} T [_{\text{VP}} t_2] v(\text{be} + \text{-en}) [_{\text{VP}} t_2 [V \text{DP1}] t_2]]$

 b. $[_{\text{TP}} \text{there} T [_{\text{VP}} t_{\text{there}}] v(\text{be} + \text{-en}) [_{\text{VP}} \text{PP2} [V \text{DP1}] t_2]]$


Although they are all legitimate in syntax, (36b) is excluded at LF for the violation of the IC: Agree (T, DP1) is blocked by another φ -argument (PP2). In consequence, there are three possible sentence patterns

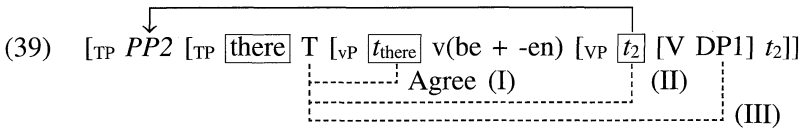
for passive verbs: DP-raising (35a), expletive (plus OS of DP) (35b), and LI (36a) sentences. This is precisely what we have observed in section 2. The relevant examples (2a-c) are repeated here as (37a-c):

- (37) a. *A bridge* was built over the river. (Raising)
- b. *There* was a bridge built over the river. (Expletive)
- c. *Over the river* was built a bridge.¹⁴ (LI)

In fact, though, there is another possible word order, as mentioned in section 4.1. The relevant example (19d) is repeated here as (38).

- (38) Over the river₂ there was [_{t₂}] built a bridge₁ t₂.

PP2 has to drop in at SPEC-V on the way to the sentence-initial position since DP1 remains in situ. This sentence indicates that the configuration like (36b) is legitimate if the PP is further shifted. The suggested analysis accounts for this fact. Configuration (36b) violates the IC at LF, and the violation can be evaded by the displacement of the intervening PP:



With the PP shifted, no A-chain head blocks Agree (T, DP1). (38)/(39) therefore converges.

5.3. Lexical Unaccusatives

Let us now consider the derivation of sentences involving lexical unaccusatives. Suppose that the derivation has reached the following

¹⁴ An anonymous reviewer requested me to clarify how to distinguish between argument PPs and adjunct PPs. One way to make a distinction is extractability. A *wh*-phrase can be extracted out of an argument PP, but not out of an adjunct PP (cf. Hornstein and Weinberg (1981), Nakau (1998)):

- (i) a. Whom will the police inspector give the money to?
- b. Which folder does Maigret keep the letters in?
- (ii) a. ?*Which party did Poirot meet Maigret after?
- b. ?*Whose office did the inspectors discuss the crime in?

(Haegeman (1994: 375))

With this in mind, observe the following examples:

- (iii) a. Which river did John build a bridge over?
- b. Which river was a bridge built over?
- c. Which river was there a bridge built over?

The legitimacy of (iii) suggests that *over the river* in (37) is an argument.

stage:

- (40) $[_{VP} \square v-V [_{VP} [t_V DP1] PP2]]$
 $[\varphi] ([\varphi_{def}])$

Since unaccusative verbs never assign Case, they do not inherit EPP from *v*. Hence OS to SPEC-V does not occur. The only EPP-position in (40) is SPEC-*v*. As discussed in the previous section, SPEC-*v* can be filled either by an internal argument (DP1 if PP2 does not bear $[\varphi_{def}]$, and PP2 otherwise) or by *there*. Hence from (40) any of the following structures is derived:

- (41) When PP2 does not bear $[\varphi_{def}]$:
- a. $[_{TP} \square T [_{VP} \boxed{DP1} v-V [_{VP} [t_V t_1] PP2]]$
- b. $[_{TP} \square T [_{VP} \boxed{there} v-V [_{VP} [t_V DP1] PP2]]$
- (42) When PP2 bears $[\varphi_{def}]$:
- a. $[_{TP} \square T [_{VP} \boxed{PP2} v-V [_{VP} [t_V DP1] t_2]]$
- b. $[_{TP} \square T [_{VP} \boxed{there} v-V [_{VP} [t_V DP1] PP2]]$

In each configuration above, T agrees with the φ -bearing argument(s), and attracts the highest goal, i.e. the SO in SPEC-*v*, to its SPEC. Consequently, from (40) any of the following four configurations can be derived:

- (43) When PP2 does not bear $[\varphi_{def}]$:
- a. $[_{TP} \boxed{DP1} T [_{VP} \boxed{t_1} v-V [_{VP} [t_V t_1] PP2]]$
- b. $[_{TP} \boxed{there} T [_{VP} \boxed{t_{there}} v-V [_{VP} [t_V DP1] PP2]]$
- (44) When PP2 bears $[\varphi_{def}]$:
- a. $[_{TP} \boxed{PP2} T [_{VP} \boxed{t_2} v-V [_{VP} [t_V DP1] t_2]]$
- b. $[_{TP} \boxed{there} T [_{VP} \boxed{t_{there}} v-V [_{VP} [t_V DP1] PP2]]$

(44b) is excluded at LF for the violation of the IC: Agree (T, DP1) is blocked by the intervening PP2. The suggested analysis thus correctly predicts that there are three possible sentence patterns for lexical unaccusative verbs: DP-raising (43a), expletive (43b), and LI (44a) sentences. This is precisely what we have observed in section 2. The relevant examples (1a-c) are repeated here as (45):

- (45) a. *A ball*₁ rolled *t*₁ down the hill. (Raising)
 b. *There* rolled a ball down the hill. (Expletive)

c. *Down the hill*₁ rolled a ball *t*₁. (LI)

To wrap up the discussion in section 5, the suggested analysis makes a correct prediction about what sentence patterns are allowed for each type of verb. The questions raised in section 3 are now resolved. Agentive expletive constructions are not derivable since the external argument and *there* conflict over the same merge position, SPEC-v(*). OS is obligatory even when the object does not receive accusative Case since the transitive verb retains its EPP if passivized. When OS is apparently absent, as in LI sentences, it is the PP-argument that undergoes OS.

6. The Optimality of Syntactic Design

We have seen that the assumptions made in section 4 allow the derivations of all and only possible sentence patterns. The requisites for the analysis are briefly summed up below:

- (46) EPP(-inheritance) is a lexical property of phase heads (C, v(*)) and EPP-heirs (T, Vt).
- (47) *There* bears [φ_{def}]/[Case]-features, and is merged in SPEC-v(*).
- (48) PP-arguments optionally bear [φ_{def}]/[Case]-features.
- (49) Locality: Move is constrained on-line by the MLC, and Agree is constrained at LF by the IC.¹⁵

As mentioned in section 1, assumptions are no longer regarded as givens, but as something to be explained. Of course it is true that systematic explanation has to be established based on a great number of/a wide variety of achieved assumptions. In this sense, it would be too hasty to draw any assertive conclusion about fundamental concepts of C_{HL} from the small list of assumptions obtained by the present research. However, I suspect that the above list might hint at one property of syntax that minimalist researches have so far avoided facing. That is, *not every derivation proceeds in an optimal way*.

Specifically, assumption (46) entails that C_{HL} cannot eliminate the EPP(-inheritance) property of EPP-bearers no matter what type of con-

¹⁵ Bošković (to appear) makes virtually the same claim based on different kinds of data.

figuration is to be constructed. Hence agentive as well as non-agentive configurations contain EPP-positions for an external argument and for Object Shift (when Vt is involved). In agentive configurations, each EPP-position is related to semantics (θ -interpretation) or morphology (Case). Hence the legitimate candidate for each position is uniquely determined. On the other hand, in non-agentive configurations, one (or more) EPP-position is not related to either semantics or morphology. That is, the position(s) must be filled, but it yields no consequence on outputs. Put differently, since such EPP-positions are not related to semantics or morphology, they can be satisfied by any argument (as long as it conforms to the locality conditions). Hence more than one derivation (sentence pattern) is allowed for non-agentive verbs, as observed in sections 5.2 and 5.3.

To restate the above story in terms of the optimality of syntactic design, agentive sentences are derived in an optimal way: C_{HL} allows no alternatives, yielding only one legitimate representation. The derivation of non-agentive configurations, on the other hand, is less economical: it includes noneffective steps, and the existence of alternative derivations increases computational load. The apparent non-optimality results from the design of syntax, in which C_{HL} has to make use of the template for agentive configurations even when it tries to derive a non-agentive configuration. SPEC-v (and SPEC-V for passivized verbs) is, in a sense, a pothole to be filled with anything available.

At first view, the derivation of non-agentive configurations is not optimal. One might assume that passive sentences would be derived without noneffective OS if passive v suspends EPP-inheritance of transitive V. However, one type of simplification often requires another type of complication. The above assumption, for example, saves noneffective OS, but requires C_{HL} to have a new type of operation, i.e. feature-suspension.

If the discussion so far is on the right track, optimality seems to be realized by *minimizing the number of derivable configuration types*. If each EPP-bearer or EPP-heir always brings its EPP-feature into syntax, the number of derivable configuration types will be limited: agentive as well as non-agentive verbs make use of the agentive template as in (50), in which the squares stand for EPP-positions to be filled.

- (50) $[_{TP} \square T [_{v(*)P} \square v(*) [_{VP} (\square) V \dots]]]$
 ((\square) is present when V is transitive.)

Although having only one template costs noneffective, pothole-fixing

steps when deriving non-agentive configurations, it is economical in that C_{HL} need not arrange the presence/absence of EPP-feature for each LxI in order to ensure the most economical derivation.

This view of optimality is greatly different from the one which has been tacitly assumed in most minimalist researches. Most minimalist studies present an analysis that derives the construction of their concern in an economical way. This is in a sense inevitable since minimalist linguists normally do not regard some construction as marked or unmarked, or study a marked construction in comparison with its unmarked counterpart. Instead, they focus on a construction of their concern, trying to assign it as economical an analysis as possible. However, if my proposal is correct, syntax is designed primarily for an unmarked configuration, and hence superfluous steps are unavoidable in the derivation of marked configurations. The traditional methodology would then have to be put under scrutiny.

Chomsky (2001) claims that there can be more than one optimal language design. The human faculty of language FL is *an* (not *the*) optimal solution to legibility conditions, and “good design” conditions are “a matter of empirical discovery” (Chomsky (2001: 1)). This paper has shown that another good design might indeed exist.

Before closing this section, I will briefly mention how my conclusion about the optimality of syntactic design can be tested. An anonymous reviewer commented that my conclusion seems hard to falsify. I would like to respond to this comment as follows. The conclusion concerns fundamental concepts of C_{HL} , and such core assumptions are not subject to empirical examination. The validity of my conclusion will be judged by the range of empirical data that it can account for and/or by predictions that it makes. One possible field of further empirical research might be the variation of sentence patterns in other languages. Take scrambling phenomena in Japanese for example. It has been argued that scrambling is a semantically vacuous operation (Saito (1989)), and that scrambled objects may occupy SPEC-T (Miyagawa (2001)). Semantically-vacuous A-movement of objects might be explained as a pothole-fixing operation: when a subject DP need not occupy SPEC-T, the EPP of T can be satisfied by any other element. Since this movement occurs just to fix the pothole, it has no effect on output. If an analysis made in conformity with the suggested optimality can explain the already-known properties of scrambling, and correctly predicts unknown properties of scrambling, it will give support to the

validity of the suggested optimality. I leave empirical examination of this kind for future research.

7. Concluding Remarks

As Lasnik (2002: 1) claims, “[t]he EPP has been ... a pervasive mystery since it was first formulated by Chomsky (1981)” (cited from Epstein and Seely (2006: 49)). There have been attempts to eliminate EPP (e.g. Bošković (2002), Epstein and Seely (2006)) or reduce EPP to some legibility condition (e.g. Williams (1980), Takahashi (2002)).

Recently, Chomsky (2007: fn. 35) suggests that EPP might be partially reduced “to general cognitive principles and ‘canonical surface forms’” although what “canonical surface forms” means is not made clear. The conclusion drawn from the present research might lend support for this claim, making more explicit what “canonical surface forms” are. That is, EPP-features are obligatorily associated with phase heads and EPP-heirs, regardless of what kind of configuration is to be constructed. Hence marked configurations (i.e. non-agentive configurations) look like unmarked configurations: internal arguments undergo OS even when the OS has no effect on output, and external argument position is filled even when no external argument is selected. Although C_{HL} in this form looks less economical in that it contains noneffective steps, it achieves the optimality of another kind: minimizing the number of derivable configuration patterns. My remark on syntactic optimality, drawn from the present research of limited concern, is by no means conclusive. However, I believe I have provided another possible direction that minimalist researches can take.

Appendix. How Are They Related? — Equidistance and Locality; Elimenable and Non-eliminable EPP Positions

In this appendix I would like to make clear the difference between my analysis and other apparently similar ones dealing with the distribution of arguments. It is not a novel idea to assume that LI and/or expletive passives involve A-movement of PP-arguments. Apart from Bowers (2002), Bresnan (1994), Lyle and Gamon (1998) and Rezac (2006) assume successive cyclic A-movement of PP-arguments. Especially, the types of the data discussed by Rezac are almost the same as mine, for which I think I should stress in what respects my proposal is

unique and better than his.

Under Rezac's analysis, all the unaccusative data given in the main text are accounted for. Let me go over his explanation with the following examples.

- (51) a. There were *three fish*₁ caught *t*₁ in the lake₂.
 b. *There were *t*_{there} caught three fish₁ in the lake₂.
 c. In the lake₂ were *t*₂ caught three fish₁ *t*₂.
 d. *There were *in the lake*₂ caught three fish₁ *t*₂.
 e. In the lake there were *t*₂ caught three fish₁ *t*₂.
 f. *In the lake₂ were *three fish*₁ caught *t*₁ *t*₂.

Since the passive participle bears an EPP-feature, some argument is attracted to pre-participial position, or Th/Ex position in Rezac's terminology ((51a)). *There* cannot be merged in Th/Ex position since it is merged in SPEC-T by assumption ((51b)). The PP-argument may cross over the DP to occupy Th/Ex position as in (51c) (Equidistance). Unlike the DP-argument, the PP cannot stay in Th/Ex position ((51d)) since the PP must move into the CP, as in (51e), for some interpretive reasons. (51f) is deviant since the PP-argument cannot cross over the DP in the *moved* position (Locality).

The empirical problem with Rezac's analysis is that it cannot block the derivation of agentive expletive sentences like (3b) and (4b). If *there* were inserted into SPEC-T, the external argument would remain in its merged position legitimately.

Conceptually, Rezac's assumptions are unclear in several points. First, it is not clear how Equidistance and Locality interact with each other. What is the use of distinguishing between arguments in the merged and the moved A-positions if the probe searches for both of them in the same way? Second, his analysis requires two kinds of EPP. The transitive verb, when passivized, loses the EPP-feature that attracts a DP-argument to the OS position but gains somewhat different EPP for Th/Ex, which can attract either DP- or PP-argument. Third, it is not clear what element bears an EPP-feature or why. Without a principle to govern the presence/absence of the EPP-feature, EPP would be just a convenient, ad hoc stipulation to explain the data.

The suggested analysis, in contrast, is free from the above problems. The relation between equidistance and locality is handled with the two locality conditions, i.e. the MLC and the IC; there is only one type of EPP, the attractee of which is determined by the MLC (23); EPP is never eliminated since syntax cannot rewrite lexical properties.

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