The EPP as Argument Structure Requirements

on Functional Verbal Heads

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Abstract

The Problems of Projection (POP) approach to minimalist syntax (Chomsky 2013, 2014, 2015) offers no account of the basic facts of short movement, agreement, and Case in expletive sentences, and involves certain derivational mechanisms of some complexity which, if eliminated, would simplify the overall theory. The present paper addresses these issues. It is argued that Inheritance is an unnecessary complication of the theory, that each head serves as a phase head (simplifying the inventory of possible head types), and that short movement is due to the argument structure requirements of functional verbal heads rather than to labeling deficiencies, as claimed in the POP literature cited above.

Keywords: EXPL insertion, Phi agreement, Short movement, Case marking, EPP, Argument structure, POP

1. Introduction

1.1 Background and Significance of the Problem

This work is concerned with various aspects of the behavior of expletive sentences (ES) and the possible implications of this behavior for the current Problems of Projection (POP) approach to syntactic theory (Chomsky 2013, 2014, 2015). Historically, within the Government & Binding (GB) Theory (Chomsky 1981), the subsequent Minimalist Program (MP) (Chomsky 1995), and the current POP approach, the plural agreement on the finite verb seen in expletive sentences such as (1a) has been taken to indicate that agreement must take place only between the finite verb form and what is termed the "associate" DP, in exactly the same way as if the DP appeared in surface subject position, as in (1b). The possibility of the ubiquitous contracted singular agreement form as in (1c) has been dismissed without further analysis as a "frozen" form (Chomsky 1995), an analysis which is incompatible with fundamental aspects of the theory.

(1)   a. There are books on the floor

        b. Books are on the floor

        c. There's books on the floor

Further, the MP and POP approaches can account for the associate DP appearing in its home/theta-marking position as in (1a), or as a surface subject, as in (1b), but due in part to the claim that only C and v* are phase heads, these approaches do not solve the problem of short movement of the associate, movement away from its home position, but not all the way to surface subject position, as illustrated in (2b-d).

(2)   a. There arrived a train

        b. There are trains arriving (*trains)

        c. There was someone arrested (*someone)

        d. There was someone being (*someone) arrested (*someone)

There are other empirical gaps. Additional phenomena not accounted for by the above-mentioned theories include the Case form of the associate DP, and other aspects of ϕ-agreement in active and passive expletive sentences, as in (3-5).

(3)   a. There is/?*are a boy and a girl singing.

b. A boy and a girl are/*is singing.

(4) a. There has to be hundreds of photos take...

b. Hundreds of photos have/*has to be taken ...

(5) a. There is only me in that picture/*There am only I ...

b. Only I am in that picture

Despite the claim in the preceding theories that agreement patterns in ES exactly as it does in non-ES, sentences (3-4) offer evidence that the picture is more complex. Sentence (3a) displays left-conjunct agreement, which is not possible with a subject-positioned DP as in (3b). Sentence (4a) (an attested form) displays 3SG agreement morphology though the associate DP is not 3SG. Another claim in GB/MP/POP is that the associate DP in ES is assigned NOM Case (from C/T); however, when a pronominal can appear in an ES, its Case must be ACC, as in (5a). Clearly, the gaps in empirical coverage noted above should be addressed, and that is a goal of the present work.

1.2 Proposed Revisions of POP

This work proposes, within the general assumptions of the POP framework, how the theory might be revised so as to allow an account for these unexplained phenomena. In this article, I will propose that the movements in (2) are due to argument structure requirements associated with the auxiliary verbs, another instance of the need to satisfy Bare Output Conditions related to the CI domain. (Note 1) In advancing this proposal, I also argue that certain complicating aspects of the POP approach may be simplified or suspended with entirely. Section 2 sketches basic aspects of the POP approach. Section 3 offers a reassessment and revision of certain basic dimensions of the POP proposal. These include (i) the possibility that, rather than being uninterpretable, syntactically-valued features can affect semantic interpretation; (ii) the possibility of eliminating Inheritance from the theory, simplifying the theory; and (iii) the simplification of the inventory of types of functional heads to one type--all functional heads are phasal. Section 4 sketches earlier work on short movement. Section 5 proposes an analysis in the revised POP framework, where short movement is the result of auxiliary verbs bearing argument structure with compliance assessed in CI (and not the result of labeling deficiency), and the other empirical gaps discussed above are resolved, basically along the lines of Sobin (2014) with some key augmentations. Section 6 offers concluding remarks.

2. Key Aspects of the POP Approach

Piattelli-Palmarini (2014) offers an excellent summary of the POP analysis. Also, the works by Epstein, Kitahara, & Seely (EKS) (e.g. 2012, 2014) include excellent characterizations of key elements of POP. In light of these, the sketch presented here will be very brief and will focus on those elements of the proposal that are most relevant here.

In advancing the POP approach, Chomsky (2013, 2014, 2015) proposes that syntactic structure is not 'tree-like' as in earlier theories, but instead two items combine by the operation Merge into a single set, as in (6). (Note 2) Merge is simply 'free'. It draws upon any two items X and Y and creates an unordered two-member set.

(6) Merge (X, Y) => {X, Y}

Any such set is claimed to require a label for the purpose of Conceptual-intentional (CI) interpretation, but the syntax per se does not provide such a label. Instead, there is a 'Labeling Algorithm' (LA) which independently carries out this task prior to or at the CI interface. There are two major subcases of Merge with respect to the task of labeling. If a phrase XP is merged with a head H ({H, XP}), then LA (always employing minimal search) chooses H as the label of the set ({$_H$ H, XP}). If two phrases XP and YP are merged ({XP, YP}), then LA searches for the head of each phrase. If each head X and Y bears a prominent feature(s) which is in an agreement relation with the other (e.g. ϕ), then the agreeing features comprise the label for the set ({$_{<\phi,\phi>}$XP, YP}). If there is no such agreement relation between these heads, then the set may be modified by 'raising' one of the members (via internal merge), such that it merges with the original set (which still contains a copy of the newly merged member, e.g. {$_2$ XP, {$_1$ <XP>, YP}--the subscript numbers here are only for exposition, and are not present in the structure). LA can only "see" a phrase all of whose copies are within the set under consideration, so after merging XP to form set 2, only YP is visible to LA in its task of labeling set 1. Hence, set 1 will be labeled 'Y' ({$_2$ XP, {$_Y$ <XP>, YP}). A virtue of this proposal is its potential for explaining successive cyclic movement in terms of an operation, Merge, which is logically necessary in one form or another to any account of sentence formation.

Derivation proceeds in phases and, there is a 'tight' primary relationship between NS and CI. A derivation is initiated by 'free' Merge. Other NS operations within each phase include Agree (agreement between any prominent features needed by LA for labeling) and Case valuation. Compliance with argument structure (including C-selection) and theta marking are verified in CI, as these relate to semantic interpretation.

Further, C and *v** are claimed to be the only phase heads. T and any root (R) are featurally unspecified or underspecified. When a phase head has been merged, it bears features for ϕ-agreement and Case, which are passed on by Inheritance to the T or R head immediately below it, making each of these phase heads. When T or R have fully utilized these newly acquired features and all labeling has been accomplished, transfer to CI takes place for semantic interpretation. (Chomsky 2015)

A key part of the POP analysis is the attention paid to '3rd factor' considerations (Chomsky 2005), such as computational efficiency, which should be maximized. These factors are not built into Merge, but serve as external constraints on its operation. Another such 3rd factor consideration is what is termed 'No Tampering'--the requirement that no new objects are added in the course of computation apart from arrangements of lexical properties. Another is the 'Law of Conservation of Features' (LCF) proposed by EKS 2012, stating that "In NS, features cannot be created or destroyed throughout a derivation" (p. 14).

3. Reassessing Some Basic POP Assumptions

Considerations of computational efficiency should include not only 'space'--minimizing the amount of structure which operations such as labeling must consider, but also 'time'--minimizing computational steps. Here, I will argue that certain aspects of the POP proposal might be altered, and that such alteration results in simplifying the system, leading to greater computational efficiency.

3.1 Labeling and Obligatory Exit

Taken together, Chomsky (2013, 2015) and EKS (2014) argue that labeling explains "obligatory exit" from both A-bar and intermediate A positions. In (7a), *a man* and the head of the infinitival phrase are said to have no common/agreeing features, so that α cannot be labeled, and without the possibility of further raising of *a man*, the derivation crashes at CI (an FI violation).

(7)   a. *There is likely [$_\alpha$ a man to be *t* in the room].

      b. There is likely [$_\alpha$ *t* to be a man in the room]. (= EKS (8a-b))

In (7b), *there* may merge to form α. *There* is claimed not to be a head, and therefore is unable to provide a label for α, effectively requiring the raising of *there*. This leaves T (= *to*), the head of TP, to determine the label for α. Success or failure in labeling a set is a function of the properties of the elements which constitute that set. Elements external to the set are irrelevant.

We may now ask whether labeling failures explain all instances of raising. Consider the short movement facts in (8).

(8)   a. There was$_{Pass}$ [$_\beta$ someone [$_\alpha$ arrested (*someone)]]

      b. There was$_{Prog}$ [$_\gamma$ someone being$_{Pass}$ [$_\beta$ (*someone) [$_\alpha$ arrested (*someone)]]]

      c. There has$_{Perf}$ [$_\gamma$ (*someone) been$_{Pass}$ [$_\beta$ someone [$_\alpha$ arrested (*someone)]]]

Given the full grammaticality of (8a) and (8c), it is clear that β can be labeled with *someone* residing in SPEC-β. But this means that β should also be successfully labeled with *someone* residing in SPEC-β in (8b), with no forced exit of *someone*. Thus claiming that all forced exit is due to labeling failure leaves the Left-most *BE* Condition (Milsark 1974) and the ungrammaticality of (8b) with *someone* surface-positioned in SPEC-β unaccounted for. Therefore, while labeling might explain some A movement, it does not suffice to explain this A movement.

3.2 CI, Syntactically-valued Features, and Inheritance

Inheritance is the idea that the features of a phase head are inherited by a non-phase head, as noted above. Thus, all heads are, or become, phase heads. One argument for the necessity of Inheritance and non-phase heads (e.g. T) alternating with phase heads (e.g. C) (Richards 2007) goes as follows: (i) Syntactically valued features (*u*Fs) are claimed to cause problems for CI in that they are indistinguishable repeats of the values given to CI by elements which bear the same values inherently. Assuming that such repetitions will cause semantic anomaly and consequently a CI crash, such *u*Fs must be removed as of transfer to CI/SM (Spellout); (ii) *u*Fs can't be removed before they are valued without causing a crash, a violation of FI. When they have been valued, they become indistinguishable from interpretable Fs, so that they can't be distinguished for removal after valuation. The proposed solution is to remove them simultaneous with valuation, since the act of valuation is claimed to be the only thing that distinguishes them; (iii) Phase heads are claimed to bear *u*Fs, e.g. C is claimed to bear ϕ-features. If such *u*Fs are valued on C directly, then C and its phase must transfer in order to remove the *u*Fs, curtailing any further derivation; (iv) For a derivation to continue, only the complement of a phase head should transfer; (v) To preserve (ii), avoid (iii), and comply with (iv), Inheritance is claimed necessary. In one proposed scenario, T merges and does nothing

immediately. C later merges, and its uFs are inherited by T. T Agrees (including ϕ-agreement and NOM Case valuation) with DP (in SPEC-v^*) and raises it (counter-cyclically) to SPEC-T. If C does not delete, then C's complement TP is transferred. (Note 3) v^* and R/V are claimed to work in parallel.

EKS (2010, 2012) note that such a system massively under-generates, since certain syntactically valued features necessarily remain at the phase edge. They propose instead that (i) inherent features are '+CI' (readable by CI), whereas syntactically valued features are '-CI' (unreadable by CI), a characterization which is unalterable due to LCF, so that (ii) uFs are permanently identified, and thus may be distinguished and removed after valuation if indeed they are problematic for CI.

Although EKS continue to assume Inheritance in some form, the necessity of Inheritance may now be questioned. First, and at the very least, if uFs are permanently marked for removal/transfer to SM only, then they may remain on phase heads without violating FI, and Inheritance appears unnecessary. Further, semantic interpretation comes solely from CI. If uFs are not allowed into CI for interpretation, this suggests that agreement mismatches should have no semantic consequence, since only CI produces semantic interpretation and CI never sees these uFs. However, it appears that uFs can be semantically disruptive. For instance, no one would bet her/his bank account on the intended number value for '*book*' in an English learner's sentence like '*This books is on the table.*' Since it appears that uFs can be semantically disruptive, and since semantic interpretation is solely due to CI, it may well be that CI does in fact require/utilize uFs. In POP, CI is category-aware, as indicated by the fact that labeling involving agreement is crucial to CI. Thus it is likely that CI knows the lexicon (as it must to do semantic interpretation) and the categorial source of Fs and uFs, and expects the interpretation of Fs to be reinforced by uFs to the extent that the language does this. So perhaps all features are CI-relevant, and redundancy via agreement fortifies rather than confuses the interpretation.

In sum, whether or not it proves desirable for CI to require syntactically valued features, the fact that they can be distinguished and dealt with after valuation renders Inheritance unnecessary--computation is simplified, and 'empty' heads are eliminated.

3.3 T as a Possible Phase Head

The argument that T is 'weak' and should not be a phase head has rested on the assumption that a phase head T would bear uFs, causing a CI crash when the next phase including T transfers to CI. However, with the identifiable uFs of EKS, no such semantic difficulty should arise, and therefore T may be a phase head. As such, it is conceivable that T bears tense and features for ϕ-agreement, and can label TP in (9). If DP merges to SPEC-T from its vP-internal position, then perhaps C assigns NOM directly to DP in SPEC-T. If DP does not raise, as in ES, it will not be in position to be assigned NOM.

(9)   [C, [DP, [$_{TP}$ T, [$_{vP}$ t ...]]]]

This would go toward explaining why a pronominal associate DP which does not reach SPEC-T as in (5a) (repeated here) must be ACC (default Case) rather than NOM.

5a) There <u>is</u> only <u>me</u> in that picture/*There <u>am</u> only <u>I</u> ...

4. Previous Work on Short Movement

4.1 Verbalizing Functional Heads

In Deal's (2009) analysis of verb type, all *There* Insertion is low (Richards & Biberauer 2005), and the possibility of *There* Insertion depends entirely on the nature of the functional v heads accompanying the various roots. Deal (2009: 298-302) proposes that non-inchoative unaccusative verbs like *arrive* and the various auxiliary verbs *be* are verbalized with 'default v' ($v\sim$), the only v with an open SPEC position allowing *There* Insertion, as in (10).

(10)   Non-inchoative unaccusative: [$_{vP}$ [$v\sim$ [$_{\sqrt{P}}$ $\sqrt{}$ DP]]]

There Insertion for the sentences '*There arrived a train*' and '*There is someone laughing*' is shown in the vP structures (11) and (12), respectively.

(11)   [$_{vP}$ there [$_v$ $v\sim$ [$_{\sqrt{P}}$ $\sqrt{}$arrive   a train]]]

(12)   [$_{vP}$ there [$_v$ $v\sim$ [$_{Asp}$ Asp$_{prog}$ [$_{vP}$ someone   [$_v$ Voice$_v$ $\sqrt{}$laugh]]]]]

                     "BE"

Appealing to 'Merge over Move' (Chomsky 2000), if *there* is in the subarray, it is merged to open SPEC-$v\sim$. If *there* is not in the subarray, T probes, agrees, and merges *a train* or *someone* to the surface subject position SPEC-T (e.g.

'*A train arrived*'). While this analysis offers insights into key aspects of *There* Insertion, such as disallowing multiple *there*s, it offers no account of short movement.

4.2 The Articulated EPP Proposal

Sobin (2014) develops this line of analysis further in arguing that each functional verbal head bears what are termed 'split' or 'articulated' EPP (ArtEPP) features which impose requirements on the nature of the DP elements that may appear immediately below and above (in SPEC of) a given functional head. (Note 4) The inventory of heads and their ArtEPP features includes those in (13).

(13) a. EPP for $v\sim$: $[u\text{Theta}_{\text{AGR}}, u\text{D}_{\text{MRG}}]$

 b. EPP for Voice$_{\text{pass}}$: $[u\text{Theta}]_{\text{AGR/MRG}}$ (= v_{unacc})

 c. EPP for simple v (*have*, *seem*): $[u\text{D}]_{\text{AGR/MRG}}$

 d. EPP for T: $[u\text{D}]_{\text{AGR/MRG}}$

The 'Agree' (AGR) feature here is not ϕ-agreement, but agreement with the DP which is structurally closest to the functional head on the characteristic designated by the Agree feature. (Note 5) Thus, $[u\text{Theta}_{\text{AGR}}]$ of $v\sim$ probes for the structurally closest theta-marked DP, a true argument. The 'Merge' (MRG) feature designates the quality of the DP which can appear in SPEC of the functional head. The Merge feature $[u\text{D}_{\text{MRG}}]$ of $v\sim$ indicates that either D-type element, an argument or an expletive, must appear in the SPEC-$v\sim$. A different argument could not be merged since it could not be theta-marked.

In contrast to $v\sim$, the Agree and Merge features of other functional verbal heads are 'unified', not split, requiring that the same element must satisfy both features. Voice$_{\text{pass}}$ (= v_{unacc}) bearing $[u\text{Theta}]_{\text{AGR/MRG}}$ must Agree a true argument and Merge that same argument into SPEC- Voice$_{\text{pass}}$. The functional head 'simple v' (associated with *have*) bearing $[u\text{D}]_{\text{AGR/MRG}}$ must Merge to its SPEC the DP that it has Agreed, either an argument or *there*. This approach deals successfully with the short movements in (8), as shown in the derivations in (14) and (15).

(14) a. There arrived a train

 [$_{TP}$ there T [$_{vP}$ <there> [$_v$ $v\sim$ [$_{\sqrt{P}}$ $\sqrt{}$arrive [$_{DP}$ a train]]]]]
  [uD̶]$_{\text{AGR/MRG}}$ [uT̶h̶e̶t̶a̶]$_{\text{AGR}}$
  [uD̶]$_{\text{MRG}}$

 b. A train arrived (*a train)

 [$_{TP}$ a train T [$_{vP}$ <a train> [$_v$ $v\sim$ [$_{\sqrt{P}}$ $\sqrt{}$arrive [$_{DP}$ <a train>]]]]]
  [uD̶]$_{\text{AGR/MRG}}$ [uT̶h̶e̶t̶a̶]$_{\text{AGR}}$
  [uD̶]$_{\text{MRG}}$

(15) a. There was [$_b$ someone [$_a$ arrested (*someone)]]

 [$_{TP}$ there T [$_{vP}$ <there> [$_v$ $v\sim$ [$_{Pass}$ Pass [$_{vP}$ someone [$_v$ Voice$_{\text{pass}}$ [$_{\sqrt{P}}$ $\sqrt{}$arrest <someone>...
  [uD̶]$_{\text{AGR/MRG}}$ [uT̶h̶e̶t̶a̶]$_{\text{AGR}}$ [uT̶h̶e̶t̶a̶]$_{\text{AGR/MRG}}$
  [uD̶]$_{\text{MRG}}$

 b. There was [$_g$ someone being [$_b$ (*someone) [$_a$ arrested (*someone)]]]

 [$_{TP}$ there T [$_{vP}$ <there> [$_v$ $v\sim$ [$_{Asp}$ Asp$_{\text{prog}}$ [$_{vP}$ someone [$_v$ $v\sim$ [$_{Pass}$ Pass ...
  [uD̶]$_{\text{AGR/MRG}}$ [uT̶h̶e̶t̶a̶]$_{\text{AGR}}$ [uT̶h̶e̶t̶a̶]$_{\text{AGR}}$
  [uD̶]$_{\text{MRG}}$ [uD̶]$_{\text{MRG}}$

 [$_{vP}$ <someone> [$_v$ Voice$_{\text{pass}}$ [$_{\sqrt{P}}$ $\sqrt{}$arrest <someone> ...
  [uT̶h̶e̶t̶a̶]$_{\text{AGR/MRG}}$

 c. There has [$_g$ (*someone) been [$_b$ someone [$_a$ arrested (*someone)]]]

 [$_{TP}$ there T [$_{vP}$ <there> [$_v$ v [$_{Asp}$ Asp$_{\text{perf}}$ [$_{vP}$ [$_{DP}$ <there>] [$_v$ $v\sim$ [$_{Pass}$ Pass
  [uD̶]$_{\text{AGR/MRG}}$ [uD̶]$_{\text{AGR/MRG}}$ [uT̶h̶e̶t̶a̶]$_{\text{AGR}}$
  [uD̶]$_{\text{MRG}}$

 [$_{vP}$ someone]... [$_v$ Voice$_{\text{pass}}$ [$_{\sqrt{P}}$ $\sqrt{}$arrest <someone > ...
  [uT̶h̶e̶t̶a̶]$_{\text{AGR/MRG}}$

In (14), $[u\text{D}]_{\text{MRG}}$ on $v\sim$ is satisfied either by merging *there* (14a) or by raising the argument (14b). With its unified

feature $[u\text{D}]_{\text{AGR/MRG}}$, T can only merge to SPEC what it has agreed, an argument, or *there*. In (15a), Voice$_{\text{pass}}$ must agree and merge an argument, and it is *v*~ of the passive auxiliary which offers the possibility of *There* Insertion, accounting for the surface position of *someone*. In (15b), the Left-most BE Condition is derived. In theory, *v*~ of the lower passive auxiliary verb *be* must merge in SPEC either the argument below it or *there*. If it merges *there*, then the higher progressive auxiliary verb *be* cannot locally satisfy its Agree feature [*u*Theta]. So the only successful course of derivation is for the argument to merge in SPEC of passive *be*, leaving progressive *be* to offer the only viable opportunity for *There* Insertion. In (15c), passive *be* offers the only opportunity for *There* Insertion. Both perfective *have* and T bear the unified feature $[u\text{D}]_{\text{AGR/MRG}}$, and each of these can only merge to its SPEC what it has agreed, an argument or *there*.

This approach captures the short movement facts and disallows both multiple *there*s and new arguments being merged (they could not be theta-marked). However, it is a feature-driven analysis, and POP is not 'feature-driven'. The analysis to follow deals with short movement within the general dimensions of POP, but with the revisions argued for earlier.

5. A POP Analysis of Short Movement

Given free Merge, and following the earlier arguments for revisions to POP, I assume that (i) Inheritance is unnecessary and therefore not a part of the theory; (ii) each head is a phase head--there are no 'dummy'/weak heads, with the possible exception of non-categorial R; (Note 6) (iii) T bears **φ**-features and **φ**-agrees with whatever merges in SPEC-T; (iv) C assigns NOM directly to DP in SPEC-T; (v) the functional verbal heads each bear an argument structure; and (vi) legibility at CI requires both labeling and compliance with argument structure--both are factors in forcing successive-cyclic raising.

5.1 The Status of [D], [Theta], and [Expl]

The features [D], [Theta], and [Expl] of ArtEPP may appear arbitrary. However, following Chomsky's early use of [D] as the EPP feature for T to be satisfied either by raising an argument or merging *there* to SPEC-T, 'D' refers to the set of elements consisting of the subset 'Theta' (true theta-marked arguments) and the subset 'EXPL'. Thus, these are not unrelated designations, but ones referring to the complete set of 'D' elements or subsets of 'D' elements.

5.2 Why These Combinations?

One may wonder why only limited combinations of [Theta] and [D] appear in 'split' vs 'unified' [*u*D]. The logically possible combinations are as follows: (i) $[u\text{D}]_{\text{AGR}}/[u\text{D}]_{\text{MRG}}$; (ii) $[u\text{Theta}]_{\text{AGR}}/[u\text{D}]_{\text{MRG}}$; (iii) $[u\text{D}]_{\text{AGR}}/[u\text{Theta}]_{\text{MRG}}$; (iv) $[u\text{Theta}]_{\text{AGR}}/[u\text{Theta}]_{\text{MRG}}$; (v) $[u\text{D}]_{\text{AGR/MRG}}$; and (vi) $[u\text{Theta}]_{\text{AGR/MRG}}$. First, (iii) and (iv) fail on external grounds--an argument independently merged by a functional verbal element cannot be theta marked. Since Voice$_{\text{pass}}$/*v*$_{\text{unacc}}$ must combine with a transitive root, it will always agree an argument. Thus (vi) appears to be a subcase of (v). This leaves us with (i), (ii), and (v). If Argument Linking (discussed immediately below) 'directly' restricts the interpretation of a split feature (always requiring the Agree feature to correspond to an argument), then (i) is interpreted as (ii). Thus the inventory is externally limited to (ii) and (v). (Note 7) That is, the only dimension of variation among the functional verbal heads in English is 'split' vs. 'unified' [D].

5.3 The Argument Linking Principle

It appears that *there* can only merge if it is 'linked' to an argument. (Note 8) Let's say that *there* is 'linked' to an argument if it is merged in SPEC-H that would otherwise be the Merge site for the argument DP structurally closest to H. (Note 9) Intuitively, *there* occupies the SPEC position that would otherwise have been occupied by the argument immediately below. I will label this property of *There* Insertion as 'Argument Linking'. As originally pointed out in Deal (2009), such a linking relation guarantees low *There* Insertion and disallows more than one *there* from appearing in a derivation. The relationship that Deal proposes between *there* and the associate DP is one of **φ**-agreement: "*There* has uninterpretable features that it checks against its associate. This is implemented as a local Agree relationship." (2009:304) However, having *there* always take on the features of the associate indiscriminately does not allow an account of the agreement patterns noted in (1c) and (3-5) above. This problem will be addressed below.

5.4 Argument Structure

Argument structure deals among other things with the thematic and categorial character of the syntactic elements which should immediately surround a given lexical item. A partial sketch of argument structure involved with roots such as *laugh*, *kiss*, *fall*, and *arrive* (Deal 2009: 298-302) is shown in (16). (Note 10)

(16)   a. Unergative: [$_v$P DP   [$_v$ Voice$_v$ √*laugh*   ]]

      b. Transitive: [$_v$P DP   [$_v$ Voice$_v$ [$_√$P √*kiss*   DP]]]

      c. Inchoative: [$_v$P *event$_C$* [CAUSE$_v$ [$_√$P √*fall*   DP]]]

      d. Non-inchoative unaccusative: [$_v$P   [*v~*   [$_√$P   √*arrive*   DP]]]

If we refer to the SPEC position as 'SUBJ', and to the complement position as 'OBJ', we might represent some of these argument requirements as in (17).

(17)   a. Voice$_v$+√laugh: [SUBJ: Agent, D]

      b. Voice$_v$+√kiss: [SUBJ: Agent, D; OBJ: Patient, D]

      c. *v~*+√arrive: [OBJ: Theme, D]

For example, *kiss* wants a SUBJ of category type D which should be interpreted as an 'agent', and an OBJ of category type D which should be interpreted as a 'patient', etc. The short movement facts suggest that auxiliary verbs may also be selective about the argumental/thematic and categorial quality of the elements that immediately surround them. While the auxiliary verbs don't assign theta roles, some require a theta-marked argument as a complementary element. Perhaps what CI wants to receive are individuated proposition-like substructures, each bearing an argument structure which CI will assess.

5.5 Argument Structure and Short Movement

I assume here that the auxiliary verbs do not require 'verbalization' by a functional head but, like T, are functional heads in their own right. (Note 11) An inventory of the functional verbal heads and their argument structures is given in (18).

(18) a. Voice$_v$ + √trans/unerg: [SUBJ: Theta; OBJ: open]

      b. *v~* + √non-inch-unacc :   [SUBJ: D; OBJ: Theta]   (= [D]$_{SPL}$)

      c. *v*$_{unacc}$ + √trans :   [SUBJ/OBJ: D]   (= [D]$_{UNI}$)

      d. *be*$_{pass}$:   [SUBJ: D; OBJ: Theta]   (= [D]$_{SPL}$)

      e. *be*$_{prog}$:   [SUBJ: D; OBJ: Theta]   (= [D]$_{SPL}$)

      f. *have*:   [SUBJ/OBJ: D]   (= [D]$_{UNI}$)

      g. *seem*:   [SUBJ/OBJ: D]   (= [D]$_{UNI}$)

      h. T: [SUBJ/OBJ: D]   (= [D]$_{UNI}$)

Here, 'Theta' is 'narrow D'--the version of D corresponding only to argumental DPs. 'SUBJ' and 'OBJ' refer to positions relative to the head H shown in (19), where SUBJ refers to the DP in 'SPEC-H', and OBJ is the structurally closest eligible DP in the complement of H, often the DP in SPEC of the next lower phase. (Note 12)

(19) [SUBJ [H [...OBJ...]]]

[D]$_{UNI}$ ('unified' D) means that the SUBJ and OBJ specifications of a head apply to the same DP--that DP must have been internally merged from OBJ to SUBJ, satisfying both the SUBJ and OBJ specifications of that head. [D]$_{SPL}$ ('split' D), directly restricted by Argument Linking means that the DP in SUBJ must be the raised OBJ DP or *there*. As indicated in (18), Voice$_v$ selects a transitive or unergative root, *v*unacc selects a transitive root, and *v~* selects a non-inchoative unaccusative root.

5.6 POP Derivations Involving Auxiliary Verbs, Passive, and There

Chomsky 2014, 2015 initially offers a derivational sequence for *v*P, noting parallelism with the derivational sequence for CP. Later, to resolve problems such as the counter-cyclic internal merge of a DP with TP, he states that "...operations just apply freely." And, "..operations are free. The outcome of the operation is evaluated at the phase level for transfer and interpretation at the interfaces." (Chomsky 2014) Following this, I assume no extrinsic ordering among the operations available in NS. Further, without Inheritance, every head simply is a phase head, possibly excepting uncategorized R. Assuming with Chomsky that the language is principally a 'language of thought' most strongly related to CI, the goal of such a language should be to produce 'propositional'/semantically 'complete' structures (SCS). (Note 13) To accomplish this, while transfer should be maximized to limit search space for operations like labeling, it should not compromise the ability of NS to produce SCS. Thus, the 'edge' of a lower

phase head must remain accessible for further possible participation in the derivation. With these ideas in mind, consider the following partial derivations.

5.6.1 Derivation with an Auxiliary Verb

A derivation for '*Mary is kissing Max*' may proceed as in (20). The labels here are provisional, but it is clear that under POP assumptions labeling succeeds, since the sentence is grammatical.

(20) (Below, EM is *external merge*, IM is *internal merge*, and IA is the *internal argument*)

a. EM of √*kiss* and *Max*, forming 1: $[_1$ √kiss Max]...

b. IM of *Max* forming 2 and Labeling: 1 => 'R' $[_2$ Max $[_R$ √kiss Max]...

c. EM of Voice$_v$, forming 3: $[_3$ Voice$_v$ $[_2$ Max $[_R$ √kiss Max]...

d. Labeling: 3 => 'v' $[_v$ Voice$_v$ $[_2$ Max $[_R$ √kiss Max]...

e. Case marking: Voice$_v$ => ACC on *Max*

f. Raising of √*kiss* to Voice$_v$ (Required for categorization of the root): $[_v$ √kiss+Voice$_v$ $[_2$ Max $[_R$ √kiss Max]...

g. Labeling: 2 => '<**ɸ**,**ɸ**>' $[_v$ √kiss+Voice$_v$ $[_{<\mathbf{ɸ},\mathbf{ɸ}>}$ Max $[_R$ √kiss Max]...

(√*kiss* has no features to agree with the DP *Max*, so raising √*kiss* leaves only the DP *Max* visible to LA within set 2; *hypothesis*: *Max* in R can **ɸ**-agree with *Max* in SPEC-R, a kind of reflexive agreement.)

h. Transfer of lower IA (= *Max*): $[_v$ √kiss+Voice$_v$ $[_{<\mathbf{ɸ},\mathbf{ɸ}>}$ Max $[_R$ √kiss ~~Max~~]...

(Here transfer takes place when a higher phase head has been merged and everything in the transfer domain has been resolved.)

i. EM of *Mary* forming 4: $[_4$ Mary $[_v$ √kiss+Voice$_v$ $[_{RP}$ Max $[_R$ √kiss ~~Max~~]...

j. EM of *be*$_{prog}$ forming 5 (*be*$_{prog}$ is a phase head; assume *be*$_{prog}$ and √kiss+Voice$_v$ will agree => '-ing'):
$[_5$ be$_{prog}$ $[_4$ Mary $[_v$ √kiss+Voice$_v$ $[_{RP}$ Max $[_R$ √kiss ~~Max~~]...

k. Labeling: 5 => 'Prog' (Since *be*$_{prog}$ is a phase head, it can label.)
$[_{Prog}$ be$_{prog}$ $[_4$ Mary $[_v$ √kiss+Voice$_v$ $[_{RP}$ Max $[_R$ √kiss ~~Max~~]...

l. Transfer of RP: (Leaving the edge of the lower phase accessible)
$[_{Prog}$ be$_{prog}$ $[_4$ Mary $[_v$ √kiss+Voice$_v$ ~~$[_{RP}$ Max $[_R$ √kiss Max]~~...

m. IM of *Mary* forming 6: $[_6$ Mary $[_{Prog}$ be$_{prog}$ $[_4$ Mary $[_v$ √kiss+Voice$_v$ ~~$[_{RP}$ Max $[_R$ √kiss Max]~~...

n. Labeling: 4 => 'vP' (Raising facilitates labeling of 4, since *Mary* and *v* don't agree)
$[_6$ Mary $[_{Prog}$ be$_{prog}$ $[_{vP}$ Mary $[_v$ √kiss+Voice$_v$ ~~$[_{RP}$ Max $[_R$ √kiss Max]~~...

o. EM of T forming 7: $[_7$ T $[_6$ Mary $[_{Prog}$ be$_{prog}$ $[_{vP}$ Mary $[_v$ √kiss+Voice$_v$ ~~$[_{RP}$ Max $[_R$ √kiss Max]~~...

p. Labeling: 7 => 'TP' (Since T is a phase head, it can label.)
$[_{TP}$ T $[_6$ Mary $[_{Prog}$ be$_{prog}$ $[_{vP}$ Mary $[_v$ √kiss+Voice$_v$ ~~$[_{RP}$ Max $[_R$ √kiss Max]~~...

q. Transfer of *v*P: (allowing CI to validate the argument structure for √*kiss*+Voice$_v$)
$[_{TP}$ T $[_6$ Mary $[_{Prog}$ be$_{prog}$ ~~$[_{vP}$ Mary $[_v$ √kiss+Voice$_v$ $[_{RP}$ Max $[_R$ √kiss Max]~~...

r. IM of *Mary* forming 8:
$[_8$ Mary $[_{TP}$ T $[_6$ Mary $[_{Prog}$ be$_{prog}$ ~~$[_{vP}$ Mary $[_v$ √kiss+Voice$_v$ $[_{RP}$ Max $[_R$ √kiss Max]~~...

s. Labeling: 6 => 'ProgP' (due to raising resulting from non-agreement between *Mary* and Prog)
$[_8$ Mary $[_{TP}$ T $[_{ProgP}$ Mary $[_{Prog}$ be$_{prog}$ ~~$[_{vP}$ Mary $[_v$ √kiss+Voice$_v$ $[_{RP}$ Max $[_R$ √kiss Max]~~...

t. Raising of *be*$_{prog}$ to T in TP : (NB: head raising; only the matrix Aux V does this):
$[_8$ Mary $[_{TP}$ be$_{prog}$ +T $[_6$ Mary $[_{Prog}$ be$_{prog}$ ~~$[_{vP}$ Mary $[_v$ √kiss+Voice$_v$ $[_{RP}$ Max $[_R$ √kiss Max]~~...

u. Labeling: 8 => '<**ɸ**,**ɸ**>'
$[_{<\mathbf{ɸ},\mathbf{ɸ}>}$ Mary $[_{TP}$ be$_{prog}$ +T $[_{ProgP}$ Mary $[_{Prog}$ be$_{prog}$ ~~$[_{vP}$ Mary $[_v$ √kiss+Voice$_v$ $[_{RP}$ Max $[_R$ √kiss Max]~~...

v. EM of C:
$[_9$ C $[_{<\mathbf{ɸ},\mathbf{ɸ}>}$ Mary $[_{TP}$ be$_{prog}$ +T $[_{ProgP}$ Mary $[_{Prog}$ be$_{prog}$ ~~$[_{vP}$ Mary $[_v$ √kiss+Voice$_v$ $[_{RP}$ Max $[_R$ √kiss Max]~~...

w. Labeling: 9 => 'CP'

[$_{CP}$ C [$_{<\phi,\phi>}$ Mary [$_{TP}$ be$_{prog}$ +T [$_{ProgP}$ Mary [$_{Prog}$ be$_{prog}$ [$_{vP}$ ~~Mary~~ [$_v$ √kiss+Voice$_v$ ────── [$_{RP}$ Max [$_R$ √kiss Max]...

x. Transfer of ProgP (allowing CI to validate the ArgStr for *be*$_{prog}$):

[$_{CP}$ C [$_{<\phi,\phi>}$ Mary [$_{TP}$ be$_{prog}$ +T ~~[$_{ProgP}$ Mary [$_{Prog}$ be$_{prog}$ [$_{vP}$ Mary [$_v$ √kiss+Voice$_v$ [$_{RP}$ Max [$_R$ √kiss Max]~~...

y. C Case-marks Mary as NOM.

z. Final transfer of CP, where CI validates the argument structure for T.

The summary structure is (21), with transfer domains marked off with '#'s.

(21) #5 [$_{CP}$ C [$_{<\phi,\phi>}$ Mary [$_{TP}$ be$_{prog}$+T #4 [$_{ProgP}$ Mary [$_{Prog}$ be$_{prog}$ #3 [$_{vP}$ Mary

```
              |-----------------------------| |------------------------| |------
                    T (D_UNI)                     be_prog (D_SPL)
```

[$_v$√*kiss*+Voice$_v$ #2 [$_{<\phi,\phi>}$ Max [$_R$ √kiss #1 Max]...

```
    --------------------------------|
          √kiss+Voice_v
```

The '|--...--|' notations indicate the domains which CI must consider to verify that argument structure requirements of each of the functional verbal heads are met. For instance, when #3 is transferred, CI can assess compliance with the argument structure of √*kiss*+Voice$_v$ by looking at *Mary* in SPEC-Voice$_v$ and *Max* in the edge of the next lower transfer domain. The same is true for each of the other transfer domains.

5.6.2 Derivation with Have, the Passive Auxiliary and There

Without detailing each step of the derivation, consider next the summary structure (22) for the passive expletive sentence '*There was someone being arrested*'.

(22) #6 [$_{CP}$ C [$_{<\phi,\phi>}$ There [$_{TP}$ be$_{prog}$+T #5 [$_{ProgP}$ there [$_{Prog}$ be$_{prog}$ #4 [$_{PassP}$ s.o., [$_{Pass}$ be$_{pass}$,

```
              |-----------------------------| |------------------------| |-----------------
                    T (D_UNI)                     be_prog (D_SPL)            be_pass (D_SPL)
```

#3 [$_{vP}$ s.o., [$_v$ √arrest+v_{unacc} #2 [$_{<\phi,\phi>}$ s.o. [$_R$ √arrest #1 s.o.] ...

```
--------| |-----------------------------------|
          √arrest+v_unacc (D_UNI)
```

The 'D$_{SPL}$' argument structure strongly incorporating Argument Linking must see an argument in OBJ, and is free to allow that internally merged argument or an externally merged *there* in SUBJ. *Be*$_{pass}$ could in theory allow merge of *there* in its SUBJ position, but this would cause a CI crash when CI assesses the argument structure for *be*$_{prog}$, with the OBJ position for *be*$_{prog}$ occupied by *there*. Thus, we derive the Left-most BE Condition. Further, it must be the case that *There* Insertion is equivalent to raising for purposes of labeling--an argument linked to *there* as in (22) becomes invisible to LA, resulting in the same labeling that would be obtained if the argument itself had been raised. T with 'D$_{UNI}$' cannot introduce *there*, but is only compatible with its SUBJ position occupied by an internally merged copy of its OBJ.

The summary structure for the derivation of sentence '*There have been trains arriving*' is (23).

(23) #6 [$_{CP}$ C [$_{<\phi,\phi>}$ There [$_{TP}$ have$_{perf}$ +T #5 [$_{PerfP}$ there [$_{Perf}$ have$_{perf}$ #4 [$_{ProgP}$ there

```
              |-----------------------------| |-------------------------------| |---------
                    T (D_UNI)                        have_perf (D_UNI)
```

[$_{Prog}$ be$_{prog}$ #3 [$_{vP}$ trains, [$_v$ √arrive+$v\sim$ #2 [$_{<\phi,\phi>}$ trains [$_R$ √arrive #1 trains] ...

```
----------------------| |-----------------------------------|
    be_prog (D_SPL)          √arrive+v~ (D_SPL)
```

Here we see same situation of two functional heads bearing [D$_{SPL}$]. Given the requirement of Argument Linking on [D$_{SPL}$], only *be*$_{prog}$ is allowed to license *there* in its SUBJ position. *Have* and T, both bearing [D$_{UNI}$], must have identical elements in SUBJ and OBJ, in (23), *there*. If *there* has not been merged, then the only other successful production is *Trains have been arriving*' as in (24).

(24) #6 [$_{CP}$ C [$_{<\phi,\phi>}$ Trains [$_{TP}$ have$_{perf}$ +T #5 [$_{PerfP}$ trains [$_{Perf}$ have$_{perf}$ #4 [$_{ProgP}$ trains

|------------------------------| |------------------------------| |----

            T (D$_{UNI}$)   have$_{perf}$ (D$_{UNI}$)

[$_{Prog}$ be$_{prog}$ #3 [$_{vP}$ trains, [$_{v}$ √arrive+v~ #2 [$_{<\phi,\phi>}$ trains [$_{R}$ √arrive #1 trains] ...

----------------------| |------------------------------------|

    be$_{prog}$ (D$_{SPL}$)   √arrive+v~ (D$_{SPL}$)

In sum, the argument structures associated with the functional verbs in English vary along one dimension, D$_{UNI}$ vs. D$_{SPL}$ (where D$_{SPL}$ is directly restricted by Argument Linking). (Note 14) D$_{SPL}$ is responsible for certain instances of raising not accounted for by labeling, as argued in connection with (8) and seen in the requisite argument raising to SUBJ of passive *be* in (22) and of √*arrive*+v~ in (23). If each of these instances of *be* were absent, the argument could have appeared lower, where labeling should have succeeded. Thus further raising of these arguments could not be due to a labeling failure.

5.6.3 There and ɸ-agreement with T

The above sentences are fully grammatical, so it must be the case that labeling succeeds in all of them. It appears that *there*, though not a theta-marked argument, can operate like one in key respects. Recall the agreement facts in (1) and (3-5). To explain these, I propose here a variant of Deal's 'contentful' *there* proposal. Deal suggests that when '*there*' is merged low, in SPEC-v~, it always takes on the ɸ-features of the full associate DP, raises in the derivation, and participates in ɸ-agreement with T. However, this does not account for the variation in Case and ɸ-agreement seen in (1) and (3-5). These facts can be captured utilizing Deal's general insight that '*there*' can bear features related to the associate, another aspect of Argument Linking. As claimed in ArtEPP, let's say that '*there*' may independently bear gratuitous [3SG]. When it does, this accounts for the singular agreement forms that may appear regardless of the number of the associate. *There* is never featureless. If *there* does not bear independent [3SG], then it takes on ɸ-features of the first 'lexical' (noun-based) DP that it is linked to. If the associate is a coordination, *there* acquires the features of the left conjunct. When *there* reaches SPEC-T, ɸ-agreement is with whatever the ɸ-features of *there* are--all such agreement is between T and the DP in SPEC-T. This will also allow the consistent labeling of the set [DP, TP] as <ɸ,ɸ>, even when DP is *there*.

5.6.4 ACC Case and no ɸ-agreement for the Associate

In contrast to sentences with a noun-based associate like '*There are trains arriving*', T cannot agree with a pronominal associate as in sentences like (5) ('*There is only me in that picture/*There am only I in that picture*', or in other instances with a pronominal list-type associate such as, '*Scotty beamed a number of us down to the surface of the planet, but on the surface there arrived only me/*I!*'). This works as follows. While default Case on a noun-based associate is the complete lack of Case, pronominal associates, which necessarily display a Case form, bear Case-inactive (default) ACC. (Note 15) In the analysis here, when '*there*' appropriates the features of a pronominal associate, it appropriates this default ACC Case. Such a feature on '*there*' is in conflict with the NOM which must be assigned to it in SPEC-T, so such a derivation fails due to conflicted Case assignment. (Note 16) Contrary to the analysis in Sobin 2014, this approach to '*there*' is compatible with the claim that NOM Case assignment and ɸ-agreement with T always involve the same DP (George & Kornfilt 1981; Cardinaletti 1997; Chomsky 2000, 2001).

6. Final remarks

This analysis has offered a revised version of the POP framework in which NS is computationally and theoretically simplified due to the elimination of Inheritance, and empirical coverage is extended to include the facts of short movement, ɸ-agreement, and Case in active and passive expletive sentences. Short movement is analyzed in terms of argument structures associated with verbal functional heads. Both labeling and argument structure are among the Bare Output Conditions imposed by the demand for legibility at CI which result in successive-cyclic movement.

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References

Alexadou, A., Anagnostopoulou E., & Schäfer F. (2006). The properties of anticausatives crosslinguistically. In M. Frascarelli (Ed.) *Phases of interpretation* (pp.187-212). Berlin: Mouton.

Alexiadou, A. & Schäfer, F. (2010) *There*-insertion: an unaccusativity mismatch at the syntax-semantics interface. Poster presented at WCCFL 28, UCLA.

Burzio, L. (1986). *Italian syntax: A government-binding approach*. Dordrecht: Reidel.

Cardinaletti, A. (1997). Agreement and control in expletive constructions. *Linguistic Inquiry* 28, 521-533.

Chomsky, N. (1981). *Lectures on government & binding*. Dordrecht: Foris.

Chomsky, N. (1995). *The minimalist program*. Cambridge, MA: MIT Press.

Chomsky, N. (2000). Minimalist inquiries: the framework. In R. Martin, D. Michaels, & J. Uriagereka (Eds.), *Step by step: essays on minimalist syntax in honor of Howard Lasnik* (pp. 89-155). Cambridge, MA: MIT Press.

Chomsky, N. (2001). Derivation by phase. In M. Kenstowicz (Ed.) *Ken Hale: A life in language*, (pp. 1-52). Cambridge, MA: MIT Press.

Chomsky, N. (2005). Three factors in language design. *Linguistic Inquiry* 36, 1-22.

Chomsky, N. (2013). Problems of projection. Lingua 130, 33-49.

Chomsky, N. (2014) Problems of projection: extensions. Plenary address, OLINKO 2014, Palacky University, Czech Republic. https: //www.youtube.com/watch?v=Icv_sCsIu6A

Chomsky, N. (2015). Problems of projection: extensions. In E. D. Domenico, , C. Hamann & S. Matteini (Eds.) *Structures, strategies and beyond: Studies in honour of Adriana Belletti*, (pp.1–16). Amsterdam: John Benjamins.

Deal, Amy Rose. (2009). The origin and content of expletives: evidence from selection. *Syntax* 12, 285-323.

Epstein, S., Kitahara, H., & Seely, D. (2010). Uninterpretable features: what are they and what do they do? In M.Putnam (Ed.), *Language Faculty and Beyond*, Amsterdam: John Benjamins.

Epstein, S., Kitahara, H., & Seely, D. (2012). Structure building that can't be. In M. Uribe-Etxebarria & V. Valmala (Eds.), *Ways of Structure Building* (pp. 253-270). Oxford: Oxford University Press.

Epstein, S., Kitahara, H., & Seely, D. (2014). Labeling by minimal search: implications for successive-cyclic A-movement and the conception of the postulate "phase". *Linguistic Inquiry* 45, 463-481.

George, L. & Kornfilt, J. (1981). Finiteness and boundedness in Turkish. In F. Heny (Ed.), *Binding and filtering* (pp. 105-128). Cambridge, Mass.: MIT Press.

Haegeman, L. (1991) *Introduction to government and binding theory*. Oxford: Blackwell.

Hale, K., & Keyser, S. J. (1993). On argument structure and the lexical expression of syntactic relations. In K. Hale & S. J. Keyser (Eds.), *The View from Building 20: Essays in linguistics in honor of Sylvain Bromberger* (pp. 53-109). Cambridge, Mass.: MIT Press.

Holmberg, A. (2002). Expletives and agreement in Scandinavian passives. *Journal of Comparative Germanic Linguistics* 4, 85–128.

Kratzer, A. (1996). Severing the external argument from its verb. In J. Rooryck & L. Zaring (Eds.), *Phrase structure and the lexicon* (pp. 109-137). Dordrecht: Kluwer.

Kratzer, A. (2005). Building resultatives. In C. Maienborn & A. Wöllenstein (Eds.), *Event arguments: Foundations and applications* (pp. 177-212). Tübingen: Max Niemeyer Verlag.

Legate, J. A.. (2002). Some interface properties of the phase. *Linguistic Inquiry* 34, 506-516.

Levin, B. (1993) *English verb classes and alternations: A preliminary investigation*. Chicago: University of Chicago Press.

Marantz, A. (1984). *On the nature of grammatical relations*. Cambridge, MA: MIT Press.

Marantz, A. (1997). No escape from syntax: don't try morphological analysis in the privacy of your own lexicon. In A. Dimitriadis, L. Siegel, C. Surek-Clark, & A. Williams (Eds.), *Proceedings of the 21st annual Penn Linguistics Colloquium* (University of Pennsylvania Working papers in Linguistics 4.2) (pp. 201-225).

Philadelphia: Penn Linguistics Club.

Milsark, G. (1974). *Existential sentences in English*. Ph.D. dissertation, MIT.

Obata, M., & Epstein, S. (2011). Feature-splitting internal merge: improper movement, intervention, and the A/A' distinction. *Syntax* 14, 122-147.

Parsons, T. (1990). *Events in the semantics of English: A study in subatomic semantics*. Cambridge, MA: MIT Press.

Piattelli-Palmarini, M. (2014). On two recent papers by Chomsky. Presentation at SynSalon. ms. University of Arizona.

Piñón, C. (2001). A finer look at the causative-inchoative alternation. In R. Hastings, B. Jackson, & Z. Zvolensky (Eds.), *Proceedings of SALT II* (pp. 346-364). Ithica, NY: CLC Publications.

Pylkkänen, L. (2002). *Introducing arguments*. Ph.D. dissertation. MIT.

Rezac, M. (2006). The interaction of TH/EX and locative inversion. *Linguistic Inquiry* 37, 685-697.

Richards. M. (2007). On feature inheritance: an argument from the phase impenetrability condition. *Linguistic Inquiry* 38, 563-572.

Richards, M. & Biberauer, T. (2005). Explaining *Expl.* In M. den Dikken & C. Tortora (Eds.), *The function of function words and functional categories* (pp. 115-153). Amsterdam: John Benjamins.

Rothstein, S. (1983). *The syntactic forms of predication*. Ph.D. dissertation, M.I.T., Cambridge, Mass.

Safir, K. (1985) *Syntactic chains*. Cambridge: Cambridge University Press.

Schütze, C. T. (2001). On the nature of default Case. *Syntax* 4, 205-238.

Sobin, N. (2014). TH/EX, agreement, and Case in expletive sentences. *Syntax* 17, 385-416.

Notes

Note 1. Rothstein (1983) was among the earliest to pursue the possibility of a semantics-based EPP.

Note 2. Chomsky (1995) also refers to the formation of two-member sets.

Note 3. If C deletes, then it is the complement of T which transfers.

Note 4. This feature-splitting proposal is distinct from the proposal of Obata & Epstein (2011), in which the features of a single element such as a *wh* phrase are split into two subsets, each of which interacts with/raises to a different head.

Note 5. DP_1 is 'structurally closest' to a head H if (i) H c-commands DP_1, (ii) there is no DP_2 such that H c-commands DP_2, and DP_2 c-commands DP_1, and (iii) DP is an immediate constituent of the phrase that is the complement of H.

Note 6. Deal (2009), following Legate (2002), takes all *v* heads, including v_{unacc}, to be phase heads.

Note 7. There is preliminary evidence that short movement in Mainland Scandinavian also observes Argument Linking but does not impose it directly in D_{SPL}, leading to a second possible (cross-linguistic) dimension of variation. See fn 14 below.

Note 8. In a somewhat similar vein, Safir (1985:140) argues for theta-chains which link *there* to an argument and differentiates *there* from expletive *it* by claiming that the latter is not/cannot be theta-linked to an argument and therefore cannot be inserted into a theta chain position.

Note 9. Given free Merge, there is no limitation in NS on what can be merged, so 'successful' Merge is that which survives labeling and which matches the demands of argument structure in CI, where Theta marking also takes place.

Note 10. Hale & Keyser (1993) argue that theta role interpretation may derive from binary syntactic structure associated with lexical entries rather than being stipulated in such entries. Since POP does not entertain such endocentric structure, I leave as a topic of further research how their approach might be recast in POP.

Note 11. This is because the auxiliary verbs do not appear as roots in various lexical categories. Should Inheritance on some grounds be once again needed, then each auxiliary verb could be accompanied by a verbalizing phase head, generally following the structures in Sobin 2014, with each auxiliary root raising to its head, in parallel to the treatment of *v** and R.

Note 12. As in the POP literature, 'SPEC' here is used metaphorically, since POP allows no structural SPEC position.

Note 13. Chomsky characterizes the content of phases as being "...the closest syntactic counterpart to a proposition.... Call these objects *propositional.*" (2000:106)

Note 14. Following Holmberg (2002), Mainland Scandinavian offers preliminary evidence of another possible dimension of variation in the [D]-type argument structure of functional verbal heads: whether D_{SPL} itself is narrowly constrained by Argument Linking as in English (= 'D_{SPL1}', where the verbal head with D_{SPL1} must always see an argument in OBJ, leading to the Left-most BE phenomenon) or whether D_{SPL} is not directly constrained by Argument Linking (= 'D_{SPL2}', where the verbal head with D_{SPL2} allows EXPL to appear in OBJ, though Argument Linking still generally constrains EXPL Insertion, that is, EXPL cannot be inserted unless there is an argument that it can be linked to). In Swedish (SWE) passive expletive sentences, for example, the internal argument (IA) may appear in post-verbal (i) or preverbal (ii) position.

(i) Det har blivit skrivet/ *skrivna tre böcker om detta.

    EXPL have been written-N.SG/written-PL three books about this

                          (= Holmberg's (3a), p. 86)

(ii) Det har blivit tre böcker *skrivet/ skrivna om detta.

    EXPL have been three books written-N.SG/written-PL about this

                          (= Holmberg's (3b), p. 86)

Further, the passive participle shows number agreement, always [SG] if the IA is post-verbal as in (ia), and [PL] if the pre-verbal IA is [PL], as in (ib). (If EXPL here is inherently SG, then the passive participle is agreeing with whatever appears in SPEC-v_{unacc}.) Regarding the nature of D_{SPL}, it appears that both v_{unacc} and the Passive verb in SWE bears what I will term 'D_{SPL2}' not directly constrained by Argument Linking as 'D_{SPL1}' in English is, though

EXPL Insertion in SWE is still broadly subject to Argument Linking. To illustrate, consider the partial derivations in (iii-iv).

(iii) [$_{PassP}$ EXPL [$_{Pass}$ Pass, #3 [$_{vP}$ EXPL, [$_v$ √skriv +v_{unacc}, #2 [$_{<ϕ,ϕ>}$ tre böcker [R √skriv #1 tre böcker]...

|--------------------------| |---------------------------------------|
       (D$_{SPL2}$)   (D$_{SPL2}$)

(iv) [$_{PassP}$ EXPL, [$_{Pass}$ Pass, #3 [$_{vP}$ tre böcker, [$_v$ √skriv +v_{unacc}, #2 [$_{<ϕ,ϕ>}$ tre böcker [$_R$ √skriv #1 tre böcker]...

|--------------------------| |---------------------------------------|
       (D$_{SPL2}$)   (D$_{SPL2}$)

In (iii/iv), since v_{unacc} is necessarily associated with a transitive root, it will always find an argument in OBJ. Given D$_{SPL2}$, it allows either EXPL (iii) or the raised argument (iv) in SUBJ. The passive auxiliary also bears D$_{SPL2}$. Not directly constrained by Argument Linking, it allows either an argument or an expletive in OBJ. If OBJ is EXPL (iii), then only raised EXPL is allowed in SUBJ. If OBJ is an argument, then in broad compliance with Argument Linking, EXPL may have been merged in SUBJ (iv). There are no other possibilities. Argument Linking allows only one EXPL in a derivation, and Theta marking considerations disallow any new arguments. Since there may be other factors affecting short movement in MSc, much more work is needed, but it appears possible that MSc consistently employs D$_{SPL2}$, whereas English utilizes D$_{SPL1}$. As in English, the perfective auxiliary verb in SWE bears D$_{UNI}$, disallowing (v).

(v) *Det har tre   böcker blivit   skrivna   om   detta.

   EXPL have three   books   been   written-PL   about this

If these observations are basically correct, then the D-type argument structures of functional verbs in MSc appear also to vary in one dimension, D$_{UNI}$ vs.D$_{SPL2}$, and English and MSc vary cross-linguistically in whether D$_{SPL1}$ or D$_{SPL2}$ is employed.

Note 15. Refer to Schütze 2001 and Sobin 2014 for an elaboration of this analysis of default Case.

Note 16. In a sentence with *there* in SPEC-*to* such as '*We believe there to be only me in that picture* ', *there* can independently bear [3SG] and be ECM Case-marked from *believe*, just as any argument DP in SPEC-*to* would be. If *there* takes on [1SG, ACC] from *me*, I will assume that it fails because the default ACC on *there* conflicts with a Case-active assignment of ACC to SPEC-*to*.