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ABSTRACT

This issue includes the following articles: "Detaching Discourse Functions from Functional Projections" (Dora Alexopoulou); "Interface Conditions on Child Language: A Crosslinguistic Look at Genitives" (Sharon Armon-Lotem, Stephen Crain); "Formal Features and Movement at PF" (Ralph C. Blight); "Semantic Features of Determiners: Toward an Account for Complements of D" (Jocelyn Cohan); "Discourse Deixis and Anaphora Resolution in German" (Miriam Eckert); "The Syntax of IPP-Constructions and the Structure of the Lower Middlefield in Westgermanic" (Roland Hinterholzl); "Pre-Boundary Lengthening: Universal or Language Specific? The Case of Hungarian" (Beth Ann Hockey, Zsuzsanna Fagyal); "Some Reconstruction Riddles" (Howard Lasnik); "The Life and Death of Derivational Morphology: Reduplication in Oroqen (Fengxiang Li, Lindsay J. Whaley); "Chains and Phono-Logical Form" (Jeffrey Lidz, William J. Idsardi); "Deixis and Interactional Construction of Context" (Simona Pekarek); "Complex Small Clauses" (Joan Rafel); "Sloppy Definites (Ann M. Reed); "An Event Syntactic Account of Delimitation in Mandarin" (Chuanchih Wang); and "Restructuring Control" (Susi Wurmbrand). References are appended to each article. (KFT)

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Detaching Discourse Functions from Functional Projections*

Dora Alexopoulou

1. Introduction

In the recent years it has been acknowledged that there is a distinct level of organisation of linguistic information, *Information Structure* (Vallduví & Engdahl 1996). Information Structure (IS) encodes the way in which speakers *package* the information conveyed by a sentence so as to meet discourse requirements. Roughly, speakers use various linguistic cues to distinguish *focused* constituents conveying new information from *ground* constituents carrying old/given information. The following examples illustrate this point (small caps indicate sentential stress/nuclear accent placement):

(1) a. Mary loves JOHN
    b. MARY loves John
    c. John, Mary LOVES

All sentences in (1) convey the same propositional content, the same information. They differ in the *packaging* of this information. In (1a) *John* is focused (i.e. new information) whereas in (1c) it is a topic/link (i.e. old/given information) and belongs to the *ground.*

In English, focused elements bear the main sentential stress/nuclear accent. Topics do not bear nuclear accent and may be preposed (1c) (Vallduví & Engdahl 1996; Ladd 1996; Steedman 1991).

Languages exploit different means—intonation, word order, morphology etc.— to encode Information Packaging. This paper focuses on languages exploiting intonation and word order: Hungarian and Modern Greek. The examples in (2), from Kiss (1995), show some possibilities for Hungarian:

(2) a. Janos EVAT varta a mozi elott
       John Eve-acc waited the cinema in-front-of
       'John waited for EVE in front of the cinema'
    b. Evat JANOS varta a mozi elott
       Eve-acc John waited the cinema in-front-of
       'Eve was waited for by JOHN in front of the cinema'

*I am indepted to Caroline Heycock for discussion and detailed comments on earlier versions of this paper. I would also like to thank Ronnie Cann and Dimitra Kolliakou. All errors are mine.

c. a mozi elott JANOS varta Evat
the cinema in-front-of John waited Eve-acc
'In front of the cinema, JOHN waited for Eve'

As shown in (2) focused constituents bear nuclear accent and move to the immediately preverbal position (**Focus-movement**). Topics are unaccented and, like foci, appear preverbally (**Topicalisation**). The ordering is Topic-Focus-VP. Note that XPs can appear preverbally irrespective of grammatical function.

Greek patterns with Hungarian in exploiting intonation and word order for Information Packaging:

(3) **Focus-movement**
tin PARASTASI skinothetise o Dimitris Potamitis
the performance-ACC directed-3SG the Dimitris Potamitis-NOM
'Dimitris Potamitis directed the PERFORMANCE'

In (3) the object NP *to Yani* is focused. It is accented and appears preverbally. However, Greek differs from Hungarian in that Focus-movement is not obligatory (*Potamitis* in (4 & 5)). In addition, preverbal foci give rise to a contrastive reading, which is not necessarily the case in Hungarian.

Topicalisation is also available in Greek:

(4) **Topicalisation**
tin parastasi skinothetise o Dimitris POTAMITIS
the performance-ACC directed-3SG the Dimitris Potamitis-NOM
'Dimitris POTAMITIS directed the performance-The perfomance was directed by Dimitris POTAMITIS.'

Note that (4 & 3) differ minimally in nuclear accent placement.

Though direct object topics may undergo Topicalisation (4) they most often participate in Clitic Left Disclocation (CLLD):

(5) **Clitic Left Dislocation (CLLD)**
tin parastasi *ti* skinothetise o Dimitris POTAMITIS
the performance-ACC it-CL directed-3SG the Dimitris Potamitis-NOM

In (5) the object NP is coindexed with a clitic pronoun. It is worth pointing out that in both (4 & 5) the object NP, *tin parastasi*, is a topic. Unlike (4), in (5) it is *doubled*. The examples (4 & 5) indicate that *doubling* is independent from Information Packaging. The interpretational differences between (4 & 5) warrant further research and remain beyond the scope of this paper.

Adjunct PPs (and indirect object PPs) can undergo Topicalisation or Focus movement:

(6) **Topicalisation**
me kokini mpoya tha vapsi ta parathira (kai me prasini tis
with red paint will paint-3SG the windows (and with green the
portes)
doors)
'S/he'll paint the windows with red paint (and the doors with green)'

Finally, if focus is preverbal, the preferred order is Topic-Focus, as in Hungarian:

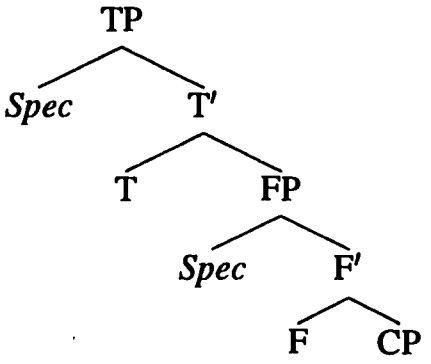
(7) to party i ELENI to 'thele, (o Yanis den ihe oreksi)
the party the Eleni-NOM it-CL wanted-3sg (the Yanis not had appetite)
'Eleni wanted the party (Yanis did not feel like it)'

Topicalisation, CLLD and Focus-movement have been central to the discussion of the Syntax-Discourse Interface. The next section reviews syntactic accounts of these structures and their implications for the interface.

2. Discourse Configurational Approaches

In the literature, the discourse functions of Topic and Focus have been associated with preverbal Functional Projections. The following tree (Rizzi 1995; Tsimpli 1995) illustrates the spirit of these proposals:

(8)



TP stands for Topic Phrase and FP for Focus Phrase. TP and FP are specified for the [topic] and [focus] feature respectively. Topics and foci move to the Specifier of the relevant projection to check their discourse features. Thus, discourse functions are encoded in the Phrase Structure through distinct Discourse Configurations. The term *Discourse Configurational Languages* has been recently coined for languages expressing topic/focus distinctions through structural operations.

Crosslinguistically, Focus-movement and Topicalisation allow long distance extraction, obey strong islands and license parasitic gaps (p-gaps henceforth), suggesting movement (Kiss 1995; Tsimpli 1995). They differ in that Focus-movement but not Topicalisation induces weak crossover effects. To account for this, it has been proposed that Topicalisation instantiates A-movement which is anaphoric in nature, whereas Focus is A-bar movement which is quantificational in nature (Kiss 1995; Lasnik & Stowell 1991; Rizzi 1995). Thus, Focus-movement patterns with Wh-movement and Quantifier Raising. Topicalisation involves an Anaphoric Operator and patterns with Raising.

The status of CLLD is controversial. This is due to the paradoxical picture it presents with respect to two diagnostics of movement. It obeys subjacency but does not license p-gaps. Rizzi (1995) treats it as movement; however, according to the dominant view, advocated by Cinque (1990); Iatridou (1995); Tsimpli (1995), the dislocated constituents are base-generated at the Specifier of a preverbal 'topic phrase'.

To summarise, Topicalisation, Focus and CLLD are typically analysed as instantiating three distinct syntactic operations, A-anaphoric-movement, A-bar-quantificational movement and base-generation. Note that neither Topicalisation nor CLLD give rise to wco. In addition, they have identical discourse interpretatations (the preverbal XPs are topics).

In essence, discourse configurational approaches view the realisation of discourse functions as a purely structural issue and encode them directly in the syntax. Implicit in this approach are several assumptions about the nature of discourse related phenomena as well as the Syntax-Discourse Interface:

1 Inasmuch as discourse functions are encoded in the Phrase Structure, they are expected to display syntactic properties; to be recursive in the way syntax is and to be subject to syntactic constraints (e.g. subjacency).

2 The relative order between topics, foci and wh-phrases is captured through the order of the relevant projections in the syntactic tree, predicting a rigid ordering of these elements.

3 Topicalisation, Focus-movement and CLLD involve three distinct syntactic operations.

4 There is a one-to-one relation between syntactic positions and discourse functions: each discourse function maps to a distinct Phrase Structure Configuration.

Points 1& 2 make direct predictions about the empirical domain whereas points 3& 4 are more relevant to the theory.

In contrast to this approach, I will argue that the discourse functions of focus and topic, and IS in general, should be independent from syntax. The argument is twofold. It is based a) on empirical facts showing the non-syntactic nature of IS and b) syntactic evidence supporting a unified syntax for Topicalisation, CLLD and Focus movement.

First, in Section 3, I will show that the predictions in 1& 2 made by the configurational approaches are not verified. Focus is neither recursive nor does it obey subjacency. In addition, word-order facts do not display the predicted rigidity.

Second, in Section 4, I will argue that several distributional facts strongly support a unified syntactic treatment for Topicalisation, CLLD and Focus movement.

Under the approach proposed here, the one-to-one mapping between discourse and syntax is abandoned. Discourse is not encoded in the Phrase Structure. Rather, the same syntactic structure underlies more than one discourse function.

3. Discourse-Syntax Mismatches

It has been observed that IS is not organised in a recursive way (Vallduví & Zacharski 1994; Heycock 1993). This point can be illustrated by the behaviour of focus in embedded contexts:

(9) * o YANIS ipe oti efiye o PETROS
the Yanis-NOM said that left the Petros-NOM
'Yanis said that Petros left'

The above example is ungrammatical because more than one constituent is focused. An analysis in the spirit of (2) would predict recursive appearance of focus. Note that multiple foci within a single clause also give rise to ungrammaticality:

(10) * o YANIS ide ti MARIA
the Yanis-NOM saw-3SG the Maria-ACC
'Yanis saw Maria'

The ungrammaticality of (9 & 10) can be attributed to the same constraint, which seems to apply over *strings* that do not correspond to identifiable syntactic constituents. The constraint violated in (9 & 10) can be roughly stated as "no more than one focused constituent is allowed per X". Whatever X may stand for, it does not correspond to a syntactic constituent.

It has also been observed (Giannakidou 1997; Rooth 1996) that Focus does not obey subjacency:

(11) svisane ta fota ya na filisi o Yanis ti MARIA
turn-off-3PL the lights for PRT kiss-3SG the Yanis-NOM the Maria-ACC
'They switched off the lights so that Yanis would kiss Maria'

In (11) the focused constituent *Maria* appears within a strong island. Configurational approaches would have to allow LF movement which would not obey strong islands.

Finally, analyses of the type illustrated in (2) predict a rigid ordering between topics, foci and wh-phrases. However, this prediction is not born out as the following examples indicate:

(12) a. * pion o Jannis idhe?
whom the John saw?
'Who did John see?" (Anagnostopoulou 1994:p.175,ex.43)

b. posa apo ta abstracts i epitropi tou Glow (ta) aperipse
how-many of the abstracts the committee of Glow them-CL rejected
omofona?
unanimously?
'How many of the Glow abstracts did the Glow committee reject unanimously?' (Anagnostopoulou 1994:p.176,ex.47)

These examples show that the ordering between preverbal XPs (or adjacency between the wh-phrase and the verb) is not as rigid as configurational accounts would predict.

To summarise, the evidence presented in this section argues in favour of the independence of IS from Phrase Structure, a view advocated in Vallduví (1995); Engdahl & Vallduví (1996); Steedman (1991).

4. A Unified Syntax

4.1. Topicalisation, CLLD, Focus Movement: Similarities

Distributional facts indicate that the syntax of Topicalisation, Focus movement and CLLD shares more than has been suggested in the literature. The facts are summarised below:

i) Topicalisation, CLLD and Focus-movement[1] allow **long distance extraction**:

[1]Due to space limits I only give examples of Focus movement and/or CLLD in

(13) a. to YANI ipe oti apelisan horis na (ton) proidopiisun
the Yani-ACC said-3SG that fired-3PL without prt him-CL warn-3PL
'S/he said that they fired YANIS without warning (him)'

b. to Yani ipe oti *ton* apelisan horis na *(*ton*)
the Yani-ACC said-3SG that him-CL fired-3PL without prt him-CL
proidopiisun
warn-3PL
'S/he said that they fired Yanis without warning (him)'

In (13) the direct object is extracted out of the *oti*-clause to a preverbal position in the matrix clause. (I'll return to the unavailability of the p-gap in (13b) later).

ii) All three constructions obey **strong islands**:

(14) * to YANI sinadisa tin kopela pu ide
the Yani-ACC met-1SG the girl-ACC that saw-3SG
'I met the girl that saw Yani'

The ungrammaticality of (14) is due to violation of the Complex NP Constraint. Extraction out of sentential subjects and adjunct clauses also gives rise to ungrammaticality (Cinque 1990; Iatridou 1995; Kiss 1995; Tsimpli 1995).

iii) None of the three constructions block selection from a higher verb:

(15) ipe to YANI oti apelise
said-3SG the Yani-ACC that fired-3PL
'S/he said that fired Yanis'

The extracted object appears immediately before the complementiser *oti* in (15) without affecting the selection of the lower clause.

iv) None of the three constructions create islands for extraction (Iatridou 1995):

(16) pios nomizis ti Maria oti tha tin psifize
who you-think the Maria-ACC that FUT her vote
'Who do you think would vote for Mary?'

In (16) the extraction of *ti Maria* has not blocked wh-movement.

v) In all three constructions the XP can occur to either side of the complementiser *oti*:

Greek. These facts also hold for Topicalisation in Greek and the corresponding constructions in Hungarian and Italian.

(17) ipe (to YANI) **oti** (to YANI) ide
said-3SG the Yani-ACC that the Yani-ACC saw-3SG
'S/he said that s/he saw Yanis'

As shown in (17), XPs can appear either before of after Comp. Configurational approaches face difficulties in accounting for these examples. Tsimpli (1995) assumes that FP and CP are both specified for the [focus] and the [wh] features. In this way, foci and *oti* can appear at the Specifier position of either FP or CP.

The evidence presented in this section shows that the distribution of extracted XPs is independent of their discourse function. Furthermore, the structural facts strongly support the view that Topicalisation, Focus-movement and CLLD share the same syntax. A plausible representation of their syntax is shown in (18):

(18) XP_S [$_{Matrix}$ V_M....*XP_S .....XP_M] XP_{S-2} [$_{Sub}$ oti XP_{S-1} V_S...]

(XP_S is a constituent from the subordinate clause and XP_M is a matrix constituent).
We need some structure to the left of the matrix and the subordinate clause for extracted XPs. Note that an extracted XP_S cannot intervene between the matrix verb and a matrix XP:

(19) * ipe to Yani$_i$ tis Marias oti ton$_i$ ide sto
said-3SG the Yani-ACC the Maria-GEN that him-CL saw-3SG at-the
SINEMA
cinema
'S/he said to Mary that s/he saw Yani at the cinema'

The structure in (18), and the facts (i-v) presented in this section, can be straightforwardly captured by the syntax of Unbounded Dependencies as expressed in Head-Driven Phrase Structure Grammar (Pollard & Sag 1994). Furthermore, the multidimensional organisation of HPSG lends itself to an elegant account of the interactions between syntax, intonation and Information Structure (Engdahl & Vallduví 1996; Manandhar 1994). Due to space limits though, an HPSG account of the data remains beyond the scope of this paper.

In the following section I briefly review some of the evidence suggesting a base-generation analysis for CLLD and the quantificational-anaphoric distinction between Focus-movement and Topicalisation.

4.2. Some Differences

As already mentioned, Topicalisation and Focus-movement license p-gaps, a hallmark of extraction. P-gaps are unavailable in CLLD (13b), a fact that

has led to the base-generation analysis (Cinque 1990; Iatridou 1995; Tsimpli 1995). It is assumed that, if the doubled NP has moved, it should license a p-gap. Implicit in this argument is the assumption that the object NP in (13b) is an argument. A closer look at the data though, suggests that this is not so. Firstly, in (13b) the doubled NP is optional as shown in (20) below:

(20) ipe oti *ton* apelisan horis na *(*ton*) proidopiisun
said-3SG that him-CL fired-3PL without prt him-CL warn-3PL
'S/he said that they fired Yanis without warning (him)'

Note that the p-gap is also ungrammatical in (20). The unavailability of the p-gap in (13b & 20) should be attributed to the same reason. I assume that, in both examples, the clitic pronoun is the verbal argument which appears in-situ. Thus, no p-gap is expected, as the argument has not been extracted. The doubled NP can be analysed as a thematic-adjunct, as described in Sanfilippo (1990); Kolliakou (1991). CLLD is then adjunct extraction. Examples (4,5 & 6) have the same syntax and the same interpretation (the extracted elements are topics). CLLD is, therefore, expected to obey strong islands, as all extractions in Greek do, but it is not expected to license p-gaps, as adjunct extraction in Greek (and in English) does not license p-gaps.

Let's turn to wco facts. As mentioned earlier, Focus gives rise to wco whereas Topicalisation/CLLD does not. Wco effects have been considered the syntactic manifestation of quantification (Lasnik & Stowell 1991; Larson & Segal 1995). On the basis of this contrast it has been suggested that Focus is A-bar movement which is quantificational in nature and Topicalisation is A-movement which is anaphoric in nature. However, wco does not appear to be a good diagnostic of the A/A-bar distinction. The data below illustrate Wh-movement in Greek. No wco is induced in (21b) which differs minimally from the (21a) in the presence of the clitic:

(21) a. $pion_i$ agapai i mana $tu_{j/*i}$?
who-acc loves the-nom mother-nom his-gen
'Who does his mother love?'

b. $pion_i$ ton_i agapai i mana tu_i?
who-acc him-cl.acc loves the-nom mother-nom his-gen
'Who does his (own) mother love?'

Constructions with the quantifier *kanena=nobody* display the same contrast. Similar facts are attested in Romanian (Dobrovie-Sorin 1990) and Italian (Cinque 1990). The absence of wco from Wh-questions and QR structures casts serious doubts on structural distinctions based on wco contrasts. In ad-

dition, wco appears a discourse rather than syntax driven phenomenon (Alexopoulou 1997).

5. Conclusions

In this paper I have argued that the same syntactic structure underlies Topicalisation, CLLD and Focus-movement. Thus, one syntactic structure is available to more than one discourse function. This approach results in a reduced, though simpler and more elegant syntax, and allows for a flexible accommodation of discourse-syntax mismatches.

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Interface Conditions on Child Language: A Crosslinguistic Look at Genitives

Sharon Armon-Lotem and Stephen Crain

1. Introduction

Even granting the formal autonomy of syntax and semantics, there are undeniable correspondences between syntactic and semantic structure. This paper is concerned with the correspondence conditions that hold between genitive and relative clause structures, on the one hand, and the mass/count distinction and certain aspects of possession, on the other. The objective of the present research is to determine whether or not these correspondence conditions are part and parcel of Universal Grammar. To address this issue, child language was chosen as the testing ground. To anticipate the conclusions we reach, young children, ranging in age from 3- to 6-years-old, are seen to obey the relevant interface constraints on the mapping from syntax to semantics. In fact, children show more stringent adherence to interface conditions than adults do. This shows that children's mapping relations between syntax and semantics are derived from UG and not from their experience.

A recent theoretical approach to the mapping between semantic and syntactic representations is to encode semantic distinctions within the computational system. This idea is implemented, for example, by Hornstein, Rosen & Uriagereka (1995) and Uriagereka (1997) who argue that certain semantic relations are marked within the Determiner Phrase (DP). To cite one of their examples, the sentence *The Saab has a Ford engine* is ambiguous, having both of the meanings associated with the paraphrases in (1a) and (1b):

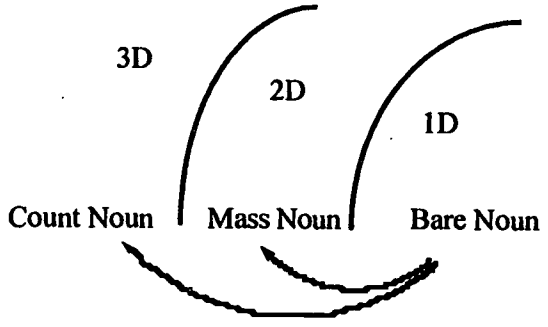
(1) The Saab has a Ford engine.
    a. The Saab engine is made by Ford
    b. The Saab has a Ford engine inside it (on the back seat)

The difference in interpretation is between an integral (inalienable) reading in (1a) and the locational (alienable) reading in (1b). According to Hornstein et al. this semantic distinction is manifest within the computational system; that is, the ambiguity has structural underpinnings, involving derivations from different underlying structures. On the interpretation where the relation between the Saab and its Ford engine is one of inalienable possession, *the*

Saab is the subject of a small clause, as in (2a). By contrast, on the locational reading *the Saab* is the predicate of a small clause, as in (2b):

(2) a. [The $Saab_i$ $BE+D/P^0_j$ [$_{DP}$ t_i t_j [$_{SC}$ [$_{DPposs}$ t_i] a Ford engine]]]
b. [[the $Saab_i$ $BE+P^0_j$ [$_{SC}$ a Ford engine [$_{PP}$ $(inside)_j$ $(it)_i$]]]

Another proposal for the same kind of interface condition is advanced by Muromatsu (1995), who offers a syntactic account of the mass-count distinction. Muromatsu's proposal incorporates both the integral relation proposed by Hornstein et al (1995) and a Kayne (1993) / Szaboltcsi (1983) style possessive structure for Determiner Phrases. Adopting this theoretical machinery, Muromatsu argues that mass noun phrases and count noun phrases have different syntactic derivations, corresponding to what she calls two-dimensional (2D) and three-dimensional (3D) representations, as depicted in the following model:



On this model, bare nouns are 1D-expressions, [N]. Mass noun phrases are 2D-expressions. For mass noun phrases, a bare noun serves as the subject and a measure word (e.g., little, some, much, etc.) serves as the predicate. The subject and predicate combine to form a small clause. The small clause projects a DP into which the bare noun is raised, given rise to the second dimension. Count noun phrases are 3D-expressions. Here, the second-dimension DP is the subject, and a classifier (e.g., in Japanese *nin* for human, *hiki* for small animals, *too* for large animals, etc.) is the predicate. Again, the subject and predicate form a small clause, which projects another DP which serves as the landing-site for the noun. Count nouns, therefore, move twice, passing through the second-dimension DP on their way to the DP in the third dimension.

Against this theoretical backdrop, several experiments were designed to assess children's knowledge of the hypothesized interface conditions which

associate the semantic distinctions (mass/count and inalienable/alienable possession) and the syntactic structures that are associated with them. The results of our experiments indicate that the interface conditions for both English-speaking adults and children are, roughly, as summarized in (3).

(3) a. Linguistic expressions denoting countable objects, CT, and inalienable relations among entities, IR, include genitive constructions but not relative clauses or prepositional phrases

Semantics		Syntax
IR+CT	⇒	gen
IR+CT	⇒	*RC/PP

Linguistic expressions denoting substances, MS, and ones denoting inalienable relations among entities, IR, include compounds but not genitive constructions, relative clauses or prepositional phrases

Semantics		Syntax
IR+MS	⇒	*gen/RC/PP
IR+MS	⇒	compound

b. Linguistic expressions denoting alienable relations, AR, include relative clauses and prepositional phrases but not genitive constructions

Semantics		Syntax
AR	⇒	*gen
AR	⇒	RC/PP

c. Linguistic expressions denoting animate countable objects, CT [+animate], and inalienable relations among entities, IR, exclude compounds. Linguistic expressions denoting nonanimate countable objects, CT [-animate], and inalienable relations among entities, IR, include compounds

Semantics		Syntax
IR+CT [+animate]	⇒	*compound
IR+CT [-animate]	⇒	compound

Interestingly, the findings of our experimental investigations of the interface conditions for Hebrew-speaking children and adults revealed important differences between the two groups. Hebrew-speaking children adhere to more stringent interface conditions than adults do. Children's more restrictive mapping from syntax to semantics is noteworthy for two reasons. First, it provides evidence that quite young children do, in fact, make the relevant semantic distinctions (by age 3). Second, it provides evidence that the interface conditions in (3) are not learned by children on the basis of the primary linguistic data. This invites the inference that these interface conditions are innately specified by UG.

2. Genitive in Adult Language

The distribution of the genitive construction in Adult English is circumscribed by the cognitive distinction between mass and count slices of reality. The contrast between (4a) and (4b) illustrates the point:

(4) a. the *tractor's wheel* / the *girl's hand*
b. * the *rice's grain* / the *milk's drop*

As (4a) shows, the possessive marker *'s* can be used to designate relations between a divisible, countable object, and its parts. The possessive marker cannot be used, however, to describe mass entities, because such entities are indivisible. To describe substances, English-speaking adults opt, instead, for compounds and the 'of' construction, as shown in (5a) and (5b):

(5) a. the *rain drops*
b. the *grains of rice*

In adult Hebrew, the genitive construction is marked by the preposition *shel* 'of'. This construction occurs with both mass and count nouns. However, its occurrence is limited to inalienable relations, as shown in the (a) examples of (6)-(9). The genitive construction cannot be used to refer to alienable relations, as illustrated by the ungrammaticality of the (b) examples in (6)-(9).

	Inalienable	Alienable
(6) a.	ha-yad shel ha-ish	b. *ha-ec shel ha-ish
	the-hand of the-man	the-tree of the-man

(7) a.	ha-zavar shel ha-zebra the-neck of the-zebra	b. *ha-siax shel ha-zebra the-bush of the-zebra
(8) a.	ha-galgal shel ha-traktor the-wheel of the-tractor	b. *ha-even shel ha-traktor the-rock of the-tractor
(9) a.	ha-gargerim shel ha-orez the-grains of the-rice	b. *ha-egozim shel ha-orez the-nuts of the-rice

To express alienable relations, adult speakers of Hebrew make productive use of relative clause constructions, as shown in (10) and (11):

	Inalienable	Alienable
(10) a.	*ha-yad she shayexet la-ish the-hand that belongs to-the-man	b. ha-ec she leyad ha-ish the-tree that by the-man
(11) a.	??ha-galgal she shayax la-traktor the-wheel that belongs to-the-tractor	b. ha-even she al ha-traktor the-rock that on the-tractor

Relations of inalienable possession in Hebrew can also be encoded by the construct state (Berman 1978; Borer 1984, 1994; Ritter 1991), but this structure is a relatively late acquisition (Berman 1983; Berman & Clark 1992; Clark & Berman 1984) and will not be discussed further in this paper.

In adult English, inalienable possession can be expressed syntactically by the genitive marker, *'s* for all count nouns, as in (12a) - (14a). The possessive marker *'s* can also be used to express alienable relations for [+animate] nouns, as shown in (12b) and (13b), but it cannot be used with [-animate] nouns, as shown in (14b). As (15) illustrates, the genitive is never used with mass nouns, presumably because part/whole relations are precluded for entities that are indivisible (all parts of rice are rice).

(12)	a. the man's arm	b. the man's tree
(13)	a. the zebra's neck	b. the zebra's bushes
(14)	a. the tractor's wheels	b. *the tractor's rock
(15)	a. *the rice's grains	b. *the rice's nuts

To summarize, adult speakers of English distinguish mass from count nouns in the genitive, allowing genitive *'s* only with count nouns. By contrast, adult speakers of Hebrew fail to make this distinction. On the other hand, adult speakers of English easily extend the use of *'s* to alienable relations with a [+animate] possessor, whereas adult speakers of Hebrew are less

tolerant in this regard. Both languages distinguish inalienable from alienable relation for [-animate, +count] nouns, allowing genitive constructions only to express inalienable relations.

3. Genitive in Child Language

The present study investigated children's adherence to these interface conditions which restrict the mappings from syntax to semantics. Specifically, the goal of the study was to see whether children produce different constructions to express inalienable (e.g., part-whole) and alienable (locational) relations, and whether they make a count-mass distinction.

Experiments were conducted in English, Hebrew and Greek, using an elicited production methodology (Thornton 1996). The experiment required two experimenters. One experimenter acted out stories using toy props. The other experimenter manipulated a blind-folded puppet, who asked the child for her help on occasion when it could not figure out what had happened in the story. The following is typical of the stories:

> Two friends, an Indian and a Cowboy go for a picnic. They take a picnic basket with them.
> Cowboy: "I think we can sit here. Let's open our basket and eat something. You can have this and I can have this."
>
> Puppet: "I can't see. What are they eating?"
> Child: .....
>
> Suddenly a bird comes in.
>
> Bird: "This looks like a nice picnic! I would like to join you! Where should I sit?" [The bird tries various places] "I can sit here, I can sit here, I will sit here!" [It sits on the Indian's arm].
>
> Puppet: "Can you help me? Where did the bird sit?"
> Child: .....

In these stories the possessors varied along four dimensions. This is shown in Table 1: [+human], e.g., *a cowboy*, [-human, +animate], e.g., *a zebra*, [-animate +count], e.g., *a tractor*, and [-animate -count], e.g., *rice* or *lemon*. The possessed was related to the possessor by a part-whole relation, e.g., *the Indian's hand*, possession (when applicable), e.g., *the Cowboy's hat*, or location, e.g., *the tree that the cowboy sits next to.*

Table 1 - Categories of Analysis

Possessed Possessor		Part-whole	Possession	Location
[+human,+count]	a person	arm	hat	tree
[+animate,+count]	an animal	neck		bush
[-animate,+count]	a vehicle	wheel		rock
[-count]	rice/salt	grains		nuts
	salad/soup	tomato		
	lemon/oil	drop		

We focus here on the results from 25 Hebrew-speaking children, ranging in age from 2;11 to 5;8. The first major result was that, unlike Hebrew-speaking adults, Hebrew-speaking children distinguish count nouns from mass nouns, consistently avoiding *shel* with mass nouns. For example, grains of rice were described by children as *orez* 'rice' or as *gargerim* 'grains' on more than 80% of the trails. By contrast, the genitive construction *gargerim shel orez* 'grains of rice' appeared on merely 13% of the trials. This finding can be compared to children's productions that describe part-whole relations among countable objects. Here, children used *shel* on over 90% of the trails.

Table 2 gives the results (in percentages) for children's use of genitive *shel* in Hebrew. As the table indicates, children, like adults, distinguished inalienable from alienable relations for nouns of the type [-animate, +Count], using *shel* only for inalienable relations as in *ha-galgal shel ha-tractor* 'the tractor's wheel'. Children almost never (2 out of 25 answers) used *ha-galgal she shayax la-traktor* 'the wheel that belongs to the tractor' or *ha-galgal she al ha-traktor* 'the wheel that is on the tractor' to describe the tractor's wheel.

Table 2 - Children's Use of Genitive *shel*

Possessed Possessor	Part-whole	Possession	Location
[+human, +count]	96 [N=25]	100 [N=24]	4 [N=50]
[+animate, +count]	87.5 [N=24]		13 [N=23]
[-animate, +count]	92 [N=24]		8 [N=25]
[-count]	13 [N=23]		22[N=23]
	4 [N=24]		
	17 [N=23]		

Children in this study also made a distinction between inalienable and alienable relations for expressions of the category [+Animate], using *shel* in over 90% of their productions for inalienable relations, but in fewer than 10% of them for alienable relations. For example, for the category [+human], *shel* was used in only 2 cases to describe the tree that the Indian set next to.

While inalienable relations were encoded by *shel*, children preferred different structures to express alienable relations, where *shel* is ungrammatical. The constructions used by children included the restrictive relative clause, prepositional phrases, and reduced relative clauses. Table 3 provides the percentage of non-reduced relative clauses for each category. As the table indicates, relative clauses were never used by children to describe inalienable relations (only 1 case out of 143), but they appeared in over 50% of children's productions which denoted alienable relations. Interestingly, there was a significant (non-adult?) distinction between [+Human] and [-Human] DPs: there were more relative clauses with [+Human] DPs (64%), than with [-human] DPs (50%).

Table 3 - Children's Use of Relative Clauses

Possessed Possessor	Part-whole	Possession	Location
[+human,+count]	0 [N=25]	0 [N=24]	62 [N=50]
[+animate,+count]	0 [N=24]		47 [N=23]
[-animate,+count]	4 [N=24]		44 [N=25]
[-count]	0 [N=23]		52 [N=23]
	33 [N=24]		
	0 [N=23]		

Relative clauses were never produced by children to denote inalienable relation with a mass possessor. For example, they were not used to describe grains of rice or drops of lemon. However, relative clause structures were used to describe a tomato in a salad. This suggests that children take the relation between a salad and a tomato that is in it to be one of alienable (locational) relation, rather than a part-whole relation.

4. Genitive in Child Language: Discussion

The findings indicate that a full DP structure is available to children before the age of 3. Children also have mastery of [+/-Animate] features, adhering to the same interface conditions as adults. Children's productions reveal a one-

to-one form-function interface relation, using genitive *shel* only for inalienable relations and expressing alienable possession by the relative clause. Finally, children were reluctant to extend the use of *shel* to [-Count] DPs, as Hebrew-speaking adults do. This shows that they also distinguish [+/-Count] features.

The interface conditions for Hebrew-speaking children and adults are as summarized in (16):

(16)

	Hebrew-Speaking Adults			Hebrew-Speaking Children		
a.	Semantics		Syntax	Semantics		Syntax
	IR+CT/MS	⇒	gen	IR+CT	⇒	gen
				IR+MS	⇒	*gen
				IR+MS	⇒	bare nouns
	IR+CT/MS	⇒	*RC/PP	IR+CT/MS	⇒	*RC/PP
b.	Semantics		Syntax	Semantics		Syntax
	AR	⇒	*gen	AR	⇒	*gen
	AR	⇒	RC/PP	AR	⇒	RC/PP

For Hebrew-speaking adults, linguistic expressions denoting inalienable relations among entities, IR, include genitive constructions, but not relative clauses or prepositional phrases. By contrast, linguistic expressions denoting alienable relation among entities, AR, include relative clauses or prepositional phrases, but not genitive constructions. Our experiment shows that Hebrew-speaking children as young as three already have the adult knowledge of the interface condition for Inalienable vs. Alienable relations. For Hebrew-speaking adults linguistic expressions denoting inalienable relations among entities, IR, do not distinguish substances, MS, from countable objects, CT.

Hebrew-speaking children show a more restrictive mapping. For Hebrew-speaking children, linguistic expressions denoting countable objects, CT, and inalienable relations among entities, IR, include genitive constructions, while linguistic expressions denoting substance, MS, and inalienable relations among entities, IR, include bare nouns but **not** genitive constructions. This provides evidence of a basic interface condition that is not evident in adult Hebrew, but is found in adult English.

It remains to provide an account of the observed differences in linguistic behavior between Hebrew-speaking children and adults, we invoke a principle of learnability, a variant of the Subset Principle. Our proposal is that this

learnability principle constrains children's hypotheses about interface conditions. According to this constraint, children's initial supposition is that there is a one-to-one mapping between semantic distinctions and syntactic structure. This explains, for example, why Hebrew-speaking children initially use the genitive construction more restrictively than adult-speakers do. At some point, positive evidence leads children to override their initial restrictions in favor of those of the linguistic community. Convergence on the adult system takes time, however. As we have seen, Hebrew-speaking children as old as 5;8 refrain from using the genitive construction in the same way adults do.

We conclude with two brief comments. First, the research reported here clearly reveals the value of crosslinguistic research. Had we limited our investigation to English, for example, we would have failed to uncover the most intriguing results, namely differences between children and adults. Our final remark is to underscore a point we made earlier about research methodology. As a research strategy, the experimental technique of elicited production proves to be particularly insightful in establishing children's knowledge of semantic distinctions, as well as their adherence to interface conditions between semantic principles and syntactic structure.

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Formal Features and Movement at PF*

Ralph C. Blight

1. Introduction

Chomsky (1995) proposes that for reasons of PF convergence all overt movement involves 'generalized pied-piping.' That is, if the operation MOVE/ATTRACT F raises the formal features of a lexical item LI before SPELL-OUT, the phonetic matrix (i.e., the whole category) of LI must also raise. On the surface, this seems to be a plausible claim given the (reasonable) assumption that all linguistic objects must have phonetic content at PF in order to be considered well-formed. Consequently, any operation which produces a PF object lacking phonetic content will result in a derivation that does not satisfy the conditions for PF convergence. Since phonetic content is irrelevant for LF convergence, MOVE/ATTRACT F does not pied-pipe the whole category of LI at this level. This has led to a characterization of MOVE/ATTRACT in the following terms (e.g., Chomsky 1995):

(1) MOVE/ATTRACT F carries along only what is needed for convergence.

Since issues of convergence supersede economy considerations, (1) has the effect of forcing all overt movement to involve pied-piping. However, this only holds if one assumes that pure formal features cannot have phonetic content if they move independently of the lexical item. In this paper, I will explore an alternative theory of feature movement which denies this basic assumption. Specifically, I will suggest that formal features may have alternative spell-outs (i.e., phonetic realizations) and may raise at PF without pied-piping. Two proposed instantiations of this will be considered: (i) the case of English *do*-support, which I argue involves overt raising of the Tense (Tns) and Agreement (Agr) features of the main verb, and (ii) the case of *there*-insertion, which I argue involves overt raising of the Agr features of the subject. The Tns/Agr features of the verb are spelled-out in T as the dummy auxiliary *do*, while the Agr features of the subject are spelled-out in Spec,TP as the expletive *there*.

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2. *Do*-support

It is widely assumed that main verbs do not raise overtly to T in English. One of the classic pieces of evidence for this claim, as illustrated by the examples in (2), is the fact that main verbs in English may never precede sentential *not*.

(2) a. Bill left.
b. Bill did not leave.
c. *Bill left not.
d. *Bill not left.

When *not* is present, the verb appears uninflected and the *do* occupies T. When *not* is absent, the main verb is inflected and unstressed *do*-support is impossible.

In French, as noted by Emonds (1978), Pollock (1989) and others, the situation is quite different. In tensed clauses, main verbs must obligatorily precede the negative marker *pas*, as demonstrated by the examples in (3).

(3) a. Jean (n') aime pas Marie.
Jean likes not Marie

b. *Jean (n') pas aime Marie.
Jean not likes Marie

Traditionally, these differences have been accounted for in terms of verb movement. Whereas French main verbs raise obligatorily to T, crossing *pas*, English main verbs remain in situ, to the right of *not*. Consequently, the English auxiliary *do* is required in order to bear the tense features of T (=Infl) when *not* is present.

While French and English differ with respect to the behavior of main verbs in this regard, they are identical with respect to auxiliary verbs, at least in tensed clauses. As the examples in (4) and (5) show, auxiliary verbs in both languages must appear to the left of the sentential negation marker, suggesting that movement has taken place.

(4) a. He (has) not (*has) understood.
b. He (is) not (*is) satisfied.

(5) a. Il (n') a pas compris.
he has not understood
b. Il (n') est pas satisfait.
he is not satisfied

As these data show, the central issue that needs to be addressed is the question of why all French verbs and English auxiliary verbs must move to T, but English main verbs must remain in situ.

Various solutions to this puzzle have been proposed. For example, Chomsky (1991) argues that English *do*-support is a last resort operation and may apply only if a more economical universal operation is blocked. Assuming independent Agreement projections, Chomsky reasons, following Pollock (1989), that French Agr is strong, attracting verbs at PF, whereas English Agr is weak. Consequently, French verbs raise overtly, as in (6a), while English verbs do not. Note that weak Agr is assumed to be able to attract the English auxiliary verbs *have* and *be*. Assuming that the trace of the raised verb in Agr deletes at LF, as shown in (6b), overt movement over Neg does not result in an ECP violation since the trace in V is too far from its antecedent.[1]

(6) a. $[_{IP}$ [V-Agr-I] $[_{NegP}$ pas $[_{AgrP}$ Agr_t $[_{VP}$ V_t]]]
b. $[_{IP}$ [V-Agr-I] $[_{NegP}$ pas $[_{AgrP}$ e $[_{VP}$ V_t]]]

Since English Agr is weak, overt raising of main verbs results in a violation of the theta criterion, on assumption that weak Agr cannot transmit theta roles to the arguments of V. As a result, T must first lower onto the verb, as shown in (7a). Then, at LF, the [T-Agr-V] complex must raise in order to obliterate the improper trace created by lowering. While this operation is licit in general, it is impossible when sentential *not* is present. That is, after lowering, the trace in Agr is deleted, as shown in (7b). The [T-Agr-V] complex then raises, first to Agr by substitution, then to T. However, since the new trace substituted under Agr has semantic content, now being a trace of V, it cannot delete. As a result, LF raising produces an ECP violation. This is shown in (7c).

(7) a. $[_{IP}$ T_t $[_{NegP}$ not $[_{AgrP}$ Agr_t $[_{VP}$ [V-Agr-I]]]]
b. $[_{IP}$ T_t $[_{NegP}$ not $[_{AgrP}$ e $[_{VP}$ [V-Agr-I]]]]
c. *$[_{IP}$ [V-Agr-I] $[_{NegP}$ not $[_{AgrP}$ V_t $[_{VP}$ V_t]]]

The only alternative is *do*-support, a language particular process, and, given Chomsky's assumptions, a more costly, albeit necessary, operation. This is shown in (8).

[1] Chomsky claims that this is still a violation of the Head Movement Constraint (HMC), but it is acceptable in this case because the HMC does not reduce to the ECP.

(8) a. [IP T [NegP not [AgrP do [VP V]]]
b. [IP do [NegP not [AgrP Agr$_t$ [VP V]]]
c. [IP do [NegP not [AgrP e [VP V]]]

Lasnik (1994), based on work by Bobaljik (1994), offers an alternative to the lowering/raising account, suggesting instead that *do*-support results from an adjacency requirement at PF. In order for the main verb to bear tense, T and the verb must be linearly adjacent. When they are separated by *not*, the adjacency condition is violated and *do*-support is required.[2]

Under the theory being proposed here, the data in (2) through (5) receive an alternative explanation. Main verbs enter a derivation with a categorical V feature as well as formal Tns and Agr features which must be checked against the Tns and Agr features of T. T may also have a V feature, a formal V feature which must also be checked . For what follows, I will assume that categorical features are those that determine the phonetic content of a linguistic item while formal features determine the grammatical properties (e.g., case, tense, agreement). Formal features must be checked. Categorical features, however, need not be, but they may asymmetrically check formal features.

A T with a formal V feature will attract the categorical feature of the verb, giving the effects of pied-piping. The checking operation here is asymmetric, with the categorical V feature of the verb checking the formal V feature of T. I will assume this to be the case for French. A T with only Tns and Agr features will not attract the categorical feature of V. In this instance, raising the verb to T would not be the minimal operation resulting in convergence. A simpler and more economical operation would be available,

---

[2] One problem for this approach is the fact that while Neg particles may not intervene between T and V without triggering *do*-support, sentential adverbs like *probably* adverbs may, as shown by the examples below:

(i) a. *John T not read the book.
b John T probably read the book.

Bobaljik (1994) suggests that adverbs are irrelevant for adjacency. Note, however, that adverbs have been crucial in the formulation of adjacency requirements on English case assignment (e.g., Stowell 1981). That is, the inability of adverbs to intervene between the verb and direct object in English, as demonstrated by the examples in (2), has been attributed to a condition whereby the verb and direct object must be linearly adjacent for case assignment to take place. Given this, it would seem odd that adverbs should be relevant for case adjacency but irrelevant for T-V adjacency.

(ii) a. John hit the ball quickly.
b. *John hit quickly the ball.

namely, movement of Tns/Agr features to T. Thus, verb movement is barred here for reasons of economy. I will assume this to be the case for English. In addition, T may possess a formal AUX feature which attracts the categorical AUX feature of auxiliary verbs like *have* and *be*, again producing the effects of pied-piping. If T has a formal AUX feature, it follows that an appropriate auxiliary verb (e.g., *have* or *be*) must also be present in the derivation to check AUX of T. I will assume that this is the case for English as well.

In both French and English, main verbs have categorical V features, whereas the English auxiliary verbs *have* and *be* and the French equivalents have categorical AUX features in addition to categorical V features. In tensed clauses, French T always has strong V features. In English, T may optionally have strong AUX features but will never have V features. Thus, French T will attract both main verbs and auxiliary verbs, while English T will attract only auxiliary verbs, if any. The Tns and Agr features (of both T and main verbs) are weak in both English and French. Given this, the economy condition PROCRASTINATE will force the checking operation involving Tns/Agr features to take place at LF unless movement at PF is required for convergence. In (2a), repeated below as (9a), a PF operation is not forced and the movement occurs at LF.

(9) a. Bill left.
b. Bill did not leave.
c. *Bill left not.
d. *Bill not left.

(9c) fails because the categorical features of the main verb have raised along with Tns/Agr. Since T has no V features in English and does not attract the categorical features of the verb, there is a more economical operation available, namely, movement of the Tns/Agr features alone. In (9b), the Tns/Agr features raise overtly to T, and independently of the categorical features of V. This is possible because Tns/Agr has an alternate phonetic realization. That is, it is spelled-out as the dummy auxiliary *do*.

Given my claim that the Tns/Agr features of T are weak, it must be the case that PF movement is forced in (9b). I will claim here that PF movement is required in order to prevent a SHORTEST MOVE violation when the subject raises to Spec,TP from its canonical VP-internal position. This violation is illustrated in (9d). Following Chomsky (1991), I assume that the presence of *not* indicates the presence of an intervening NegP between TP and VP. However, I assume that *not* itself appears in the Spec,NegP while the head Neg is phonetically null.[3] Furthermore, I assume that Spec,NegP is an A-position

[3] It should be noted that the syntax of negation has been a controversial topic in the literature. Many have treated *not* as a syntactic X^0 category, heading it's own

and counts as a potential landing site for purposes of SHORTEST MOVE. This being the case, it follows that the subject cannot raise over Spec,NegP without either the verb or Tns/Agr first moving to T. Since Tns/Agr has raised overtly to T in (9b), spelled-out as *do*, the Spec,TP and Spec,NegP are equidistant from Spec,VP and the subject may raise directly to Spec,TP. This is shown in (10a). In (9d), neither the verb nor Tns/Agr has raised. In this case, movement to Spec,TP must precede through Spec,NegP in order to satisfy SHORTEST MOVE. However, since Spec,NegP is filled by *not*, this is impossible. Assuming that the case features of the subject are strong, movement of the subject at LF would result in an uninterpretable case feature surviving at PF. On the other hand, overt raising of the subject produces a violation of SHORTEST MOVE since Spec,NegP is filled by *not* (e.g., 9d). This is shown in (10b).

(10) a. $[_{TP}\ Bill_i\ did_k\ [_{NegP}\ not\ t_k\ [_{VP}\ t_i\ [_{V}\ leave\text{-}t_k]]]]$
b. $*[_{TP}\ Bill_i\ T\ [_{NegP}\ not\ Neg\ [_{VP}\ t_i\ left\ ]]]$

One problem which remains to be addressed involves cases in which English T does not have a formal AUX feature and there is an auxiliary present. I have argued that T in English may or may not have formal AUX features. When such features are present, T will obligatorily attract the first auxiliary. On the other hand, if T has no AUX features, the first auxiliary should not be able to raise overtly since it will have only categorical AUX features, which I have assumed do not need to be checked. Since Tns/Agr features are weak, movement should take place at LF, unless a PF operation is required for convergence. This being the case, the present theory would predict *do*-support. As the examples in (11) show, however, this is not the case.

(11) a. *John did not have left.
b. *John not has left.
c. John has not left.

The presence of *not* in each of the above examples forces the movement to be overt in order to satisfy SHORTEST MOVE. Assuming that T does not have a formal AUX feature, (11a) should be acceptable whereas (11c) should fail. That is, the simplest operation satisfying the economy conditions should be the one in which the Tns/Agr features of *have* raise independently of AUX. This follows since AUX is not attracted by T.

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independent NegP projection (Chomsky 1991, Potsdam 1997). Others have treated it as an A' specifier (Rizzi 1990). Still others have analyzed it as an adverb (Baker 1991), or as a hybrid (Ernst 1992).

I will suggest here that this problem may be overcome by assuming that auxiliary verbs like *have* and *be* do not have Tns/Agr features. Instead, the categorical AUX features of these lexical items must check the Tns/Agr features of T. Given that categorical features are those which determine phonetic content, this will have the effect of forcing the first auxiliary in any English finite clause to raise overtly, giving the effects of pied-piping. Consequently, (11a) is impossible since *do* is the manifestation of the Tns/Agr features of main verbs. Table 1 summarizes the feature specifications I have assumed for English and French.

	English	**French**
T	weak Tns/Agr, (strong AUX)	weak Tns/Agr, strong V
Auxiliaries	AUX, V, no Tns/Agr	AUX, V
Verbs	V, weak Tns/Agr	V, weak Tns/Agr

Table 1. Summary of feature specifications for head-head checking

Before moving on, it should be noted that not all of the possible combinations of auxiliary verbs have been considered here. In this paper, I have been primarily concerned with the dummy auxiliary *do*, which I have argued is a spell-out of the Tns/Agr features of the verb which have moved to T independently of V. However, I believe it is possible to treat the entire auxiliary system of English (as well as other languages) in this way. I envision a system in which all auxiliary verbs are spell-outs of some formal feature or features that have raised independently of the verb at PF. As I have argued, *do* is a spell-out of Tns and Agr features in T. Similarly, modal auxiliaries like *can*, *could*, *will*, and *would* could be analyzed as spell-outs of the overtly raised Tns features of the verb in combination with some type of modality feature. Some motivation for this is the fact that while *do* inflects for Tns and Agr, modals inflect only for tense, as shown by the examples in (12).

(12) a. Mary does/*do not like popcorn.
b. I *does/do not like popcorn.
c. Mary will not leave the party.
d. I will not leave the party.

Similarly, *have* could be a spell-out of perfective aspectual features, *be* could be a spell-out of progressive aspectual features, and so on...

3. Existential *there*

Like *do*-support, existential constructions have received much attention in the literature. One of the more intriguing properties of these constructions is the

fact that the verb must agree with the post-verbal lexical subject, not with the pre-verbal expletive, as examples in (13) show:

(13) a. There seems/*seem to be a man in the garden.
b. There *seems/seem to be some men in the garden.

Lasnik (1996) suggests that these facts follow on assumption that only the formal Agr features of the subject raise to Spec,TP at LF, not the whole category. The Agr features of subject enter into a symmetric checking relation with the Agr features of T. If these features match, the derivation converges; if they clash, the derivation crashes.

That only the formal Agr features of the subject have raised at LF is evidenced by the binding examples in (14). That is, if the categorical features of the subject had been pied-piped along with the Agr features, the subject should be a possible antecedent for the reciprocal in (14b) since it would be in an appropriate c-commanding position at LF. On the other hand, if the categorical features remain in situ, no c-command relation is established at LF and the impossibility of reciprocal binding follows.

(14) a. Some linguists seem to each other [t to have been given good job offers]
b. *There seem to each other [t to have been some linguists given good job offers]

Given the theory of feature movement proposed here, I will argue that a much simpler account of these facts is available. For what follows, I assume that T has Agr and CASE features which must be checked against the Agr and CASE features of an appropriate DP in Spec, TP. The Agr features of T are strong, whereas the CASE features of T are weak. Definite DP subjects and the indefinite DP subjects of non-existential predicates have weak Agr features and obligatorily strong CASE features.[4] The indefinite DP subjects of existential predicates also have weak Agr features, but their CASE features do not have to be strong. The presence of *there* results from overt movement of the formal Agr features of the subject to Spec,TP (i.e. to check the strong Agr features of T). The raised Agr features are spelled-out as *there*, while the categorical features of the lexical subject remain in situ and determine the phonetic content of the indefinite DP. CASE features, on the other hand, may not raise independently of the lexical subject (i.e., they have no independent phonetic spell-out). If these features are strong, as has been assumed for definite and indefinite non-existential subject DPs, it follows that the

[4] By non-existential predicates, I mean predicates which do not allow existential *there*.

only operation available is to raise the categorical features of the lexical subject, producing the effects of pied-piping. Raising of the Agr features alone will result in strong CASE features being unchecked at PF. This is illustrated by the examples in (15), where PrP = Predicate Phrase, a functional category directly above the main VP in which external arguments are projected (Bowers 1993).

(15) a. [$_{TP}$ John$_i$ was [$_{PrP}$ t_i [PP in the garden]]]
b. *[$_{TP}$ there$_i$ was [$_{PrP}$ John$_i$ [PP in the garden]]]

Since indefinite existential subject DPs may either have strong or weak CASE features, it follows that either operation should be possible. This prediction is confirmed by the examples in (16).

(16) a. [$_{TP}$ a man$_i$ was [$_{PrP}$ t_i [PP in the garden]]]
b. [$_{TP}$ there$_i$ was [$_{PrP}$ a man$_i$ [PP in the garden]]]

In (16a) the subject has strong CASE features which must be checked overtly. Since CASE features may not move independently of categorical features, the whole DP must raise in order to ensure convergence.[5] In (16b) the CASE features of the subject are weak must be checked at LF since the CASE features of T are also weak (i.e., by PROCRASTINATE). The Agr features of T, being strong, attract the Agr features of the subject at PF. The raised Agr features are spelled-out as the expletive *there*. Table 2 summarizes the feature specifications I have assumed in this section.

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[5] One potential problem in raising constructions involves cases in which *not* appears in the lower infinitival clause, as is the case in (i) below.

(i) a. John seems not to like Mary.
b. John seems to not like Mary.

Recall my earlier argument that head movement must precede DP raising when there is an intervening NegP since *not* occupies Spec, NegP. Failure of head movement would result in a violation of SHORTEST MOVE. In (ib) I will assume that the infinitive particle *to* raises from the head position of an XP, call it *to*-phrase, which is internal to NegP, first adjoining to Neg, and then moving to infinitival T. Given this, subsequent movement of the lower subject will not result in an economy violation. (ia) is a bit more difficult to explain. For present purposes, I will simply assume that negation in this instance is constituent negation (i.e., that *not* is an A' adjunct, adjoined to the constituent it negates).

	T	Def DPs	Indef DPs of existential predicates	Indef DPs of non-existential predicates
Subj Agr	strong	weak	weak	weak
CASE	weak	strong	strong/weak	strong

Table 2. Summary of feature specifications for spec-head checking

One of the most problematic aspects of the LF movement account of English exlpetives is the assumption that the expletive and the lexical subject are independently selected from the lexicon. If it is the case that *there* is a semantically empty lexical item that checks the EPP features of T, as has been suggested, then it should be possible with any predicate. However, as illustrated by the examples in (17) and (18), *there* is only possible with a limited class of predicates, including verbs of existence and appearance as well as (locative) copular constructions (e.g., Milsark 1974, Levin 1993).

(17) a. There arose a fierce storm.
b. There is a strange man in our garden.
c. There seems to be quite a few lies coming out of Washington these days.
d. There suddenly entered the room an ugly old man.

(18) a. *There melted a lot of snow on the streets of Chicago.
b. *There is a man very cold.
c. *There seems to be a girl to like Billy.
d. *There ran a little boy in the yard.

Under the LF account, where it is assumed that lexical subjects are generated in Spec,PrP (or a similar category) and expletives are generated in Spec,TP, with the lexical subject raising to Spec,TP at LF, these facts are difficult to explain (Chomsky 1991, Lasnik 1992, 1996, Groat 1995). That is, there is no way to capture the fact that the predicate appears to select for the expletive. This problem does not arise under the present theory since Agr and CASE features, which are specified as part of the DP when it enters the computation, are available for selection by a predicate. Thus, predicates allowing expletive *there* select (indefinite) subjects with optionally strong CASE features, whereas predicates disallowing expletive *there* select (indefinite) subjects with obligatorily strong CASE features. Given this, the following derivations would be ruled out:

(19) a. [$_{TP}$ e seems [$_{TP}$ e to be [$_{PrP}$ [$_{DP}$ John-AGR] in the garden]]]
b. *[$_{TP}$ there$_i$ seems [$_{TP}$ t_i to be [$_{PrP}$ [$_{DP}$ John-t_i] in the garden]]]

c. [TP e [PrP [DP a little boy-AGR] ran in the yard]]
d. *[TP there$_i$ [PrP [DP a little boy-t$_i$] ran in the yard]]

The subject *John* of the lower clause in (19a/b) is definite. As a result, it has obligatorily strong CASE features and it's Agr features may not raise independently of it's categorical features. Consequently, (19b) crashes at PF since the strong CASE features of the lexical subject are unchecked. In (19c/d) the subject is indefinite. However, the predicate of the lower clause is non-existential, meaning that it must select subjects with obligatorily strong CASE features. Raising the Agr features alone, as in (19d), produces a non-convergent derivation since the strong CASE features of the lexical subject remain unchecked at PF. The only options available to (19a) and (19c) are (20a) and (20b), respectively.

(20) a. [TP John$_i$ seems [TP t$_i$ to be [PrP t$_i$ in the garden]]]
b. [TP a little boy$_i$ [PrP t$_i$ ran in the yard]]

4. Conclusions

Given the theory of feature movement outlined here, 'generalized pied-piping' may be eliminated as a necessary requirement for PF convergence. The operation MOVE/ATTRACT raises categorical features into the checking domain of formal features and formal features into the checking domain of other formal features. If a categorical feature is attracted, the effects of overt movement will be obtained (e.g., T attracts V in French). If a formal feature moves independently of a lexical item LI at PF, it must have an independent phonetic realization (e.g., T attracts Tns/Agr of the verb in English, which is spelled-out as *do*). While the analysis presented here is far from wide in scope, I believe it represents a good step forward in exploring an alternative to the widely-held stipulation that pure formal features may not raise independently of their lexical items at PF. Only future research will determine if this is step in the right direction.

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Semantic Features of Determiners: Toward an Account for Complements of D

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1. Introduction

Since the emergence of the DP hypothesis (Abney 1987), numerous syntactic treatments have appeared in which pronouns are analyzed as determiners. The application of this kind of analysis to English nominals has two advantages. The first is that it takes into account the fact that pronouns of English, as well as those of other languages, stand in complementary distribution to articles, quantifiers and other categories that have been traditionally categorized as determiners (Ouhalla 1991; Zwarts 1993).

1. a. * the he vs. the boy
   b. * every that vs. every article
   c. * which they vs. which girls

The distribution of these elements has been taken as evidence that they belong to the same syntactic category. It will be argued in section 2 that this category can be also defined with respect to the semantic feature it contributes to the nominal -- more specifically, it will be argued that determiners provide overt realization of the person features associated with a nominal.

A second advantage for the DP hypothesis is that it provides an account for the fact that noun phrases can appear with some pronouns, allowing these NPs to be treated as complements rather than appositives (Zwarts 1993).

2. a. we linguists [$_{DP}$[$_{D'}$ we [$_{NP}$ linguists]]]
   b. you kids [$_{DP}$[$_{D'}$ you [$_{NP}$ kids]]]
   c. those devils [$_{DP}$[$_{D'}$ those [$_{NP}$ devils]]]
3. this, that; these; those; we, you (*pl*)

This approach is not entirely unproblematic, however. The elements of the proposed class of determiners do not behave uniformly with respect to complement selection. While some determiners of English (cf. 2 and 3) can appear with or without NP complements, others bar the appearance of a complement (or any modifiers).

4. he, she, it, him, her; I, me; you (sing)
   they, them

5. a. *I linguist
   b. *you kid
   c. *he devil

A third group requires the appearance of a complement.

6. a(n), the, every
7. a. *the vs. the devil
   b. *a vs. a devil
   c. *every vs. every devil

One possible approach is to handle these differences via subcategorization: 'obligatorily transitive' determiners require complements (6, 7), 'obligatorily intransitive' determiners bar complements (4, 5) and 'optionally transitive' determiners can appear with or without complements (2, 3).

One of the objections raised to the use of subcategorization to account for these differences (Zwarts 1993) is that subcategorization is assumed to be based on some semantic property of the item doing the selecting (cf. transitive, intransitive and optionally transitive verbs); there have been no proposals as to what semantic properties determine complement selection for determiners.

Other proposals have addressed the problem in one of two ways: (1) "strong" determiners occur with phonologically null NP (non-overt) complements (Lobeck 1991) or (2) these determiners originate in N and raise to D in order to check "strong" features. (Zwarts 1993, Siloni 1995). These approaches, however, face the same problem as an approach that uses subcategorization: they have merely substituted "strength" for "transitivity", without providing any means for distinguishing those determiners that are "strong" enough to appear without an NP from those that are not.

The transitivity of a verb can be tied to the meaning encoded by the verb, to its argument structure and the number of theta roles associated with it. The "transitivity" or "strength" of determiners, however, cannot be determined on this basis, because determiners do not have theta roles or arguments associated with them. Previous proposals, which have relied on features like number and ±HUMAN (Zwarts 1993, Lobeck 1991), have not been able to capture the differences in the behavior of determiners. In section 3, it will be argued that the semantic criteria that divide the determiners of English into the three classes described above depend upon the use and function of determiners in discourse.

2. Determiners as a Natural Semantic Class

As we see from the data presented in example 1 above, pronouns, demonstratives and articles are in complementary distribution with each other, suggesting they belong to the same natural class. This class can be independently established on the basis of the semantic feature determiners contribute to nominal phrases.

Cross-linguistic data show determiners and pronouns to be the locus of person features (Ouhalla 1991) that participate in subject-verb agreement when relevant. In English, the appearance of a singular demonstrative, definite or indefinite article invariably signals a third person referent, just as third person pronouns do. When nominals containing demonstratives or articles appear as the subjects of finite clauses, the verb shows third person agreement morphology (8a); when it does not (8b), the resulting sentence is ungrammatical.

8. a. That/ The/ A defendant is going to be found guilty.
   b. That/ The/ A defendant *am/*are going to be found guilty.
   c. She is/*am/*are going to be found guilty.

The semantic characteristic or feature that all determiners share is that they are all specific for *person*. The examples in 8 show that the person feature of a nominal is accessed in subject-verb agreement. The person feature of a nominal is also crucial to establishing an index for use in binding and coreference.

9. a. *You lawyers*$_i$ must hate yourselves$_i$/ *themselves$_i$/ *ourselves$_i$.
   b. *You lawyers*$_i$ love your$_i$/ *our$_i$/ *their$_i$ (own) work
   c. *We lawyers*$_i$ hate ourselves$_i$ /*themselves$_i$/ *yourselves$_i$
   d. *We lawyers*$_i$ love our$_i$/ *their$_i$/ *your$_i$ (own) work.
   e. *Those lawyers*$_i$ hate themselves$_i$/ *ourselves$_i$ / *yourselves$_i$
   f. *hose lawyers*$_i$ love their$_i$/*our$_i$/*your$_i$ (own) work.

The examples in 9 demonstrate that the semantic index of a nominal reflects the person associated with an overt determiner. Specifically, a second person nominal like *you lawyers* in 9a and 9b is associated with a second person index that can bind only a second person anaphor and can be coreferential only with a second person possessive; the appearance of first or third person elements results in ungrammaticality. Likewise, a first person nominal like *we lawyers* (9c and 9d) can be coreferential only with a first person anaphor or possessive, and a third person nominal like *those lawyers* (9e and 9f) only with third person elements.

These facts suggest that the person feature of the index required for binding, coreference and subject-verb agreement (when relevant) comes from the determiner of a nominal.

The proposal that determiners contribute person features to nominals in English provides a semantic basis for categorizing pronouns, demonstratives and articles as members of the same class, determiner. Additionally, it provides an explanation for the complementary distribution of determiners in English, a semantic reason for their behavior as a syntactic class: a nominal projects only one referential index, and thus contains a single specification for person.

One implication of this proposal is that nouns of English are themselves not specified for person. The examples in 9 above show that plural nouns may appear as part of nominals containing a first or second person plural pronoun or a plural demonstrative. This suggests that plural nouns (and presumably singular nouns) do not themselves have person features, since these would conflict with the person feature of the determiner.

Another implication is that nominals without an overt determiner acquire person features either from a phonologically null determiner or by default, since these nominals are usually third person in English. Example 10a shows that bare plurals trigger a third person index, while 10b shows that a bare singular triggers third person subject agreement on the verb.

10. a. *Defendants*$_i$ usually don't testify on their$_i$ own behalf.
    b. *Precedent* suggests/ *suggest that the defendant will prevail.

Table 1 lists the pronouns, articles and demonstratives of English and the person features proposed to be associated with them.

Table 1: Person of English Determiners

PERS	NUM	Determiners
3	sg	Ø, a, the, this, that; he, him, she, her, it
3	pl	Ø, the, these, those; they, them
2	sg	you
2	pl	you (pl)
1	sg	I, me
1	pl	we, us

3. Dividing the Classes

The distinctions illustrated in Table 1 still do not capture the differences in complement selection that were discussed in section 1. Neither person nor number can account for these differences. Number is relevant only for first and second person determiners, and thus provides a distinction between determiners that must appear without overt complements (*I, you (sg.)*) and those that can appear optionally with overt complements (*we, you (pl.)*).

11. a. I (*lawyer) am about to be placed in contempt of court.
    b. We (lawyers) are about to be placed in contempt of court.
    c. You (*lawyer) are about to be placed in contempt of court.
    d. You (lawyers) are about to be placed in contempt of court.

Furthermore, number does nothing at all to help make distinctions among the third person determiners. These show all three patterns in both singular and plural. In the singular, we find that *the* requires an overt complement, *it* bars appearance of an overt complement, while *this* and *that* can appear with or without an overt complement (cf. 12a-c); the same range of behavior occurs with plural determiners (cf. 12d-e).

12. a. The *(statement) was shown to be false.
    b. That (statement) was shown to be false.
    c. It (*statement) was shown to be false.
    d. The *(statements) were shown to be false.
    e. Those (statements) were shown to be false.
    f. They (*statements) were shown to be false.

Thus, any account of the differences in the behavior of determiners must look beyond the person and number (phi) features typically associated with them. This proposal considers the discourse function of nominals in order to define the characteristics that set these classes of determiners apart from each other.

3.1. Known Unique Reference

The third person determiners that bar complements (cf. 3, 4 and 12c, f) correspond to the referring expressions that have been observed to be associated with the highest level of cognitive accessibility in treatments of referring expressions in discourse (Prince 1981; Gundel 1993). In fact, in general it can be observed that the higher up on the cognitive accessibility hierarchy a referring expression occurs, the more likely it is to contain a determiner that cannot appear with an overt complement.

Table 2 Cognitive state and form of referring expression

Cognitive state	form of expression	examples
active	unstressed pronouns	she, he, her, him, it, etc.
accessible	definite NP	I, you, that, the cat, John
unused (familiar)	definite NP	the boss, John
brand-new, anchored	indefinite, specific NP	a guy at work
brand-new, unanchored	indefinite NP	a guy

(from Prince 1981)

For example, nominals containing determiners that require complements correspond to the *unused* or *brand-new* cognitive states (*the, a*), while nominals containing determiners that may appear with or without complements correspond to the *accessible* cognitive state (*that, we, etc.*). This accessibility hierarchy of the use of referring expressions in discourse provides a means for distinguishing the three categories of determiners in English.

Arguably, the third person pronouns, which occur at the highest level of cognitive accessibility in the hierarchy in table 2, are used felicitiously only when they have known unique referents.[1] The first and second person singular pronouns always refer to the speaker and addressee, and thus also always have known unique referents, whether or not they have already occurred in the context.

While definite nominals often have known unique referents, they need not. All the determiners that allow or require complements (cf. 3 and 6) can be used without specific unique referents (generic or indefinite), while determiners that bar complements cannot be used this way (unless embedded under another generic).

The italicized nominals in 13a-e all employ determiners that are usually considered to be definite; in these examples, however, they may be construed as generic rather than definite, given the right context. The demonstrative *this* is also usually considered to be definite, but example 13f provides an example of (colloquial) usage which can result in an indefinite interpretation of the nominal.

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[1] There are some formal or archaic uses of the third person pronouns that are generic (or not unique); these may appear with relative clauses.

i. a. *He who laughs last* laughs longest.
   b. *They who tell the truth* have nothing to fear.

It should also be noted that there are also non-referential uses of *it* and *they* which are not included in this generalization.

ii. a. *It* is going to rain.
   b. *They* say it is going to rain.

These uses are felicitous at the beginning of a discourse, and thus do not correspond the highest level of cognitive accessibility.

13. a. *The smart defense lawyer* keeps his client off the stand.
    b. *Those prosecution witnesses* are always well-rehearsed.
    c. *These courtroom dramas* are always entertaining.
    d. *We/ You lawyers* hate uncooperative clients.
    e. *That closing argument* is always the best part.
    f. *This guy* lost it in the courtroom.

The characteristic or feature that the determiners in 4 share – besides the fact that they cannot take complements -- is that they must have a known unique referent. The current proposal is that they share a feature like that defined in 14:

14. UNIREF: a D is UNIREF if and only if it must always be mapped onto a unique entity or set of entities present in the discourse context.

Furthermore, a known, unique referent cannot be further modified or restricted felicitiously; thus, the proposal provides a semantic reason for the absence of any overt nouns or modifiers with UNIREF determiners like *me, you (sg.)* and *she.*

This characteristic provides a semantic difference between Ds that appear with complements and Ds that do not, capturing a distinction between these two natural classes. Table 3 lists the pronouns, demonstratives and articles of English and the UNIREF value proposed to be associated with each of them.

Table 3: Known unique reference (UNIREF)

accessibility	Determiner	PERS/NUM	UNIREF
HIGH	he, him, she, her	3 sg	yes
	they, them	3 pl	yes
	you	2 sg	yes
	I, me	1 sg	yes
	we	1 pl	NO
	you (pl)	2 pl	NO
	these, those	3 pl	NO
	this, that	3 sg	NO
	the	3 s/p	NO
LOW	a	3 sg	NO

3.2. Referential Index and Context

Further distinguishing determiners that must take a complement (cf. 6 and 7) from those that may (cf. 2 and 3) will require consideration of the separate characteristics of these two sub-classes.

The determiners *the* and *a(n)*, although specified for person under the current proposal, do not provide fully referential indices on their own; they require an NP complement to complete the specification of their phi features. It could be said that *the* requires number and some feature like ±HUMAN (as proposed in Zwarts 1993 inter alia, or perhaps instead ±ANIMATE) to fulfill its referential index, while *a* requires merely the second of these, since it is already singular.

To serve in an argument position, a nominal must have at least these features, otherwise neither agreement, binding, coreference nor semantic restrictions on predicates could operate; thus these Ds require an NP complement.

15. a. *The witness*$_i$ has/ *have perjured himself$_i$/ *itself$_i$/ *themselves$_i$.
    b. *The defendant*$_i$ did not commit this crime by herself$_i$ /*itself$_i$. /*themselves$_i$

On the other hand, the demonstratives and plural personal pronouns (those Ds listed in 7) can serve in argument position without any overt NP.

16. a The defendant took *this*$_i$ (indicating gun) and pointed it$_i$ at Mr. Green.
    b. *You*$_i$ (addressing the jury) must ask yourselves$_i$ the right questions.

This is possible because the determiners in 16 (and 7) can get the content required to complete the referential index from the context, while the determiners *a* and *the* cannot. It is proposed that this is the characteristic or feature that distinguishes the remaining two classes of determiners: a determiner that appears without an overt complement is one that picks up the features of its referential index from the discourse context;

17. REFCONT: a D is REFCONT if the features of its referential index can be determined from discourse context.

Because *the* and *a(n)* cannot pick up these features from the contexts in which they occur, they are not classified as REFCONT determiners. Only determiners that are not REFCONT determiners will require the appearance of an overt NP complement in all circumstances. Determiners that are REFCONT determiners but not UNIREF determiners are those that can appear with or without overt NPs. These two features thus provide independent semantic

means for distinguishing the syntactic subclasses of English determiners.

Table 4 lists the pronouns, demonstratives and articles and the REFCONT and UNIREF values proposed to be associated with each of them.

Table 4: Referential index completed by context

accessibility

HIGH

LOW

Determiner	PER/NUM	REFCONT	UNIREF
he, him, she, her, it	3 sg	yes	yes
they, them	3 pl	yes	yes
you	2 sg	yes	yes
I, me	1 sg	yes	yes
we	1 pl	yes	NO
you (pl)	2 pl	yes	NO
these, those	3 pl	yes	NO
this, that	3 sg	yes	NO
the	3 s/p	NO	NO
a	3 sg	NO	NO

4. Comments

It has been proposed that the determiners of English comprise a natural class that provides nominals with the person feature they require for referential index. This class can be further divided with the proposed features UNIREF and REFCONT. These features provide an independent means of classifying the relative "strength" of determiners for DP accounts of pronouns that rely on a version this mechanism; they also provide a means of identifying determiner types and their relationships to each other, helpful for developing lexical hierarchies within a framework like HPSG.

Figure 1: Hierarchy of determiner types with cognitive accessibility scale

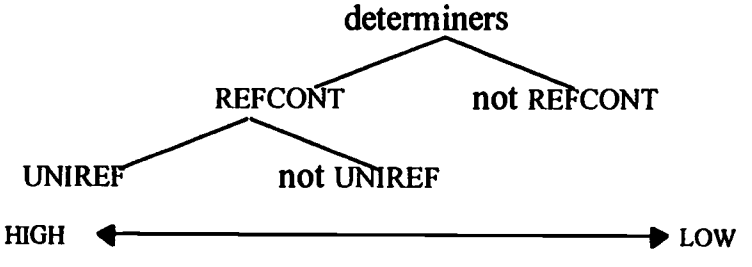

Table 4 and Figure 1 show that all UNIREF Ds are also REFCONT Ds, but not vice-versa. They also show that determiners associated with the lowest levels of accessibility on cognitive accessibility hierarchies are non-REFCONT Ds, while determiners associated with the highest levels are UNIREF Ds. Thus, determiner selection restrictions are proposed to be related to the discourse function of the nominals that contain the determiners.

Although the proposal presented here is based on the behavior of determiners in English, these relationships are predicted to hold cross-linguistically. That is, we should expect to find (1) that UNIREF Ds are also REFCONT Ds; (2) that UNIREF Ds are associated with the highest levels of cognitive accessibility and bar noun phrase complements; (3) that non-REFCONT Ds are associated with the lowest levels of accessibility and require noun phrase complements; and (4) that gaps in the determiner system will occur at either end of the proposed hierarchy, but not in the middle. It remains to be seen whether these predictions will be borne out.

Additionally, the proposal must also be extended to address other elements that have been classified in different syntactic frameworks as determiners (such as possessives, relatives and interrogatives) and those that are considered to have referential indices (such as proper nouns). It should also be noted that the approach presented here predicts that quantifiers cannot be UNIREF determiners, since they do not require a known unique referent. Thus, if they are determiners, they will not bar complements; this appears to be borne out by quantifier data in English. However, the classification of certain quantifiers as determiners will be problematic under the current proposal: unlike the determiners examined here, it is not clear that all quantifiers consistently contribute person to a nominal.

18. Most of us are motivated by our/*their/*your own interests.

The situation is, of course, more complicated than that presented here in other respects, as well. Further work will need to be conducted to evaluate the proposal in light of a wider range of determiner-like elements in English as well as in other languages.

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Discourse Deixis and Anaphora Resolution in German*

Miriam Eckert

This paper contains an analysis of anaphora in a Maptask Corpus[1] containing 12 recorded and transcribed German dialogues. The results show that there is a strong correlation between *discourse deixis, null anaphora* and *topic position* in German. As this is in contradiction with the generally held assumption that discourse deixis involves topic shift (Webber 1991; Gundel *et al.* 1993; Dahl & Hellman 1995), it is proposed that a more accurate account of anaphora resolution can be achieved if one assumes that entities expressed by whole discourse segments can be the default centre of attention for speaker and hearer. In addition, an extension of the compatibility rules for anaphora resolution in Centering Theory is provided, to include verbal subcategorisation restrictions in terms of NP vs clausal complements.

1. Background

1.1. Null Topics in German

German is a V2 language in main clauses with SVO as its canonical word order. For purposes of topicalisation, constituents or clauses other than the subject may occupy the initial position. These constituents may be phonologically null, provided certain syntactic and contextual restrictions are adhered to. This can be seen in the following examples taken from Fries (1988), where the null topic is represented by ∅:

(1) **Object:**

a. **A:** Was ist mit Klaus? (What about Klaus?)

b. **B:** ∅ hab ich seit Wochen nicht gesehen.
B: ∅ have I for weeks not seen.
"I haven't seen him for weeks."

*I would like to thank Ronnie Cann, Caroline Heycock and Massimo Poesio for helpful discussions.

[1]The German Maptask Corpus was devised by Regina Weinert and funded by the University of Hull Research Support Fund. Data collected and transcribed by Gillian Razzaki. The corpus is a recording of participants' descriptions to each other of routes on a map.

(2) **Infinitival verbal complex:**

a. **A:** Er will kommen.
A: he wants to.come

b. **B:** Ja, ∅ will er.
B: yes, ∅ wants he.
"A: He wants to come. B: Yes, he does."

(3) **Embedded clause:**

a. **A:** Er sagte, dass du kommst.
A: He said that you come.

b. **B:** Ja, ∅ sagte er.
B: yes, ∅ said he.
"A: He said that you're coming. B: Yes, he did."

As the contexts show, the entity referred to by the null element is particularly salient in the discourse. For this reason the term *null topic* is used. The term *topic position* for the initial position in main clauses is controversial as it may also contain focussed or contrastively focussed elements. However, it seems clear that topicalisation is involved where null elements are concerned and so for the purposes of this paper I will use the term throughout.

Two further points are important. The first is that null topics are restricted to initial position, as can be seen if we substitute the following response for Example 1: *B: Ich hab Klaus/ *∅ seit Wochen nicht gesehen.* (I have Klaus/ *∅ for weeks not seen). Secondly, the occurrence of a null topic blocks the occurrence of any other constituent in pre-verbal position, much the same way as an overt entity would, eg *Leider hab ich Klaus seit Wochen nicht gesehen.* vs **Leider Klaus/ ∅ hab ich seit Wochen nicht gesehen.* (*Unfortunately Klaus/ ∅ have I for weeks not seen.). This shows that there is indeed an anaphoric element present and the constructions are not verb-initial.

1.2. Discourse Deixis: Definition and Examples

The null topics in Examples 2 and 3 (Section 1.1) have discourse deictic reference by which is meant anaphoric reference to non-NP antecedents, ie reference to events, states, event types/concepts, propositions, facts or the utterance as a linguistic object (Webber 1991). It has alternatively been referred to as *textual deixis* (Lyons 1977) or *reference to abstract objects* (Asher 1993).

The abstract entity anaphora in the corpus, such as the null topics (∅) in the following examples, mainly refer to states, events and event types:

(4) a. **A:** jetzt musst du doppelt so lang hochgehen
(now you have to go up twice as far)

b. **B:** na ja ∅ kann ich doch.
B: oh well ∅ can I part.
"oh well I suppose I can (after all)." (**Event type**)

(5) a. **A:** ja südöstlich äh des Aussichtspunktes hab ich n Zaun
(yes south-east of the viewpoint I've got a fence)

b. **B:** mhm ∅ hab ich auch.
B: mhm ∅ have I too.
"I've got that, too." (**State**)

In Example 4, the most likely interpretation is one where the null topic refers to an event or event type which could be expressed by a VP, ie *doppelt so lang hochgehen* (go up twice as far). The null topic in Example 5 refers to a state (the state of a fence being south east of the viewpoint).

In my analysis, I assume that the reference is to an individual concrete entity if the context is a discussion of the existence of this entity on the map, as in Example 6, where a direct question is involved:

(6) a. **A:** Hast du den Wasserfall?
(have you got the waterfall(masc.))

b. **B:** ja den/??das hab ich.
B: yes that(m./??n.) have I.
"Yes, I've got it."

In this situation the neuter demonstrative *das* is infelicitous, as the gender has to agree with that of the previous NP (*der Wasserfall* (m.), *den* (m.)). If, on the other hand, the discussion is not only about the concrete entity itself but about the entity *in a particular location* (as in example 5), both *den* and *das* are acceptable. As has been noted for Dutch (Romijn 1996), the neuter demonstrative or pronoun which does not agree in gender with any preceding NP signals reference to complex, abstract objects (discourse deixis). I therefore analyse utterances where the neuter demonstrative could replace the null topic as state anaphoric.

The types of abstract object reference have a certain *fluidity*. Asher (1993) notes that what determines the type of abstract object being referred to anaphorically is not the anaphor itself but rather the predicate of the anaphor and its θ-grid. This point will be returned to in Section 3, where I propose using the predicate information to account for anaphoric resolution.

A final point relevant to my analysis is that it has been claimed (Webber 1991; Gundel *et al.* 1993; Dahl & Hellman 1995) that establishing discourse deixis automatically involves topic *shift*. This may be due to the fact that, in English, demonstratives as opposed to unstressed pronouns are preferred for establishing this kind of reference. The alternative responses (b, c) in Example 7 show that in ambiguous contexts unstressed pronouns are preferrably interpreted as having concrete NP referents, and demonstratives as having discourse deictic reference:

(7) a. **A:** My number's 4 7 5 8 2.

b. **B:** Sorry, could you repeat **that**? (*your utterance; ?your number*)

c. **B:** Sorry, could you repeat **it**? (*your number; *your utterance*)

As we have seen in the examples above and also will see in the following sections, German frequently employs null topics for establishing discourse deictic reference. The main question I therefore concern myself with is whether establishing discourse deictic reference is necessarily associated with topic shift.

2. The Corpus Analysis

2.1. Discourse Deixis and Topicality

The analysis of the corpus gives quite striking results concerning the correlation between null topics, discourse deictic reference and the initial "topic" position of German main clauses.

In accordance with Gundel *et al.*'s hierarchy of syntactic forms and cognitive status, shown in Table 1, null anaphora and unstressed pronouns are associated with the cognitive status *in focus* ("topiclike"), whereas demonstratives are associated with the less salient cognitive status *activated.*

Cognitive Status	In Focus	Activated	Uniquely Identifiable	Type Identifiable
Syntactic Form	pronoun, zero anaphora *"it/∅"*	demonstrative *"this/that"*	definite NP *"the car"*	type identifiable *"a car"*

Table 1: Association Hierarchy adapted from Gundel et al. 1993

Demonstratives	52	56%
Null Topics	30	32%
Unstressed Pronouns	11	12%
Total	93	100%

Table 2: Discourse Deictic Reference and Syntactic Form

Discourse Deictic	38	72%
Non Disc. Deictic	45	28%
Total	53	100%

Table 3: Reference of Null Topics

In order to determine the cognitive status associated with discourse deictic reference, the frequency was counted with which it was established by different pronominal forms. There were a total of 93 instances of discourse deictic reference in the corpus. Table 2 shows their correlation with syntactic form. This result gives rise to an apparent conflict on Gundel et al's heirarchy, as null topics are expected to group with unstressed pronouns, not with demonstratives, for establishing particular types of reference. This problem will be discussed in Section 2.2.

Concerning null topics, the most important finding (shown in Table 3) is that out of the 53 instances of null topics, 38 instances (72%) had discourse deictic reference.

The correlation of null topics and grammatical role is also surprising – null objects are far more frequent (75%) than null subjects (25%). This is in line with the finding that the discourse deictic anaphora were almost exclusively objects.

One further important correlation is that between discourse deictic reference and position, shown in Table 4. 56% of discourse deictic references (cf. Table 2) are established by demonstratives, which, unlike null topics, are free to occur in initial or non-initial position. This means that having 87% of discourse deictic references in initial position is a reliable indicator that there is a strong preference for discourse deixis to occur in initial/topic position *aside*

Initial Position	81	87%
Post-verbal Position	12	13%
Total	93	100%

Table 4: Discourse Deictic Reference and Position

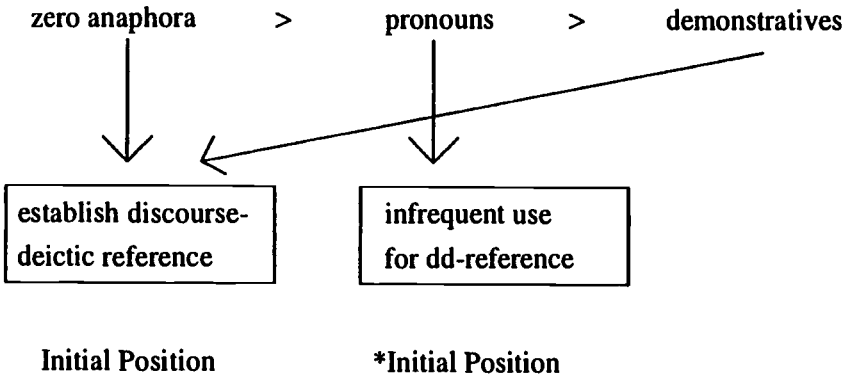

Figure 1: Cognitive Status, Discourse Deixis and Form

from its strong correlation with null topics.

In summary, the results indicate that there is a strong connection between *discourse deixis, null anaphora* and *topic position* in German, clearly indicating that discourse deixis involves an expected topic rather than topic shift.

2.2. Syntax–Pragmatics Conflict

I return now to the point that there are relatively few instances (12%) of unstressed pronouns establishing discourse deictic reference (Table 2). Especially interesting is the fact that this group is smaller than that of null topics, which account for 32 %. It seems there is a preference for making this type of reference with either a demonstrative or a null topic.

If we compare this to the heirarchy set up by Gundel et al, we find the conflict shown in Figure 1. There is a frequency "gap" along the hierarchy between zero anaphora and demonstratives. Why this gap should occur given that all three forms (null topic, pronoun, demonstrative) are at least potentially available can be explained if one takes syntactic factors into account. Unstressed neuter object pronouns, for example, are barred from the initial position (eg **Es mag ich nicht*).

It now becomes clear why discourse deictic reference is so infrequently made with unstressed pronouns. The grammatical gender of discourse deictic reference is neuter and, as has been shown in the previous section, there is a strong preference for this type of reference to occur in initial position. Both zero anaphora and demonstratives can occur in initial position, whereas object neuter pronouns cannot. The syntactic restrictions override the pragmatic rules, showing that speakers prefer to place the discourse deictic anaphor in "topic" position despite the fact that this requires the use of an anaphoric form which is lower on Gundel *et al.*'s hierarchy than would be expected.

3. Expansion of Compatibility Rules

The null topics in the corpus occur with a wide variety of different verbs. A feature of these verbs (eg *machen* "do"; *wissen* "know") is that they all can take clausal complements or have clausal subjects. This fact seems to be important for the correct explanation of anaphora resolution.

Information encoded on the verb has been taken into account in various works on anaphora resolution (Asher 1993; Nunberg 1979). Nunberg provides a formula containing a referring function whose range intersects the set of things that the speaker might be intending to refer to. The advantage of this is that no separate account needs to be found for the problem of *fluidity* of abstract objects (cf. Section 1.2), ie the simultaneous existence of event types, event tokens, propositions and proposition types as possible referents. This set is restricted by the context, or in Nunberg's terms by "the nature of the predication, by the morphology of the demonstrative pronoun, and by such contextual considerations as "topic of conversation"" (Nunberg 1979, p.157). In Asher's terminology, it is the θ-grid of the verb (eg $< AGENT, CONCEPT >$) which brings about the existence of the required abstract object.

The algorithm for anaphora resolution in Centering Theory (Grosz *et al.* 1995) also makes use of rules of anaphora – antecedent compatibility. These state, for example, that an antecedent becomes *invisible* for reference if it has incompatible ϕ-features with the anaphor (Dimitriadis 1996) (in Nunberg's terms "the morphology of the demonstrative pronoun") or does not agree with it in terms of agentivity and similar notions ("the nature of the predication").

I propose that these compatibility rules be generalised as follows:

- **Compatibility Rule:** In selecting an antecedent, pronominals ignore antecedents which are incompatible,

where *incompatible* means having incompatible ϕ-features expressed on the antecedent referring expression or on the verb, incompatible agentivity, and also being *an incompatible verbal complement.*

The following example illustrates how the predicate of the anaphor can disambiguate between not only concrete vs abstract entity anaphora but also between *types* of abstract entities:

(8) a. **A:** der ist'n kleines bisschen höher als der Zaun
(it's a little bit higher than the fence)

b. **B:** ja, so ungefähr, ∅ weiss ich nicht so genau
B: yes so roughly ∅ know I not so exactly
"Yes, roughly, I don't really know."
Complement: clause (proposition), *NP

(9) a. **A:** du solltest erst an der burg vorbeigehen
(you should first go past the castle)
b. **B:** gut, ∅ mach ich
B: good, ∅ do I
"Ok, I'll do that."
Complement: VP-concept, *NP

If the anaphoric element is the object complement of a verb like *wissen* (know), which (unlike the English verb "know") can only take an abstract, clausal complement expressing a proposition, it is clear that it cannot be resolved as one of the concrete NP antecendents (eg **Ich weiss den Zaun.* (*I know the fence)) but instead must refer to the proposition *whether it is a bit higher than the fence.* It can also not be resolved as any other kind of abstract object (eg event, state) as the θ-grid of the verb does not allow this.

Similarly, in Example 9, a null topic which is the complement of the verb *machen* (do) cannot be interpreted as referring to a concrete entity that was referred to in the previous utterance (eg **Ich mach die Burg* (*I'll do the castle)). Instead, the verb requires as its complement a concept expressed by a VP such as *an der Burg vorbeigehen* (go past the castle).

It seems intuitively plausible that when we resolve an anaphor which itself gives little or no information about its referent, we take the information into account that is supplied by the rest of the utterance. Whether an anaphor refers to a concrete NP-entity or to an abstract entity (and if so, to which type) depends on the verb it occurs with. The Compatibility Rule describes the use of this information.

4. Discourse Deixis as Default Reference

A problem that still remains is the utterances where the ambiguity is not resolved by the nature of the verb, for example when the verb potentially allows both clausal and concrete complements. One of the most frequent verbs to occur with null topics is the verb *haben* (to have), which, as in English, could be an auxiliary for perfective forms or a main verb expressing possession. The following example taken from the corpus illustrates this point:

(10) a. **A:** ja so bis zum Hotel nach oben.
(A: yes up to the hotel)
b. **B:** ja ∅ hab ich.
B: yes ∅ have I.
"I've got that."

Here, *hotel* would be a possible complement of the verb *haben* and so would

the abstract entity describable as *your previous description of the route* plus a past participle (eg *verstanden* (understood)). It is clear to native speakers, however, that the latter is the intended meaning. For the examples in the corpus, most of the null topics occurring with such verbs refer to abstract, not concrete, entities.

Null topic utterances containing such ambiguous main verbs are not taken care of by the extended Compatibility Rule. In the anaphora resolution algorithm in Centering analyses the Discourse Unit is ranked *lower* than the overt centres (Dimitriadis 1996; Walker *et al.* 1994), indicating that discourse deictic reference is marked and less likely to be established in topic position than reference to concrete entities. We have seen that, for German at least, this is not the case.

A possible solution would be to assume that the Discourse Unit is the default referent of anaphors. In this case, the problematic references would be those where the verb allows both clausal and NP complements but the concrete entity is preferred over the abstract one.

Cases such as these do occur, but the corpus shows that these are almost exclusively to be found immediately after direct questions, as in the following example where the null topic refers to *Burg* (castle):

(11) a. **A:** Hast du **die Burg**?
(Have you got **the castle**?)

b. **B:** Nee, ∅ hab ich nicht.
B: No, ∅ have I not.
"No, I haven't."

If we assume that questions (as opposed to statements) cannot establish events, propositions or states as discourse referents, then the correct anaphoric resolution is accounted for in these cases: the Discourse Unit is not available for reference so the null topic must refer to a concrete entity. At least for the Corpus under examination here, the Discourse Unit appears to be the default antecedent for anaphora. Where an anaphor does not refer to a Discourse Unit, this is made clear from the subcatgorisation frame of the verb or the availability of a Discourse Unit for reference.

5. Conclusion

The analysis of discourse deictic reference in the German corpus shows that it does not, as has been suggested, necessarily imply topic shift. This accounts for the extremely high percentage of discourse deictic anaphora which are null topics (compared to the percentage of NP reference by null anaphora) and

also the strong preference for discourse deictic anaphora to occur in initial (topic) position. The use of demonstratives for this type of reference can be explained if syntactic restrictions are taken into account, such as those barring unstressed neuter object pronouns from initial position. This make it clear that the demonstratives are not used to express topic shift.

I have also shown that it is crucial for the resolution of anaphora which carry little semantic information themselves (eg null topics) to take into account the information supplied by the verb. This is in line with Nunberg's restriction of the referring function by information carried by the predicate and also with Asher's use of the subcategorisation frame of the verb to determine the type of abstract object referred to.

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The Syntax of IPP-Constructions and the Structure of the Lower Middlefield in Westgermanic

Roland Hinterhölzl

In this paper, we investigate the structure of the lower middlefield in Westgermanic. The arguments for the particular structure that we propose are in part based on an analysis of the syntax of IPP-constructions in Westflemish, Afrikaans and German. In the course of the paper, we will present empirical evidence for leftward V-movement in embedded clauses in Westgermanic. Furthermore, we will demonstrate that not only DP-arguments of the verb, but also verb-particles, VP-internal predicates and CP-complements have to move out of the VP to be licensed in specific positions in the lower middlefield.

1. The Verb-Final Pattern: OV and VO Accounts

Two approaches have been proposed to account for the verb-final embedded pattern in the Westgermanic SOV-languages, the traditional SOV approach and the antisymmetric SVO approach. The traditional approach allows for parametric variation in the head-complement order. For the Westgermanic SOV languages it is assumed that the functional and lexical projections in the IP-domain are head-final. In this approach, the embedded verb-final position in (1a) is compatible either with the lack of V-movement (1b) or with rightward V-movement to a functional head within IP (1c).

(1) a. weil Hans gestern das Buch las
since Hans yesterday the book read-Past
b. $[_{CP}$ weil $[_{IP}$ Hans gestern $[_{VP}$ das Buch las]]]
c. $[_{CP}$ weil $[_{IP}$ Hans gestern $[_{VP}$ das Buch t_i]las$_i$]]

A slight complication for the traditional approach is posed by the position that the infinitival marker occupies in infinitival clauses, as is illustrated in (2a). The sequence *zu lesen* (to read) looks very much like a head-initial right-branching structure, in which the infinitival marker heading a functional position takes the infinitival VP as its complement to the right. To accommodate this order with the particular assumptions about the word-order in the IP-domain within the standard approach, it is either assumed that the infinitival marker in the Westgermanic SOV-languages is not an

independent head but rather a verbal affix (Haider 1993), as illustrated in (2b) or that the infinitival verb undergoes rightward head-movement to (right-)adjoin to the head-final infinitival marker in the IP-domain, as illustrated in (2c).

(2) a. ohne gestern das Buch zu lesen
without yesterday the book to read-INF
b. $[_{CP}$ ohne $[_{IP}$ PRO gestern $[_{VP}$ das Buch $[_{V}$ zu-lesen]]]]
c. $[_{CP}$ ohne $[_{IP}$ PRO gestern $[_{VP}$ das Buch t_i $][_{I}$ zu+lesen$_i$]]]

In the antisymmetry approach (Kayne 1994, Zwart 1993), it is assumed that all structure is head-initial. In this approach, the embedded verb-final order is derived by some sort of feature driven leftward movement of VP-internal material. This is illustrated for arguments of the verb in (3a) and for VP-internal predicates in (3b). While the movement of DPs into AgrPs is in accordance with recent minimalist assumptions about Case-licensing of arguments, the movement of APs, PPs and other VP-internal constituents required within the antisymmetry approach, appears stipulative in the absence of any empirical evidence.

(3) a. [weil Hans gestern das Buch$_i$ $[_{VP}$ las t_i]]
since Hans yesterday the book read-PAST
b. [weil Hans gestern krank$_i$ $[_{VP}$ war t_i]]
since Hans yesterday sick was

The crucial empirical evidence that supports the assumptions necessary within the antisymmetry approach and at the same time disqualifies assumptions necessary within the traditional approach comes from the position of the infinitival marker in non-finite IPP-Constructions in Westflemish (4a), taken from Haegeman (1995), and Afrikaans (4b), taken from Donaldson (1993).

(4) a. mee Valere te [willen [dienen boek kuopen]] een
with Valere to want that book buy have
"with Valere having wanted to buy that book"
b. Die banke moes oop gewees het, om dit gister te [kan betaal] het
the bank should open been have it yesterday to can buy have
"the bank should have been open to have been able to buy it yesterday"

Since material, given in square brackets in (4), can intervene between the infinitival marker and the corresponding infinitival verb, it follows that the infinitival marker in the Westgermanic SOV languages cannot be analyzed as a verbal affix, but, like in English, has to be analyzed as occupying a functional position within the IP-domain. That this functional position is not head-final and that the sequence *te+V* cannot be accounted for by assuming rightward head-movement of the verb within the traditional approach, also follows directly from (4a). In (4a), the constituent that has been moved to the right of the infinitival marker cannot possibly be a head since it contains the DP *that book*.

We thus assume that the infinitival marker occupies a functional head to the left of VP, which Haegeman (1995) coined F1. In section 3, we will argue that it can be shown with the help of the infinitival marker that VP-internal constituents, including APs, verb-particles and PPs move out of the VP. But first we want to explain what IPP-constructions are.

2. The Syntax of IPP Constructions

The infinitival clauses in (4) involve IPP-complements. The Infinitivus Pro Participio (IPP) Effect occurs when a restructuring verb, e.g. a modal verb, selecting an infinitival complement (the dependent infinitive) is used in a Perfect tense. In this case, the selecting verb does not show up in its participial form but is realized as a bare infinitive (the IPP-infinitive). This is illustrated for Dutch in (5) and German in (6), where the infinitival forms *willen/wollen* replace the participial forms *gewild/gewollt* of the modal verb *want*.

(5) a. *dat Elsje hem een Brief heeft **gewild** schrijven
that E him a letter has wanted(pp) write

b. dat Elsje hem een Brief heeft **willen** schrijven
that E him a letter has want(inf) write
"that E has wanted to write him a letter"

(6) a. *dass Else ihm einen Brief schreiben **gewollt** hat
that E him a letter write wanted(pp) has
"that E has wanted to write him a letter"

b. *dass Else ihm einen Brief schreiben **wollen** hat
that E him a letter write want(inf) has

c. dass Else ihm einen Brief hat schreiben **wollen**
that E him a letter has write want (inf)

As the contrast between (5b) and (6b) shows, in German, it is not sufficient to simply replace the participle with a bare infinitive, as it is in Dutch. In order to yield a grammatical sentence in German, the auxiliary has to invert with the cluster comprised of the dependent infinitive and the IPP-infinitive (6c). We will give an account of inversion in German in this context when we talk about.the internal syntax of IPP-complements.

The interesting issue that the IPP-effect raises is the question of whether IPP-infinitives are real infinitives or hidden participles of some sort. Most notoriously, Jakob Grimm (1969/1898:195) put forth the hypothesis that the IPP-infinitive is a prefixless participle. We will adopt the hidden participle account for the following reasons. Based on the distribution of participles, infinitivals and IPP-complements in Westflemish and Afrikaans, we will argue in 2.1 that IPP-complements behave like participles and unlike infinitives. Secondly, the hidden participle account allows us to assume that for the purpose of checking the subcategorization of the auxiliary (which selects for a participial phrase) and for the purpose of temporal interpretation, the IPP-infinitive counts as a participle.

2.1. The External Syntax of IPP-Complements

Let us look at the distribution of infinitives, IPP-complements and participles in Westflemish first. The following data are taken from Haegeman (1995). In Westflemish, infinitives always follow their selecting verb, while participles always precede the selecting auxiliary. This is illustrated in (7) and (8), respectively.

(7) a. da Valere dienen boek wilt kuopen
that Valere that book wants buy
b.* da Valere dienen boek kuopen wilt
that Valere that book buy wants
"that Valere wants to buy that book"

(8) a. da Valere dienen boek gekocht eet
that Valere that book bought has
"that Valere has bought that boek"
b.* da Valere dienen boek eet gekocht
that Valere that book has bought

In contrast, IPP-complements can both precede and follow the selecting finite verb. In the standard analysis, we may assume that IPP-complements

can optionally be extraposed (cf. 9ab). However, the IPP-complement must follow the selecting verb if the negative particle *en* is to be spelled out on the finite verb. This is illustrated by the contrast in (9cd).

(9) a. da Jan **ee** [willen [Marie nen boek geven]]
that Jan has want(IPP) Marie a book give
b. da Jan [willen [Marie nen boek geven]] **eet**
that Jan want(IPP) Marie a book give has
"that Jan has wanted to give Marie a book"
c. da Jan nooit **en-eet** willen an Valere nen boek geven
that Jan never en has want(IPP) to Valere a book give
"that Jan has never wanted to give a book to Valere"
d. da Jan nooit willen an Valere nen boek geven **(*en)-eet**
that Jan never want(IPP) to Valere e book give en has

On the other hand, the IPP-complement must precede the selecting verb if the auxiliary is non-finite. In this case the IPP-complement must occur between the infinitival marker and the infinitive as we have seen in (4a). Before we provide an analysis of the distribution of IPP-complements within the antisymmetry approach, let us see how we would account for these data in the traditional SOV-approach. Bringing the facts illlustrated in (7-9) into a single picture it is hard to see what rule might govern extraposition in Westflemish. Remember that the regularities are the following. An IPP-complement may or may not be extraposed if the selecting verb is finite. However, it must be extraposed if the selecting finite verb incorporates the negative particle *en*. On the other hand, it may not be extraposed at all when the selecting verb is non-finite. Finally, an infinitival complement must always be extraposed independently of the finiteness of the selecting verb. To capture these regularities in a single rule that follows from other properties of Westflemish or from general principles of grammar seems almost impossible.

Hence we will try to give better explanation of these regularities within the antisymmetry approach. In the antisymmetry approach all complements, that is, infinitives, IPP-complements and participles in our case, start out to the right of the selecting verb. All we have to say about infinitival complements is that they stay in their base position, as illustrated in (10a). Remember, as shown in (8) above, that participles as opposed to infinitives have to precede the selecting auxiliary and that the infinitive in an IPP-complement stands for a participle. Thus, we would like to propose that IPP-complements are Participle Phrases (PartPs) and that they move like

participles into a Specifier, say [Spec,F2], of the selecting auxiliary to check the auxiliary's subcategorization. Now we would like to adopt the ingenious account by Haegeman (1995), who proposes that the complex pattern illustrated in (9) follows from the availability of **leftward** head-movement of the selecting verb. If we assume that non-finite verbs as opposed to finite ones cannot move to F1, then we derive the fact that an IPP-complement may not be *extraposed* if the selecting verb is non-finite (10b). All we have to say to derive the fact that an IPP-complement may or may not be extraposed if the selecting verb is finite (and does not incorporate the negative marker *en*) is to assume that finite verbs may optionally move to F1 (10cd). Still the question arises why an IPP-complement can be **extraposed** while a simple participle, as is shown in (8b), cannot. The answer is that a participle moves even higher than F1. (11) shows that a participle cannot intervene between the infinitival marker and the auxiliary but must always precede the infinitival marker. Finally, if we assume, following Haegeman's (1995) proposal that a) the negative particle *en* is licensed in F1 and b) that it has to incorporate into the verb, then we derive the fact that an IPP-complement has to be **extraposed** if the finite verb incorporates **en**[1] (10e).

(10)	F1	SPEC	F2	COMPLEMENT
a.	(verb)		(verb)	infinitive
b.	te	IPP	Aux	t_{IPP}
c.		IPP	Auxfin	t_{IPP}
d.	Auxfin	IPP	t_{auxfin}	t_{IPP}
e.	en-Aux	IPP	t_{aux}	t_{IPP}

(11) a. Mee Valere dienen boek **gewild** te een (vu zenen verjoardag)
with Valere that book wanted to have (for his birhtday)
"Valere having wanted that book for his birthday"
b.* Mee Valere dienen boek te **gewild** een (vu zenen verjoardag)
c.?* Mee Valere dienen boek t'een **gewild** (vu zenen verjoardag)

In (12), we summarize the distribution of participles, infinitives and IPP-complements with respect to the selecting verb and infinitival marker *te*. To minimize the difference between participles and IPP-complements (hidden

[1] Haegeman (1995) also argues that if non-finite verbs cannot move to F1, as we have assumed, then one can derive the fact that *en* can only be spelled out on a finite verb.

participles) we propose that participles are not moved in one swoop from their base position to the right of the selecting verb to their surface position but that they, like IPP-complements, first undergo XP-movement to [Spec,F2] of the selecting auxiliary (to check its subcategorisation) and subsequently undergo X^0-movement to F1. The latter (additional) movement of participles must be triggerd by the participial morphology that IPP-infinitives lack. That participles indeed undergo this complex two-step movement in Westflemish and the other Westgermanic languages is supported by behavior of participles in Afrikaans. In this language, the intermediate step of the complex movement of participles, unevidenced in all other Westgermanic languages, luckily is evidenced. As is illustrated in (13), the participle is spelled out between the infinitival marker and the infinitival verb. (13) also provides the ultimate confirmation for our hypothesis that IPP-infinitives are hidden participles: in Afrikaans, participles and IPP-infinitives have exactly the same distribution (cf. (13) and (4b)).

(12) **participle** te **IPP** verb **infinitival complement**

(13) Jy behoort die lig af te geskagel het
You ought the light off to turned have
"You should have turned the light off"

2.2. The Internal Syntax of IPP-Complements

In this section, we provide an account of the IPP-effect which we left unexplained so far. We will also explain why participles and IPP-infinitives pattern exactly alike in Afrikaans but have a slightly different distribution in the other Westgermanic languages, as illustrated above for the case of Westflemish. The IPP-effect occurs in restructuring contexts. One important feature of restructuring is the formation of verbclusters (cf. Haider (1993), Rutten (1991)). In Hinterhölzl (1996), we argue that in restructuring contexts, due to a defective complementizer, the dependent infinitive moves into [Spec,F2] of the selecting verb to check its subcategorisation. Following Bech (1955), we assume that a verb selects for the **status** of its non-finite complement. That is, it determines whether the dependent nonfinite verb is a participle, a bare infinitive or a to-infinitive. Thus we will henceforth refer to F2P as Status Phrase (StatP). To explain the IPP-effect, we will make use of the particular structure of participle phrases in Westgermanic. We note that the languages and dialects in which the participle is formed without the participial prefix *ge*, namely Frisian and Low

German, do not display an IPP-effect. In the following we will show how the IPP-effect can be reduced to a structural incompatibility between the participial prefix and the infinitive dependent on the restructuring verb.

In the Westgermanic languages displaying the IPP-effect, the participle is formed by affixation of the prefix *ge* and the suffix *t/d*. We follow Halle & Marantz (1993) in assuming that inflected forms are (partially) derived in the syntax. More specifically, we propose that the participial prefex *ge* is inserted in [Spec,StatP/F2P] of the participial phrase. The verb in the participial phrase will then first move to F2, to check its prefix, and then up to F1 to adjoin to its suffix. The prefix will then left-adjoin to the complex of verb and suffix to form the participle before Spell out. This is illustrated in (14).

(14) $[_{F1P}$ -t $[_{F2P}$ [ge] F2 $[_{VP}$ V]]]

If the verb in the participle phrase is a restructuring verb, then the dependent infinitive will at some point in the derivation (before Spell out in German, but after Spell out in Dutch, Westflemish and Afrikaans) move into [Spec,F2P]. It follows that a verb in participial form and a bare infinitive selected by such a verb rule each other out. In this case the participial prefix is *blocked* by the dependent infinitive, that is to say, it cannot be inserted. We argue that the blocking of the prefix leads to a violation of a morphological constraint at MF, namely, of the requirement that a participle consist of a suffix **and** a prefix. This violation is avoided in that a) no phonological material is inserted in F1 (that is, the suffix is dropped) and b) the verb remains in F2 and is spelled out with the default morphology of a bare infinitive. This is illustrated in (15).

(15) $[_{F1P}$ 0 $[_{F2P}$ [dependent infinitive] IPP-infinitive$_i$ $[_{VP}$ t_i]]]

The morpheme in F1 in (15), though not containing any phonological feature, arguably contains the formal feature [+participle] and a semantic feature [+ PAST] (or the condition that event time precede reference time in a Reichenbachian system). We propose that the semantic feature of the participle has to move to F1 of the auxiliary (which we now identify as an Aspect-head) to be linked with the matrix tense and argue that it is movement of this feature (after the formal feature of the participle has been checked by XP-movement of the Participle Phrase into StatP of the auxiliary) that pied-pipes a phonetically realized participle but remains invisible in the case of an IPP-infinitive.

Returning to obligatory inversion with the IPP-complement of the auxiliary in German (cf. (6bc)), we propose that the movement of the semantic feature of the participle is in a way made *visible* by the concomittant movement of the auxiliary, which, like auxiliaries in Westflemish, moves up to F1, presumably, in order to help license the empty morpheme, as is illustrated in (16).

(16) daß Else ihm einen Brief $[_{F1P}$ hat$_i$ $[_{F2P}$ $[_{F1P}$ 0 [[schreiben] wollen]] t_i $[_{VP}$ t_i]]]
\----------/

that Else him a letter has write want-IPP

That movement of the auxiliary in (16) is obligatory is probably due to the strength of the participial feature[2]. Thus, (16) provides an example for a case of leftward V-movement in German.

Why then do IPP-infinitives and participles behave alike in Afrikaans while they differ in their distribution in the other Westgermanic languages? Note that verbs in Afrikaans have lost all their endings. In particular, participles, while retaining the "ge"-prefix, have lost their "d/t"-suffix. Thus, it stands to reason that participles in Afrikaans, like IPP-infinitives in general, contain an empty morpheme in F1, movement of which will fail to pied-pipe the participle in F2P below.

To conclude, the behavior of participles in Afrikaans provides strong, independent evidence for our account of IPP-infinitives in Westgermanic.

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[2] Note that in German, even non-finite auxiliaries have to invert with IPP-complements (i), while the opposite holds in Westflemish (ii). It follows that in Westflemish, due to the inability of non-finite verbs to move to F1, the empty morpheme may be licensed at LF.

(i) a. Else wird ihm einen Brief haben schreiben wollen
Else will him a letter have write want (IPP)

b.* Else wird ihm einen Brief schreiben wollen haben
Else will him a letter write want (IPP) have
"Else will have wanted to write him a letter"

(ii) a. dan-ze kosten willen dienen boek kuopen een
that they could want(IPP) that boek buy have

b.* dan-ze kosten een willen dienen boek kuopen
that they could have want (IPP) that boek buy
"that they could have wanted to buy that book"

3. The Structure of the Lower Middlefield in Westgermanic

In this section, we give a brief description of the basic clause structure of the Westgermanic languages. The following discussion is mainly based on German data, but its results are taken to carry over to Dutch and Westflemish as well.

Manner adverbs like *sorgfältig* (carefully), *genau* (precisely), *gut* (well), *schlecht* (badly) and so forth show that nominal arguments - both definite and indefinite ones - always have to leave the VP before Spell-out. They are licensed in functional projections above the position of manner adverbs and the negative marker *nicht*.

(17) a. weil Hans den Plan/einen Plan **schlecht** ausführte
since Hans the plan/a plan badly executed
"since Hans executed the/a plan badly"
b.?? weil Hans **schlecht** den Plan/einen Plan ausführte
since Hans badly the plan/a plan executed

This type of scrambling does not affect the interpretation of the moved DP. It is well-known that indefinite DPs in German differ in their interpretation depending on whether they follow or precede sentential adverbs like "oft". So the type of scrambling of DPs across manner adverbs (short scrambling) has to be distinguished from the type of scrambling that affects the scope of a DP, as is illustrated in (18). The latter kind of movement is optional, while the former kind is obligatory and seems to occur for reasons of Case-licensing. In her discussion of the mapping hypothesis, Diesing (1992) systematically overlooks short scrambling and thus arrives at the faulty conclusion that certain DPs, namely nonspecific indefinites, may stay in the VP.

(18) a. weil Hans ein Buch oft gelesen hat (only specific interpretation)
since Hans a book often read has
b. weil Hans oft ein Buch gelesen hat (only nonspecific interpretation)
since Hans often a book read has

Having established that the infinitival marker occupies a functional head, namely F1, to the left of the VP we can now show that also VP-internal predicates (including small clauses, idioms and directional PPs) have to move out of the VP. The Westflemish data taken from Haegeman (1995) show that an adjectival small clause predicate cannot remain within the VP, or for that

matter, incorporate into the verb, as is often assumed (cf. Neeleman (1994). We assume that small clauses undergo XP-movement to be licensed in the Specifier of a Predicate Phrase (PredP). The Predicate Phrase occupies a position between F1 and the position of manner adverbs. While the small clause predicate stays in [Spec,PredP] its argument, like the other arguments of the verb, moves out of PredP to its licensing position above manner adverbs, as is illustrated in (19c).

(19) a. K goan proberen van die deure **groen** te verwen
I go try of the door green to paint
b.* K goan proberen van die deure te **groen** verwen
I go try of the door to green paint
c. weil Hans **den Zaun**$_i$ sorgfältig [$_{PredP}$ [t_i gelb]$_{SC}$ [$_{VP}$ anstrich t_{SC}]]
since Hans the fence carefully yellow up-painted

The test with manner adverbs indicates that idiomatic expression and directional PPs are licensed in PredP as well. Since these elements can only occur between the manner adverb and the infinitival marker they must occupy PredP in (20).

(20) a. um es ihr schnell zur Verfügung zu stellen
in-order it her quickly to-Agr availability to put
"in-order to make it available for her quickly"
b.* um es ihr zur Verfügung schnell zu stellen
in-order it her to-Agr availability to put
c. um die Milch vorsichtig in den Kühlschrank zu stellen
in-order the milk carefully into the refrigerator to put
d.* um die Milch in den Kühlschrank vorsichtig zu stellen
in-order the milk into the refrigerator carefully to put

From the licensing movement of adjectives it follows that CP-complements cannot remain within the VP either. (21a) shows the only possible order between adjective and CP-complement in an infinitival clause. The adjectival phrase undergoes licensing movement into PredP above the infinitival marker. As (21b) shows pied-piping of the CP-complement leads to ungrammaticality. It follows then that the CP-complement has to move out of the VP before the adjectival phrase moves to PredP, in order to derive (21a) from the underlying structure in (21c). We propose that CP-complements undergo short movement and are licensed in a functional projection directly below the position to which the verb in embedded clauses

moves. We thus arrive at the following structure of the lower middle field in the Westgermanic languages (cf. (22)).

(21) a. ohne **froh** zu sein, **daß der Hans nicht kam**
without happy to be that the Hans not came
'without being happy that Hans did not come'

b.* ohne [froh, daß der Hans nicht kam] zu sein
without happy that the Hans not came to be

c. $[_{CP}$ ohne ...$[_{F1P}$ zu $[_{VP}$ sein $[_{AdjP}$ froh [CP]]]]]

(22) [DPs [Neg [VP-adverbs [$Pred^0$ $[_{F1P}$ zu $[_{F2P}$ V $[_{F3P}$ CP [VP]]]]]]]

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Pre-Boundary Lengthening: Universal or Language-Specific? The Case of Hungarian

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1. Introduction

Right edges of prosodic boundaries can be marked by a variety of acoustic cues. Among these features, increased segmental duration, referred to as pre-boundary lengthening (PBL), is of particular interest, because it raises the question of how this phonetic lengthening interacts with segmental length distinctions. While the general consensus is that PBL is widely used among the world's languages to mark phonological phrasing (Hayes, 1997), and therefore it might be universal (Vaissière, 1983), some languages are considered exceptions. It has been argued, for instance, that languages with phonemic length distinctions, such as Finnish (Lehiste, 1965), Estonian (opt.c.) and Skolt-Sami (McRobbi, 1996) do not have PBL, because they would not utilize duration for additional functions.

In this paper we report the results of an investigation on PBL in Hungarian, a Finno-Ugric language known to have phonemic length distinctions. We begin by showing that there is no convincing evidence against PBL in Finno-Ugric languages, especially not in Hungarian. We will argue based on our data that Hungarian shows a consistent tendency for pre-boundary lengthening, and that the amount of lengthening we observe should be well within the range of perceptibility for native speakers of Hungarian.

2. PBL According to the Literature

2.1. What is PBL?

PBL is one of the acoustic cues used to segment speech into linguistically meaningful units. There is, however, some discrepancies between its use in production and the perception. While adults systematically lengthen boundaries when disambiguating between different syntactic bracketings, 5 and 7-year old children do not use such durational cues (Katz et al. 1996), which indicates that PBL may be a learned behavior (Oller and Smith, 1977). On the other hand, adults and 7-year old children massively rely on durational cues in perceiving the same syntactic groupings (Beach et al., 1996). This is consistent with the "phonological bootstrapping" hypothesis (Gleitman et al,

1988), stating that the phonological phrase structure facilitates the processing of syntactic information by children. It remains, however, an open question exactly what constituents are marked by PBL, and to what extent this marking reflects a hierarchical phrase structure.

2.2. What is Lengthened?

Following SPE phonology[1], early studies on PBL assumed a complete overlap between prosodic and syntactic constituents. Therefore, they used a limited set of read-aloud sentences in which syntactic boundaries were selected first, then duration measured. Findings invariably indicated that: 1) PBL reflects the syntactic hierarchy, and 2) it exists in a great variety of languages, such as English (Klatt, 1975; Lehiste et al. 1976), Swedish (Lindblom, 1968), French, Spanish and German (Delattre, 1968), to name the most well-known examples.

In these studies, the domain of PBL could be any size constituent: final vowels and consonants (Lindblom, 1968), final syllables (Delattre, 1968); words (Umeda and Quinn, 1981), syntactic clauses (Streeter, 1978), sentences (Klatt, 1975) and paragraphs (Lehiste, 1979). Based on the type of boundary under investigation, lengthening was called 'pre-pausal', 'phrase-final' or just 'final'. This led to the conclusion that "there might be three kinds of lengthening phenomena" (Vaissière, 1983, p.61): the last syllable in a phrase, the last word in a phrase, and the last sentence of a paragraph.

Linguistic theories of the eighties and nineties shed new light on PBL. It is generally accepted that there is a phonological hierarchy of prosodic constituents separate from the surface syntactic structure. The levels of this hierarchy were shown to be recursive, and cued by several acoustic correlates. PBL, for instance, can signal at least four levels of constituency above the word level in English (Ladd and Campbell, 1991), and reflects a three-level prosodic hierarchy—accentual phrase, intermediate phrase and intonational phrase—in French (Jun and Fougeron, 1997). At each level of constituency, the domain of PBL is restricted to the rhyme of the final syllable in English and in Dutch (Wightman and al., 1992). If the rhyme is a schwa, the lengthening spreads over the penultimate rhyme in Dutch (Cambier-Langeveld, 1997). Although the exact number of prosodic constituents varies widely from one study to the other, the "prosodic word" and the "intonational

[1] SPE: *The Sound Pattern of English*. Chomsky, N. and Halle, M. (1968), New York: Harper and Row.

phrase" seem to be uniformly accepted as the lowest and highest units above the syllable.

Our study follows recent work on PBL in assuming prosodic constituents separate from syntactic constituents. Since prosodic constituents have not previously been studied independently from the syntactic structure in Hungarian, we used acoustic correlates typical of prosodic constituent boundaries in other language to identify such boundaries in our corpus (see section 3).

2.3. PBL in Finno-Ugric Languages?

As illustrated in the previous section, increased segmental duration is used for boundary singaling in many languages. PBL is, therefore, often considered universal (Vaissière, 1983). This is contradicted, however, by some studies that argue that PBL is nonexistent or perceptually irrelevant in languages where length is phonemic. As for Finno-Ugric languages, a number of sources were repeatedly cited in support of this interpretation (see Oller et al., 1977; Vaissière, 1983). However, by returning to these studies, we found that they either do not mention phonetic lengthening at all, or they dismiss its existence based evidence we find questionable.

One of the studies systematically cited against the existence of PBL in languages with phonemic length distinctions is Lehiste's 1965 paper about the function of quality and quantity in Finnish and Estonian. In this paper PBL is not even mentionned. Lehiste's demonstration of different prosodic hierarchies in Estonian (four levels) and in Finnish (three levels) is crucial in showing how quantity and syllabic weight determine word structure in both languages, but it does not concern phonetic lengthening phenomena. PBL, or synonymous expressions, are not evoked as a phonetic cue of the phonological hierarchy Lehiste is concerned with. The reason that this paper is quoted as evidence against PBL remains unclear for us. We can only guess that Lehiste's statment about vowel quantity not being contrastive at the end of words in these languages might have motivated erroneous references to this paper. As a matter of fact, Lehiste is among the authors who showed that PBL is used to signal prosodic constituency above the level of the intonational phrase (see Lehiste et al., 1976 on 'paragaphs').

McRobbi (1994, 1996) also argues that PBL is nonexistent in Skolt-Sami. However, based on references to Lehiste's papers on paragraphs in speech, she first dismisses the existence of PBL in general:

> "It can be stated that durational increase does not play a role in signalling the presence of boundaries..." (McRobbi, 1994, p.383)

This statment is surprizing, given the considerable amount of evidence supporting the opposite in both perception and production (see section 2). Despite her previous conclusion on PBL, McRobbi (1996) carries out the study of duration in boundary signalling in Skolt-Sami. By studying disyllabic words embedded in a sentence frame, she reaches the conclusion that that there is a significant decrease in absolute durational values in disyllabics occurring in a paragraph-final sentence. Although her data indicates some durational decrease, we found that the lack of perceptual experiments or statistical significance levels in her paper, makes the significance of this decrease difficult to estimate. Another result of her study, used as an arguement against PBL, is that in paragraph-final position disyllabics undergo vowel reduction or drop. According to her table 5 (p.1191), this is true in the controlled experiment where the majority (89%) of disyllabics in sentence-final position are reduced or droped, as compared to their sentence-initial position (14%). However, this ratio is not confirmed when more than twice as much data are analyzed from spontaneous conversations. In spontaneous contexts, the amount of reduction and drop is the same in both positions: 98% paragraph-initially and 100% paragraph-finally. Based on these studies , the evidence seems insufficient to reject the possibility of PBL in this language.

In Hungarian, the Finno-Ugric language our study is concerned with, no studies argued that PBL is nonexistent. On the contrary, present-day and historical data indicate some amount of lengthening at the boundaries of syntactic constituents in the language (Kassai, 1979; 1982). However, this lengthening was systematically dismissed, because the authors concluded that it is not perceptually relevant. Kassai (1979; 1982), for instance, shows that vowels and consonants are longer at the end of words and sentences. She even states that durational differences between segments in sentence-initial and sentence-final positions are the only non-negligible difference in her corpus. However, she also seems to conclude that this amount of lengthening is not perceptually relevant, because the listener tends to compare sentence-final durational cues to their sentence-medial (and not sentence-initial) counterparts (Kassai, 1982, p. 136). We do not think this assumption about the mechanism of perceptual processes is correct. In the following sections, we argue that the amount of lengthening we observe in our data must be perceptible.

3. Corpus and Data

The data for this study comes from a corpus of approximately 3 hours of restricted spontaneous speech transcribed, digitized and analyzed by the authors, using Entropics' acoustic analysis software. Two native Hungarian speakers (one male and one female) from Budapest were taped in a quiet room, using head mounted directional microphones, while exchanging information about the actions and characters in simple computer animations. The speakers were recorded in three dialog situations, representing decreasing control of the investigator over the speech material: question-answer, directed description and undirected description (see Hockey, 1998 for more detail). There were two sequences of 24 animations used as stimuli in recording the participants. Data for this study came from each participants' directed and undirected descriptions, as well as from their answers in the question-answer task.

As opposed to previous studies using read-aloud speech produced in laboratory conditions (see 2.), our corpus has the advantage of a controlled situation and of spontaneous speech production: the speakers were engaged in a constrained task, but they spoke spontaneously within the context of performing the task. On the other hand, the restricted context and limited vocabulary provided many occurrences of identical words uttered in different prosodic positions by both speakers. 130 pairs of words were selected from this corpus. These target words were paired according to their occurrences in each of two prosodic positions: (i) Intonational Phrase-final (IPF) and (ii) Intonational Phrase-medial (IPM). To insure clear cases of IPF words, we only considered the last word of turn-final utterances followed by major pitch movements, pauses or hesitations, i.e. any one or more of prosodic features typically associated with major prosodic boundaries. For IPM words, we excluded all items preceded or followed by any such boundary cues. The following utterances show the target word *esernyô*[2] 'umbrella' in the two prosodic positions:

Intonational Phrase Medial (IPM):
*A zöld **esernyô** nekiütközik a fekete lakatnak.*
'The green umbrella (with)hits the black padlock(with)'
(h-aja-t2s1, anim. 20, Line 169)

[2] The carat sign (ˆ) stands for double-bar accent used in the spelling of long labial vowels.

Intonational Phrase Final (IMF):
A fekete lakatnak ütközik a fehér esernyô.
'The black padlock(with) hits the white umbrella'
(h-aja-t2s1, anim. 20, Line 174)

The animation corpus provided multiple instances of various nouns, adjectives, adverbs, verbs and particles in both IPM and IPF positions. Out of the 130 matched pairs of words, 58 pairs were produced by the female speaker, and 72 pairs by the male speaker.

Durations of IPM and IPF words were measured. Since the corpus of IPM and IPF items did not contain utterance-initial words, silent periods of stop consonants in both positions could be measured accurately. We also measured individual vowels in order to compare the long to short vowel ratios in our corpus to previous reports of these ratios for Hungarian. Vowels were measured from the onset to the offset of voicing, bursts of stop consonants were excluded from vowel durations. If two adjacent vowels or vowels and glides occurred, the segmentation was decided on the basis of formant transitions and perceptual judgements.

4. Results and Discussion

The result of our matched pair analysis, shown graphically in figure 1, is the finding that intonational phrase-final tokens of words are systematically longer than their intonational phrase-medial partners. This result is significant at $p<.0001$, using the Wilcoxon signed rank test. It is clear from the scatterplot in figure 1 that the significance of the result comes more from consistency of the phenomenon rather than from huge differences in duration between intonational phrase-final and intonational phrase-medial items. In other words, while the difference in duration between IPM and IPF items may not always be large, the IPF words are almost always longer. Contrary to what might have been expected, it appears that Hungarian speakers are consistently using increased duration to mark phrase boundaries in the same way that speakers do in other languages, such as English. This result clearly contradicts previous assumptions about the absence of PBL in languages with phonemic length, and it supports the hypothesis that PBL is likely to be universally used by languages to cue major prosodic boundaries.

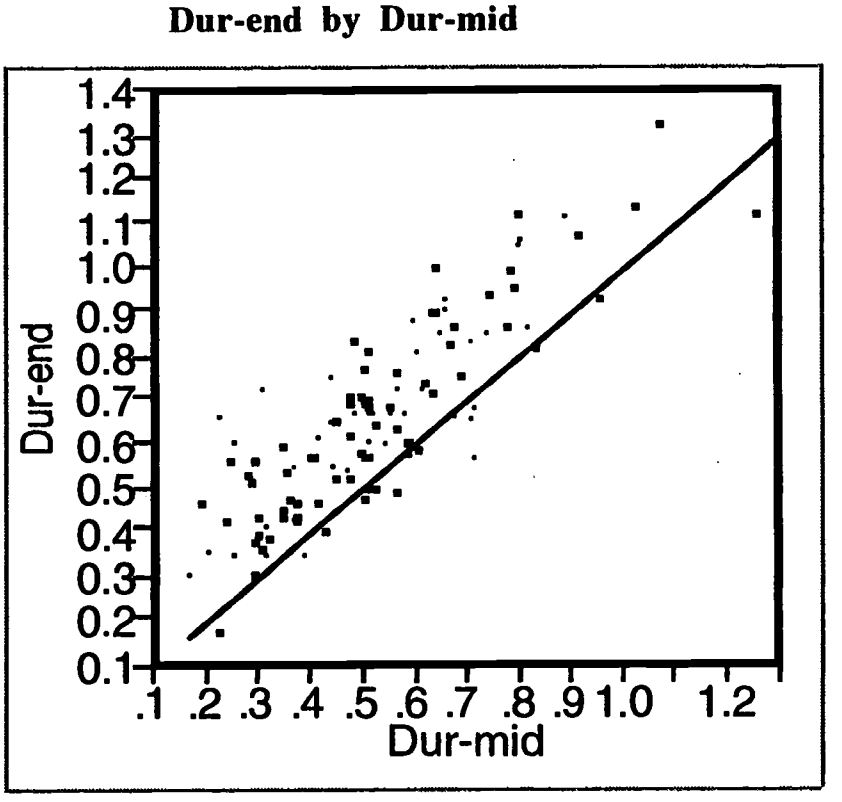


Figure 1. Words durations in two prosodic positions: intonational phrase-medial (Dur-mid) and intonational phrase-final (Dur-end).

This result is not completely new, since earlier studies on Hungarian clearly showed effects similar to figure 1. As discussed in Section 2, systematic lengthening of vowels and consonants in final position is a well-documented phenomenon in the Hungarian phonetic literature. However, PBL was rejected as a legitimate boundary cue, because people thought it is not perceptually relevant. The lack of perceptual experiments in the literature led us to wonder if this is simply speculative, and to ask what type of data could address the question of perceptual relevance. We decided to compare the difference in duration between IPF and IPM items with a durational difference known to be crucial in the language. Hence we compared the differences in IPF and IPM durations to those of long and short vowels. We measured the duration of individual vowels within the target words, and then calculated: 1) the ratios of long to short vowels, and 2) the ratios of IPF to IPM vowels. We did not distinguish between vowels in different positions within the word or between syllable-types. Our hypothesis was that if we found that the IPF/IPM ratio was as large or larger than the long/short ratio, we could conclude that the IPF/IPM distinction must be perceptually relevant. If this is

the case, then it seems likely that speakers and hearers of Hungarian can use PBL as a distinction since it is as noticeable as the phonemic length.
Table 1 shows that in fact our hypothesis seems to be correct. There are IPF/IPM ratios that are bigger than long/short ratios.

Table 1: Duration ratios for long/short and IPF/IPM distinctions.

Vowel	long/short	IPF/IPM	N (IPM/IPM pairs)
i	1.52:1	1.13:1	46
i:		1.04:1	9
e	1.47:1	1.18:1	131
e:		1.25:1	37
y	*no data*	0.99:1	13
y:		-	-
u	*no data*	0.99:1	14
u:		-	-
ø	1.81:1	1.37:1	31
ø:		1.52:1	22
o	1.66:1	1.10:1	64
o:		2.27:1	7
a	1.78:1	1.21:1	37
a:		1.36:1	18

For example, the IPF/IPM ratio for /ø:/ is as big as the long/short ratio for /i/ and larger than the long/short ratio for /e/. The IPF/IPM ratio for /o:/ is larger than any of the long/short ratios including the long/short ratio between /o:/ and /o/. It seems unreasonable to assume that speakers would be able to perceive a 1.66:1 difference between /o:/ and /o/ but not a 2.27:1 difference between /o:/ in IPF and IPM positions. This is particularly significant in light of the fact that we did not control for position of the vowel within the word, and controlling for position in the word is likely to make the ratios even larger in the same direction.

Table 2 shows vowel length ratios in our corpus compared to two previous studies. Meyer and Gombócz's historical data were taken from Kassai (1979). The ratios shown for Kassai (1979) were recalculated for thoses types of items by the second author, based on the tables Kassai provides. We have sufficient data for comparison of 5 of the 7 long/short vowel pairs. As might be expected for a corpus of spontaneous speech as opposed to read

minimal pairs, the ratios in our corpus show less variation. It has been claimed that high vowel ratios should be bigger than the ratios for lower vowels, but this is not supported by either our ratios or the ratios we calculated from Kassai's data. For example the ratio of /i:/ to /i/ is 1.52:1 for us and 1.28:1 for Kassai. This is smaller than the ratios for /a:/ to /a/ in both studies: 1.78:1 in our corpus, and 1.82:1 in Kassai's corpus. The claim that vowel ratios should be larger for vowels distinguished only by length is also not supported (see appendix for vowel chart). The same compararison between i:/i and a:/a just discussed also demonstrates this point. The most important point is that in spite of the difference in speech style (spontaneous vs. read) our vowel ratios are sufficiently similar to previously reported vowel ratios that our results on PBL cannot be discounted as a peculiarity of our corpus.

Table 2: Ratios of long to short vowels in three studies.

Vowel	H & F (1998)*	Kassai (1979)**	Meyer & Gombócz (1925)***
i:/i	1.52:1	1.28:1	2.11:1
e:/e	1.47:1	1.25:1	1.69:1
y:/y	*no data*	1.79:1	1.97:1
u:/u	*no data*	2.00:1	2.02:1
ø:/ø	1.81:1	1.60:1	1.86:1
o:/o	1.66:1	1.89:1	2.11:1
a:/a	1.78:1	1.82:1	1.78:1

* spontaneous speech, all types of syllables, 1-6 syllable words
** minimal pairs, open syllables, 1-4 syllable words
*** minimal pairs, all syllables, one-syllable words

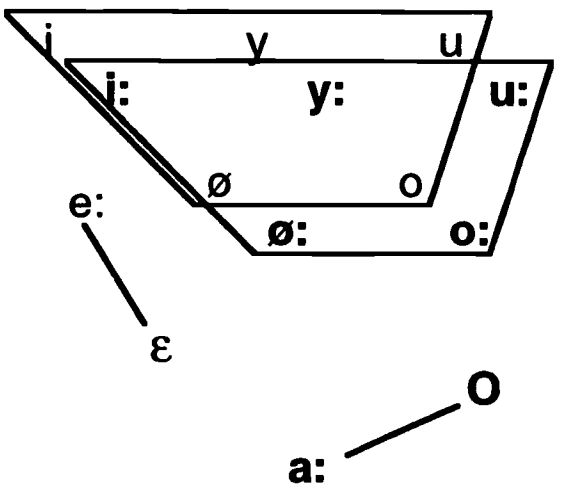
5. Conclusion

In this paper we have shown that Hungarian, a language with phonemic length also has consistent preboundary lengthening. Contra previous work which also noted this lengthening but claimed that it was not perceptually relevant, we presented evidence that PBL is as great or greater than differences in length between short and long vowels. Since it is clear that native speakers of Hungarian are able to perceive the difference between long and short vowels, we conclude that it is highly likely that they are also able to perceive PBL. This suggests that the use of phonemic length in a language does not

preclude the use of PBL and that Hungarian does not seem to be an exception to the universality of PBL.

6. Appendix

Vowels of Hungarian: 5 pairs of vowels are distinguished by length only, 2 pairs of vowels differ both in length and in quality.



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Some Reconstruction Riddles

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The investigation of reconstruction phenomena has played a significant role in theory construction in several modules of syntax, including those determining phrase structure, the nature of transformational derivations, and, of course, anaphoric connection. In this paper, I will discuss two of the most interesting proposals about reconstruction that have appeared in recent years. The first is the widely accepted Lebeaux (1988) account of certain complement/adjunct asymmetries, first noted by Freidin (1986), in terms of generalized transformations. The second is the almost universally rejected claim of Chomsky (1995b) that there is no reconstruction with A-movement. In the first instance, I will suggest that though the argument is plausible, it is actually incorrect. And in the second, I will suggest the reverse: that while the argument is implausible, its conclusion might actually be correct.

1. Condition C Complement/Adjunct Reconstruction Asymmetries (The 'Lebeaux Effect')

Until the mid-1980's, it was rather standardly assumed that overt movement can salvage what would otherwise have been a Condition C violation. (1), derived from something like (2), is a representative type of example.

(1) Which report that $John_i$ revised did he_i submit?
(2) He_i submitted which report that $John_i$ revised

Note that (2) would be in violation of Condition C, just like (3).

(3) *He_i submitted the report that $John_i$ revised

Freidin (1986) observes an interesting apparent exception. In (4), movement does not seem to rehabilitate the violation.

(4) *Which report that $John_i$ was incompetent did he_i submit?

Freidin notes that the difference stems from the status of the clause internal to the fronted NP. In the good (1), that clause is a relative clause, while in

the bad (4), it is a complement. Freidin suggests that the process of reconstruction can somehow make this distinction.

Lebeaux (1988) presents similar contrasting examples:

(5) a. *He$_i$ believes the claim that John$_i$ is nice
b. *He$_i$ likes the story that John$_i$ wrote
c. *Whose claim that John$_i$ is nice did he$_i$ believe?
d. Which story that John$_i$ wrote did he$_i$ like?

Lebeaux provides a detailed account, in terms of a new (in part, very old) theory of phrase structure. Following Chomsky (1981), Lebeaux proposes that D-structure is a representation of thematic relations. Given this, complements, being necessarily θ-marked, have to be represented at this level, while relative clauses, being adjuncts of some sort, need not be, Lebeaux reasons. Relative clauses can be inserted anywhere in the course of the derivation, via a generalized transformation. Lebeaux goes on to propose that Condition C must be satisfied not (just) at S-structure or LF, but everywhere in the course of the derivation. (5)c is then ruled out, since at D-structure (and, in fact, at every point of the derivation prior to wh-movement), Condition C is violated, as *he*$_i$ c-commands *John*$_i$. (5)d, on the other hand, has a possible derivation where the relative clause is not inserted until after wh-movement. On such a derivation, there is no point at which *he*$_i$ c-commands *John*$_i$, so there is no Condition C violation.

Chomsky (1993) gives further similar examples, presented here in (6), questions certain properties of Lebeaux's account, and then proposes an extension of it.

(6) a. *Which claim [that John$_i$ was asleep] was he$_i$ willing to discuss
b. Which claim [that John$_i$ made] was he$_i$ willing to discuss

Chomsky states that

> "The approach is appealing, if problematic. For one thing, there is the question of the propriety of resorting to generalized transformations. For another, the same reasoning forces reconstruction in the case of A-movement. Thus, [(7)] is analogous to [(6)a]; the complement is present before raising and should therefore force a Condition C violation." [p. 204 of Chomsky (1995)]

(7) the claim that John was asleep seems to him [$_{IP}$ *t* to be correct]

The second of these objections, I will return to. As for the first, Chomsky's concern isn't with generalized transformations per se. Rather, the worry is that they are used in too narrow a set of circumstances. Chomsky, instead, proposes "a full-blown theory of generalized transformations". All aspects of structure are so derived. Then, of course, the asymmetry Lebeaux was concerned with is no longer explained. Chomsky thus replaces Lebeaux's account with the following:

(8) a. The 'Extension Condition': structure must be built strictly cyclically.
b. Adjuncts are exempt from the Extension Condition; relative clauses are adjuncts.
c. 'Reconstruction' is essentially a reflex of the formation of operator-variable constructions.
d. An operator chain (a sequence of copies) undergoes complementary deletion.
e. Condition C is an LF requirement.

The contrast between (6)a and (6)b is handled in the following way. First, the grammatical (6)b, with the relative clause, has one of the following two derivations, consistent with (8):

(9) a. [Which claim [that John made]] was he willing to discuss ~~which claim~~ PF
b. Which ~~claim~~ [that John made]] was he willing to discuss ~~which~~ claim LF
c. For which x that John made, he was willing to discuss x claim Interpretation (?)

OR?

(10) a. [Which claim [that John made]] was he willing to discuss ~~which claim~~ PF
b. [Which claim [that John made]] was he willing to discuss ~~which claim~~ LF
c. For which x, x a claim that John made, he was willing to discuss x Interpretation (?)

Notice that in both of these, no Condition C violation arises. Now consider (6)a, with a noun complement. The adjunct exemption is not relevant, so the

derivation must be cyclic, as in the following:

(11) a. Which claim [that John was asleep] was he willing to discuss ~~[which claim that John was asleep]~~ PF
b. [Which ~~claim [that John was asleep]~~] was he willing to discuss [~~which~~ claim that John was asleep] LF
c. For which x, he was willing to discuss x claim that John was asleep Interpretation (?)

In LF (12), *he* c-commands *John* yielding a Condition C violation, evidently the correct result. Note, though, that two other potential derivations, seemingly made available by the theory, must be excluded:

(12) a. Which claim [that John was asleep] was he willing to discuss ~~[which claim that John was asleep]~~ PF
b. [Which ~~claim~~ [that John was asleep]] was he willing to discuss [~~which~~ claim ~~that John was asleep~~] LF
c. For which x that John was asleep, he was willing to discuss x claim Interpretation (?)

(13) a. Which claim [that John was asleep] was he willing to discuss ~~[which claim that John was asleep]~~ PF
b. [Which claim [that John was asleep]] was he willing to discuss [~~which claim that John was asleep~~] LF
c. For which x, x a claim that John was asleep, he was willing to discuss x Interpretation (?)

I continue to hedge on the precise status of the (c) examples as interpretations, but surely if (9)c and (10)c are appropriate interpretations for their corresponding LFs, then (12)c and (13)c are for theirs. Given that, LFs (12)b and (13)b cannot be excluded on semantic grounds. Yet, evidently incorrectly, those representations are not in violation of Condition C. To rule out derivations like (12) and (13), Chomsky proposes (14).

(14) "...preference principle for reconstruction: Do it when you can (i.e., try to minimize the restriction in the operator position)." [p. 208 of Chomsky (1995)]

(14) leaves us with (11), whose LF violates Condition C, the desired result.

Thus far, we have considered the adjunct-argument Condition C reconstruction asymmetry, and two plausible analyses: that of Lebeaux in terms of a partial theory of generalized transformations, and that of Chomsky in terms of the 'preference principle'. Before examining those analyses further, I would like to consider the facts in more detail. While the contrast seems clear enough in the standard examples cited above, there are examples structurally parallel to the noun complement cases, which, surprisingly, are reasonably, even fully, acceptable. A few samples are as follows:

(15) Which piece of evidence that John was guilty did he successfully refute?
(16) How many arguments that John's theory was correct did he publish?
(17) Which proof that Mary's theory is superior to John's did she present?

In all of these, contrary to now standard assumptions, coreference between the pronoun and the name is acceptable. In questioning those standard assumptions, Kuno (1997) gives comparable examples:

(18) a. Whose allegation that $John_i$ was less than truthful did he_i refute vehemently?
b. Whose claim that the $Senator_i$ had violated the campaign finance regulations did he_i dismiss as politically motivated?

All of the examples considered so far, both the standard bad ones and the surprising good ones, have involved interrogation. By the logic of the standard analyses, topicalization would also be expected to show the 'Lebeaux effect'. And this has, in fact, been claimed in the literature. Chomsky and Lasnik (1993) give the following pair:

(19) a. *The claim that $John_i$ was asleep, he_i won't discuss
b. The claim that $John_i$ made, he_i won't discuss

And Chomsky (1993) gives these:

(20) a. *The claim that $John_i$ is asleep, he_i was willing to discuss
b. The claim that $John_i$ made, he was willing to discuss

However, as with the interrogative examples, the generality of the forced

reconstruction effect is open to question. The following examples, the first two of them due to Postal (1997), who, like Kuno, questions the standard assumptions, all seem much better than would be expected under the Lebeaux or Chomsky accounts:

(21) The claim that the director$_i$ was corrupt, he$_i$ was unwilling to discuss
(22) That the director$_i$ was corrupt, everyone knew that he$_i$ would always be able to deny with a straight face
(23) The widespread belief that John$_i$ is incompetent, he$_i$ deeply resents
(24) This argument that John's$_i$ theory is correct, he$_i$ is now ready to publish
(25) Mary's attempt to hire John's$_i$ student, he$_i$ heartily endorsed
(26) John's request to attend Mary's$_i$ lecture, she$_i$ immediately granted

Postal and Kuno thus seem justified in questioning the standard generalization. But what of the standard examples? Why are the complement instances degraded? Consider first the topicalization instances, repeated here:

(27) *The claim that John$_i$ is asleep, he$_i$ was willing to discuss
(28) *The claim that John$_i$ was asleep, he$_i$ won't discuss

(27) is indeed substantially degraded, in fact virtually bizarre. But, there seems to be a serious tense mismatch between the main and complement clauses, one that persists even in the absence of intended coreference. And with coreference, the situation denoted is pragmatically strange. The Chomsky and Lasnik example (28) controls for both of these properties, and I now believe that we were incorrect in calling it bad. And the several native informants I have consulted concur that it is far better than advertised (except where the topicalized NP is taken as referring to a claim that John made, an effect that can presumably be characterized completely internal to that NP).

Consider now the standard interrogative examples, first Lebeaux's (5)c, repeated as (29).

(29) *Whose claim that John$_i$ is nice did he$_i$ believe?

I suspect that the undeniable peculiarity of (29) stems, at least in large part, from factors independent of forced reconstruction. First, it is at least somewhat unusual for someone (John in this case) to rely on others' claims

in order to determine his or her own personality characteristics (niceness in this instance). Further, it is not easy to imagine a situation where a set of claims that John is nice can be sufficiently individuated that some can be believed and others not. To illustrate this point, I present the following one scene play, with three characters:

(30) Susan: John is nice.
Mary: John is nice.
!!John: I believe Susan but I don't believe Mary.

John's line of dialogue is very strange in this context. But if (30) is not the kind of situation that would make (29) felicitous, what would be? I suspect that Chomsky's interrogative example (6)a, repeated here as (31), has this property as well, though to a lesser extent (and, in fact, the example seems less bad than (29)).

(31) *Which claim [that $John_i$ was asleep] was he_i willing to discuss

A very similar example from Munn (1994) is somewhat worse than (31):

(32) *Which claim that $John_i$ was asleep did he_i later deny

As with (31), the individuation that is presupposed is somewhat unlikely. Additionally, the *later* raises a question: Later than what? And with the example given in isolation (as Munn gave it), the only plausible response to that question is, later than he made the claim. But then there is arguably a Condition C effect completely internal to the interrogative NP, with an 'understood' *John* as the subject of *claim*.

There might also be an interfering pragmatic factor in Freidin's example (4), repeated as (33).

(33) *Which report that $John_i$ was incompetent did he_i submit?

It is not customary for an individual (say, John) to be in a position where he would submit reports (even more peculiarly, one selected out of several) on his own incompetence.

If this discussion is on the right track, we would expect that when these interfering pragmatic factors are controlled, the resulting sentences are improved. In fact, we have already seen that this is so. All of the following

examples, repeated from above, are syntactically indistinguishable from the standard bad cases, but are far better:

(34) Which piece of evidence that John$_i$ was guilty did he$_i$ successfully refute?
(35) How many arguments that John's$_i$ theory was correct did he$_i$ publish?
(36) Which proof that Mary's$_i$ theory is superior to John's did she$_i$ present?
(37) Whose allegation that John$_i$ was less than truthful did he$_i$ refute vehemently?
(38) Whose claim that the Senator$_i$ had violated the campaign finance regulations did he$_i$ dismiss as politically motivated?
(39) The claim that the director$_i$ was corrupt, he$_i$ was unwilling to discuss
(40) That the director$_i$ was corrupt, everyone knew that he$_i$ would always be able to deny with a straight face
(41) The widespread belief that John$_i$ is incompetent, he$_i$ deeply resents
(42) This argument that John's$_i$ theory is correct, he$_i$ is now ready to publish
(43) Mary's attempt to hire John's$_i$ student, he$_i$ heartily endorsed
(44) John's request to attend Mary's$_i$ lecture, she$_i$ immediately granted

All of this suggests that the complement/relative clause reconstruction asymmetry might be illusory. Suppose this is so. How problematic is that for syntactic theory? Postal (1997) implies that if the complement cases do not show Condition C reconstruction, that would constitute an argument against trace theory (i.e., of the 'copy' version Chomsky assumes). But it is not really that. Rather, it is, at most, an argument against a potential argument for trace theory; no conclusion can be drawn from the denial of the factual basis for the potential argument. Consider now Chomsky's specific account of the asymmetry. What problem would arise there? None, as far as I can tell. What is doing the crucial work is the 'preference principle' for reconstruction, repeated here:

(45) "...preference principle for reconstruction: Do it when you can (i.e., try to minimize the restriction in the operator position)."

But there is nothing a priori desirable about this principle as opposed to, say, one that would minimize the restriction in the variable, or one that would freely allow minimization in either position. Further, if there is no complement/relative clause reconstruction asymmetry, the stipulated exemption to the extension condition for relative clauses is no longer needed in

Chomsky's approach (as in (8)a,b above). And on Lebeaux's account briefly summarized above, the reconstruction asymmetry could be eliminated by denying that Condition C must be satisfied everywhere in the course of the derivation, instead limiting its application to a specific level of representation (necessarily LF if central claims of Chomsky (1995b) are correct).

2. On Lack of Reconstruction With A-Movement

I turn now to certain questions of A-movement reconstruction (or lack thereof). Recall one of Chomsky's concerns about Lebeaux's account of the (alleged) complement/relative clause reconstruction asymmetry: that it incorrectly predicts forced reconstruction for A-movement as well as for A'-movement, with noun-complement constructions, as in (46).

(46) The claim that $John_i$ was asleep seems to him_i [$_{IP}$ *t* to be correct]

Before considering Chomsky's account, I should note that Lebeaux (1988); Lebeaux (1990) actually does have something to say about examples like (46). Lebeaux proposes that lexical material is inserted only in the head position of an A-chain. On this proposal, an empty category is inserted into the complement subject θ-position. The lexical subject *The claim that John was asleep* is not inserted until after the empty category is raised to its Case position in the higher clause. *John* is then never in the domain of *him*, so there is no Condition C effect. Chomsky's account given above in (8)c and repeated here is possibly, but not obviously, superior.

(47) 'Reconstruction' is essentially a reflex of the formation of operator-variable constructions.

Why this should hold is unclear. Chomsky (1993) offers the following discussion, which does not entirely clarify matters:

> "The reconstruction process ... applies only to operator-variable constructions. What about A-chains, which we may assume to be of the form CH = (α,*t*) at LF (α the phrase raised from its original position *t*, intermediate traces deleted or ignored)? Here *t* is a full copy of its antecedent, deleted in the PF component." [p. 210 of Chomsky (1995)]

Chomsky assumes that A-movement leaves a full copy as a trace, and further, that the copy persists throughout the computation. Absence of

'reconstruction' is thus little better than a stipulation.

So far, Chomsky's claim of lack of reconstruction with A-movement is based on the apparent 'Lebeaux effect' with A'-movement but not with A-movement. But I have suggested that even with A'-movement there is no forced Condition C reconstruction. If that is correct, there is nothing special to say about A-movement in this regard. At this point, I turn to two other interesting arguments that Chomsky (1995) offers for lack of reconstruction with A-movement. The first, like the one discussed already, is based on Binding Theory, but this time Condition B. And this time, the issue is not reconstruction refraining from creating a violation, but rather reconstruction not being able to rehabilitate a violation. Chomsky gives the following example, observing that it has the status of a Condition B violation:

(48) *John$_i$ expected [him$_i$ to seem to me [$_\alpha$ *t* to be intelligent]]

Chomsky reasons that "...under reconstruction the violation [of Condition B] should be eliminated, with *him* interpreted in the position of *t*..." [p. 326] There is a question here about the correct characterization of the domain relevant to pronominal obviation (the 'Governing Category' of the GB framework). But under plausible assumptions, *John* would, indeed, be outside of the relevant binding domain of *him* were the latter 'reconstructed'. In fact, given the predicate internal subject hypothesis, which Chomsky assumes, the reconstructed position would presumably be even lower than Chomsky indicates in (48).

The next argument involves scope interaction between clausal negation and subject universal quantifier. Chomsky (1995) gives the following paradigm:

(49) a. (it seems that) everyone isn't there yet
b. Everyone seems [*t* not to be there yet]

In (49)a, *everyone* is easily understood as within the scope of negation, while in (49)b it cannot be so understood. While the relevant interpretive mechanism at work in (49)a is mysterious, Chomsky reasonably argues on the basis of the contrast that in (49)b, "... there is no reconstruction to the trace position ..." [p. 327] As Chomsky indicates, this conclusion raises questions about standard 'quantifier lowering effects' as in (50) from May (1977).

(50) Some politician is likely to address John's constituency

I turn now to a brief discussion of those effects.

3. Quantifier Lowering?

To reconcile his conclusion based on (49) with standard quantifier lowering as in (50), Chomsky suggests that the 'lowered' reading in the latter instance

> "... could result from adjunction of the matrix quantifier to the lower IP (c-commanding the trace of raising and yielding a well-formed structure if the trace of quantifier lowering is deleted, along the lines of May's original proposal). But reconstruction in the A-chain does not take place, so it appears." [p. 327]

Quantifier lowering has been widely discussed in the literature, but precise characterization of the ambiguity remains surprisingly elusive. Paraphrase is pretty much all one finds, and the following, from May (1977), is as good as any:

> "[(50)] may be taken as asserting either (i) that there is a politician, e.g., Rockefeller, who is likely to address John's constituency, or (ii) that it is likely that there is some politician (or other) who will address John's constituency."

Interestingly, just as Chomsky presented evidence based on a (surprising) missing scope possibility that 'reconstruction' doesn't take place with A-movement, there are also surprising missing scope possibilities with quantifier lowering. Some of the examples, like Chomsky's, involve negation:

(51) No large Mersenne number was proven to be prime
(52) Noone is certain to solve the problem

Neither of these has a 'lowered' reading, at least on the paraphrase characterization above. (51) is not accurately paraphrasable as (53), nor is (52) as (54).

(53) It was proven that no large Mersenne number is prime
(54) It is certain that noone will solve the problem

This paraphrase failure is not limited to negative contexts. Consider (55) in a situation where there are five fair coins, flipped in a fair way.

(55) Every coin is 3% likely to land heads

This situation strongly biases the sentence towards the lowered reading, but that reading still is not possible. (55) cannot be accurately paraphrased as (56).

(56) It is 3% likely that every coin will land heads

These facts suggest that there is no quantifier lowering. That is, as Chomsky claims, there is no reconstruction to the position of trace of raising. But additionally, there is no lowering of a quantifier (by a QR type rule) to adjoin to a lower IP. This might be because there are no rules of the QR type at all, or because the Move operation is strictly one of raising. Given one of those prohibitions, I can only speculate about what is going on with the standard examples like (50), repeated as (57).

(57) Some politician is likely to address John's constituency

As far as I know, examples showing an apparent lowering effect always have an indefinite as subject, unlike the new examples I have presented. I assume that this property is crucial, perhaps in the following fashion: On the first reading of (57) discussed by May, the speaker has a particular individual in mind (a politician, in this instance), but, for some discourse reason or other, does not identify that individual. On the second reading (the 'lowered' one), the speaker does not have any particular individual in mind. The apparent ambiguity might than fall under theme-rheme properties, the 'wide scope' quantifier being a theme or topic. Notice in this regard that even in a completely transparent context, we can find something strangely reminiscent of the two readings May presents for raising sentences:

(58) Some politician addressed John's constituency
(59) a. ...namely Rockefeller
b. ...I can tell by all the balloons and flags on the green

May (1985) presents an important argument that actual syntactic lowering must be involved in the second reading of examples like (57): namely, that such a 'lowered' reading for the quantifier is incompatible with the binding of a pronoun in the upper clause. May gives the following

example:

(60) No agent$_i$ was believed by his$_i$ superior to be a spy for the other side

It does seem correct that there is no lowered reading for the subject in (60). However, the same is apparently true even with no bound pronoun, as in examples (51)-(52) above. A more relevant test would involve an indefinite subject, as in (61).

(61) Some professor$_i$ is believed by his$_i$ students to be a tyrant

It is certainly correct that (61) cannot be paraphrased as (62).

(62) *It is believed by his$_i$ students that some professor is a tyrant

But it is not clear what we can conclude from the fact that a sentence cannot be paraphrased by an ungrammatical sentence (in this case, one that violates the Weak Crossover constraint). That leaves the discourse test summarized above: Does the speaker have an individual in mind or not? And it does seem that (61) can be felicitously uttered under either circumstance, as illustrated in (63).

(63) a. Howard Lasnik is believed by his students to be a tyrant
b. Some professor (or other), I have no idea exactly who, is believed by his students to be a tyrant

The context for (63)b might be the discovery of graffiti scrawled on the lavatory wall saying "Our professor is a tyrant", or it might even be mere general background knowledge about the typical sociology of a university.

There is another class of apparent A-movement reconstruction effects, that, as far as I know, Chomsky has not addressed at all. This class includes Condition A reconstruction of the sort discussed in detail by Belletti and Rizzi (1988), among many others. Standard examples involve classic raising predicates and also 'psych' predicates (which are argued, in part on this basis, to be raising predicates of a particular sort). Examples of the familiar sort are as follows:

(64) Each other's supporters frightened the candidates
(65) Each other's supporters seem to the candidates to be unscrupulous

The contrast between such examples, on the one hand, and ones with simple transitive or control predicates on the other, constitutes one widely accepted argument for A-movement reconstruction. Examples contrasting with (64) and (65) are given in (66) and (67).

(66) *Each other's supporters attacked the candidates
(67) *Each other's supporters asked the candidates to be more honest

I have marked (64)-(67) with the standard judgments, but I must confess that I am no longer confident that (64)-(65) are as good as they are always claimed to be or that (66)-(67) are as bad. If they do not really contrast, then, needless to say, there is no clear argument for reconstruction. If, on the other hand, the contrasts in (64)-(67) are genuine, the satisfaction of Condition A in (64)-(65) might be handled 'on-line', as in Belletti and Rizzi (1988) or in Lebeaux's theory. Formally, this makes sense if satisfaction of Condition A involves a formal feature, a not implausible assumption.

Arguably, determination of scope is not satisfaction of a formal feature, but rather, is a matter of interpretation at the interface. The absence of scope reconstruction in Chomsky's example (49)b, and perhaps in my (51), (52), and (55), then follows, as noted above, if there is no actual lowering of the relevant sort, and (Chomsky's assumption) traces of A-movement are not visible at LF. But, recall that that assumption follows only from the stipulation that reconstruction is a property solely of operator-variable constructions. A more principled possibility might be that A-movement, unlike A'-movement, does not leave a trace, where a trace is, following Chomsky, a copy of the item that moves, and LF reconstruction effects result from failure to delete (a portion of) a lower copy. This distinction is conceptually plausible: A'-movement typically creates an operator-variable relation, so at least an 'initial' trace is necessary. For A-movement, on the other hand, the trace is seemingly a theoretical excrescence. There are not two separate interpretive roles for a moved NP and its trace to fulfill.

Chomsky (1995), in effect, argues against this proposal, by arguing that the trace of A-movement must be present at the LF level:

> "In the phonological component, traces delete. We have found no reason to extend that convention to the $N \rightarrow \lambda$ computation, and indeed cannot; were we to do so, θ-positions would be invisible at LF..." [p. 301]

I suggest that the undesirable consequence that concerns Chomsky can be

avoided. Suppose that instead of being determined specifically at the LF level, θ-roles are 'checked' in the course of a derivation. The moved argument is then itself a record of the crucial part of the history of its derivation. This view of θ-roles as features is argued for on independent grounds by Bošković and Takahashi (In press) and Lasnik (1995). To the extent that such an analysis can be maintained, we can circumvent Chomsky's conclusion above that the trace of A-movement must persist to the interface level (hence, a fortiori, must exist in the first place). There is then no clear empirical objection to the suggestion that A-movement does not leave a trace, and some reason to think that the suggestion is correct. But we are left with perhaps the biggest reconstruction riddle of all: Given a 'bare phrase structure' of the approach articulated and motivated by Chomsky (1995a) and Chomsky (1995b) how is it even possible for movement not to leave a trace?

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The Life and Death of Derivational Morphology: Reduplication in Oroqen

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Oroqen is an endangered Northwestern Tungusic language spoken in the northeast of China.[1] Like most Tungusic languages, Oroqen has very rich systems of inflectional and derivational morphology. For example, two grammatical sketches of the language, Hu (1986) and Zhang et al. (1989), and our own fieldwork have yielded over 50 derivational morphemes for nouns and adjectives alone. Since there is no literary corpus which predates this century for any Tungusic language except Manchu, and since most of the Tungusic languages have no written form at all, our knowledge of the diachronic development of Tungusic morphology rests primarily on comparative evidence. Unfortunately, the ability to undertake comparative research is greatly hampered by the lack of detailed descriptions on morphology, particularly in the realm of derivation.

In this paper, we focus on a single derivational process in Oroqen, the partial reduplication of adjective stems to indicate intensity. Our purpose is three-fold: first, we provide a comprehensive description of emphatic reduplication in Oroqen; second, we argue that the process entered into the language as a result of contact with Mongolian languages; third, we demonstrate the deleterious effect that language obsolescence has had on the use of reduplication. As part of this demonstration, it is shown that other derivational affixes are undergoing similar effects.

1. Reduplication in Oroqen

Emphatic reduplication operates in Oroqen by copying the first syllable of an adjectival stem onto a CVC template and prefixing the copied material to the adjective. If the first syllable of the adjective is open, then a [b] is inserted into the post-vocalic slot of the CVC template. These patterns are demonstrated in (1):[2]

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[2]For some speakers, the fourth form in (1) is pronounced as *kɔŋnɔrin*. However, even though this produces a closed first syllable, the reduplicated form remains the same as in (1).

(1)	bagdarin	'white'	bag-bagdarin	'very white, white as snow'
	ʃiŋarɪn	'yellow'	ʃib-ʃiŋarɪn	'very yellow, golden yellow'
	kara	'dark, glossy'	kab-kara	'very dark, glossy black'
	kɔŋɔrɪn	'black'	kɔb-kɔŋɔrɪn	'very black'

For certain speakers, the post-vocalic [b] in the last three forms has assimilated in voicing to the following obstruent, and so is pronounced [p].

Emphatic reduplication occurs only with a small number of adjective stems, perhaps only the four presented in (1). Notably, all the adjective terms are colors, and all of them are commonly associated with the hue of certain domestic animals. For example, *kara* is typically used for describing dogs and horses, and *ʃiŋarɪn* for dogs, though not exclusively. Speakers routinely reject emphatic reduplication with other adjectives, even if they are color terms, as shown in (2).

(2)	gɪlbarɪn	'sky blue'	*gil-gɪlbarɪn
	tʃəŋg^{y}ɛn	'deep blue'	*tʃəŋ-tʃəŋg^{y}ɛn
	ɷlaarɪn	'red'	*ɷb-ɷlaarɪn
	ʧuturin	'green'	*ʧub-ʧuturin

In simplest terms the semantic outcome of emphatic reduplication is to attribute an unusually deep hue to the color being denoted. However, the emphatic adjectives appear to have developed specific connotations which makes their use much more restricted than the glosses provided in (1) suggest. Consider just one example, the adjective *kabkara* "very black", as mentioned earlier, is most often employed to describe the fur of a horse or dog. In this use, it implies that the animal's coat has a sheen to it. The adjective, however, can also be used to describe clothes which have become blackened from dirt. In this case, the black being described need not be glossy. *kabkara* can also be employed to describe the night time, in which case it connotes that it is so dark that one cannot see.

The fact that adjectives which utilize emphatic reduplication have specialized applications is perhaps not surprising when one considers that Oroqen possesses two other productive strategies for indicating intensity of colors. These are exemplified in (3).

(3)	manɪ kɔŋɔrɪn	'very black'
	kɔŋɔɔ-li	'very black'

The first expression consists of the degree adverb, *manɪ*, plus an adjective. The construction is fully productive with all adjectives. The second form involves the suffix *-li* and the lengthening of the stem vowel immediately

before the suffix; it is also fully productive within the semantic domain of color terms. It can be used generally to signify intensity, though somewhat like emphatic reduplication, it does have certain specialized uses. For example, it is used to identify objects in the distance whose color is certain but whose identity is not. Colors with *-li* suffixes sometimes have conventionalized meanings. A few examples are provided in (4).

(4) yalbaali 'very white or white person'
lɷgdɷɷli 'very brown or low-hanging dark clouds'
ɷlaali 'very red or a non-white person whose face turned red due to having had too much to drink'
ulubaali 'very pink or a white person whose face turned pink due to having had too much to drink'

Since use of the degree adverb and the suffix *-li* are fully productive, it is of little surprise that emphatic reduplication is dedicated to a far more restricted semantic task.

Having described the properties of emphatic reduplication, we now turn to its origin.

2. The Origin of Emphatic Reduplication

Like all the other Tungusic languages spoken in China, Oroqen has been impacted by several contiguous dominant languages, such as Mongolian, Dagur, Russian and Chinese. Consequently, it has a number of linguistic characteristics which are genetic, but many which are areal. The reduplication process is one good example.

Emphatic reduplication is clearly not characteristic of Tungusic languages generally. In fact, as Tsumagari (1997) points out, it is absent from all the Tungusic languages spoken in Russia--at least as far as one can determine from published material--and appears only in a subset of the Tungusic languages in China. Specifically, it has been identified in Sibe (Li and Zhong 1986), Solon Evenki (Hu and Cao 1986), Kilen-Nanay (An 1968), and Oroqen. The irregular distribution of the reduplication makes it highly unlikely that it was inherited from proto-Tungusic. A much more likely scenario is that it is an areal phenomenon which has arisen through contact with Mongolian languages.

In the case of Oroqen, the lending language is Dagur, the only Mongolian with which Oroqen speakers have been in extended contact.[3]

[3]The other possibility is that the reduplication entered into Oroqen via another Tungusic language, which in turn had borrowed it from a Mongolian language. If

Dagur has a formally identical reduplication strategy which copies the first syllable with the insertion of [b] or [m] in the coda position of the prefix (Zhong 1982, Wu 1996). Examples are given in (5).

(5)	xulaːn	'red'	xub xulaːn	'thoroughly red'
	tʃiɣaːn	'white'	tʃim tʃiɣaːn	'very white'
	dasuŋ	'sweet'	dab dasuŋ	'really sweet'
	səruːŋ	'cool'	səb səruːŋ	'really cool'
	xɑrduŋ	'fast'	xobxorduŋ	'very fast'

Like Oroqen, Dagur employs reduplication to indicate intensity. However, the process is productive and operates on adjectives denoting different sorts of properties, not just colors.

Dagur speakers have been in contact with Oroqen speakers for centuries, in a symbiotic relationship. The traditionally nomadic Oroqen relied on the sedentary Dagur for certain agricultural goods, while in exchange supplying the Dagur with pelts and meat. The commercial relationship, while mutually beneficial, established Dagur as the dominant language, and it became the norm for Oroqen speakers to learn to speak Dagur.

As a result, the Oroqen lexicon has taken on many Dagur words, and Oroqen grammar has borrowed from Dagur, particularly in the realm of derivational morphology. Thus, the borrowing of reduplication can be seen as part of a more general Dagur influence on Oroqen grammatical structure.

As a point of comparison, consider another example of morphological borrowing. Dagur has a plural marker *-nur* used for kinship terms and human nouns illustrated in (6) below.

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so, the candidates for the source language would be either Khamnigan Evenki or Solon Evenki. Little is known of the morphology of the former (Janhunen 1991 is the best overview but makes no reference to emphatic reduplication). The Oroqen had much more extensive contact with the Solon Evenki, who themselves were typically bilingual in Dagur. Because of the nature of multilingualism which pervades this region, it may not be the case that the emphatic reduplication entered into any one of the Tungusic languages first. If Tungusic speakers were fluent in one or more Mongolian languages and one or more Tungusic languages, it might be most accurate to say that emphatic reduplication entered the speech repertoire of multilingual individuals where it was used in each of the languages spoken.

(6) əkəə 'sister'
əkəənur 'sisters'
gutʃ 'comrade'
gutʃnur 'comrades'
(from Zhong 1982:33)

Oroqen uses the phonologically similar suffix *-nVr*, but it is only used for kinship terms.[4] Among Tungusic languages, the suffix is only found in Oroqen and some dialects of Chinese Evenki, which are also in contact with Dagur. This fact indicates that the suffix is a borrowing. Examples are given in (7).

(7) naatʃɷ 'uncle (on mother's side)'
naatʃɷnɔr 'uncles (on mother's side)'
amaakaa 'uncle (on father's side)'
amaakaanar 'uncles (on father's side)'
jəəjə 'grandpa'
jəəjənər 'grandpas and those of their generation'
(Hu 1986:56)

In Dagur, the marker *-nur* simply signals plurality. The borrowed marker *-nVr* in Oroqen, however, is more restricted in two ways. It is used solely with kinship terms, and it has taken on other connotations beyond plurality. On the one hand, it can indicate an exhaustive set. The word *naatʃɷnɔr* in (7) thus connotes all the uncles on my mother's side together. The suffix also can indicate age association, as in the final form in (7), *jəəjənər*.[5]

The instance of the *-nur* borrowing is reminiscent of the facts surrounding the borrowing of reduplication. In both cases, a morphological strategy is borrowed, but imperfectly such that in Oroqen it can only be applied to a subset of those forms to which it can be applied in Dagur. Furthermore, perhaps as part of its limited distribution in Oroqen, it takes on connotations that it did not have in Dagur. This pattern, which we have only discussed with respect to two morphological borrowings, appears to hold true for all other cases of probable borrowing which we have identified to date.

The sort of structural influence that Dagur has had on Oroqen requires an extended period of relatively intimate contact. It is useful here to review the history of these groups which points to just this type of interaction.

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[4]Most Oroqen suffixes are subject to vowel harmony with the preceding root vowel. Vowels subject to harmony are orthographically represented in this paper by capital V.

[5]The root *jəəjə* is itself a borrowing from Mandarin Chinese.

Both the Dagurs and the Oroqens are believed to originate from the region north of the Amur River, that is, in present day Russia. They both crossed the mighty Amur River several hundred years ago (most likely in the 1600s) and spread over the Greater and Lesser Hinggan Mountains in Manchuria. Janhunen (1997) suggests that migrations of small Dagur populations occurred in tandem with the Oroqen and Solon migrations. Regardless, it is widely accepted that all these groups have co-existed harmoniously in Inner Mongolia and Northeast of China for several centuries.

Trading among them was ubiquitous, usually involving the exchange of fur, game products and animal hide handicrafts from the Oroqens and Ewenkis and animal husbandry or agricultural products from the Dagurs. The frequency of the trading led to multi-lingualism, and some mixing of the populations through inter-marriage.

Since the borrowing being discussed here is structural rather than lexical in nature, massive bilingualism on the part of the Oroqen speakers in the lending language persisting over a long period of time is a crucial prerequisite.

Another social factor frequently invoked in accounting for borrowings across languages, especially languages belonging to different families, is a prestigious status of the source language. As Moravcsik (1978) puts it, in perhaps a bit of overstatement, "nothing can be borrowed from a language which is not regarded [as] prestigious by speakers of the borrowing language." The Dagur people have historically held the necessary position of prestige: According to Janhunen (1997), "since Qing times, the Dagurs have been known as an ethnic group interested in acquiring higher learning through dominant languages such as Manchu and Chinese." This may help explain why the Qing emperor entrusted the Dagurs with the control of the diaspora army sent to guard Chinese borders against the potential invaders in bordering areas.

Although some linguists would consider structural similarity and functional congruence as important factors in cases of grammatical borrowing (e.g. Weinreich (1953)), we argue that Oroqen provides a counter-example. Dagur has both suffixes and prefixes whereas Oroqen is purely suffixal, with the exception of emphatic reduplication. Since, in terms of genetic affiliation, Oroqen, the borrowing language, and Dagur, the lending language, belong to two different families, Tungusic and Mongolic respectively, typological distance and structural similarity do not obviously hold in this case. In this way we agree with Thomason and Kaufman (1988:35) who contend that "it is the sociolinguistic history of the speakers, and not the structure of their language, that is the primary determinant of the linguistic outcome of language contact. Purely linguistic considerations are relevant but strictly secondary overall." The case of Oroqen borrowing provides evidence in support of Thomason and Kaufman's contention.

There is one final issue in the borrowing of emphatic reduplication which needs to be raised. It is clear that it is the process of reduplication which has been borrowed rather than frozen reduplicated forms since Oroqen applies the reduplication to native color terms rather than borrowing these terms from Dagur (cf. bag-bagdarin Oroqen vs. *ʧim ʧiyaːn* Dagur). Because the process is borrowed, and not lexical items which contain frozen instances of reduplication, it is surprising that the reduplication is so highly restricted in Oroqen. We propose that the restrictive nature of this process arose from two factors: first, the presence of other highly productive strategies to indicate intensity relegated the reduplication to a highly specialized semantic domain and inhibited its spread (see Whaley and Li (forthcoming) for an overview of qualitative suffixes in Oroqen); second, the borrowing of the reduplication most likely occurred in the context of trade, meeting a practical need. Since domesticated animals were one common trade item, this would account for the semantic realm in which the reduplication entered into Oroqen. It is after entry into Oroqen that emphatically reduplicated adjectives were applied idiosyncratically in other contexts.

3. The Impact of Language Attrition on Morphology

We have provided arguments for the onset of reduplication in Oroqen. Our fieldwork has also provided us ample opportunities to observe the initial stages of the loss of this morphological process. The circumstances are not happy in this instance because they are linked to an increasing moribundity of the language.

Northwestern Tungusic, to which Oroqen belongs, is rapidly being replaced by Russian in Siberia, and Mandarin Chinese in China. Accordingly, we are interested in seeing what changes take place in these languages as speakers replace one language with another. We are specifically interested in the role of the contact language upon the phonological, morphological and syntactic changes which take place, as well as the order in which these changes occur. We have managed to locate speakers with varying proficiency levels in Oroqen (and Evenki on the Russian side), which may provide insight into longitudinal aspects of language obsolescence and language change.

For present purposes we will confine our discussion in this last section to presenting and commenting on data collected so far which bear on derivational morphology. The restrictive application of reduplication has made it highly vulnerable to rapid loss as Oroqen becomes obsolescent. Data from four informants demonstrate, somewhat anecdotally, that younger speakers no longer have emphatic reduplication in their grammar. Our two older informants A (Er Denggua, 66 years old) and B (He Qinghua, 56 years old) both used Oroqen as their primary language until their early twenties. Since

that time they have increasingly used Mandarin Chinese. Both women use the reduplicated adjectives in (1), though the younger of the two does not recognize or accept the last of these forms. Our two younger informants C (Tuo Jimei, 42 years old) and D (He Xia, 26 years old) no longer accept or recognize any of these forms. Though both of these women learned Oroqen in the home as a first language, both have grown up and been educated in a Mandarin dominated context.

Similar patterns were found with other morphological processes indicating the same process of loss. Consider one further example: Among the nominalizers in Oroqen, *-ŋki* is by far the most productive. It occurs with practically any verb to yield a noun. Examples are given in (8).

(8)	kadı-rə-n	'cut-PROG-3S'
	kadı-ŋki	'sickle/scythe'
	minə-rə-n	'cut-PROG-3S'
	minə-ŋki	'cutting board with one end flat and the other end concave shaped to hold meat or with both ends flat and the middle concaved' (It is usually called'ninan'.)
	ʤik-tə-n	'slice-PROG-3S'
	ʤixi-ŋki	'cutting board'
	gɷlʤı-ra-n	'lock-PROG-3S'
	gɷlʤı-ŋki	'lock/latch'
	tək-tə-n	'sit-PROG-3S'
	təɣəŋki	'sth. to sit on'

Both our older informants A and B readily produced many examples using this and other less productive nominalizers. For example, they employed the nominalizer *-wun* (kadı-wun 'knife', tukti-wun 'ladder').

What is noteworthy is that quite a few of the less productive nominalizers are no longer in the repertoire of our informants C and D. Our informant C only used the suffix *-ŋki*, even in forms where older speakers do not use it. Although she retains this most productive nominalizer *-ŋki* and in fact uses it more generally than older speakers, she alternates between having the velar nasal in the suffix and leaving it out. A similar pattern held for informant D's speech. Only the most productive nominalizer was employed. However, for her, nasal deletion in the suffix *-ŋki* is compulsory. Some of the examples are given in (9) below.

(9)	lɔxɔ-rɔ-n	'hang sth. up-PROG-3S'
	lɔxɔki	'hook'
	təɣə-rə-n	'sit-PROG-3S'
	təɣəki	'sth. to sit on'
	mu:-lə:	'water-LOC'
	mu:lə:ki	'water bucket'
	tukti-rə-n	'go up/climb-PROG-3S'
	tuktiki	'ladder'
	gɷldʒɪ-rə-n	'lock-PROG-3S'
	gɷldʒiki	'lock(noun)'

These data demonstrate, for the younger generation of Oroqen speakers, the wholesale loss of certain limited derivational strategies such as emphatic reduplication, and the replacement of low productivity derivational morphemes by equivalent, yet more productive, strategies. Of course, neither sort of change is unusual in the historical development of language. What is interesting, though, is the rate at which it has occurred, seemingly in the span of twenty-five years.

The findings reported herein shed light on our understanding of the complexity of language change in terms of both internal and external factors leading to the development and loss of morphological processes. The interaction between internal phonological changes and external language contact/ multilingualism induced changes coupled with factors of language obsolescence provide a special set of insights into the intricate complexity of language change in general, and morphological change in particular.

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Chains and Phono-Logical Form

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1. Introduction[1]

This paper provides empirical and conceptual motivations for a research program concerning the nature of the phonological and semantic interfaces with the syntactic component. The analysis we present here represents only a first step in this program. What we hope the reader will take away from this paper is not a detailed analysis of the phenomena we discuss, but rather a sense of the character that any such analysis must have. The central observation of the paper is that NP-movement, control and anaphor-binding all represent the same phenomenon (cf. Hornstein 1997, to appear). From this observation we argue that NP-t, PRO, and anaphor are allomorphs conditioned by properties of the chains that they occur in.[2] We show that the choice of allomorph has semantic consequences, indicating that the semantic component has access to morphophonological representations. To account for this fact, we will argue that there is a single level of representation, *Phono-Logical Form*, which provides the input to both the morphophonology and the semantics. This approach represents a reification of the level of S-structure in grammatical theory by collapsing the functions of PF and LF into a single level. We believe that this type of theory embodies the most minimal of all Minimalist-style theories predicated on the assumption that the syntactic component must, at the very least, provide an input representation for the Articulatory-Motor System (PF) and an input representation for the Conceptual Intentional System (LF) (Chomsky 1993; 1995). The simplest instantiation of this assumption is that these two levels of representation are the same.

The argument proceeds from the question of the explanatory power of chains in linguistic theory. We follow the standard assumption that chains are a consequence of movement and then ask whether other syntactic relations

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[1] This paper has benefited from discussions with Dorit Ben-Shalom, Tonia Bleam, Bob Frank, Howard Lasnik, Colin Philips and the audience of the 22nd Penn Linguistics Collquium. The Kannada data in section 6 was collected by Lidz in 1996. Lidz was supported in part by IRCS and in part by a National Research Service Award Postdoctoral Fellowship from the National Institutes of Health.

[2] The approach is reminiscent of the functional determination hypothesis of Bouchard 1982, Chomsky 1982 and Safir 1985 among others.

also involve chains.[3] Rizzi 1986 and Reinhart and Reuland 1993 (among others) argue that anaphora is also a chain relation. Lidz 1997 claims that this conclusion is necessary in a theory in which chains are the only interpretable objects. If a chain is the only legitimate LF object (Chomsky 1993), then we are led to the question of what object of the interpretive component a chain corresponds to. The simplest position is that a chain corresponds to a semantic entity. Turning this around, if every semantic entity corresponds to a single syntactic object, then anaphora, NP-movement and control all *must* involve a chain relation because it is in precisely these cases that we find more than one NP position corresponding to a single semantic entity. These can be unified as chain relations,[4] giving us a one to one relationship between syntactic objects (chains) and semantic objects (entities).[5, 6]

Conceptual considerations aside, there are good syntactic reasons to think that NP-movement, control and anaphora all involve the same syntactic relation. These are reviewed in sections Reasons to Unify NP-Movement, Control and Anaphor Binding through Anaphor Binding. In section How to Build and Pronounce a Chain we provide an algorithm for building and pronouncing chains, explaining the allomorphy of anaphor, NP-t and PRO. Finally, section Reasons to Distinguish NP-t, Anaphor and PRO provides evidence against the total unification of anaphor, NP-t and PRO demonstrating semantic differences between them. We further show that these differ-

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[3] This assumption is not beyond scrutiny and has been questioned by Hornstein (1997), who argues that chains can be eliminated from grammatical theory altogether, their effects reduced to derivational constraints. We do not find Hornstein's arguments convincing by themselves and give evidence in support of the existence of chains below.

[4] We stand uncommitted on the question of whether the chains in anaphora and control structures are also the consequence of movement, though the analysis of Lidz 1998 is suggestive of a generate and filter approach to chains whereby chains can be formed between any two NPs in the syntax but only those that are referentially unique are legitimate inputs to the semantics. see also Section Alternative 1: Generate and Filter.

[5] We restrict attention here to chains involving Nouns. Chains of other syntactic categories will have the appropriate semantic content. That is, verb-chains will be interpreted as eventualities and so forth.

[6] Assertions of identity, like "Clark Kent is Superman," involve two semantic objects, even though both of these correspond to the same individual in the world. That is, this sentence is an assertion that the entity in the model that we call Clark Kent is realized in the world by the same guy as the entity in the model that we call Superman.

ences do not derive from any single syntactic, semantic or phonological property but from the interaction of semantic and phonological properties with the syntactic representation. The theory which best explains these interactions is one in which chains are simultaneously visible to both morpho-phonology and to semantics and in which chains, pronuncations and meanings must meet certain correspondence conditions defined at the interface between the syntax and these other components.

2. Reasons to Unify NP-Movement, Control and Anaphor Binding

The following 10 paradigms illustrate that anaphor binding, control and NP-movement are possible into the same domains (cf. Bouchard 1982, Hornstein to appear, Lebeaux 1984-85). In (1) we see that these relations are possible from the subject into the object of a matrix clause:[7]

1) a. **John** was seen **e**
   b. **John** saw **himself**
   c. **John** dressed **PRO**

In contrast, these relations are not possible from the object into the subject of a matrix clause:

2) a. * **e** was seen **John**
   b. * **himself** saw **John**
   c. * **PRO** dressed **John**

All three relations are possible into the subject of an infinitival clause:

3) a. **John** is expected **e** to lose the race
   b. **John** expects **himself** to lose the race
   c. **John** expects **PRO** to lose the race

They are not possible, however, into the subject of a tensed clause:

4) a. * **John** was expected (that) **e** would lose the race
   b. * **John** expected (that) **himself** would lose the race
   c. * **John** expected (that) **PRO** would lose the race

[7] We follow Hornstein (to appear) in the claim that so-called inherently reflexive verbs have a PRO object.

These relations are impossible across an expletive subject of an infinitival clause.:[8]

5) a. * **John** was expected it to be likely **e** to lose the race
   b. * **John** expected it to be likely **himself** to/will lose the race
   c. * **John** expected it to try **PRO** to lose the race

An antecedent is always required for NP-t, anaphor and PRO:

6) a. * was seen **e**
   b. * **himself** shaved
   c. * It was expected **PRO** to shave himself

In general, the antecedent for NP-t, anaphor and PRO must be the closest possible antecedent:[9]

7) a. * **John** was expected Mary to be likely **e** to lose the race
   b. * **John** expected Mary to believe **himself** to be losing the race
   c. * **John** expected Mary to try **PRO** to lose the race

In all three relations, the antecedent must c-command the anteceded:

8) a. * **John's** campaign is expected **e** to lose the race

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[8] We follow Williams 1980 in distinguishing Obligatory Control from Non-obligatory Control. The generalizations in this paper are meant to capture only Obligatory Control. Hence cases of Super-Equi do not constitute a counter-example because Super-Equi is a case of Non-obligatory Control, as can be seen in (ii):

(i) **Roger** thinks that it will be easy [**PRO** to protect **himself**]
(ii) Roger thinks that it is easy [**PRO** to protect **yourself**]

Space prevents us from discussing Non-obligatory Control, but we note that, like binding into picture-NPs, this process behaves more like pronominalization than NP-movement with respect to the paradigms listed above. cf. Bouchard 1982.

[9] Two potential counterexamples to this generalization are (i) subject control and (ii) binding in double-object constructions:

(i) John promised Mary PRO to leave
(ii) John told Mary about himself/herself

Whether these are actual counterexamples depends on the precise definition of "closest potential antecedent" and on the structure of these sentences. Analysis of these cases would take us too far from the main point of this paper, though it should be noted that the NP object in both examples could be construed as a dative and hence invisible to the relation in question, much as the prepositional object of *seems* does not block raising in English.

b. * **John's** campaign expects **himself** to lose the race
c. * **John's** campaign expected **PRO** to lose the race

Split antecedents are impossible with all of these relations:

9) a. * **John** was expected **Mary** to be likely **e** to lose the race
b. * **John** described **Mary** to **themselves**
c. * **John** persuaded **Mary PRO** to describe themselves/each other

Under VP-ellipsis, only sloppy identity is possible in all three cases. That is, (10a) cannot mean something like "John was expected to lose the race and Bill was expected John to lose the race too."[10] Similarly, (10b) cannot mean that John expected himself to lose and that Bill also expected him to lose; and, (10c) cannot mean that John expected to leave and Bill also expected him to leave.

10) a. **John** was expected **e** to lose the race and Bill was too
b. **John** expected **himself** to lose the race and Bill did too
c. **John** expected **PRO** to leave and Bill did too

These distributional similarities suggest that A-movement, control and anaphora should be unified as involving the same relation. Failure to unify these relations is failure to explain a clear pattern of facts. The minimal differences between these relations are stated in Table 1.

	# of theta-roles	# of Cases
NP ... anaphor	2	2
NP ... PRO	2	1
NP ... t	1	1

Table 1[11]

[10] Howard Lasnik notes that we can't tell much from paraphrases which violate the theta-criterion, although in this case it seems as though the impossibility of creating the paraphrase that would give the strict reading is precisely the evidence we need to show that this reading is blocked.

[11] The missing cell in Table 1 is one with two cases but only one theta role. We might think this is the relation characterized by expletive replacement (also argued to be a case of chain-formation (Chomsky 1981; Safir 1985); however, there are good reasons to believe this to be the wrong analysis. First, such chains are odd in having the less referential expression of the pair as the head of the chain (cf. fn. 17). Second, Tortora 1997 argues that *there* is an argument and thus should not be in a chain with its antecedent. We will follow Tortora and argue

The above observations suggest that NP-t, anaphor and PRO are allomorphs since they form a minimal set with definable conditions as to when each pronunciation will be used. The tail of a two-membered chain will be pronounced as an anaphor if the chain has two case-postions and as an empty category if the chain has only one case position. NP-t and PRO are further distinguished by whether the chain has two theta-roles or one.

It is important to observe that what differs between NP-t, anaphor and PRO is not statable in terms of properties of these elements by themselves. Anaphor is distinguished from NP-t and PRO by having case; but, there is no distinction between NP-t and PRO statable only in terms of the category itself. In GB, the distinction was in terms of government, but government has since been eliminated (Chomsky 1993). Rather, the differences between NP-t and PRO are determined by properties of the antecedent. The antecedent of NP-t is in a non-theta position while the antecedent of PRO is in a theta-position. So, in order to unify the three elements, we need to consider the chains that they are a part of, as in Table 1. The best analysis of these facts will involve calculations over local chain properties only wherein the computational system can consider only two adjacent links at a time. We will assume this to be the case without argument.

If we don't treat NP-t, PRO and anaphor as alternative pronunciations of a particular chain-position, then we fail to capture the fact that their distributions are so similar. That is, if control and/or anaphora do not involve a chain, then we fail to capture the similarities to NP-movement observed above.

3. Control

3.1. Control as NP-Movement

Standard accounts of control are inadequate because they fail to explain the observed similarity to NP-movement. Better accounts were blocked for two reasons. First, it was observed as early as Rosenbaum 1970 that control and raising had different properties and hence it was a virtue for a theory to distinguish them. We will see below, however, that the standard differences between raising and control reduce to thematic differences. Second, prejudices due to the theta-criterion and the projection principle made it impossible to

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instead that the missing cell represents an impossibility, perhaps due to something akin to Chomsky's (1981) visibility condition requiring that a case-marked NP bear a theta-role.

unify raising and control, as illustrated here:

11) [e tried [John to leave]] ⇒ [John tried [e to leave]]

If the matrix subject position in (11) is not a theta-position, then the theta-criterion is violated since *try* has a subject theta-role to assign. If the matrix subject position in (11) is a theta-position, then the projection principle is violated since *John* would only have the relevant theta-role at S-structure and not at D-structure. Thus, there is no raising analysis of control under standard assumptions. Without the theta-criterion and projection principle, however, the movement is licit, assuming that an element can receive a theta-role via movement.

Standard differences between raising and control are still easily accounted for. In the case of expletive subjects, control is blocked because the expletive cannot bear the theta-role required by the control verb. Whether or not the expletive bears a theta-role in the general case, it cannot bear the agentive theta-role assigned by verbs like *try* for lexical reasons. These elements are simply not compatible with an agentive theta-role and so raising into a position in which such a role is assigned is not possible:

12) a. there seems e to be a man in the garden
b. * there tries PRO to be a man in the garden

A similar argument can be made regarding the idiom chunk evidence against treating control as raising. For reasons of thematic interpretation, the subject NP in a control structure cannot both be interpreted idiomatically, as required by the base position, and non-idiomatically, as required by the surface position:

13) a. the cat seems e to be out of the bag
b. * the cat tried PRO to be out of the bag

Other standard arguments (such as the argument from the interpretation of embedded passives) can also be handled by thematic principles in a raising theory of control.

3.2. Control as Chain Formation Without Movement

The previous section showed that a raising analysis of control is possible without losing the explanation of the core differences between what is traditionally called raising and what is traditionally called control (cf. Hornstein to appear). However, a movement analysis of control is unneccessary if we

assume that chains exist independent of movement. In a theory where chains can be generated freely, we can maintain the prohibition on raising into a theta position. Control and raising are unified in this approach as involving chains. The differences between PRO and NP-t are thematic in nature. PRO is the caseless tail of a two-theta chain; NP-t is the caseless tail of a one-theta chain.

4. Anaphor Binding

The similarity between NP-t and anaphor was observed as early as Chomsky 1973 but was captured in later frameworks only by stipulating that NP-t was an anaphor. The relation between the antecedent and these elements, however, was unified only as a case of binding and not as chain-formation. If there is a chain in NP-movement and not in anaphor binding, then we fail to capture the similarity other than by stipulation. On the other hand, if there is a chain involved NP-movement and anaphor binding, then the category *anaphor* can be eliminated entirely.[12] On this conception, there is no binding theory independent of chain theory.

In standard accounts, NP-movement forms a chain between the antecedent and the trace so that the NP can be associated with a theta-position. Further, NP-t is an anaphor and hence must be locally A-bound. An overt anaphor must also be locally A-bound, though it does not form a chain with its antecedent. Thus, chain-formation and binding are independent, and redundant in the case of NP-movement. However, if the local A-binding property can be reduced to the chain-formation property, then the redundancy can be eliminated. Hence, local A-binding should be incorporated into the definition of chain. That is, rather than stipulating that NP-t is an anaphor, we say that anaphora is a chain relation and the redundancy is eliminated.[13] We propose

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[12] There is an alternative whereby there are no chains and NP-t is an anaphor. This also eliminates the redundancy but requires that theta-roles are features. Without that stipulation, there would be no way to get the moved an NP assigned the correct theta-role. We will not pursue this possibility here.

[13] Howard Lasnik points out that the resulting theory resembles that of Chomsky 1973 quite closely. In that theory, both NP-movement and anaphor binding were viewed derivationally and hence were subject to the same conditions on rule application. The anaphor discussed in that work was *each other* and not *himself* and was related to its antecedent by a rule of *each-movement*. Given the claim of the current work that an anaphor is the spell-out of the tail of a chain with two theta- and case-positions, The distributional unity of reflexive pronouns and recipro-

that an anaphor is like an NP-t with case.[14] That is, an anaphor is the spell-out of the tail of a chain containing two theta-positions and two case-positions.

So far we have presented the following points. NP-movement, local anaphora and obligatory control are the same phenomenon. We have hinted at two possible hypotheses to account for this unity. The first of these allows raising into a θ-position and so NP-t, anaphor and PRO are unified under movement theory. PRO is simply NP-t when the antecedent is in a θ-position. Anaphor is NP-t with case. The second hypothesis does not allow raising into a θ-position is and so chains are formed freely, analogous to the theory of free indexation. NP-t, anaphor and PRO are unified under chain theory. On this view there will be a chain pronunciation algorithm which states that a chain with 2 θ-roles and 2 Cases has an anaphor at its tail; a chain with 2 θ-roles and 1 Case has PRO at its tail; a chain with 1 θ-role and 1 Case has an NP-t at its tail. In the next sections, we flesh out these alternatives.

5. How to Build and Pronounce a Chain

5.1. Alternative 1: Generate and Filter

The first alternative we will consider is one in which chains are generated freely. On this approach, any two NPs in a syntactic representation may be connected by a chain. However, these chains are filtered by an interface principle requiring a one-to-one correspondence between semantic entities and syntactic chains:

14) *Syntactic Uniqueness Principle (SUP):*
one semantic entity corresponds to one syntactic chain.

A syntactic representation is interpretable provided that the SUP is satisfied.

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cals leads us to the conclusion that reciprocals are also the spell-out of the tail of such a chain and that the late phonological choice between reflexive and reciprocal is driven by semantic considerations. This conclusion provides further evidence for the view that PF and LF are the same level of representation (cf. section Reasons to Distinguish NP-t, Anaphor and PRO). Distributional differences between reciprocals and reflexives (cf. Lebeaux 1983) must then follow from other principles.

[14] Compare Bouchard 's Principle of Lexicalization (Bouchard 1982, p. 41) which entails that an empty category will be pronounced if it has case.

Chains can be formed either by movement as in (15a) or by "base-generation" as in (15b–c).

15) a. John was expected e to leave <John, e> = JOHN
b. John expected himself to leave <John, himself> = JOHN
c. John expected PRO to leave <John, PRO> = JOHN

Chains formed between referentially distinct NPs will be blocked by the SUP:

16) John expected Bill to leave <John, Bill> ≠ JOHN
<John, Bill> ≠ BILL
Therefore: *<John, Bill>

Given the SUP, we must also block chains that are formed across syntactic domains that are too large, as in pronominalization structures or superraising constructions:

17) a. John expected Bill to see him <John, him> = JOHN
b. John was expected it to be likely e to win the race
<John, e> = JOHN

These structures satisfy the SUP but are not licit chains. We therefore need an additional locality requirement on chains. Only sequences which meet the locality requirement are licit chains:

18) C= $(a_i,...a_n)$ is a chain iff C is the maximal sequence such that for all j, $1 \leq j < n$, the link from a_j to a_{j+1} obeys the Minimal Link Condition[15]

Now, given the definition of chain in (18) and the well-formedness condition on chains in (14) we need an algorithm for pronouncing the elements of the chain. This is given in (19):

19) *Chain Pronunciation Algorithm:*
Given α and β, successive links in an A-chain, β in a theta-position:
$\beta_{[+case]}$ = anaphor
$\beta_{[-case]}$ = [e] (where [e] is NP-t or PRO)

5.2. Alternative 2: Dramatis Personae

An alternative approach places a semantic restriction on the numeration.

[15] The precise formulation of the Minimal Link Condition is beyond the scope of this paper. We assume something like the definition of Chomsky (1995).

Here, every entity in the semantic representation will correspond to one and only one element in the numeration, in accordance with the principle in (20):

20) *Unique Lexical Access Principle:*
each semantic entity corresponds to exactly one lexical item in the numeration.

On this view, syntactic chains are formed for syntactic reasons alone. NP-movement is driven by syntactic properties like case, in the standard fashion. Anaphor binding, on this view, also involves movement. Here the movement is driven by the need to identify a theta-role since the NP is assigned case in its base position.[16] Control structures involve movement both to identify a theta-role and to get case. Independent principles determine how the chain is pronounced, i.e., whether the tail is an empty category or an anaphor. These principles roughly follow the approach of Nunes 1995.

Nunes 1995 argues that deletion of the base position in a movement structure is required to satisfy the Linear Correspondence Axiom (Kayne 1995). If you didn't delete one position, you couldn't linearize the structure. Thus, NP movement leads to deletion of the base position, as in (21):

21)	a.	{John, was, expected, to, leave}	numeration
	b.	[was expected [John to leave]]	
	c.	[John was expected [John to leave]]	movement is copying; driven by Case
	d.	[John was expected [e to leave]]	delete base-copy

If the base position of a chain is a case-marked NP, a problem arises when this position is targeted for deletion. Because this position has case, it must be morphologically realized. Thus, a case-marked NP targeted for deletion must be replaced (rather than deleted) in order to meet the linearization conditions. Since an anaphor is the least specified NP (both morphologically and semantically) that can be used as a replacement, it is used as the replacement item, as indicated in the derivation (22a–d). If the base position in the structure (22c) is not a case position, then the NP in this position is deleted, i.e., pronounced as ø, as illustrated in (22e).

22)	a.	{John, expected, to leave}	numeration
	b.	[expected [John to leave]]	
	c.	[John expected [John to leave]]	movement driven by θ

[16] Note that this theory will require an assignment theory of case as opposed to a checking theory.

d. [John expected [himself to leave]] if +acc, base-copy = anaphor
e. [John expected [e to leave]] if -acc, delete base-copy

5.3. Some Implications

We believe that the chain pronunciation analysis outlined above leads to some interesting implications for the theory of movement in general. As an illustration, consider the nature of Strong Crossover violations, standardly treated as violations of Principle C:

23) * Who$_i$ did he$_i$ see e$_i$

Here, a chain must be formed between the position of the pronoun and the position of the wh-trace. That is, the structure of a sentence like (23) is really:

24) [CP *who* [IP *who* see *who*]]

This structure includes a chain connecting [spec, CP], [spec, IP] and the complement position. The chain between [spec, IP] and the complement position must be pronounced as <who, himself>, given the chain pronunciation principles outlined above. Thus, the element in [spec, IP] (and not the complement) must ultimately be treated as the variable bound by the wh-quantifier, leading to the pronunciation in (25):

25) who saw himself

The sentence in (23) simply cannot be generated. Strong-crossover structures do not arise because in all cases they can be pronounced as non-crossover structures. Thus, strong-crossover is not properly a syntactic phenomenon, but a morphological one.

We anticipate that similar considerations will be operative in the analysis of weak-crossover, parasitic gaps, improper movement and resumptive pronouns.

6. Reasons to Distinguish NP-t, Anaphor and PRO

Given the conclusion drawn above that the difference between anaphor, NP-t and PRO is simply a difference of allomorphy, i.e., of pronunciation, we would expect that there are no significant semantic differences between these elements. We don't expect the meaning of a formative to change simply because its environment triggers one allomorph over another. However, we

find that empty categories are more closely tied to their antecedents referentially than anaphors are. This point can be seen when we consider the Madame Tussaud examples first discussed by Jackendoff (1992). Jackendoff shows that an anaphor can refer to a representation of its antecedent. In a scenario in which Ringo Starr goes into a wax museum which has a set of statues representing the Beatles and Ringo trips when approaching them, we may say (26) to mean that Ringo fell on the statue that portrays him:

26) Ringo fell on himself

Lidz (1997a) labels this interpretation "Near-reflexive." Interestingly, an overt anaphors allow Near-reflexive interpretation but empty categories do not.

27) a. **Ringo** was expected **e** to be on display at the museum
b. **Ringo** expected **e** to be on display at the museum
c. **Ringo** expected **himself** to be on display at the museum

(27c) can have the reading that Real-Ringo expected that Statue-Ringo would be on display. However, such an interpretation is blocked in (27a-b). The gaps in (27a-b) cannot be interpreted as the statue unless the antecedent is also interpreted as the statue.[17]

Interestingly, in languages with multiple anaphors, interpretation varies with the form of the anaphor exactly along the lines of the varation between the empty category and the anaphor in English. In Kannada, for example, the morphologically simplex anaphor *tannu* must be completely identical with its antecedent, while the morphologically complex anaphor *tannu-taane* can be interpreted as a Near-reflexive:

28) a. **Ringo tann-annu** boolisikoNDa
Ringo self-ACC shaved-REFL
'Ringo shaved'
(=Beatle shaved Beatle; ≠ Beatle shaved Statue)
b. **Ringo tann-annu-taane** boolisikoNDa
Ringo self-ACC-self shaved-REFL

[17] Note also that in the cases where statue interpretations are allowed, we cannot interpret the antecedent as the statue and the anaphor as the real guy. An anaphor cannot do a better job of picking out a referent than its antecedent (Jackendoff 1992). We believe it to be a general property of chains that elements in higher positions in the chain are more directly linked to the referent identified by the chain than elements in lower positions. Space precludes elaboration of this point.

'Ringo shaved himself'
(=Beatle shaved Beatle OR Beatle shaved Statue)

Similarly, the affixal anaphor in English has the interpretive properties of an empty category.

29) **Ringo's self**-destruction surprised everyone

We cannot interpret (29) as Real-Ringo's destruction of Statue-Ringo.

A second distinction between empty categories and anaphors in English lies in the set of readings allowed in Comparative Deletion. Strict readings are licensed in comparative deletion structures involving the English anaphor *himself*, but not in comparative deletion structures that involve empty categories.[18]

30) a. **John** was expected **e** to leave before Bill was
b. **John** expected **e** to leave before Bill did
c. **John** expected **himself** to leave before Bill did

(30c) can mean that John expected himself to leave before Bill expected him to leave. (30b), however, cannot mean that John expected to leave before Bill expected him to leave. Similarly, (30a) has only the sloppy reading.

The difference between English *himself* and empty categories is mirrored again in the contrast between types of anaphors in Kannada:

31) a. Rashmi Siita-ginta cheenage tann-annu rakshisi-koLL-utt-aaLe
Rashmi Sita-COMP better self-ACC defend-REFL-NPST-3SF
'Rashmi defended herself better than Sita defended herself'
'*Rashmi defended herself better than Sita defended her'
b. Rashmi Siita-ginta cheenage tann-annu-taane rakshisi-koLL-utt-aaLe
Rashmi Sita-COMP better self-ACC-self defend-REFL-NPST-3SF
'Rashmi defended herself better than Sita defended herself'
'Rashmi defended herself better than Sita defended her'

What we have shown to this point is that certain chains differ from each other interpretively in patterned ways. We will say that there are two sets of properties: the Variable Properties (i.e., properties of variables) and the Near-reflexive Properties:

32) a. *Variable Properties:* * Near-reflexive interpretation
* Strict-identity in Comparative Deletion

[18] Note that this is different from VP-ellipsis which allows only sloppy readings for both anaphors and empty categories.

b. *Near-reflexive Properties:* Near-reflexive interpretation
Strict-identity in Comparative Deletion

Crucially, the difference in interpretation between the elements with Variable Properties and the elements with Near-reflexive Properties cannot be attributed to a difference in overtness because the set of elements with Variable Properties includes both overt and covert elements: English empty categories, English affixal reflexive, and Kannada simplex anaphor. The difference can also not be attributed to Case because in Kannada the simplex anaphor is casemarked and has Variable Properties, like English empty category which does not have case. Finally, the differences cannot be attributed to theta-theory because the two kinds of anaphor and PRO are all alike in this respect. That is, the anaphors and PRO are all members of chains with two thematic roles and yet some anaphors have Variable Properties and some have Near-reflexive Properties.

We now find ourselves in the following state of affairs. We have syntactic reasons to think that NP-t, PRO and anaphor should be unified under the chain relation. But, we have semantic reasons to think that the unification is not total. Taking the syntactic evidence that NP-t, PRO and anaphor should be unified as allomorphs leads us the the conclusion that the pronunciation properties of a chain feed its interpretive properties. The form of the tail of the chain provided by the Chain Pronunciation Algorithm (CPA) determines the range of interpretations provided to that chain. In a theory in which PF and LF are distinct, we must wait until PF to apply the CPA. However, doing so makes the Near-reflexive facts mysterious. How can the PF properties of a chain be relevant to interpretation, given that the interpretive component does not have access to PF? If PF and LF were the same level, this problem would not arise.

To make matters even more complicated, we are also led to the conclusion that the interpretive properties of a chain feed its pronunciation properties. Since there is no syntactic difference between simplex and complex anaphors in Kannada with respect to their relationship to an antecedent, the factor determining which to use is the intended interpretation. This may seem in some ways to be a simple matter of lexical choice, like whether an NP is pronounced *cat* or *dog*, since here too the pronunciation properties have interpretive consequences. However, the analogy is not accurate. Whether an NP is *cat* or *dog* has no effect on the syntactic computation; the phonological matrix is atomic as far as the syntax is concerned. Similarly, the choice of anaphor should have no effect on the syntactic computation. But the presence of an anaphor at all is a consequence of the syntactic computation. The

choice of anaphor (a morphophonological choice) does have semantic consequences, however, and indicates that semantics feeds phonology. This case is different from the choice between *cat* and *dog* because it is a *nonlexical* distinction. The syntax tells you that you need a chain with a certain choice of pronunciation and the semantics tells you which pronunciation is best. In the case of *cat* vs. *dog*, syntax is irrelevant; but, in the case of a simplex vs. complex anaphor, syntax gets you to the choice point. Saying that the choice of anaphor is like the choice of *cat* vs. *dog* misses the important generalization that the distinction between anaphors in Kannada is the same as the distinction between overt and covert elements in English. The lexicon is irrelevant in the choice between anaphors and empty categories in English and so must be irrelevant to the choice between anaphors in Kannada. The conclusion is thus that we need PF decisions to be made on the basis of LF representations. It is the interpretation which leads to the morphophonological choice.

In order to account for the fact that the pronuncation properties of a chain have semantic conseqences and that the interprevie properties of a chain have phonological consequences, we claim that a chain is simultaneously visible to both morphophonology and semantics. In order for the chain to be available to two extrasyntactic components, we need a grammatical architecture in which there is a single level of representation, *Phono-Logical Form*, which provides the input to both morphophonology and semantics.

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Deixis and the Interactional Construction of Context

Simona Pekarek

1. Introduction

Natural languages provide speakers with options and with constraints upon these options. A substantial body of research has shown that what motivates speakers' choices of linguistic forms are not only linguistic constraints but also social and interactional constraints of various types (Goffman 1974) and, furthermore, that these choices are part of the very means by which speakers encode or 'indicate' dimensions of the context of talk (Gumperz 1982).

Much less attention has however been paid to the ways in which speakers' choices of linguistic forms not only reflect properties of the context but also ***contribute to creating*** the interactionally relevant dimensions of context. This is the idea that I will explore in the present paper by examining speakers' deictic use of the French pronominal forms 'on'/'nous' [*we*] and 'je' [*I*] in a segment of face-to-face interaction. My purpose, thereby, is twofold. First, I aim to illustrate that the motivations and the functions of speakers' coding options are crucially related to the structure of the activities accomplished in the process of talk. And second, I want to argue that a contextualized analysis may provide a rich complement to evidence drawn from the study of the use of forms in isolated utterances or utterance pairs, in that it allows us to interpret forms of reference beyond their purely referential functionality as part of the means by which talk is constructed as a social activity.

2. Indexicality, Context and Social Interaction

Since the pioneering work of Bar-Hillel (1954), Benveniste (1966 [1956]), Bühler (1964 [1935]) and Jakobson (1971 [1957]), the meanings and functions of deictical expressions have been seen as intrinsically linked to situational contexts. Person deictics, in particular, have received extended attention regarding their social functions, mainly with regard to terms of address (i.e. the tu-vous distinction; e.g. Brown/Gilman 1960) and other deference indexes. Most importantly, the dialogical relation between interlocutors at a given moment in space and time is understood as the basis of deixis (Fillmore 1975). Given these grounds, it is somewhat surprising that research tends to focus on either monological evidence or utterance pairs extracted from their larger interactional contexts. It is also notable that while research has provided many important insights into the situational dependency of the use of deictical expressions (i.e. their indexical relation to context), very little attention has been paid to their possible contribution to the

creation and modification of such interactionally relevant contexts. As Hausendorf (1995) has persuasively argued recently, this seems primarily due to the prevalent reliance on a fundamentally static notion of context.

With the recently growing interest in the various ways grammar and interaction are interrelated, the use of forms in discourse starts to be more systematically approached from a perspective that sees context (i.e. the participants' understanding of the relevant context) as being continuously accomplished by the participants. Findings by authors such as Hausendorf (1995) on deictical expressions in particular, and Fox/Ford (1996), Goodwin (1996), Schiffrin (1992) as well as, much earlier, Sacks (1992) and Schegloff (1972) on referential expression in general indicate that speakers' choices of referential expressions not only index contextual dimensions of a communicative event but also contribute to the very organization of that event.

Drawing from this line of research, I will argue that, if, as Silverstein (1976) has put it, "indexical modes (...) link speech to the wider system of social life" (p. 53), they link it by that very fact to the social interactional courses of which social life is made and, therefore, to the microscopic steps in the process of its ongoing constitution. Such a point of view starts from the assumption that the social agent lives in a recursive relationship to the structures that surround him or her: social actions are creative of contexts and sensitive to contexts (Garfinkel 1967). According to this position, participants do not come into an interaction with a ready-made understanding of the situational context that remains unchanged throughout their encounter, but continuously recreate an understanding through their very interaction (Garfinkel 1967, Goffman 1974, Gumperz 1982, Sacks 1992). This relies on a concept of context which defines it not as static, given once and for all, but as a dynamic object continuously made mutually manifest[1].

Such an understanding of context is a theoretically and methodologically consequential position that, as has been persuasively illustrated recently (see the papers assembled in Ochs/Schegloff/Thompson 1996), radically affects the way we conceptualize the relation between referential expressions and discourse activities and, more generally, between linguistic structure and interactional dynamics.

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[1] It also implies a representational notion of context (context = the interactant's understanding of the relevant parameters of their encounter), and, in this specific point, meets positions proposing a representational notion of referents that blurs the distinction between anaphora and deixis (cf. Brown/Yule 1983). Following such a notion of context, and viewing language use as pervasively indexical, the present discussion of deixis may be relevant to some crucial aspects of referential processes in general.

3. The Data and the Initial Problem

The data I will examine consist of a transcribed audiotaped classroom French second language lesson in a Swiss high school. The students' first language is Swiss-German, they are 18 to 19 years old and have reached a very advanced level of French. They have had the present French teacher for more than 3 years. The analysis will focus on the following sequence of discussion relating to the (im-)possibilities of communication in the classroom:

(example 1:)

1 T: bon maintenant **je** vous pose une question très précise↓
*so now **I** ask you a very precise question↓*

2 **essayons** eh d'analyser la communication telle qu'elle se fait
let's try uh to analyse the communication as it happens

3 maintenant **essayez** de mettre ensemble tous les éléments . (...)
*now **try** to assemble all the elements . (...)*

(....)

14 B: il **me** manque les arguments .. et c'est .. un thème ehm duquel on ne
I don't have any arguments .. and it's .. a topic uhm one

15 peut pas≠ ou: bien **MOI je** ne peux pas discuter très longtemps..
*can't ≠or: **ME** I cannot talk about very long ..*

16 T: **vous me** dites pourquoi↑
*will **you** tell **me** why ↑*

17 B: **je** ne sais pas maintenant je ne peux pas (3s) (classe: rires)
I don't know now I can't (3s) (class: laughter)

18 C: d'une part **je** suis un peu fatigué et (classe: rires)
*on the one hand **I** 'm a bit tired and (class: laughter)*

19 C: d'autre part eh le sujet **m**'ennuie un peu↓
*on the other hand uh the subject bores **me** ↓*

20 T: **vous** pourrez expliquer pourquoi ça **vous** ennuie
*can **you** explain why it bores **you***

21 C: parce que **je** ne suis pas très intéressé au: parce qu'**on** écoute
*because **I**'m not very interested in: because **we** always listen*

22 toujours la même chose . dans l'école↓ . . les médias↑ **je** pense↓
*to the same thing . at school↓ . . the media↑ **I** think↓*

23 parce que↑ . [c'est pas des]
because↑ . [it's not]

24 T: [attention **on** parle pas] . oui . actuellement **on**
*[attention **we** aren't talking] . yes. at the moment **we***

25 parle pas tellement/ maintenant ***je*** parle pas de médias
aren't talking so much/ now I'm not talking about the media
26 hein↑ . **je** parle de communi [cation↑]
am I↑ . I'm talking about communi [cation↑]
27 C: [jä mais] mais **je** pense que **nous** avons
[yeah but] but I think we've been
28 assez parlé avec **vous** des de la communication . . et c'est
*talking enough about communication with **you** . . and it's*
29 presque toujours la même chose↓
almost always the same thing ↓

As a preliminary, an explanation of some French terms of person reference is in order. As this is a very complex subject, I will limit myself strictly to the distinctions relevant to the present data. 'Je' means *I*. 'Nous' is the first person plural pronoun which, like the English *we*, can be used inclusively, i.e. including the addressee, and exclusively, i.e. excluding the addressee. 'On' is a hybrid form, abundantly discussed in literature (cf. Riegel et al. 1994, Freyne 1992). It is used exclusively in subject position and its basic value is the one of an impersonal pronoun, referring either to one or several persons which the speaker does not want to or is not able to identify precisely, or to people in general. Depending on its context, however, 'on' can move on a continuum between ± definite and ± indefinite. In spoken French, 'on' is very frequently used in place of the first person plural pronoun 'nous' (English *we*) with no specific connotational charge, carrying either an inclusive or an exclusive value.

With these distinctions in mind, let us turn to lines 24 to 26 in the above transcript which will serve to introduce, on empirical grounds, the problem addressed here. The teacher's turn shows two instances of what has become called self-initiated self-repair in conversation analysis (Schegloff/ Jefferson/ Sacks 1977). The second case (l. 25) involves a recoding of person reference whereby the speaker shifts the origo of the discourse activity from a collective source ('on' = *we*, teacher and students) to an individualized source ('je' = *I*, the teacher). Dwight L. Bolinger once wrote: "What speakers avoid doing is as important as what they do" (Bolinger 1953, quoted in Schegloff/ Jefferson/ Sacks 1977). In this sense, what interests me here is why the teacher might choose not to use the collective inclusive referential expression 'on'.

One plausible interpretation of the referential recoding might consist in stating that the speaker undertakes a self-correction, thereby adjusting his statement on the level of its propositional content: he himself is not talking about the media, but about communication. There are however two interconnected problems that arise with such an interpretation:

- It is based on an analysis of a sequence in isolation (as opposed to one that takes into account its larger discourse context) which leads us to treat as a monological sequence something which in fact is part of an interactional activity[2].
- Due to the very exclusion of the larger discourse context, the interpretation cannot but treat the role of the deictical expressions in terms of a purely referential functionality (cf. Silverstein 1976), and thereby limit the function of the repair to the propositional content.

In what follows, I will propose an alternative interpretation by complementing a content-based account with an exploration of what is ***done*** by the change of deictic expressions and how this doing relates to the more general referential strategies pursued by the parties at talk.

4. Referential Strategies and Discourse Activities

4.1. The Teacher's Referential Codings

The teacher's discourse shows a functional relationship between his use of the inclusive 'nous' or 'on' and the type of activity he is performing. This is the case for instance in the very beginning of the discussion (l. 1-3), where the teacher explicitly encodes the reciprocal positions to be held by himself and by the students in the course of the accomplishment of the actual classroom task. He follows a decentering axis leading from the first person singular 'je', to the first person plural inclusive of the students and encoded in the morpho-syntax of the verb 'essayer' ('essayons' = *let's try*) and finally to the second person plural centred on the students ('essayez' = *try*). By these very means, the teacher defines himself as being responsible for proposing the task at hand (l. 1), while charging the students with accomplishing it (l. 3). However, in between this rigid definition of the asymmetrical reciprocal positionings, the teacher inserts a terrain of solidarity, encoded in his *let's try to assemble....*(l. 2). The inclusive use of the first person plural projects teacher and students for an instant on equal ground, creating a collective perspective

[2] The internal structure of the sequence is a first indicator of its fundamentally dialogic nature, which will be further developed under point 4.3. The speaker organizes his talk, by means such as syntactic incompletion of the clauses and word interruption (l. 24/25), so as to accomplish his change from 'on' to 'je' without losing control over the turn at talk (cf. Sacks/ Schegloff/ Jefferson 1974). It is only after this that he solicits the tacit agreement of his interlocutors (by his 'hein', accompanied by rising intonation, l. 26) before reinforcing the attribution of the responsibility for the discourse to himself by repetition of 'je'. See Pekarek (in press) for a detailed discussion.

on the task at hand, and thereby mitigating the teacher's control activity just at the moment when the asymmetry between them is particularly relevant[3].

The following sequence provides another example of this:

(example 2:)
alors **nous** allons regarder quelque:s quelques sujets plus précis **vous**
so w e are going to have a look at so:me some more specific subjects y o u
allez choisir ce que **vous** voulez à discuter . communication entre
are going to choose what y o u want to talk about . communication between
élèves et professeur communication entre homme et femme
students and teacher communication between man and woman
communication entre suisses et étrangers communication entre
communication between Swiss and foreigners communication between
suisses alémaniques et suisses romands . . eh: **j'**aimerais savoir où sont
German speaking and French speaking Swiss . . uh: I'd like to know where
les difficultés≠ où sont les problèmes où: sont: où est l'intérêt
the difficulties lie≠ where the problems are whe:re are: where the interest is
. . . **prenons** peut-être tout d'abord la question la plus actuelle↑
. . . let's maybe first take the most topical question↑
la communication entre élèves et professeur↓ (8s) Hansjürg
communication between students and teacher↓ *(8s) (name of student)*

[3] Note that although this utterance corresponds to what is often identified as an indirect speech act, there are two substantial reasons — one empirical and the other theoretical — for which an approach in terms of speech acts does not seem satisfactory for addressing the questions raised by the present data. First of all, the concrete problems addressed here pose themselves in terms where one specific occurrence of a form takes its function not by virtue of its relation to abstract patterns of speech regularities, but from the concrete patterns of oppositions occurring within a slot of talk (cf. point 4.3 infra). These patterns are not limited to one specific speech act type, but need to be accounted for across different occurrences (*we aren't talking about (...); let's try to assemble; we are going to have a look at (...); we always listen to the same thing*), and in opposition to other coding devices (*I am not talking about communication; when I talk to another student...*). Second, a position that considers linguistic forms under their aspect as ready-made instructional or interpretive markers, views hardly compatible with a perspective that sees these forms as functionally tied to *locally* instantiated social (and socio-cognitive) activities. In the present case, we are concerned not with type level representations that rely on the opposition between standard propositional meaning and departure from it, but with highly context sensitive tokens of language in use.

In this sequence again, the 'je' [*I*] distributing the task and the 'vous' [*you*] responsible for its accomplishment are counterbalanced by two inclusive first person plural references: the first within a definition of the task at hand (*we are going to...*) and the second, encoded in the morphosyntax of the verb 'prendre' ('prenons'), within a directive act. What becomes particularly apparent here is that the inclusive use is a way of masking — but not eliminating — the asymmetry of the reciprocal positionings: after having proposed to the students free choice as to what type of communication they want to talk about, the teacher closes his turn by making himself that choice.

In both of the quoted cases, the function of the first person plural inclusive reference is complex. If, by choosing an expression signalling shared group identity, the speaker introduces a link to his interlocutors, he also reduces his own responsibility and leads the addressees into an obligation pattern, as Mühlhäusler/Harré (1992, 178) have pointed out. However, as the collective references are placed in task distributing and directive activities produced by the one in the institutionally dominant position, their effect consists in attenuating the power of these very activities[4]. This point provides support for the notion that the motivations for speakers' coding options cannot be reduced to the informational level of talk but interact with the structure of the activities accomplished by talk (Ford/Fox 1996, Goodwin 1996, Pekarek 1997 and 'in press'). Clearly, the teacher's choices of deictic expressions appear to be a means by which he regulates a come-and-go between the affirmation of a dominant position and the diminution of the asymmetry according to his communicative objectives (defining the task, asking questions, making the students speak, etc.).

4.2. The Students' Referential Codings

The teacher's systematically inclusive use of 'nous' and 'on' sharply contrasts with the students' persistently exclusive use of these same expressions. A student's turn immediately following the repair sequence persuasively illustrates this point (l. 27/28). On one hand, the student responds to the teacher's repair section by implicitly confirming the correctness of the teacher's initial (!) statement according to which they (i.e. teacher and students) are talking about communication at that moment in class. On the other hand, by his very way of putting into words what in fact is a criticism addressed to the teacher, the student openly contrasts the class (exclusive use of 'nous') with the teacher ('vous'). This is not an isolated moment, as the following example, taken from the same lesson, illustrates. Here, the 'on' takes a generalized value (cf. pt. 3 supra) referring to any member of the collective of students

[4] This is a procedure that has also been identified for other types of asymmetrical situations, such as interviews for instance (Pekarek 1993).

('on' = *you/one*, as a student), which the speaker is part of, and addressed to 'a teacher', who stands for the category teachers and is excluded from the group designated by 'on':

(example 3)
comme élève **on** ne peut pas parler franchement avec un professeur↑
*as a student **you** can't talk frankly to a teacher*↑
parce que **on** doit toujours eh penser s'il peut: être fâché ou
*because **you** always have to uh consider whether he ca:n be angry or*
s'il peut être . . si **on** dit quelque chose qu'**on** ne . . pense pas comme ça↑
*whether he can be . . if **you** say something **you** don't . . mean like that*↑
. . c'est quand **je** parle avec un: un un autre élève . **je** peux aussi dire
*. . it's when **I** talk to a: a another student . **I** can also say*
des choses qui sont un peu: . qui ne sont pas très clairs
things that are a little: . that are not very clear

What is particularly interesting about this example is the consistency with which the 'on', relating to the collective of students, confronts the category 'teacher' as long as there is some criticism of the latter involved, whereas the individual 'je' overtakes as soon as the teacher ceases to be the object of criticism.

The two quoted examples indicate that the students' systematic use of the exclusive 'on' is functionally tied to their institutional positionings as students as well as to the type of activity they accomplish: this use serves to dissimulate the antagonistic individual speaker, placed at the lower end of an asymmetrical relation, behind a collective and eventually to avoid possible sanctions for that individual, emanating from the one legitimately placed at the upper end of the asymmetry.

The examination of the teacher's and the students' coding options shows thus that the same linguistic forms are used by the two parties for opposed communicative ends. Their choices of person reference amongst the semantically and syntactically available — though not equivalent — options (in the present case 'je', inclusive 'nous'/'on' and exclusive 'nous'/'on') depend on and contribute to establishing the structure of the actions performed by talk (such as to criticize, to direct or to define a task) as well as the interactional positionings of the participants. This observation is consistent with findings by Ford/Fox (1996) and Goodwin (1996) in indicating that formal choices are functionally tied to a larger interactional and/or institutional context of which they contribute to activate, in a dynamic and variable fashion, the contextual relevances. With this in mind, let us return to the repair section with which we have started the analysis.

4.3. The Immediate Discourse Context of the Repair Sequence

What happens immediately before the repair section pertains to what I have just described as a collective criticism strategy employed by the students: after some criticism being put forward from the individual standpoints of the students' je', to which the teacher responds with curiosity (l. 16, 20), student C directly attacks the teacher's choice of the topic of discussion from the position of a collective 'on', excluding the teacher (l. 21 to 23). The very occurrence of the teacher's twofold repair in what follows as well as its overlap with student C's previous turn manifest the disconcerting effect of the student's collective criticism on the teacher. These elements concur to indicate that the student's use of a collective exclusive 'on' at the very moment of a criticism contributes to ***change*** the contextual relevances for the teacher. This observation confirms that the repair sequence and the formulation of reference are fundamentally interactional activities (see note 2): they are ***reactions*** to a contextual change accomplished by immediately preceding talk and need to be interpreted as such.

In fact, we have seen that the teacher uses an inclusive, solidarity marking 'on' or 'nous' (*we* = students and teacher) in order to mitigate the power of his control activities. Now, such a use would ***not*** be functional as a reaction to a criticism, addressed to the teacher himself and reinforced through reference to a collective source. On the contrary, it is the affirmation of the individual 'je' — the teacher in his dominant position who, in addition, has the legitimate right to insist *'I am talking about communication'* — that responds as a defence to the 'collective' attack[5].

This is how the question of what is ***not*** chosen becomes relevant, and how what is or is not chosen is related, as a part of locally accomplished activities, to general communicative strategies pursued by the parties at talk. The recoding leading from the use of 'on' to 'je' is reactive to preceding talk and builds upon an opposition that is coherent with these larger strategies.

5. Discussion

The analysis has illustrated that the repair of the referential coding in example 1 is not limited to a correction of the propositional content of the utterance but is functionally tied to the larger referential strategies of teacher and students by which the social group of the class is moulded into different interac-

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[5] Note with regard to what has been said above (note 3) that an interpretation in terms of speech acts would not allow to account for the repair as part of locally accomplished strategies, building on the opposition between the three referential forms 'je, inclusive 'on'/'nous' and exclusive 'on'/'nous', and reflected in the speakers' choices amongst these forms.

tionally relevant shapes (students; student and teacher, teacher alone). What seems particularly interesting about the present case is however not so much the definition of a limited number of motivations for the choices of deictic personal pronouns and their communicative functions (e.g. mitigation of control or reinforcement of criticism), beyond the 'standard' function relying on the tu-vous distinction. It is rather the following observations:

- The analysis provides empirical evidence supporting the notion that what motivates choices among the possibilities offered by the linguistic system is not a pure indexical or referential functionality. These choices are also functionally embedded in the ***action structure*** of discourse, the aims pursued by the participants and their interactional positionings.
- The consistency with which these choices are made suggests that besides their local effects, it is their ***structures of opposition*** within a segment of talk that contribute to determining their communicative functions.
- These choices appear to be ***creative*** in that they contribute to dynamically establishing the participants' understanding of the social interactional context, to making these understandings mutually manifest and thereby to regulate the social co-ordination of their actions.

These findings suggest that a more encompassing understanding of the motivations and the interactional effects of speakers' coding options might be reached by investigating these options not only from the aspect of their dependency of context but also from the aspect of their contribution to the creation of interactionally relevant contexts.

6. Concluding Remarks

I wish to conclude this paper by alluding to some more general questions that arise from the anlysis with regard to the relationship between text and context as well as the one between grammar and interaction.

The various ways in which the use of forms appears to be dependent on a dynamically evolving action structure of talk indicate that we can assume neither a stable relation between forms and functions, nor a static relation between text and context (cf. Fox 1994, Schiffrin 1994). This not only hints at the limits of context-free (and co-text-free) characterizations of linguistic forms; it also suggests the need for models that allow for a dynamic notion of context and can account for linguistic tokens not merely in terms of direct or stable reflections of communicative events but as part of speakers' strategically deployed and locally accomplished syntactic choices.

This also suggests an interactionally based notion of indexicality along the lines proposed by Goodwin (1996) who views formal choices as part of the indexes by which interlocutors manifest to each other their orientation towards interactionally established and maintained frames for interpretation

(i.e. contexts). To adopt such a point of view means to follow a perspective which considers language as action, and as pervasively indexical, not only in terms of the reference of deictic expressions, but above all in terms of a continuous modulation of context, of its continuous production through a discourse-action in constant accomplishment (Garfinkel 1967). This offers an interesting basis for exploring speakers' syntactic choices not only in terms of information management and other processing dimensions but also with regard to their contribution to interactional organization.

Symbols Used in Transcripts:

A, B, C	students	[ ]	overlap
T	teacher	↑	rising intonation
. .. ...	short pauses	↓	falling intonation
(3s)	pause (nb. of seconds)	THE	heavy stress
oui:	stretching of a sound	( )	transcriber's comments
/	interruption of a word	xx	unidentifiable sequence

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Complex Small Clauses

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1. The Complex Small Clause Structure

The structure of an ordinary Small Clause (SCl) that has been adopted in the Generative literature since Stowell (1981), (1983) is as represented in (1).

(1) $[_{XP}$ DP $[_{X'}$ X]] where X = A, V, N, P

In this structure, the DP that will function as the subject of the SCl is taken to be base-generated in the specifier of the lexical head X, where it is assigned a theta-role by the SCl-predicate X′. Furthermore, it is predicted that this DP later moves to a higher functional projection to check structural Case.

The basic idea behind the notion of a Complex Small Clause (CSCl) that I propose here consists in allowing the DP in the structure in (1) to be directly merged with a functional head F that is part of the functional domain of the lexical head X. This could be schematically represented as in (2).

(2) $[_{FP}$ DP $[_{F'}$ F_X ... $[_{XP}$ $[_{X'}$ X]]]]

where XP = lexical domain
FP = functional domain of X

One immediate question that arises from the structure in (2) concerns the way in which the thematic specification of X is satisfied. As has been generally accepted, all theta-marking, including the assignment of external theta-roles, is carried out in a strictly local fashion. In (2), however, we can see that the subject of X is not base-generated in Spec, XP, but in Spec, FP. My position on this point is to consider that in Spec, XP there is a null argument that satisfies the thematic properties of the lexical head X. As we will see below, this null argument will be pro or PRO depending on the Case properties of the functional domain of X. All in all, the final structure of a CSCl that I propose in this paper is the following:

(3) $[_{FP}$ DP $[_{F'}$ F_X ... $[_{XP}$ pro / PRO $[_{X'}$ X]]]]

Like in an ordinary SCl (see (1)), here the lexical DP receives its theta-role from the predicate of the construction, that is, the constituent introduced

by F′. Throughout the derivation this DP will move to a higher functional projection outside FP in order to check structural Case. On the other hand, the null argument pro / PRO is assigned a theta-role by the predicate X′, and later checks nominative or null Case within the FP-projection.

We will also see that the null argument ends up receiving its referential value from the lexical DP. This will be possible since that DP is found in a position hierarchically higher than the position occupied by the null argument.

The disposition of the lexical DP and the null argument according to the structure in (3) implies the existence of two predicative domains, one included within the other, in every single type of CSCl. The first one, which I call the *external domain of predication*, is constituted by the lexical DP and the predicate F′. Meanwhile, the *internal domain of predication*, which is the one satisfied within the predicate of the CSCl (F′), is set up by the null subject pro / PRO and the predicate X′.

The purpose of the following sections is to show how the CSCl-structure presented in (3) works when it is to be applied to real examples.

2. The Pseudo-Relative

2.1. The Syntactic Behavior of the PR

The Pseudo-Relative (PR) is a construction that is found in the majority of the Romance languages. It is formed by a DP, a C, and a finite verb which agrees in person and number with that DP. Some examples are given in (4).

(4)	a.	He	visto	a	*Juan*	*que*	*corría.*	(Spanish)
	b.	He	vist	*en*	*Joan*	*que*	*corria.*	(Catalan)
	c.	J′ai	vu		*Jean*	*qui*	*courait.*	(French)
		have.I	seen	to the	John	that	ran.he-$_{IMPERF}$	
		`I saw John running.′						

As can be observed, the elements that make up the PR and the word order in which these elements are presented at Syntax are identical to the elements and the word order normally found in ordinary relative clauses (R). There exist, however, many arguments which conclusively demonstrate the distinct nature of these two constructions. Some of them are the following:

(i) The DP introducing the PR can be a proper name. This distinguishes the PR, (5), from the restrictive relative, (6) (the examples are in Spanish).

(5) He visto a *Juan* que corría en el maratón.
have.I seen to Juan that ran.he-$_{IMPERF}$ in the marathon
`I saw Juan running in the marathon.´
(6) *He conocido a *Juan* que corría en el maratón.
have.I met to Juan that ran.he-$_{IMPERF}$ in the marathon
`I met Juan who ran in the marathon.´

(ii) The DP can only be interpreted as the subject of the verb contained in the PR, (7), whereas it can correspond to any argument in the R, (8).

(7) *He visto a *María* que Juan besaba.
have.I seen to María that Juan kissed.he-$_{IMPERF}$
`I saw María being kissed by Juan.´
(8) He conocido a *la chica* que Juan besaba.
have.I met to the girl that Juan kissed.he-$_{IMPERF}$
`I met the girl whom Juan kissed.´

(iii) The DP can be cliticized and extraposed only in the PR:

(9) a. *Lo* he visto que besaba a María.
him have.I seen that kissed.he-$_{IMPERF}$ to María
`I saw him kissing María.´
b. *¿A quién* has visto que besaba a María?
to who have.you seen that kissed.(s)he-$_{IMPERF}$ to María
`Who did you see kissing María?´
(10)a. **Lo* he conocido que besaba a María.
him have.I met that kissed.he-$_{IMPERF}$ to María
`I met him who kissed María.´
b.**¿A quién* has conocido que besaba a María?
to who have.you met that kissed.(s)he-$_{IMPERF}$ to María
`Who did you meet who kissed María?´

(iv) The tense of the PR must concur with the tense of the matrix sentence, (11). This property is not observed in the R, (12).

(11)He visto a María que { *corría* / **corre* / **correrá.*}
have.I seen to María that ran.she-$_{IMPERF}$ / runs.she / run.will.she
`I saw María running / is running / will run.´

(12)He conocido a la chica que { *corría / corre / correrá.*}
have.I met to the girl that ran.she-$_{IMPERF}$ / runs.she /run.will.she
`I met the girl who ran / is running / will run.´

Constituency tests show that our construction is formed by a single constituent, at least when it is subcategorized for (Spanish examples):

(i) The whole structure can be replaced by the neuter clitic *lo*.

(13)He visto a [María que corría.] Yo también *lo* he visto.
`I saw María running. I saw *it* too.´

(ii) It can be clefted as well as pseudo-clefted:

(14)Fue a [Juan que corría] que vi aquella noche.
`It was Juan running that I saw that night.´
(15)Lo único que vi aquella noche fue a [Juan que corría.]
`The only thing that I saw that night was Juan running.´

2.2. Analysis

The analysis that I propose for the PR is represented in (16).[1]

(16)[$_{CP}$ *Juan* [$_{C'}$ *que* [$_{IP}$ [$_{I'}$ [$_{VP}$ *pro* [$_{V'}$ *corría*]]]]]]

In this structure the DP *Juan* is directly merged with C. In this position it presumably receives its theta-role from the CSCl-predicate, that is, C´. Then, it raises to the matrix clause to check accusative Case. This latter step is suggested by the accusative form employed when this argument appears cliticized onto the main verb, as shown in (17).

(17)*Lo* he visto que corría.
him-$_{ACC}$ have.I seen that ran.he-$_{IMPERF}$

On the other hand, the null subject pro is base-generated in Spec, VP as the external argument of the verb, and checks the nominative Case provided by the finite tense in Spec, IP.

[1] To simplify I do not represent the functional domain introducing a SCl/CSCl, i.e., AgrP or PredP, which would be immediately above CP in (16).

2.2.1. Against a Raising Hypothesis

An apparently simple way out to account for the presence of the lexical DP in a position preceding the C in the PR would be to suppose that this DP actually moves from an IP-internal position to Spec, CP. A hypothesis of this sort, however, carries both syntactic and semantic problems.

The syntactic problem concerns the type of feature which would in principle trigger this movement. In this regard we could say that the movement of the DP to Spec, CP should be understood as a previous step for a further movement of this DP towards the matrix AgroP, where it must check accusative Case (see (17)). Note, however, that this stipulation would leave unanswered what argument checks the nominative Case of the embedded finite tense. Of course, we could suppose that it is the same DP that checks this Case, but this would mean that this argument ends up checking two structural Cases, an unwelcome result.

The semantic problem is that it would lead us to accept that the movement of the DP to Spec, CP can change both the semantic category of the PR, and the meaning of the main verb. A perception verb has an epistemic interpretation when it is combined with an ordinary CP-complement. In other words, when it appears with a proposition the interpretation of this verb is similar to the interpretation of a verb like *to realize*, as shown in the examples in (18). Interestingly, the only reading available for the perception verb when it combines with the PR is the nonepistemic one, that is, that of sensible perception. This explains the ungrammaticality of sentences like that in (19). Here the epistemic interpretation of the perception verb is forced by the dissociation of tenses. The problem is that the complement used is the PR instead of an ordinary CP-complement. This indicates that the PR is semantically interpreted as an event, rather than as a proposition.

(18)a. He visto que Juan correrá en el maratón. ^{OK}[epistemic]+[CP, Prop]
b. I saw that John is going to run in the marathon.

(19)*He visto$_{PAST}$ a *Juan*$_i$ que t_i correrá$_{FUT}$. *[epistemic]+[PR, Prop]
(cf. He visto$_{PAST}$ a Juan que corría$_{PAST}$.) ^{OK}[sensible]+[PR, Event]

Now the movement of the DP from IP to Spec, CP would bring us to say that the semantic category of the PR changes from proposition to event, and that the perception verb changes from an epistemic interpretation to a sensible interpretation. Leaving aside the conceptual problems that this conclusion conveys, the fact that the semantics of the complement and the se-

mantics of the verb are both unaffected when it is a wh-phrase the element moved to the specifier of the embedded CP provides further evidence against the raising hypothesis. Compare (19) and (20).

(20)a Ya he visto *cuándo*$_i$ correrá Juan. t_i. ^{OK}[epistemic]+[CP, Prop]
b. I have already seen$_{PAST}$ *when*$_i$ John is going to run$_{FUT}$ t_i.

2.2.2. French and *pro*

The idea that there is a pro in the PR leads us directly to the question regarding the licensing of this null subject in French. Modern French possesses the PR (see (21)) despite the fact that it is a non-pro drop language, as opposed to Old French which was pro-drop (Adams 1987).

(21)Pierre *la* voit *qui parle à Jean.*
Pierre her sees that talks.she to Jean
`Pierre is seeing her talking to Jean.´

Another interesting point about Modern French is that it only allows the PR in a third person, singular and plural (Guasti 1988). This is exceptional since this restriction is not observed in the rest of the Romance languages that still maintain the pro-drop parameter. Compare the grammaticality of (21) with the deviance of the sentences in (22) in French, on the one hand, and, on the other, the ungrammaticality of (22) with the well-formed examples in (23) in Spanish (also possible in Catalan and Italian).

(22)a.?/*Pierre *me* voit *qui parle à Jean.* [1st, sing]
b.?/*Pierre *te* voit *qui parles à Jean.* [2nd, sing]
(23)a. Pedro *me* vio *que hablaba con Juan.* [1st, sing]
b. Pedro *te* vio *que hablabas con Juan.* [2nd, sing]

What I want to suggest here is that Modern French has kept the capacity to license a third person pro in this construction, first, because of the unmarked properties of the third person, which is the no-person and, secondly, due to the unique structural particularity of the PR itself, where a DP base-generated in the specifier of its CP provides this pro with its referential value.

3. The Verbal Gerund

3.1. The Verbal Gerund and the Reduced Relative

So far we have seen that the lexical DP in the PR is base-generated in the specifier of CP. This property allows us to explain the distinct behavior of the PR with regard to ordinary R clauses, in which an operator—or the NP itself according to Kayne (1994)—must raise from a position within IP to the specifier of the CP. Compare (24) and (25).

(24)He visto a . $[_{CP}$ *Juan* $[_{C'}$ que $[_{IP}$ *pro* corría]]] [PR]
(25)$[_{DP}$ el $[_{NP}$ chico $[_{CP}$ Op_i $[_{C'}$ que $[_{IP}$ t_i corría]]]]] [Relative]

What I want to propose at this point is that this basic syntactic difference can also be used to account for the distinct behavior between the gerundive clause that appears as a perception verb complement in English, (26), and the so-called reduced-relative, (27).

(26)I saw *John reading the newspaper.*
(27)*The boy reading the newspaper* is my cousin.

First of all, note that exactly the same arguments that have been utilized above to demonstrate the distinct nature of the PR with respect to ordinary relative clauses can also be employed now to show the distinct behavior between the CSCl containing a gerund and the reduced-relative. (I do not reproduce these arguments here). In this paper I assume that the reduced-relative is analyzed as in (28) (cf. Siloni 1995 for more details).

(28)$[_{DP}$ the $[_{NP}$ boy $[_{CP}$ Op_i $[_{C'}$ $[_{IP}$ t_i reading the newspaper]]]]]

For our purposes, we only need to notice that the only primary difference between the structure of a simple R clause (see (25)) and the structure in (28) is that in this latter the C is non-overt.

3.2. Analysis

The structure that I would like to propose here for the verbal gerund selected by perception verbs is the one represented in (29) (see note 1).

(29)I saw [$_{CP}$ *John* [$_{C'}$ [$_{IP}$ *PRO reading the newspaper*]]]

The main distinction between this structure and the analysis proposed for the PR in (16) lies in that here the null subject is PRO instead of pro. To begin with, this property straightforwardly explains why English possesses the gerundive CSCl, but not the PR.[2]

As in the PR, the lexical DP in (29) is base-generated in Spec, CP, and then raises to the principal clause in order to check accusative Case. That this is so is suggested by the pronoun used in a sentence like (30).

(30)I saw *him* reading the newspaper.

Meanwhile, PRO is directly merged in Spec, VP, and checks null Case within the IP-projection of the gerund.[3]

4. The Prepositional Infinitival Construction

4.1. The Syntactic Behavior of the PIC

European Portuguese possesses the so-called *Prepositional Infinitival Construction* (PIC), which behaves like the PR in the other Romance languages. The PIC is composed of a DP, the P *a* (ˆat´), and an infinitival verb, which can be inflected in person and number. If the infinitive shows up inflected, it must agree with that DP:

(31)Eu vi *os advogados a trabalhar(em).*
I saw.I the lawyers at work-$_{INF\text{-}(AGR)}$
`I saw the lawyers working.´

As has been shown in the literature (see Raposo 1989), the PIC also behaves like a single constituent in one of its possible interpretations:

(i) It can be clefted and pseudo-clefted:

---

[2] That a PRO can be independently licensed in a gerundive clause in English is clearly shown in sentences like those in (i) (from Reuland 1983).

(i) a. John kept walking slowly, [$_{CP}$ [$_{C'}$ while [$_{IP}$ PRO drenching the road]]]
b. Rudy didn't remember [$_{CP}$ [$_{C'}$ [$_{IP}$ PRO reading the letter]]]

[3] Presumably like the PRO that is found in the sentences cited in the previous footnote.

(32)Foi [os meninos a trabalhar(em)] que eu vi.
`It was the children working that I saw.´
(33)O que eu vi foi [os meninos a trabalhar(em).]
`What I saw was the children working.´

(ii) It triggers singular agreement on the verb when it appears in subject position:

(34)[Os meninos a trabalhar(em)] *é* uma visão horrivel.
`The children working is a terrible sight.´

4.2. Analysis

The analysis of the PIC in terms of a CSCl would be as in (35) and (36) for the inflected and uninflected cases, respectively.

(35)a. Eu vi *os advogados a trabalharem.*
b. $[_{PP}$ *os advogados* $[_{P'}$ *a* $[_{AgrsP}$ $[_{Agrs'}$ $[_{TP}$ $[_{T'}$ $[_{VP}$ *pro* $[_{V'}$ *trabalharem*]]]]]]]]
(36)a. Eu vi *os advogados a trabalhar.*
b. $[_{PP}$ *os advogados* $[_{P'}$ *a* $[_{TP}$ $[_{T'}$ $[_{VP}$ *PRO* $[_{V'}$ *trabalhar*]]]]]]

In both structures the lexical DP is directly merged in the specifier of the functional P *a*. This DP will then check accusative Case in the matrix clause independently of the inflectional properties of the infinitive:

(37)Eu vi-*os* a trabalhar(em).
I saw.them-$_{ACC}$ at work-$_{INF(AGR)}$

In (35) the P is immediately dominating AgrsP, whereas in (36) it dominates TP. This difference intends to account for the assumption that only the inflected infinitive needs to raise to the head of the AgrsP to check its person and number features. A direct consequence of this is that it is predicted that the subject of the inflected infinitive is a pro, which checks the nominative Case within AgrsP, just like in the PR (see (16)). On the other hand, the subject of the uninflected infinitive will be a PRO which checks null Case within the TP-projection as in the examples using a gerund in English (see (29)).

5. Adjectival and Nominal CSCIs

5.1. Some Properties of Non-Verbal CSCIs

There also exists a range of CSCIs the head of which is a functional P, as in the PIC cases, but interestingly the lexical head of the construction is an A or a N, instead of a V as in all the instances of CSCI examined up to this point:

(38)a. Van prendre *aquestes noies per molt llestes*. (Catalan)
took.they these girls for very bright-$_{FEM, PL}$
b. They took *John for a fool.*
c. *Estas chicas* pasan *por jugadoras de baloncesto.* (Spanish)
these girls can.be.taken for players-$_{FEM, PL}$ of basketball

In these constructions it can be observed that the A in (38a) and the N in (38b) and (38c) agrees in gender and number with the lexical DP *aquestes noies*, *John*, and *estas chicas*, respectively. In fact, this kind of agreement is exactly the same that we obtain when we insert these DPs and these adjectival / nominal predicates into an ordinary SCI-configuration:

(39)a. *Aquestes noies*$_i$ són $[_{AP}$ t_i $[_{A'}$ *molt llestes*.]]
b. *John*$_i$ is $[_{NP}$ t_i $[_{N'}$ *a fool.*]]
c. *Estas chicas*$_i$ son $[_{NP}$ t_i $[_{N'}$ *jugadoras de baloncesto.*]]

The relevant difference between the structures in (38) and the examples in (39), however, lies in the fact that in the former cases a P intervenes between the lexical DP and the adjectival / nominal predicate. This situation could lead us to conclude that the structure of the examples in (38) and (39) is identical except for the fact that in (38) the SCI is introduced by a P, instead of the copula as in (39). This would mean that in (38) the verb subcategorizes for a PP which in turn selects a SCI.

(40)$[_{PP}$ $[_{P'}$ *P* $[_{AP/NP}$ *DP* $[_{A'/N'}$ *A / N*]]]]

There are some problems for this analysis. First of all, it implies that the verb subcategorizes for a plain PP like in the example in (41).[4]

[4] Note that in (38) the P *for* could also be taken as a prepositional complementizer, as has been proposed for (41).

(41)It is impossible [$_{PP}$ for [me to go.]]

This is problematic since there is evidence that the constituent introduced by the P functions as a syntactic unit and, as a consequence, as the predicate of the DP. This is shown in the Catalan examples in (42) in which the constituent headed by P can be moved, (42a), replaced by the clitic *hi*, (42b), and separated from its subject when the sentence is pseudo-clefted, (42c).

(42)a. [*Per molt llestes*], prenen [aquestes noies.]
b. [Les] [*hi*] van prendre.
c. A les que van prendre [*per molt llestes*] van ser a [aquestes noies.]

Therefore, it seems more plausible to suppose that it is the verb itself that selects a SCl the head of which is a P. This means that the constituent headed by this P will be interpreted as the predicate of the construction and, because of that, will be able to assign a theta-role to the lexical DP in its specifier, just like in ordinary prepositional SCls, as in (43).

(43)I saw [$_{PP}$ John [$_{P'}$ with Mary.]]

5.2. Analysis

The structure that I suggest for the examples in (38) is given in (44) (cf. (40)).

(44)[$_{PP}$ *DP* [$_{P'}$ *P* [$_{AP/NP}$ *PRO* [$_{A'/N'}$ *A / N*]]]]

In this analysis the lexical DP is base-generated in the specifier of the functional P, where it is assigned a theta-role by the prepositional predicate. This argument will then move to check structural Case. This Case is accusative in (38a) and (38b), and nominative in (38c):

(45)a. *Les* van prendre per molt llestes.
b. They took *him* for a fool.
(46)*Estas chicas*$_{[PL]}$ {pasan $_{[PL]}$ / *pasa $_{[SING]}$ } por jugadoras de baloncesto.

On the other hand, PRO satisfies the thematic properties of the adjectival/nominal predicate, and triggers the gender and number agreement with it.

Furthermore, it will check null Case presumably like in those structures in which PRO is the subject of a simple SCl, as in (47).

(47)John arrived [PRO tired.]

Note, finally, that the analysis proposed in (44) could be considered as the minimal version of sentences like that in (49).

(48)I consider *John* as *PRO* my best friend.
(49)I consider *John* as *he* was my best friend.

To summarize, the verb in (38) would select a CSCl with the functional P *for* as its head, just like the verb selects a CSCl with the functional P *a* as its head in the PIC in European Portuguese.

6. Conclusion

I have tried to show that a single structure can be applied to several complements which share the property of satisfying all the requirements to be considered examples of CSCl. We have seen that the two main differences among them are to be found in the type of category F that the DP-subject is merged with, and the value of the category X that heads the lexical domain.

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Sloppy Definites

Ann M. Reed

1. Background

A wide range of studies in philosophy, formal semantics, pragmatics, and psycholinguistics has addressed the interpretation of English noun phrases with the definite article. With some injustice to individual insights, these are often distinguished as familiarity or uniqueness analyses. The familiarity approach (Heim (1982)) focuses on deictic, anaphoric, and associative definites, as in (1), and characterizes their interpretation, loosely put, as "the one you know about".

(1) a. Take out the trash, will you.
b. There were leaves and trash and I worked on the trash.
c. There was a godawful mess so we just cleaned up the trash.

The uniqueness approach is usually associated with singular referential phrases, often with restrictive modification, exemplified in (2); it, again loosely, characterizes a definite as "the only one in the relevant discourse set".

(2) a. Somebody neglected to pick up the trash outside the Mayor's house.
b. If you're going into the bedroom, would you mind bringing back the big bag of potato chips that I left on the bed? (Birner and Ward, 93)
c. You should never look directly at the sun.

Birner and Ward (1994) demonstrate the inadequacy of both the familiarity and uniqueness approaches. While noting that either analysis can stretch to include most examples addressed by the other, they show that novel definites, as in (3), are not easily accommodated by a familiarity approach.

(3) I'll get directions from the guy at the next tollbooth.

On the other hand, while they find the possibility of a uniqueness interpretation, as in (2), to be sufficient for felicitous use of definites, they argue that it is not necessary, presenting the examples in (4), where there is no unique or familiar referent for the definite NP.

(4) a. It's hot in here. Could you please open the window? (in a room with several windows)
b. Please pass the rolls. (at a table with several roll baskets)
c. This afternoon I went to the park. (in many-parked city)

They observe that, in such non-unique definites, "not only must the referent not be uniquely identifiable, but there must in fact be no relevant basis for differentiating it from other referents denoted by the NP. We have identified two such uses: plural or mass NPs, in which a definite may be used to refer to some subset of the mass or group denoted by the NP, and singular NPs, in which a definite may be used to refer to some location of the type denoted by the NP." They conclude that "no single factor proposed—familiarity, uniqueness, or relevance—can alone account for the full distribution of the definite article in English. In particular, pragmatic factors such as the inferred intent of the speaker and the differentiability of referents in context contribute crucially to the interpretation of the definite article." (Birner and Ward, 101)

Birner and Ward's non-unique definites, which I will refer to as *sloppy definites,* have several characteristics begging explanation. First, under the interpretations in (4), they would all also be felicitous with the indefinite article, e.g. *please open a window; I went to a park.* As the examples in (5) (Hawkins (1991)) suggest, however, indefinites cannot ordinarily substitute for definites. (I have followed the */# notation of various analyses without pursuing the possible theoretical implications and contradictions).

(5) a. You two are wearing the/*a same tie.
b. The/*a only student in the room was Mary.
c. The/*a color red is my favorite color.
d. I saw the/*a biggest bird at the zoo. (superlative reading)
e. I recalled the/*a sweet little child that Harry used to be.
f. I peered into the/*a center of the flower.
g. The/*a present reviewer dislikes this book.

Second, as Birner and Ward note, some singular definites, as in (4a) and (4c) are fine but others, as in (6), are not.

(6) a. I need a hard surface to write on. Would you please hand me a/#the book? (pile of books nearby)
b. Please pass a/#the roll. (from a platter of rolls)

Third, there is no obvious explanation for the limitation of the sloppy interpretation to subsets of mass and plural nouns and to locatives.

Finally, Birner and Ward's discussion pushes us to consider: if not uniqueness or familiarity, then what characterizes the interpretation of definite noun phrases? Does accepting their observations about the effect of context on conditions for use mean that we cannot define a unitary interpretation for noun phrases with *the*? More generally, Birner and Ward's discussion raises the question of how the conditions for use which they describe correlate with the linguistic meaning of definites.

This paper addresses the specific points above within a general approach to definite noun phrases which encompasses the classic familiar and novel definites as well as sloppy definites. Although I agree with Birner and Ward about the need to incorporate contextual information into the interpretation of definites, I think that the time is right to attempt a coherent and unitary analysis of morphological definiteness.

Historically, the vast literature on this topic has not been coherent. Accounts from the perspectives of formal semantics and of pragmatics have dealt with different and limited data with conflicting assumptions about the relationship of linguistic meaning and contextual information. However, recent work in formal semantics (Chierchia (1995), Renaud (1996), Recanati (1996)) not only admits the need for some contextual determination of reference but builds it into the semantics, with more or less explicitness. More informal accounts (Hawkins (1978, 1991), Chesterman (1991)) have long stressed the role of contextual identification for definites. In his most recent work, Hawkins (1991) claims that neo-Gricean pragmatics will allow us to maintain a uniqueness criterion, which implicates universal membership in a contextually determined set. Moreover, work on language processing and discourse structure (Fraurud (1990), Garrod (1994), Gernsbacher (1989)) has addressed the varied contributions made by more or less explicit lexical material, as in (7), where definites and pronouns contrast:

(7) They tried to cross the river but the boat/*it sank.

There is some consensus that the explicit nature of definite noun phrases distinguishes their role in discourse from that of pronouns or indefinites, and various hierarchies of noun phrases in the recent linguistic literature (Ariel (1990), Gundel et al (1993)) depend upon these differences.

I think that we are now able to imagine a model of interpretation in which the contribution of explicit linguistic material can be integrated with

contextually-based assumptions and inferences. That goal underlies that the argument about sloppy definites to follow, which assumes that we can develop a precise and coherent account of the interpretation of noun phrases with *the*. The task is not small, however: we must define the effect of this tiny but ubiquitous word in a way which encompasses the interpretation of novel, familiar, and sloppy definites, allows for the contributions of linguistic and contextual material to interpretation, and accounts for the distributional differences and overlap among definites, indefinites, and pronouns.

Such factors prompt a definition of definites which, while unitary, does not claim uniqueness of reference, and, while allowing for the contributions of contextual information to full interpretation within the discourse, highlights the contribution of explicit linguistic material.

2. Identifiability

I maintain that definite NPs are inherently discourse-linked. By discourse-linked, in this case, I do not refer to the well-known effect of context upon the identification of referents in definite NPs. Rather, discourse-linked suggests that *the* is about the discourse, specifically, about the role of the linguistic material in the NP in a discourse model. The lexical/compositional meaning of *the*, like *there*, but unlike most other lexical items, is inherently linked to the discourse model.

For purposes of this discussion, I will rely on the sense of a discourse model and discourse entities first proposed in Webber (1979). More specifically, I will use a set of elements which Webber termed Identifying Descriptions (IDs). Webber postulated that discourse entities were identified by descriptions which stemmed from their first mention in discourse; so the ID for *a man* first occurring in the sentence *a man walked in* would be *the man who walked in*, later pronominals and even anaphoric definites being linked to that ID.

The speaker using a definite noun phrase is assuring the listener that there is enough information in the phrase itself to identify the relevant discourse entity. I define the interpretation of definites as *guaranteed identifiability within the discourse model*. This means that the link between linguistic material and discourse entities is direct, in this paper, that noun phrases with *the* will be interpreted directly as IDs. Since the lexical material in the NP will serve as the basis for the full ID for the discourse entity, guaranteed identifiability for definite NPs is linked directly to the explicit

descriptive material in the NP itself.

Of course, for definite NPs, like pronouns, identifying the intended diiscourse entity may depend upon discourse context, particularly in the familiar definites noted in (1). In previous descriptions of this general analysis of definites (Reed (1996)), like others with a uniqueness criterion (Chierchia (1995)), a variable predicate incorporates the linguistic and extralinguistic material which ensures identifiability. For the familiar definites in (1), the identifying material may be inferred from previous mention, association, deixis. For some novel definites, as in (2), explicit linguistic material, usually in the form of restrictive modification, provides the identifying predicate.

In this approach, a novel definite such as *the guy at the next tollbooth* in (3) serves fully as an ID linked to a new discourse entity in the discourse model. Conversation can felicitously proceed with respect to pronoun reference and other inferences—independent of the real-world existence of an upcoming toll-booth or even the hearer's belief in such:

(8) a. ... But if he's like the last one, we'll end up going in circles.
b. ...but actually we'll never see him; the sign says the road ends in a mile.

A familiar definite, on the other hand, has an ID which includes the lexical material as well as contextual information. Thus, as Chierchia (1995) pointed out, the identification of *table* in *the table is dirty* can be expressed deictically ("over there"), cognitively ("that you and I are aware of"), or anaphorically ("we brought in a table and chairs"). A variable predicate, which can be satisfied by this variety of contextual information, will complete the ID in these cases.

This account differs from other plausible accounts of definiteness in context (Ariel (1990), Gundel et al. (1993), Chafe (1996)) in avoiding the issues of unique existence in the real or discourse world, of hearer knowledge, and of the hearer's cognitive states. These factors are all relevant to identifying a referent for the discourse entity but not to identifying the discourse entity. While it is difficult to maintain a distinction between our commonsensical notions of familiarity, uniqueness, and identifiability in reference from their possible role in a discourse model, I believe that the distinction is crucial to defining definiteness. Distinguishing between an Identifying Description for a discourse entity and the conditions of use relevant to identifying a referent allows us to capture the contribution of linguistic material with some coherence. If the use of a definite article is a

signal by the speaker that the lexical material in the definite noun phrase is sufficient for identifiability within the discourse model, we can, loosely but without circularity, characterize a definite NP as meaning "the one I am talking about."

Issues of reference, to be sure, will follow. For example, in most cases of singular noun phrases in non-modal, extensional contexts, an interpretation of unique reference stems from identifiability. So in (9):

(9) I opened the window.

which describes a realized event, the interpretation of the discourse model will prompt the hearer's inference of a particular (hence unique in context) window. However, reference, as others have noted (Neale 1991), is not intrinsic to formal definiteness. In many well-known examples, including Hawkins's examples in (5a) and (5c), identifiability of properties or types rather than referents is at stake. Moreover, Grosz et al (1995) have argued that some aspects of interpretation in a discourse model should be left open even beyond the clause, that a partially specified interpretation will encompass the possible interpretations of examples like (10),

(10) The Vice-President of the United States is also President of the Senate.

which can be interpreted as referring to an particular individual or as a general statement about whoever is Vice-President, subsequent utterances in the discourse clarifying which is intended. If these observations are incorporated into a discourse model then discourse entities need not be referential but may (all or some) be interpreted as sets of properties or types. The ID in these cases will serve to identify properties or types.

Following this general analysis of definites, in the following discussion of sloppy definites, I will assume that in noun phrases with *the*, the lexical material in the noun phrase along with a variable predicate serves as an ID for the relevant discourse entity.

3. Sloppy Definites

Although I will argue that the characterization of definites as IDs can encompass Birner and Ward's sloppy definites, sloppy definites pose a problem for any analysis which distinguishes definites and indefinites. As noted earlier, all of the sloppy definites in (4) could be replaced with

indefinites. In some analyses, for example in the hierarchy proposed by Gundel et al.(1993), that would follow from the claim that indefinites signal type identifiability, but not referent identifiability. So *a window* in *open a window* can mean "any window you find".

While a common interpretation of type-identifiability supports the parallel use of indefinites and sloppy definites in examples like (4), it also raises the question of whether any dividing line between definites and indefinites exists. The examples in (5), where there are distributional differences between definites and indefinites and those in (6), where definites are unacceptable even though the referents are undifferentiated, suggest that we need to maintain such a line.

In the analysis of definites presented above, it is the existence of the variable completing the ID that will distinguish the sloppy definites from the indefinite noun phrases. In the cases of the tidy classic definites cited earlier, the variable predicate is satisfied by explicit linguistic material or by an obvious local discourse context. The examples in (4) differ from those in (1), (2), and (3) in that they have no obvious local discourse context or restrictive linguistic material. The examples occur in narratives or imperatives with no necessary shared discourse context: they make available to the listener only the linguistic material in the simple NP, which suffices to identify a type. Insofar as the identifiability has to do with the linguistic material in the NP, with no contextual information to narrow reference, identifiability simply has to encompass any suitable referent for the term. (So, in (4a), *the window* is apparently identifiable only by the linguistic material in the NP, perhaps in contrast to what else a listener might open—door, transom, etc.)

If there is any difference in the interpretation of *please open the window* and *please open a window* in a room with more than one window, it must come from the guaranteed identification of discourse entity described by the definite. In *please open the window*, the guarantee can only come from the sense that the listener will pick one, probably by salience or convenient location. The context for identifiability can be viewed as a default context—to be supplied by the listener. In the imperatives in (4a) and (4b), this seems plausible insofar as these are instructions to the hearer to act in his/her current context.

Of course, each of the definites in (4) in another context, could be used to refer uniquely—e.g. in a room with only one window. In such a discourse context, where the context forces identifiability of the discourse entity, the indefinite is infelicitous:

(11) I see that this room has a window—can you open it/the/#a window?

So we find that, while sloppy definites and indefinites can both occur where only a default discourse context can be supposed, only definites will occur when the context for identifiability is specified.

Moreover, definites, even sloppy definites, must have some potential default context available. In contrast to the acceptable sloppy definites in (4), the definites in (6), while meeting Birner and Ward's criterion of undifferentiated members of a set, are unacceptable; only indefinites can occur in these examples. On the face of it, there does not seem to be even a hairsplitting distinction between *open the window*, an acceptable sloppy definite, and *#pass the roll*, which is not acceptable. Note, however, that in the unacceptable cases, we are faced with an aggregate group of entities rather than a number of separate, although undifferentiated, entities. The separateness of the windows, the baskets of rolls, and the parks in the examples in (4) allows us, as noted above, to envision a salient context, probably physical location, in which a discourse entity might be identified. In such cases, the possibility of some separate location which might provide a context completing the ID allows for type-identification to be sufficient. In the unacceptable aggregate cases in (6), however, we cannot construct such a context and the sloppy definite fails.

Such an assumption of potential context, elusive though it is, also underlies other cases observed by Birner and Ward, for example, the observation, attributed to William Ladusaw, that in cases involving movement, the idea of a fixed path is crucial. So they report for the examples in (12) that "in the absence of uniqueness, the definite may be used only for those conveyances that move along a regular pre-established path." (Birner and Ward, 100)

(12) To get to Dr. Smith's office, I suggest taking the stairs, the bus, the train, #the car, #the bike, #the taxi.

In these cases, the path, mental or physical, provides a context within which identification of the relevant discourse entity may be made. It is not reference to a particular set of stairs but the linking of the stair to the path which creates the ID.

In other cases of sloppy definites, the potential context seems to stem from a general sense of purpose associated with some locations but not others:

(13) I've never been to Santiago; when I get there, I will go to the store, the university, the library, the movies, the hospital, #the house, #the neighborhood, #the office building, #the street.

We can distinguish the acceptable definites in (13), like *stores*, from the unacceptable ones, like *houses*, by noting that stores have a more fixed function than that of houses and that that sense of function can fix a context for the Identifying Description. (In discussing similar examples (but not making the distinction observed in (13)), Birner and Ward specifically argue against a schema-interpretation for sloppy definites. They note that not all sloppy definites can be related to a particular schema associated with a location. Like Birner and Ward, I propose that a more flexible construction of context is needed to explain the variable examples of sloppy definites.)

In sum, I propose that, as in the case of other definites, a contextual fix is necessary to provide a sufficient ID even for sloppy definites. In some cases a general sense of location, movement along a path, or purpose may be at stake. But other contexts can work as well—even with an aggregate set of undistinguished entities. The discourse can quickly create a context for identifiability, as in (14), where there is still no particular entity at stake-other than the one relevant to this context—and the definite is acceptable:

(14) a. ...I see you have a pile of books and I could use something to sup port this lamp...(hearer ignores speaker)...just hand me the (damn) book, will you!

b. (a cafeteria worker is setting up pre-arranged plates, each of which has to have a roll on it) I'm almost done with this last one—could you pass me the roll?

4. Relational Definites

The sloppy definites discussed so far parallel a well-known set of non-unique definites exemplified in (15). The cases in (15) are sometimes defined as relational definites (Lobner 1987) where the identifiability associated with definiteness comes from a link to the postnominal phrase, e.g. *of her sister.*

(15) a. She married the lover of her sister.

b. I shut the door of my car on his hand.

c. He is the son of a poor farmer.

d. Molly is rooming with the daughter of my best friend.

e. They appointed the teacher of the superintendent's son. (who has many teachers)

Relational definites share several characteristics with sloppy definites. First, they do not depend on uniqueness of reference. In the relational definites in (15), the referent of the NP is not uniquely identified by the definite, (even though in most of these cases (a,b,d, and e) a particular referent is clearly intended). In each case, rather, the description is identifying a type of entity. So the spouse in (15a) is identifiable as a type "lover of her sister", although the sister may have had many lovers. Lobner (1987) suggested that it is the linking of the relational noun (*lover, son*, etc) to another entity that provides the identification here.

In fact, Lobner uses these examples to argue that non-ambiguity of reference and not uniqueness characterizes the meaning of the definite article. In the analysis of this paper, his argument is paralleled in the claim that relational definites represent a type, e.g. *lover*, in a particular relationship defined by the postnominal *(of her sister)*. In this case, the guarantee of identifiability—just as with a restrictive relative clause—comes from the explicit linguistic material in the *of*-phrase.

A second characteristic which relational definites share with sloppy definites is the existence of parallel phrases with indefinites, as exemplified in (16):

(16) a. She married a lover of her sister.
b. I shut a door of my car on his hand.

Here again, as with sloppy definites, the difference in interpretation between the definites and indefinites is elusive (if not imaginary). My sense is that, if any overt difference can be marked, it lies in the definite having slightly greater emphasis on the importance of the relationship (e.g. lover of her sister) than the indefinite. That would, of course, follow from the claim of this paper that the definites are direct identifying descriptions whereas the indefinites signal a type which may be incorporated into an identifying description.

Note, in this respect, that the relational definites in (15) contrast with the definites in (17), which have a uniqueness interpretation:

(17) a. It's the/*a steering wheel of my car.
b. He's the/*a father of my friend.

c. She's the/#a president of the college.

In these cases, where extralinguistic knowledge forces an identifying description (cars have one steering wheel but many doors), the indefinite is not acceptable.

5. Sloppiness

The term "sloppy definites" links the phrases discussed in this paper to the well-known and still intractable pronouns of laziness or sloppy identity. The following are Chierchia's (1995) examples of such pronouns:

(18) a. Every man except John gave his paycheck to his wife. John gave it to his mistress.
b. Morrill Hall doesn't have a bathroom or it is in a funny place.
c. It is not true that John doesn't have a car. It is parked outside.
d. John doesn't have a car anymore. He sold it last week.

Pronouns of laziness are similar to sloppy definites in that the identifiability intrinsic to their interpretation seems to come from linguistic sense rather than from coreference. So in (18a), the *it* in the second clause is not coreferential with the antecedent NP *the paycheck* in the first clause, although its interpretation clearly depends on the antecedent term. (Indeed, in several studies (Evans (1980), Neale (1991)), sloppy pronouns have been characterized as covert definite descriptions: for example, in (18d), *it* is interpreted as *the car he had.*)

The full analysis of sloppy pronouns will require the convergence of yet another mass of semantic and pragmatic analyses, in this case, of anaphora. However they are incorporated into a systematic theory of anaphora and NP interpretation, sloppy pronouns and sloppy definites play a similar role in challenging interpretive theories based primarily on reference, including unique reference, and in exemplifying a role for linguistic sense, in context.

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An Event Syntactic Account of Delimitation in Mandarin*

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1. Introduction

The purpose of this paper is two-fold. First, I explore delimitation in Mandarin. Second, I propose an eventive syntactic structure along the line of Ritter and Rosen (1997, 1998, in press, to appear). The paper is organized as follows. Section two is devoted to the empirical summary of delimitation in Mandarin, including ambiguity of delimitation in activities, and unambiguity of delimitation in RVC construction and in *ba* constructions. I also discuss the transitive alternation, multiple interpretation and causative alternation in RVC constructions. Section three focuses on the syntactic account of delimitation in Mandarin. I argue that delimitation is encoded in the syntax, and that the head of functional projection FP-delimitation and the head of FP-initiation assign case and event role to the NP in its Spec position via Spec-Head relation. The event syntactic structure which maps lexical items directly from the lexicon encodes semantic interpretation in Mandarin, such as delimitation in general and multiple interpretation of RVC constructions. In addition, the fact that arguments of the verb are mapped freely from the lexicon to the syntax accounts for transitive alternation and causative alternation in this language. Section four concludes the paper with a summary and a global perspective for the present study.

2. Delimitation in Mandarin

2.1. Activity

Mandarin activities are ambiguous in delimitation, given (1-3). I use the test 'in X time' for delimitation, following Dowty (1979) and Tenny (1994), among others.

* I thank Sara Rosen for instructing me to this topic, and for her constant encouragement. I also thank Matthew Feeney for proofreading.

(1) a. Ta (zai shi fenzhong nei) sha-le Xiaoming[1].
He (within ten minute in) kill-ASP Xiaoming
'He killed Xiaoming (in ten minutes).'
b. Ta sha-le Xiaoming, keshi Xiaoming mei si.
He kill-ASP Xiaoming, but Xiaoming not die
'He began to kill Xiaoming, but Xiaoming didn't die.'
c. Ta sha-si-le Xiaoming.
He kill-die-ASP Xiaoming
'He killed Xiaoming.'
d. *Ta sha-si-le.

The activities in Mandarin are ambiguious in delimitation, as shown in (1a) and (1b). Yet resultative verb compound (RVC) constructions encode delimitation, as shown in (1c). In addition, the object is always overt, otherwise the sentence is ungrammatical, as shown in (1d).

(2) a. Ta (zai shi fenzhong nei) chi-le san wan fan
He (within ten minute in) eat-ASP three bowl rice
'He ate three bowl of rice (in ten minutes).'
b. Ta chi-le fan[2], keshi mei chi-wan
He eat-ASP meal, but not eat-finish
'He began to eat, but he didn't finish eating the meal.'
c. Ta chi-wan-le san wan fan.
He eat-finish-ASP three bowl rice
'He finished three bowls of rice.'
d. *San wan fan chi-wan-le.
(intended reading: 'He/She/I/We/You finished eating three bowls of rice.'
e. Ta chi-wan-le.
'He finished the meal.'

The nominal modifier *san* 'three' renders the VP predicate delimited, given (2a). The activity verb *chi* 'eat' alone does not delimit the predicate, as shown in (2b). The predicate with the resultative verb *chi-wan* 'eat-finish' encodes an end point, as shown in (2c). *Chi-wan* shows transitive alternation, given (2c) and (2e). *Chi-wan* does not allows causative alternation, given ill-formed (2d).

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[1] The following abbreviations are used in this paper:
ASP: perfective aspect marker
CLSS: classifier

[2] *Fan* in Mandarin refers to either 'meal' or 'rice,' depending on the context.

(3) a. Ta (zai wu nian nei) xie-le san ben shu.
He (within five year in) write-ASP three CLSS book
'He wrote three books (in five years).'
b. Ta xie-le shu, keshi hai mei xie-wan.
He write-ASP book, but yet not write-finish
'He began to write books/a book, but he has not finished them/it.'
c. Ta (zai wu nian nei) xie-wan-le san ben shu.
He (within five year in) write-finish-ASP three CLSS book
'He wrote three books (in five years).'
d. Ta xie-wan-le.
e. San ben shu (zai wu nian nei) xie-wan-le.
three CLSS book (within five year in) write-finish-ASP
'He/She/You/I/We wrote three books (in five years).'

In (3), again we see that the activity, namely to write a book in this language, is not necessarily delimited. Ambiguity of delimitation is shown in (3a-b). However, the resultative disyllabic verb compound construction is delimited. In addition, *xie-wan* shows transitive alternation, given (3c) and (3d). It also allows causative alternation, as shown in (3c) and (3e).

Notice that the perfective aspect marker *le* does not contribute to delimitation. (4) is delimited even though le is not in the sentence.

(4) Ta zai wu nian nei xie-wan san ben shu.
'He wrote three books in five years.

2.2. RVC Constructions

RVC consists of two verbs. The first verb denotes the activity, and the second verb the result of the activity. As Shengli Feng points out (personal communication), the first verb serves to describe how the result is reached. In this vein, the first verb functions similar to an adverb in this language. For instance, (5a) shows that the handkerchief was wet due to his crying. (5b) describes the same result without specifying how the handkerchief became wet. Thus even though I found causative alternation in (5a) and (5b), (5b) expresses a resultative state while (5a) represents an activity and a resultative state due to the activity[3].

[3] Notice that (i) is grammatical but unnatural sounding.

(i) ? Shopa zai wu fengzhong nei ku-shi-le.
(intended reading: The handkerchief was wet in five minutes as a result of someone's crying.)

(5) a. Ta (zai wu fenzhong nei) ku-shi-le yi tiao shoupa.
He (within five minute in) cry-wet-ASP one CLSS handkerchief
'He cried so much that his tears even made the handkerchief wet (in five minutes).'
b. Shopa ku-shi-le.
Handkerchief cry-wet-ASP
'The handkerchief was wet as a result of crying.'
c. *Ta ku-shi-le.

(6) a. Ta (zai wu fenzhong nei) pao-lei-le tue.
He (within five minute in) run-tired-ASP leg
'He ran so much that his legs were tired (in five minutes).'
b. Tue pao-lei-le.
'His legs were tired as a result of running.'
c. Ta pao-lei-le.
'He ran so much that his legs were tired.'

Ku-shi 'cry-wet' shows causative alternation but not transitive alternation, given ill-formed (5e). *Pao-lei* 'run-tired' shows both transitive and causative alternations. Some RVC constructions have multiple interpretations, as discussed recently in Li (1990, 1995, 1997).

(7) Meimei (zai shi fenzhong nei) zhui-lei-le Xiaoming.
Meimei chase-tired-ASP Xiaoming
a. 'Meimei chased Xiaoming so much that Meimei was tired.'
b. 'Meimei chased Xiaoming so much that Xiaoming was tired.'

(8) a. Meimei zhui-lei-le.
'Meimei chased someone so much that Meimei was tired.'
b. *Xiaoming zhui-lei-le.
(intended reading: Xiaoming was chased. As a result he was tired.)

The person who is tired after chasing may be the subject or the object in (7), yielding multiple interpretations. *Zhui-lei* also shows transitive alterna-

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I suspect that prosody is crucial in explainging the unnaturalness of the sentence. See Feng (1997) for how prosody constrains syntax in this language. The following sentences show a similar phenomenon.

(ii)?Tue zai wu fenzhong nei pao-lei-le.
(ii)?Ta zai wu fenzhong nei pao-lei-le.
(iii)?Meimei zai shi fenzhong nei zhui-lei-le.

In addition, as RVC is incompatible with the five-syllable time adverbial, the monosyllabic activity verb is also incompatible with it.

(iv)??Tue/Ta/Meimei zai wu fenzhong nei lei-le.

tion, given (8), but no causative alternation.

2.3. *Ba* Constructions

In Mandarin *ba* constructions, the direct object is to the left of the verb. Either an activity verb or an RVC may appear in *ba* constructions. In addition, both subject and object are overt in *ba* constructions. *Ba* constructions are always delimited, given (9-12)[4].

(9) Meimei (zai shi fenzhong nei) ba Xiaoming zhui-lei-le.
Meimei (within ten minute in) BA Xiaoming chase-tired- ASP
a. "Meimei chased Xiaoming so much that Meimei was tired (in ten minutes)."
b. "Meimei chased Xiaoming so much that Xiaoming was tired (in ten minutes.)"

(10) Ta (zai shi fenzhong nei) ba shoupa ku-shi-le.
He (within ten minute in) BA handkerchief cry-wet-ASP
'He cried so much that the handkerchief was wet (in ten minutes.)'

(11) a. Ta (zai shi fenzhong nei) ba Xiaoming sha-le.
He (within ten minute in) BA Xiaoming kill-ASP
'He killed Xiaoming (in ten minutes).'
b. Ta (zai shi fenzhong nei) ba Xiaoming sha-si-le.
He (within ten minute in) BA Xiaoming kill-die-ASP
'He killed Xiaoming (in ten minutes).'

(12) a. Ta (zai wu nian nei) ba shu xie-le.
He (within five year in) BA book write-ASP
'He wrote the book (in five years).'
b. Ta (zai wu nian nei) ba shu xie-wan-le.
He (within five year in) BA book write-finish-ASP
'He wrote the book in five years.'

The RVC constructions and their corresponding *ba* constructions are identical in the semantic interpretation. However, the sentences with activity verbs are ambiguous in delimitation, while their corresponding *ba* constructions are always delimited. In addition, the object NP which immediately follows *ba* is always definite and specific (Wang 1957, among others).

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[4] Notice that the time adverbial is compatible with monosyllabic verbs and with RVCs in *ba* constructions, in contrast to the sentences in footnote 3. The preliminary assumption is that the preposed object plus *ba* adds more weight to the VP predicate, thus the addition of the time adverbial adjunct does not cause prosodic disproportion.

(13) Ta (zai wu fenzhong nei) ba xin xie-le.
He (within five minute in) BA letter write-ASP
'He wrote the letter (in five minutes).'
*'He wrote a letter (in five minutes).'

2.4. Affected Argument

In light of the empirical evidence, I propose that all events that reach an end point have an affected argument. For RVC constructions, the affected argument is always the argument that is affected by the result. Consequently, the argument of the second verb in the compound is always the affected argument. For instance, the affected argument is the person who feels tired in chasing, given (9). In this case, it may refer to the external or the internal argument, but not at the same time. Consequently, we found multiple interpretations in the chasing event. In addition, I propose that the affected argument is always overt. On the other hand, the unaffected argument may be non-overt, given transitive and causative alternations. In addition, the object NP in the *ba* construction is always definite and specific.

(14) a. Every delimited event as an affected argument.
b. The affected argument is always overt, and it may refer to the external or the internal argument of the predicate.
c. The unaffected argument may be non-overt.
d. The affected argument is sensitive to both definitedness and specificity.

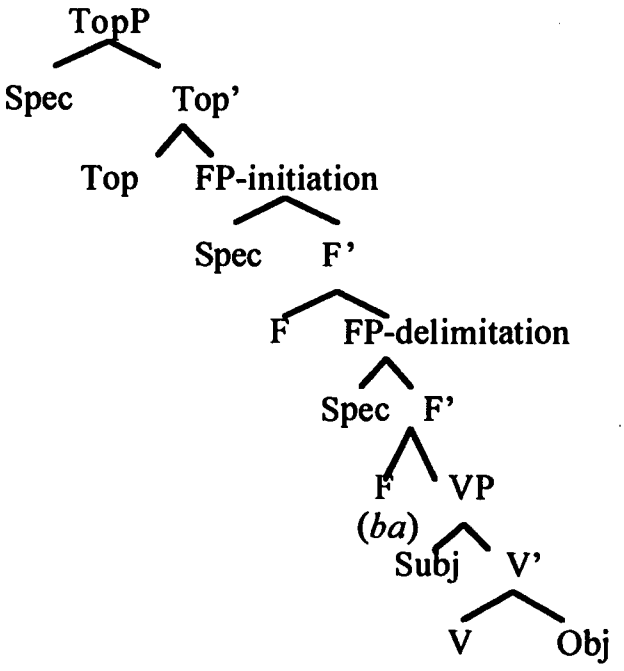
2.5. Summary

We have seen that delimitation in Mandarin is ambiguous in activities and unambiguous in resultatives. It is unlikely that delimitation is encoded in the lexical semantic information of the verb. If so, we would not be able to explain why *ba* constructions are always delimited while the same sentences without *ba* are not. In addition, it is also unlikely that each RVC is listed in the lexicon as a single verb, so that every possible interaction between the verbs in the compound and the arguments is included. Transitive alternation, causative alternation and multiple interpretations of RVC constructions strongly indicate that the lexically listed information of a verb is only one part of the puzzle for completing the picture of interpreting the sentence. I will argue in the next section that syntax encodes delimitation and transitive and causative alternations, as well as multiple interpretations, which are constrained by the lexically listed information of the verb.

3. Syntactic Event Structure

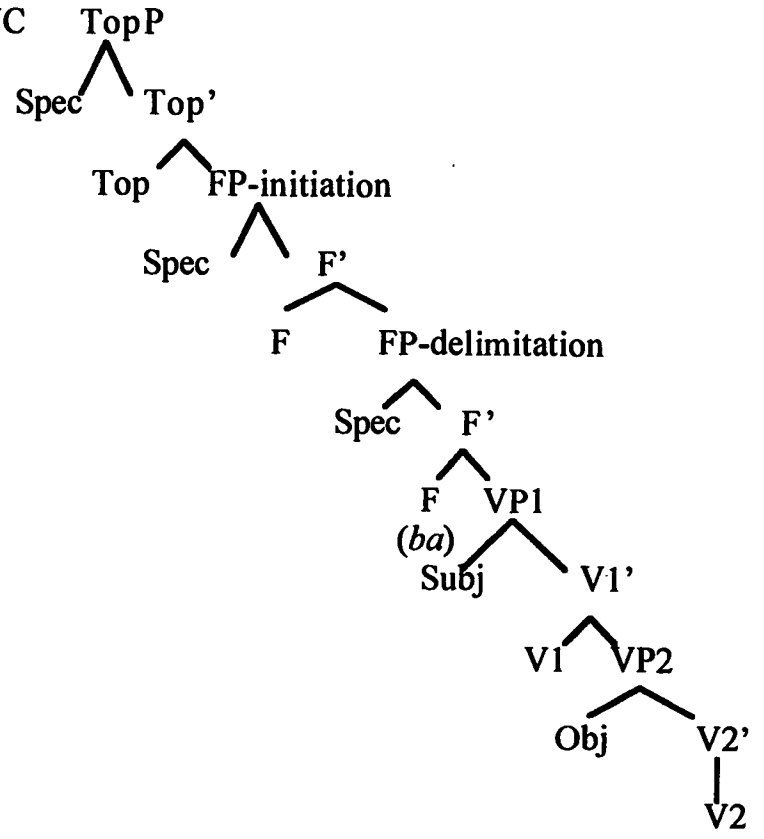
In this section I introduce an event syntactic structure, following Borer (1994), Ritter and Rosen (1997, 1998, in press, to appear). Borer first proposed that delimitation is encoded in the syntax, and that functional projections are responsible for the interpretation of the event, including delimitation and initiation, via assignment of the event roles. Ritter and Rosen further propose that the functional projections FP-initiation and FP-delimitation are equivalent to Agr-SP and Agr-OP, yet the former carries semantic substance and the latter does not.

(15) activity



The nominative case features are checked in Spec of FP-initiation via Spec-Head relation. The accusative case features are checked in Spec of FP-delimitation via Spec-Head relation. FP-delimitation assigns the event role delimiter to the NP that lands in its Spec position via Spec-head relation. Thus the affectedness of the NP is ensured, and this NP is always overt in a delimiting event.

(16) RVC



FP-initiation assigns the event role delimiter or causer to the NP that lands in its Spec position. FP-initiation is projected even though it is not always filled (R&R, in press).The syntax thus prepares a position for the free insertion of the initiator or causer. Non-resultative sentences such as (1) have the structure illustrated in (15).When the object stays in situ, it receives partitive case (R&R to appear). When the object moves to Spec of FP-delimitation, the sentence is interpreted as delimited.

Following Zou (1996), I propose that each verb component in RVC projects a VP, given (16). V2 will raise to join V1 for compound formation. The causative alternation is assumed under the addition of the causer or initiator as an external argument of the verb, whose position in the syntax is ensured by the FP-initiation. The transitive alternation is only possible when the affected argument, originated in Spec of VP2, moves to FP-delimitation where it receives the event role delimiter, and then moves further to check nominative case in Spec of FP-initiation, when the initiator or causer is not specified. Otherwise the external argument moves to Spec of FP-initiation, where the event role initiator or causer is assigned and the nominative case is checked via Spec-Head relation. The event syntactic approach also accounts for the multiple interpretations found in *zhui-lei* 'chase-tired' construction. The affected DP will raise to Spec of FP-delimitation to

receive the event role delimiter. If the affected DP also initiates the event, it needs to raise further to receive the event role initiator or causer[5].

I hypothesize that *ba* serves only to mark the affected argument. It is thus the head of FP-delimitation. Semantic and phonological evidence support this hypothesis. First, *ba* does not have any meaning. Second, in fast speech, *ba* may change from the original third tone to first tone or neutral tone in Mandarin, which suggests that *ba* does not behave like a verb. Verbs in Mandarin never undergo tonal change in fast speech except in the environment of tone sandhi.

4. Concluding Remarks

The event syntactic approach assumes that lexical semantic information of the verb does not determine the interpretation of the sentence or the number of arguments of the verb in the event. It is the content of the event as well as the meaning of the constituents of the sentence that determine the interpretation of the event. The event is compositionally realized in the syntax, which is constrained by the lexically listed information of the verb. Two consequences result from this morpho-syntactic analysis. First, RVCs are not listed in the lexicon. Instead they are realized in the syntax. Second, the syntax requires that the affected argument be overt. The syntax also prepares a position for optional insertion of the unaffected argument. Thus multiple interpretation, causative alternation and transitive alternation of RVC constructions are encoded in the syntax.

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[5] The external argument of RVCs such as *shoupa* 'handkerchief' in *Shoupa ku-shi-le* 'The handkerchief was wet as a result of someone's crying,' checks the nominative case in Spec of FP-initiation and receives the event role delimiter in Spec of FP-delimitation. In other words, the case feature of ku-shi is checked off in FP-initiation. A similar situation applies to the subject in *the vase broke* (Sara Rosen, personal communication).

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Restructuring Control*

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1. Introduction

One of the main issues in the studies of infinitival constructions in the last decades has been the semantic and syntactic category of infinitives. Labels like *coherence* (Bech 1955), *verb-raising* (Evers 1975), *clause union* (Aissen & Perlmutter 1976), and *restructuring* (Rizzi 1976) all refer to one phenomenon: the observation that certain infinitival constructions lack clausal behavior and show transparency effects for various processes (e.g., scrambling, clitic climbing etc.). Since the early studies on restructuring,[1] extensive investigations of the properties associated with restructuring have been provided. The central aim of this paper is not to characterize transparency properties like scrambling etc., but rather to gain some insight into the notion of restructuring.

In order to account for the transparency of RIs two basic approaches are conceivable. First, and as most authors assume, the clause union effect is derivational: RIs and NRIs start out with the same syntactic structure and an application of 'restructuring' alters the structure and/or properties of the infinitive in a way that ultimately renders it transparent for various processes. Second, one could assume that RIs and NRIs have different structures; i.e., while NRIs are clausal categories, RIs never constitute a clausal domain.[2]

In this paper, it will be argued that restructuring phenomena are the result of an extreme form of clause union: a sentence with a RI is a simple clause throughout the derivation. I will give a definition of a 'clause' that builds on the idea that a clause has a unique functional part (consisting of CP, TP and *v*P) but a recursive lexical part (various VP-levels). A compari-

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[1]I will settle here for Rizzi's term; the abbriviations RI/RV stand for *restructuring infinitive/verb*, NRI/NRV for *non-restructuring infinitive/verb*.

[2]The structure of RIs has been a long standing issue. For a review of the proposals found in the literature see Sabel (1996) and Wurmbrand (in prep.).

son of the core of restructuring verbs in Romance with the core of restructuring verbs in Germanic will show that restructuring verbs in Romance are *functional* verbs, whereas Germanic also displays restructuring with *lexical* verbs.

2. The Core of Restructuring Verbs

In most studies on restructuring, it is emphasized that there is no real consensus among speakers as to whether particular verbs belong to the class of verbs taking transparent infinitival complements (i.e., restructuring verbs) or to the class of verbs taking non-transparent infinitival complements (i.e., non-restructuring verbs). However, it is also commonly accepted that there is a core of RVs that does not show variation among speakers. Moreover, this core of RVs seems to be constant across the languages displaying restructuring effects. Table 1 illustrates the core of RVs with typical RVs in German, Dutch, Spanish and Italian.

Table 1: The Core Of Restructuring Verbs

VERB	GERMAN	DUTCH	SPANISH	ITALIAN
want, can, must	+	+	+	+
know-how	+	+	+	+
begin	+	+	+	+
come, go	+	+	+	+
easy-adjectives	+	+	+	+

As the table shows, infinitives selected by modal verbs like *can, want, must*, motion verbs like *come* and *go*, and aspectual verbs like *begin* are typically RVs.

2.1. How Many Events?

Most authors share the intuition that the core of RVs forms a coherent (semantic) class of verbs. The first attempt to formulate this was provided by Napoli (1981). Napoli proposed that what distinguishes RVs from NRVs is that the former do not function as full lexical verbs but rather as *auxiliaries*. She proposed that the relation between a RV and the infinitive is in many syntactic and semantic respects identical to the relation between an auxiliary and a participle. Similarly, underspecification also plays a crucial role in the accounts of Rochette (1988) and Rosen (1989, 1990). Rochette proposes that

RVs are like auxiliaries in that they lack an *event position* in their theta-specification. Rosen suggests that the common property of RVs is that they are *light verbs* and that RVs are characterized by an empty argument structure—i.e., by the lack of argument and event specifications.

What these approaches have in common is that restructuring constructions show some kind of 'event unification'; in other words, a sentence with a RI is characterized as involving only one event. All three accounts deny an independent event structure for RVs. I will show in this section that this assumption is untenable, since there seems to be evidence for the assumption that restructuring constructions consist of two separate events rather than a single event.

The argument is based on the assumption that modifiers like *again* presuppose the existence of a previous event which is identical to the event they modify (cf. von Stechow 1996). In a sentence like (1), the presence of *again* which modifies the marry-Sue event presupposes the existence of another marry-Sue event in the past. Since the second part of the sentence in (1) denies the existence of such an event, the sentence expresses a contradiction.

(1) #John married Sue again, but she has never been married before

As Napoli (1981) notes, adverbials like *again* only optionally modify the matrix verb(phrase) *want* in a restructuring example like (2).

(2) lui la vuole sposare **di nuovo**
he *her*-CL wants to-marry once more
'He wants to marry her again'

Thus, a sentence like (2) could be true in the following situation: John had married Sue once, but he had done this against his desire (e.g., his family had forced him to marry her). They then get divorced but after the divorce he suddenly falls terribly in love with her. Under these circumstances, the sentence in (2) would be an appropriate utterance. This shows that modification by *again* in this reading does not presuppose that there is a previous 'want-to-marry-her' event but only that there is a previous 'marry-her' event. Since *want* is not part of the embedded event, the question is whether it is an independent event or simply some sort of modification of the embedded event (cf. Picallo 1985). In what follows, I will argue that there is in fact some reason to assume that the *want*-predicate denotes an independent event in restructuring contexts. Specifically, I will show that event modifiers that would be

impossible as modifiers of the embedded event are licit if they can be construed with the matrix event, hence supporting the claim that RVs denote independent events.

Consider the following two contexts in German and Italian. The a.-sentences enforce a reading where the adverbial *again* modifies the embedded verb. John and Sue were married once, got divorced, but now they want to get married again. The context in the b.-sentences, however, enforces exactly the reading where the adverbial modifies the matrix verb but not the embedded infinitive:

(3) a. *Context A:* A year ago, John and Sue got divorced. But recently, people say ...'

German: daß er sie **aufs Neue** heiraten will
that he her once more marry wants

Italian: che lui la vuole sposare **di nuovo**
that he *her*-CL wants to-marry once more
'that he wants to marry her again'

b. *Context B:* A year ago, John broke off his engagement with Sue. But recently, people say ...

German: daß er sie **aufs Neue** heiraten will
that he her once more marry wants

Italian: che lui la vuglia sposare **di nuovo**
that he *her*-CL would-want to-marry once more
'that he wants to marry her again'

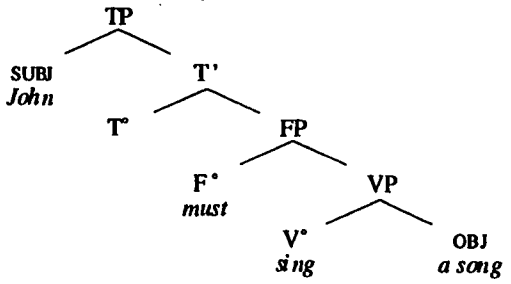
The German examples in (3) involve scrambling of the embedded object to the left of the adverbial; the Italian examples involve clitic climbing to the left of the matrix verb—hence both examples in (3) are RIs. What is crucial is that the b.-examples in both languages are appropriate utterances in a situation where John and Sue are not and have never been married (to each other) before. Thus, the examples show that the adverbial *once again* can only be taken to modify the matrix verb *want*.

To conclude this section, it seems that an analysis that assumes a single event structure for restructuring constructions is too restrictive in that it does not allow certain modifications of the matrix event that are clearly possible in restructuring configurations. The question then is what the common property of RVs is. A proposal will be made in the next section.

2.2. Clause Union: United from the Beginning

Although the characterization of RVs as verbs without an independent event or argument structure seems to be problematic, I will assume that the approaches proposed by Napoli (1981), Rochette (1988), and Rosen (1989, 1990) nevertheless allow us to gain an important insight into the class of RVs. In the analyses mentioned, RVs are considered as verbs with very little *lexical meaning*. Modal verbs, motion verbs and aspectual verbs all involve what could be called *functional meaning*, i.e., meaning that can be expressed by basic concepts like desire, obligation, ability etc. and that seems to be more robust across languages. I will assume that this aspect of meaning (lexical vs. functional) is represented in the syntactic structure in the following way: lexical verbs are the head of VP, whereas functional verbs are the head of some functional projection above the lexical VP (see Cinque 1997 for a similar proposal). A sentence with a modal verb *(John must sing a song)* could then have the (very simplified) structure in (4).

(4) **Restructuring: the basic idea**



As for clause union phenomena, the issue of 'restructuring' then does not arise since there is no representation or stage of the derivation in which a construction involving a functional RV consists of two clauses. Thus, nothing more has to be said about the transparency of the infinitive (i.e., the main lexical VP of the sentence) than about the transparency of a VP in a simple clause.[3]

While an approach to restructuring along the distinction functional vs. lexical verbs accounts for the transparency effects of infinitives selected by a verb from the core of RVs, it seems to be insufficient as a characterization of

[3]The structure in (4) of course raises a number of questions about the nature of FP, the position of the subject, the raising/control distinction, the epistemic/root distinction etc. These issues have to be left aside here since they require a separate investigation of each subclass of RVs (see Wurmbrand in prep.).

RVs in German (see next section). An investigation of restructuring in German will shed some light on the interaction between the syntactic structure and the semantics of restructuring constructions.

3. Lexical Restructuring Verbs

3.1. The Core of Restructuring Verbs in German

The class of RVs in German cannot easily be reduced to functional verbs. Table 2 lists the verbs that are uniformly considered as RVs in German (the shaded area involves verbs of the universal core of RVs). In contrast to Italian or Spanish, lexical verbs (i.e., the verbs in the non-shaded area in Table 2) are also uncontroversial common RVs.[4]

Table 2: Restructuring Verbs in German

VERB	RV	VERB	RV
want, can, must	+	*try*	+
know-how	+	*manage*	+
begin	+	*dare*	+
come/go	+	*forget* (implicative)	+
easy-adjectives	+	*finish*	+

It seems worth noting here that the verbs in the non-shaded area belong to the 'extended core' of RVs in Romance—i.e., the class of verbs that are RVs for some speakers but NRVs for others (cf. Rizzi 1982:41). As mentioned before, the class of RVs does not involve a fixed set of verbs but rather constitutes a continuum that varies from language to language, speaker to speaker and—as Aissen & Perlmutter (1983) put it—from a speaker on one day to the same speaker on another day. Though unexpected under a mere semantic approach to restructuring, this kind of variation receives an interesting explanation if we look at restructuring in the following way: some property of a verb like *try* in Romance indicates that it should be a RV (this obviously should be the same property that makes *try* a RV in Germanic), but some other property of *try* indicates that it should be a NRV (e.g., the as-

[4]The literature on restructuring in German shows a substantial inconsistency w.r.t. the class of RVs as well. In this paper, I will concentrate on the verbs in Table 2; I refer the reader to Wurmbrand (in prep.) for a review and discussion of the 'periphery' of restructuring (e.g., verbs like *recommend* or *promise*).

sumption that only functional verbs are RVs in Italian). Conflicts of that sort can be solved in two different ways, none of them resulting in the perfect solution. Hence, the uncertainty and variation among speakers and languages is not be surprising.

In what follows, I will show that the crucial factor for restructuring is the size of the infinitival complement. Assuming that RIs are bare VPs that do not contain an embedded subject will allow us not only to characterize the class of RVs but also to derive various properties associated with restructuring without additional assumptions.

3.2. RIs Lack CP and TP

The basic idea that I will pursue is that restructuring is only found when the infinitive lacks functional projections above VP—RIs do not involve TP, CP and *v*P. The arguments against CP and TP will be summarized in this section, arguments against *v*P will be reviewed in the next section.[5]

It is a well known fact that overt complementizers are prohibited in RIs (cf. Rizzi 1982, Kayne 1989, 1991, Rutten 1991, Roberts 1993, 1997 among others). To illustrate, Dutch infinitival clauses can be introduced by the overt complementizer *om* if the infinitive is extraposed and scrambling does not apply; i.e., when it is a NRI (cf. 5a):

(5) a. dat Jan probeerde [(**om**) zijn broer die brief te schrijven]
that Jan tried [COMP his brother the letter to write]
'that John tried to write the letter to his brother'

b. dat Jan [die brief]$_i$ probeerde [(***om**) zijn broer t_i te schrijven]
that Jan *the letter* tried [COMP his brother t to write]
'that John tried to write the letter to his brother'

If scrambling applies as in (5)b—i.e., when the infinitive is unambiguously a RI—an overt complementizer is prohibited. These and similar facts in Romance follow straightforwardly from the assumption that RIs do not involve a CP-projection.[6]

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[5]I will adopt here the idea that *v*P contains the base position of the subject and the licensing position of ACC (cf. Marantz 1993, Kratzer 1994, Chomsky 1995).

[6]It has been claimed that restructuring is marginally possible across wh-specifiers. Although I cannot go into any detail here, I want to point out that the distribution of wh-specifiers is highly restricted (cf. Rooryck 1994) and that there is reason to assume that in the cases of apparent wh-specifiers, the wh-element and

Looking at the tense interpretation of RIs, it has been claimed that RIs are unspecified for tense and that the infinitive is in a tense dependency with the matrix verb (cf. Rutten 1991, Rochette 1988, Bok-Bennema & Kampers-Manhe 1994, Rooryck 1994). First, it can be observed that RVs like *try* in contrast to NRVs like *decide* cannot appear with finite complements (e.g., *John decided/*tried that he would clean the bathroom*). Following Rochette (1988), this fact can be taken as an indication that RVs combine with tenseless complements.

Second, infinitives selected by NRVs exhibit future or past interpretations of their infinitival complements (cf. 6b), whereas infinitives selected by RVs are interpreted as simultaneous with the tense of the matrix clause (cf. 6a).[7]

(6) a. #Hans versuchte Sue in zwei Monaten in Wien zu besuchen
'John tried to visit Sue in two months in Vienna'
b. Hans beschloß Sue in zwei Monaten in Wien zu besuchen
'John decided to visit Sue in two months in Vienna'

One problem that complicates the facts, and is as I will argue partly responsible for the great amount of speaker variation found w.r.t. the restructuring/non-restructuring distinction, is that most infinitival constructions also allow a marked reading. In examples like (6)a, an interpretation like *John tried to make arrangements so that he would be able to visit Sue in two months* is marginally available as well. Interestingly, however, infinitives with a marked reading (i.e., a reading which involves independent tenses for the infinitive and the matrix clause) are indeed instances of NRIs and therefore block restructuring properties like scrambling (see Wurmbrand 1997, 1998a,b).

One might wonder in this respect about the position of the infinitival marker *zu* that appears in certain RIs. Following Travis (1992, 1994), I assume that *zu* 'to' is the head of an aspectual or event phrase inside the VP. Assuming that there are aspectual projections inside the VP, the presence of *zu* in certain RIs in German does not pose a problem for the claim that RIs

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the verb rather seem to form some sort of idiomatic phrase (see Wurmbrand 1998a for details).

[7]The notion 'simultaneous' might be misleading here since the infinitive *to visit* does not refer to an actual event; what seems to be the correct characterization is that the infinitive can not have a temporal interpretation.

lack functional projections *above* VP.

In the next section, I will discuss some of the arguments against a *v*P-projection in RIs.

3.3. RIs Are PRO-Less

RIs allow an apparent long operation of passive: an embedded object raises to the matrix subject position in cases where the matrix RV (but not the embedded verb) is passivized (cf. (7)a for German and (7)b for Spanish). NOM case and agreement of the matrix verb with the underlying object in (7)a are evidence for movement to the matrix subject position.

(7) a. [Der LKW und der Traktor] wurden zu reparieren versucht
[*the truck and the tractor*]-NOM were-PL to repair tried-PASS
'Somebody tried to repair the truck and the tractor'

b. [Estas paredes]$_i$ estan siendo terminadas de pintar t_i
these walls were being finished to paint t_i

What is crucial about object movement of this sort is that the case assignment properties of the embedded verb are affected by passivization of the matrix verb: the suppression of the matrix subject causes the loss of ACC in the embedded complement. This behavior is quite unexpected under a bi-clausal approach to restructuring; i.e., if it is assumed that both predicates have a subject position and hence (by Burzio's Generalization) the ability to assign ACC. Thus, various adjustments have to be made to account for the non-blocking effect of the embedded PRO subject and the fact that the embedded object does not show up with ACC. If, however, RIs do not involve a *v*P-projection (hence no embedded subject and ACC), examples like (7) are readily accounted for.

The assumption that RIs do not involve an embedded subject is further supported by 'imperfect control'. NRIs allow an interpretation in which the embedded subject and the controlling argument are not coreferential, hence providing evidence for the assumption that the embedded subject constitutes an independent argument. Collective predicates like *to gather* require plural subjects, the controlling argument in the examples in (8), however, is singular. The well-formedness of sentences like (8)a—i.e., NRIs—shows that the embedded subject does not have to be referentially identical to the controlling argument but that it is sufficient that it be included in the reference set of the PRO subject.

(8) a. Der Bürgermeister **beschloß** [sich im Schloß zu versammeln]
the mayor decided [SELF in the castle to gather]
'The mayor decided to gather in the castle'

b. #Der Bürgermeister **versuchte** [sich im Schloß zu versammeln]
the mayor tried [SELF in the castle to gather]
'The mayor tried to gather in the castle'

Interestingly, however, the imperfect control interpretation is generally impossible in RIs. This distribution—which coincides with the restructuring/non-restructuring distinction and which certainly does not seem to be accidental—follows from the analysis here since there is simply no embedded subject in a RI that could be assigned an imperfect interpretation.[8]

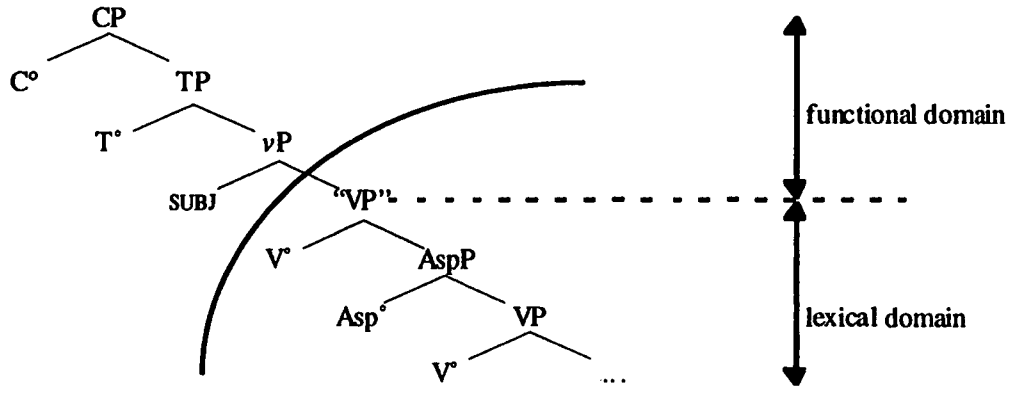
4. The Architecture of a Clause

What we have seen so far is that a lexical verb can only function as a RV if it combines with a bare VP-complement. More specifically, I have argued that RIs do not involve CP, TP and *v*P-projections. However, RIs constitute distinct events (see section 0), and the presence of the infinitival marker suggests that there is some aspect or event projection where *zu* is generated (see section 0). The question then arises whether the distribution of projections that are possible in RIs vs. the projections that are prohibited is an accidental fact about restructuring or whether there is a deeper motivation behind this generalization.

In the recent literature, it has been argued that clauses consist of two domains: a 'functional' domain and a 'lexical' domain (cf. Harley 1995, Marantz 1997, Travis forthcoming). Although different in many respects, the common idea of these approaches is the assumption that a sentence contains some kind of domain of *l(exical)-syntax*, and that as soon as the crucial level is reached, this domain is closed off for various lexical or semantic processes. Suppose, following Marantz (1997) that the lexical domain is closed off below the subject, and following Travis (1992, 1994, forthcoming) that the "VP" includes an inner aspect phrase. The functional vs. lexical domain can then be represented as in (9):

[8]A similar argument can be drawn from binding and pronominal anaphors which I cannot discuss here due to space limitations (see Wurmbrand 1998a, in prep.).

(9)



What the structure in (9) shows is that the projections of the functional domain are exactly the projections that are impossible in a RI—CP, TP, *v*P, whereas the lexical domain contains projections that are licit in RIs—VP, AspP etc.

I would like to offer a final speculation here, extending on the idea of a mono-clausal structure as proposed in section 0. I assume that 'restructuring' or 'clause union' as such indeed do not exist in any form, but that transparency effects are the result of the fact that a sentence with a RI is and always has been a single clause. Assume further that a *clause* is defined as involving exactly one functional domain. In a structure like (9), projections of the lexical domain could then be added without adding an additional clause; i.e., a sentence with recursive AspPs or VPs, but only one functional domain would still constitute a single clause. However, crucially, one clause could not involve projections of the functional domain that are added inside the lexical domain. Thus, if the split of a clause in a functional vs. lexical domain as proposed above is correct, we can now see why RIs can involve certain projections but not others: CP, TP and *v*P-projections are projections from the functional domain; an infinitive with its own functional domain would constitute an independent clause and therefore restructuring would be blocked. Recursive VP-projections, on the other hand (including aspect and event phrases), are part of the lexical domain, and therefore the infinitive does not form an independent clause but is part of the lexical domain of the matrix clause.

5. Conclusion

I have proposed that RIs do not represent independent clauses but that they are part of the lexical domain of the matrix clause. Under a bi-clausal approach to restructuring various movement, argument structure and tense

properties of RIs would be accidental and have to be accounted for separately. The mono-clausal approach taken here, on the other hand, accounts for verb-raising, the case properties in RIs, the non-blocking effect of PRO, the impossibility of complementizers and imperfect control, and restrictions on restructuring that are linked to the tense interpretation of the infinitive without additional assumptions about restructuring. Furthermore, the approach proposed here allows us to derive the notion of restructuring and to get rid of an arbitrary lexical feature [±restructuring], as well as to dispense with long distance movement processes that are otherwise unmotivated in the languages under consideration.

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