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Anna McNay

Some Grammatical Abbreviations

abl.	ablative
acc.	accusative
act.	active
dat.	dative
decl.	declarative
f.	feminine
foc.	focus
fut.	future
fut.pf.	future perfect
gen.	genitive
impf.	imperfect
impv.	imperative
ind.	indicative
infin.	infinitive
m.	masculine
mid.	middle
n.	neuter
nom.	nominative
pass.	passive
pf.	perfect
pl.	plural
plpf.	pluperfect
pple	participle
pres.	present
refl.	reflexive
sg.	singular
subj.	subjunctive
top.	topic
voc.	vocative

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Adjectives and Headedness[*]

Robert Truswell

1 Introduction

Within the Principles and Parameters framework, two standard assumptions concerning the syntactic and semantic nature of attributive adjectives are that they denote properties, and that they occupy adjoined positions.[1] The former assumption found a natural home in strongly first-order theories such as Higginbotham 1985 and Chierchia & Turner 1988, although it also formed a central instance of the operation of Predicate Modification in Heim & Kratzer 1998. Meanwhile, the latter assumption appeared to go without saying in early Government and Binding theory: attributive adjectives, as optional elements, would appear to be prime candidates to occupy adjoined positions.

This paper will argue, however, that in the case of English, both of these assumptions are incorrect. It will be demonstrated that the major alternative semantic treatment of attributive adjectives, as denoting second-order identity-typed functions, has conceptual and empirical advantages over a theory in which attributive adjectives denote properties. If, moreover, the requirement that an attributive adjective modify a nominal is a specifically syntactic selectional requirement, this would suggest, following Chomsky 2000 among others, that it is the adjective, rather than the noun, which projects in this construction. In that case, the adjective has one of the major characteristics of syntactic heads, and so the analysis of attributive adjectives as heads in Abney 1987 gains plausibility.

The following sections will spell out the steps in the above argument in greater detail. §2 will compare the analyses of attributive adjectives as first- and second-order functions, and the predictions that they make. §3 will argue that the need for an attributive adjective to modify a noun does not stem from the compositional

[1]This also holds in work, stemming from the Linear Correspondence Axiom (Kayne 1994) and developed by Cinque 1994, which takes attributive adjectives to occupy specifier positions within an extended nominal functional sequence, as the LCA characterises specifier positions as the unique adjoined maximal projections within each phrase.

semantics, but rather that there is a parallel syntactic selectional requirement for attributive adjectives to have a nominal sister. This section will also sketch one way of accommodating such a requirement within current syntactic theory. Finally, §4 will show some further empirical advantages of this syntactic treatment.

2 Two Semantic Analyses of Attributive Adjectives

2.1 The Montagovian Analysis

Within the framework of Montague Grammar, the assumption that attributive adjectives are second order functions is absolutely natural. Distributionally, an Adj–N group is identical to a common noun in isolation. If the syntactic category of common nouns is CN, then, the natural analysis of attributive adjectives is as being CN/CN elements. On the assumption that common nouns are of type $\langle e, t \rangle$, then, attributive adjectives are of type $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$, their identity type reflecting their syntactic transparency. Indeed, *modulo* intensionality, this is exactly the proposal of Lewis 1972, Montague 1974 and Kamp 1975.

Kamp defines several subclasses of attributive adjective on the basis of the relations that hold between ⟦Adj⟧, ⟦N⟧and ⟦Adj⟧(⟦N⟧). For example, an adjective F is *intersective*[2] if:

(1) 'there is a property Q such that for each property P and each $w \in W$ [the set of possible worlds], $F(P)(w) = P(w) \cap Q(w)$' (Kamp 1975:124);

and an adjective is *affirmative* if:

(2) 'For each P and w, $F(P)(w) \subseteq P(w)$' (Kamp 1975:125).

Crucially, though, these properties of classes of adjectives are irrelevant to their combinatorial properties: they are meaning postulates, or more specifically, statements about our knowledge of the relation between elements in the domain and the range of a given adjectival function.

2.2 *On Semantics* and All that Followed

The Montagovian treatment of attributive adjectives posits a uniform method of syntactic and semantic combination whereby adjectives are functions from property-denoting common nouns into property-denoting common nouns. The different entailment relations that different attributive adjectives give rise to must then be treated as meaning postulates, as in (1–2), concerning the relation between the domain and range of a given adjective.

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[2]I substitute the more current term *intersective* for Kamp's *predicative*, which is used in a distinct sense below.

An alternative view was proposed by Higginbotham 1985, arguing for an explicit representation of these relations in the syntactic and semantic derivation. Higginbotham assumes that an attributive adjective, as well as a noun and an Adj–N group, denotes a property. Since functor–argument relations between two $\langle e, t \rangle$ elements as they stand are impossible, as neither element is of the correct type to serve as argument to the other, the immediate question is one of how the adjective and noun are to combine semantically.

Higginbotham's solution is to shift the relationship between adjective and noun into θ-theory. He assumes that his proposal that adjectives and nouns denote first-order functions translates into such elements bearing θ-roles, which must be discharged. There are two mechanisms by which discharge of adjectival θ-roles is achieved, namely *θ-identification* and *autonymous θ-marking*. These correspond, roughly, to Kamp's properties of *affirmativity* and *non-intersectivity* respectively, but here, they are structurally encoded. Diagrammatically, these operations are represented by Higginbotham as follows:

(3) a. θ-identification:
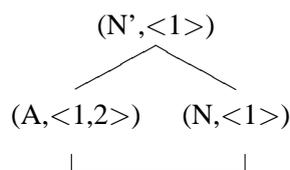
b. Autonymous θ-marking:
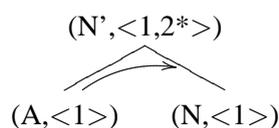
(Higginbotham 1985:564–567)

We can then define three classes of adjective, according to the thematic relations into which a given adjective enters:

(4) a. An adjective whose θ-role is discharged through θ-identification is affirmative and intersective.

b. An adjective whose θ-role is discharged through autonymous θ-marking is non-affirmative and non-intersective.

c. An adjective with two θ-roles, one discharged through θ-identification and one through autonymous θ-marking, is affirmative and non-intersective.

The fourth logical possibility, an adjective which is non-affirmative and inter-sective, can never arise, as there is a contradiction between these two characteris-tics: as defined above, intersectivity entails affirmativity. Also, in θ-theoretic terms, such an adjective would not have entered into a relation of θ-identification or au-tonymous θ-marking, and so it would have an undischarged θ-role, in violation of the θ-criterion.

Broadly, then, we may suppose that the semantic representations of these three types of adjective–noun groups, respectively, will be as follows:

(5) a. Affirmative and intersective: $\lambda x.N(x) \wedge A(x)$

b. Non-affirmative and non-intersective: $\lambda x.A(^{\wedge}N(x))$ [3]

c. Affirmative and non-intersective: $\lambda x.N(x) \wedge A(^{\wedge}N(x))$

2.3 Separating the Two Analyses

The theory represented in (4–5) predicts that inferences parallel to the meaning postulates in (1) and (2) are structurally encoded in the syntactic and semantic derivation. If, for example, an adjective belongs to the class (5a), the inferences for some individual x from Adj–N(x)[4] to Adj(x) and N(x) should then be automatic. Similarly, if an adjective is in class (5c), the inference from Adj–N(x) to N(x) should be automatic. Any other inferences, for adjectives in one of the classes in (5), should be invalid. Such patterns of inference clearly do not necessarily hold so absolutely under a view of affirmativity and intersectivity as meaning postulates.

Indeed, this is part of the motivation for Higginbotham's move away from the Montagovian view of attributive adjectives sketched in §2.1: if we can automati-cally infer that a *red car* is both *red* and a *car*, and that a *big car* is a *car*, but not that a *big car* is *big* or a *possible car* is a *car*, shouldn't the automatic inferences be "hard-wired" into the compositional semantics?

The question, then, is whether these "automatic" inferences really are auto-matic. And it would seem that they are not. Consider, first, the following two phrases:

(6) a. A red face

b. A red double-decker bus

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[3]Higginbotham's proposal is that what is θ-marked in autonymous θ-marking is 'the phrase marker with root N' (Higginbotham 1985:564), as opposed to the reference of such a phrase marker. It is not clear to me what this corresponds to in the model, and so I represent autonymous θ-marking here as taking the nominal intension as an argument.

[4]This notation is intended to be neutral between the two representations, (Adj(N))(x) and Adj(x)∧N(x).

Clearly, the *red* in these two examples is not identical, as a *red face* and a *red double-decker bus* are probably not the same colour. This means that even a prototypically intersective adjective, such as *red*, does not simply denote a property in (6), but is relativised to the noun that it modifies. In other words, even adjectives such as *red* are not absolutely intersective, in the sense of (1). This casts some doubt on the existence of (5a) as a separate class of adjectives.

It may be argued, though, again following Higginbotham 1985, that a *red face* is still a *face*, and a *red double-decker bus* is still a *double-decker bus*. In the above examples, this is undoubtedly true. However, consider the following sentences, all of which I would claim are true:

(7) a. A corn marigold is not an ox-eye daisy. [They have separate Latin names, for example]

   b. A corn marigold is (just) a yellow ox-eye daisy.[5]

   c. Therefore, a yellow ox-eye daisy is not (necessarily) an ox-eye daisy.

(8) a. A marrow is not a courgette. [They are sold as separate vegetables by greengrocers, for example]

   b. A marrow is (just) a big courgette.

   c. Therefore, a big courgette is not (necessarily) a courgette.

(9) a. A Tonka truck is not a truck. [This will become evident if you attempt to drive one on a public highway]

   b. A Tonka truck is a toy truck.

   c. Therefore, a toy truck is not (necessarily) a truck.

In each case, the pattern is the same. The (a) sentences assert that the two noun phrases denote distinct properties, while the (b) sentences assert that one particular property, denoted by the adjective, distinguishes the properties denoted by the two noun phrases[6]. This allows us to deduce, as in the (c) sentences, that the inference from Adj–N to N is not automatic.

However, only (9) involves an adjective which would standardly be considered as non-affirmative, where *affirmative* is defined as in (2). (7–8) involve canonical

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[5]I have no explanation for why it should be that *just* facilitates interpretation of the (b) examples.

[6]There is a sense in which the (a) and (b) sentences are true at different levels of granularity. It is only at a fairly superficial level that the equation "ox-eye daisy + yellow = corn marigold" could be taken to be true. That is beside the point, here, touching on questions of how an audience evaluates the truth of such utterances. The fact that they *could* all be taken to be true, under quite unremarkable circumstances, already has serious implications for the notion that attributive adjectives can denote conjoined properties.

intersective and subsective adjectives, respectively.[7] Under a theory of attributive adjectives such as Higginbotham's, the failure of the inference that "an Adj N is an N" is unexpected in such cases, as such inferences are inseparably linked, through θ-theory, to the fundamental mode of structural combination of such adjectives with nouns. However, if the combination of adjective and noun is independent of such entailment relations, which are instead represented as meaning postulates, as in the Montagovian theory, then their defeasibility in contexts such as (7–9) has less drastic theoretical consequences. Such examples must be taken, then, to strongly favour the uniform analysis of attributive adjectives as second-order functions, and to provide evidence against θ-identification as the mode of combination of attributive adjectives.

2.4   Relating Attributive and Predicative Uses of Adjectives

A consequence of Higginbotham's claim that adjectives canonically denote properties is that we might then expect a primary function of theirs to be forming propositions by taking type e arguments. Indeed, the evidence from copular and predicative constructions suggests that we should preserve this intuition, as Partee 1987 demonstrates that adjectives in such constructions alternate with indefinite DPs, and can be co-ordinated with them:

(10) Mary considers John competent in semantics and an authority on unicorns. (Partee 1987:119)

On the other hand, the evidence reviewed above from attributive uses suggests that adjectives can be second-order functions, of type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$. If this is the case, we may assume that an operator is available of type $\langle\langle e, t\rangle, \langle\langle e, t\rangle, \langle e, t\rangle\rangle\rangle$, that is, an operator which takes a first-order property as its argument and outputs a second-order function from properties to properties, shifting from the predicative to attributive use of an adjective.

Postulation of such an operator permits explanation of several facts concerning the distribution of adjectives. For example, it allows us to suggest a semantic reformulation of the distinction proposed in Bernstein 1993 and Alexiadou 2001 between a class of adjectives that are X^0s and a class that are XPs: in Bernstein's analysis, the A^0s are distinguished by never occurring in predicative constructions and by not taking modifiers such as *very*, for example:

(11) a. 'That car is big'

 b. 'A very big car'

 c. * 'That car is former'

---

[7]A *subsective* adjective is here defined as a non-intersective, affirmative adjective, that is, the class (5c).

d. * 'A very former car'

Such facts are amenable to a more structurally uniform formulation if we assume that, in fact, those adjectives which Bernstein labels as A^0s are lexically represented as type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$, while those that she labels as APs are represented as type $\langle e, t\rangle$ and require a type-shifting operator to be used attributively. If, furthermore, degree modifiers take $\langle e, t\rangle$ arguments (which seems reasonable, given the acceptability of a sentence such as 'That car is [very big]'), we have largely derived the restrictions on adjective distribution in (11).

Furthermore, postulation of this operator goes some way towards resolving the tension observed in Kamp 1975 between the fact that attributive uses of adjectives are most satisfactorily represented as second-order functions, while a supervaluation-based treatment of comparatives seems to require that adjectives denote gradable first-order properties. As the cases of comparatives he discusses are all found in clausal constructions, rather than DP-internally, this distinction is now expected. We see that it is quite generally the case that predicative uses of adjectives are first order, and attributive uses are second order, and the comparative constructions that Kamp discusses fit this pattern.

As an approximation of the content of this operator, I propose to reformulate the JOIN operator of Baker 2003 in such a way as to allow a second-order representation of attributive adjectives:

(12) $\text{JOIN}(A) = \lambda N \lambda x.(A_{\text{Attr.}}(^\wedge N))(x)$, where:
   A is the property denoted by the adjective used predicatively;
   $A_{\text{Attr.}}$ is the second-order function denoted by the adjective used attributively;
   N is the property denoted by the noun (with any lower complements or modifiers).[8]

The syntax and semantics of attributive adjectival modification under these proposals, putting aside for the moment issues of projection, will be as follows:

(13) a.

b. $(\text{JOIN}(\text{red}'))(\text{car}') = \lambda y.(\text{red}_{\text{Attr.}}(\text{car}'))(y)$

---

[8]This formulation clearly begs the question of the nature of the almost, but not quite, deterministic relation between an adjectival property and the related second-order function. This important problem will have to await further research.

This representation captures several essential facts about attributive adjectives: the modification is potentially recursive because the type of the noun is unchanged by merging an adjective; the modification is optional because what is usually essential for a DP is that it provides an argument to the clause which contains it, and this is neither helped nor hindered by merging an adjective because there is nothing in the nominal semantics which requires the merging of an adjective (the requirement comes instead from JOIN, which requires two $\langle e, t \rangle$ elements as arguments); and scope is represented because the most recently merged adjective directly modifies the group consisting of the noun and any adjectives merged earlier, and this group is basically semantically opaque (i.e. an Adj–N group behaves exactly like a bare noun as far as any further computation is concerned).

It is important to note that postulation of JOIN means that, even in cases such as English where the phonetic forms of adjectives used predicatively and attributively are identical, they make distinct contributions to the semantic representation. In particular, a predicative adjective is first-order and an attributive adjective is second-order. Note also that JOIN must be formulated in such a way as to take the adjective as its first argument, in order to capture the data in (11). A possible alternative formulation of JOIN which took the adjectival and nominal arguments in the opposite order would necessarily assume a uniform type for adjectives, ruling out the possibility that certain adjectives could be lexically specified as type $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$. These considerations will have repercussions when we turn our attention to syntax in the following section.

3   English Attributive Adjectives are Heads

We have seen that attributive adjectives denote functions from properties to properties, and that they are derived from first-order properties by means of the two-place relation JOIN. However, not every property constitutes an acceptable input to such a relation. For instance, we also saw in §2.4 above that there is reason to believe that predicative adjectives denote properties, yet an attributive adjective cannot modify a predicative adjective:

(14) a. * The car was *big red*.

  b. $(\text{JOIN}(\text{big}'))(\text{red}') = \lambda y.(\text{big}_{\text{Attr.}}(\text{red}'))(y)$

Furthermore, JOIN must only be able to take an adjectival property as its first argument, otherwise the following should be deriveable, by JOIN taking two nominal arguments:

(15) a. * The *car vehicle* raced down the street.

  b. $(\text{JOIN}(\text{car}'))(\text{vehicle}') = \lambda y.(\text{car}_{\text{Attr.}}(\text{vehicle}'))(y)$

As the only elements modified by attributive adjectives are nominals (that is, a noun with any complements, possibly modified by other, lower, adjuncts), and as an attributive adjective with no nominal sister is marked, if not ungrammatical (compare null nominal constructions such as (16)), it appears that an attributive adjective selects an N projection as its sister.[9]

(16) # The red is good.

Now, under a standard conception of attributive adjectives as adjuncts, the nominal projects, by definition. For instance, Chomsky 2000 writes that:

> 'Adjunction has an inherent asymmetry: X is adjoined to Y. Exploiting that property, let us take the distinction between substitution and adjunction to be the (minimal) distinction between the set $\{\alpha, \beta\}$ and the ordered pair $\langle\alpha, \beta\rangle$, α adjoined to β...[In the latter case,] Given the asymmetry, it is natural to conclude that the adjoined element α leaves the category type unchanged: the target β projects.' (Chomsky 2000:133)

Leaving aside the question of whether JOIN has a syntactic reality, or instead perhaps describes a lexical redundancy rule, this would give a tree for an Adj–N constituent as follows:

(17)

$$
\begin{array}{c}
\text{car} \\
\diagup \diagdown \\
\text{red}_{\text{Attr.}} \quad \text{car}
\end{array}
$$
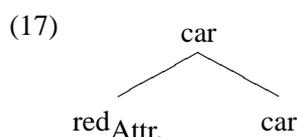
With regard to projection in cases of substitution, Chomsky writes:

> 'Set-Merge typically has an inherent asymmetry. When α, β merge, it is to satisfy (selectional) requirements of one (the *selector*) but not both. Fairly generally, furthermore, the selector is uniquely determined for a pair (α, β)...In this case too, then...the label of the selector projects.' (Chomsky 2000:133–4)

These two statements, however, should give rise to doubts concerning the validity of the substitution–adjunction distinction, formulated in this way. It is the inherent asymmetry in adjunction which leads Chomsky to propose that adjunction is a pair-forming operation. However, there is an inherent asymmetry in substitution too. It is not clear why these two asymmetries should be represented in different ways (ordering of elements and projection in the case of adjunction, as opposed

---

[9]Note that such a suggestion is only plausible if attributive and predicative uses of adjectives are syntactically distinct. Predicative adjectives do not subcategorise for a sister at all, instead standardly occurring as the sister of a predicative head.

to projection alone in the case of substitution). Even if it is indeed necessary to preserve the substitution–adjunction distinction (and much recent research, from Kayne 1994 onwards, suggests that it is not), it is at least clear that the way of representing this distinction in Chomsky 2000 amounts to nothing more than a diacritic, and so should be treated with suspicion, in line with minimalist principles.

Let us assume, instead, that any 'inherent asymmetry' is represented structurally by projection alone. If adjunction is not treated as a structurally distinct operation from substitution, then a surprising reversal occurs. It is clear that the nominal is Merged to satisfy the selectional requirements of the attributive adjective, rather than *vice versa*: it is the attributive adjective which subcategorises for a nominal sister, while the nominal clearly does not subcategorise for an adjective. In that case, we should expect the adjective, rather than the noun, to project:

(18)   red$_{Attr.}$

     red$_{Attr.}$ car
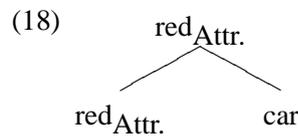
In other words, if it is possible to equate selection with projection, the head of an Adj–N constituent is the adjective. However, the distribution of Adj–N constituents is identical to that of nouns alone. It is necessary, then, to explain how the adjective projection comes to be essentially "transparent", in that it allows categorial features of its nominal sister to remain visible.

3.1   Attributive Adjectives and Relativised Heads

Baker 2003 proposes a theory in which there are three lexical categories, namely nouns, verbs and adjectives / adverbs. Nouns are distinguished by having a *criterion of identity* (that is, 'they… set standards by which one can judge whether two things are the same or not', Baker 2003:101), and verbs by their ability to license specifiers. Adjectives and adverbs are distinguished by the absence of both of these characteristics. The claim, then, is that it is only meaningful to say *X is the same Y as Z* or *X is a different Y to Z* if Y has the distinguishing characteristic of a nominal. If an Adj–N constituent is to have the function and syntactic distribution of a noun, then, it follows that the Adj–N constituent, too, must be able to set a standard of sameness. This appears to be true:

(19) Cabbage is a different green vegetable to kale.

If an Adj–N constituent, like a noun, has a criterion of identity, and this is the fundamentally nominal characteristic, then the fact that attributive adjectives do not alter the distribution and function of their nominal sister is unsurprising. This criterion of identity must, however, be inherited from the noun, rather than the adjective, as adjectives are not inherently able to express set standards of sameness.

This is surprising, given the evidence that the adjective is the head of an Adj–N constituent.

This phenomenon, whereby syntactic characteristics are inherited from the non-head, is described extensively in Williams 1994, where the non-head is called a *relativised head*. Williams' proposal is as follows:

> 'Suppose first that there is an "absolute" head. Then, "head with respect to F" is defined as follows:
>
> (45) X is the head with respect to F of Y if X is marked for a value of F, and either X is the absolute head of Y, or the absolute head of Y is not marked for F.
>
> This provides a sort of unification that always succeeds, for in cases of conflict the head wins.' (Williams 1994:46)

Assume that the criterion of identity is encoded by some feature. As this is essentially a variant of the long tradition of describing lexical categories in terms of categorial features, let us call the feature [N]. Then nouns have this feature, and adjectives don't, as a direct consequence of Baker's theory. Furthermore, the [N] feature on a nominal complement can only be inherited by a head if that head is not verbal, as no category can be both nominal and verbal on Baker's theory. In that case, in the construction [$_{AP}$ A [$_{NP}$ N]], A can inherit N's [N] feature, as A is defined as a lexical category lacking the defining characteristics of both nouns and verbs. This contrasts with cases where, for example, a verb has a nominal complement. As [V] and [N] features are incompatible, there is a conflict, and the absolute head alone determines the category of [$_{VP}$ V DP].

We must note, however, that it is possible to subcategorise for an adjectival projection, as in the case of *too*, for example, which only occurs modifying adjectival and adverbial projections. This means that an adjective cannot simply be analysed as a lexical category without [N] and [V] features, as, in that case, there will be nothing for *too* to subcategorise for. However, there is evidence that it is only possible to subcategorise for *predicative* adjectives in this way: the sequence D–*too*–A–N is at least marginal in English, and adjectives argued above to be lexically specified as type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$ are unable to be modified by *too*:

(20) a. ?? A too happy man

      b. * Too former / too solar

This constitutes further evidence that the syntactic nature of predicative and attributive adjectives is radically different: to the best of my knowledge, there is no clear evidence that anything subcategorises for a specifically attributive adjective in English. The categorial status of an attributive adjective with respect to the noun that it modifies is reminiscent, then, of the status of functional heads: although

they head their own projections, these still form part of the *extended projection* (in the sense of Grimshaw 2003) of the lexical item most locally c-commanded by the functional head. This paper claims that attributive adjectives are heads in the nominal extended projection, even if predicative adjectives are associated with some distinct categorial feature, which permits elements such as *too* and *very* to subcategorise for them.

The theory of projection and category membership sketched here amounts to saying that, no matter which daughter projects, if the mother can function as a criterion of identity, then it will have the distribution of a noun phrase. And only nominal extended projections (by definition) and projections of attributive adjectives (where the ability to function as an expression of sortality is inherited from the nominal complement, there being no conflict between an attributive adjective and this nominal characteristic) can function in this way.

At least in English, one welcome immediate consequence of such an analysis is that the general Adj–N order then coincides with the general head–complement order. However, DP-internal adjectives are not always pre-nominal in English: notably, adjectives with PP complements occur post-nominally, and the same applies to occurrences within the noun phrase of adjectives modified by *too*:

(21) a. A proud man

    b. * A man proud

    c. * A proud of his children man

    d. A man proud of his children

(22) a. * A too proud man

    b. A man too proud

Interestingly, Williams himself assumes that certain adjectives, notably *alleged*, stand in a head–complement relation to the nouns they modify. One reason for singling out *alleged* for such an analysis is that it has distinct semantic characteristics when in post-nominal position. While an *alleged murderer* is not necessarily a murderer, an instance of *murderer* modified by post-nominal *alleged* necessarily does denote a murderer:

(23) a. * The murderer alleged since yesterday. . .

    b. The murderer alleged to have stolen the car. . . (Williams 1994:92)

However, given the discussion in §2.3, we may now expect to find that such patterns hold more generally. And it seems that this is true: the following examples must denote ox-eye daisies and courgettes, respectively, in contrast to the pre-nominal cases:

(24) a. (# A corn marigold is just. . .) an ox-eye daisy, yellow as the sun.

     b. (# A marrow is just. . .) a courgette as big as a shoe.

One interesting adjective in this respect is *old*. *Old* is vague: it can prototypically be interpreted affirmatively (in which case it is the opposite of *young*), or non-affirmatively (in which case its meaning is close to *former*)[10]. However, used post-nominally, only the first sense remains: the following must necessarily denote a house:

(25) A house as old as the hills. . .

This evidence all suggests that post-nominal adjectives display all the characteristics of predicative, not attributive, semantics: N–Adj constructions, strikingly, allow affirmative patterns of inference and permit the use of modifiers available in predicative constructions but barred pre-nominally. We may speculate, then, that the N–Adj construction is structurally distinct for the Adj–N construction, in that only the latter makes use of JOIN.

In that case, generalising Williams' analysis of *alleged* to cover all attributive adjectives is theoretically plausible, and, it seems, empirically justified. A pre-nominal attributive adjective is a head, and the noun is its complement. In the following section, I will sketch some further benefits of this approach.

4   Extensions

4.1   Adjectives, Givenness and Prosody

Givenness of material is generally marked in English by de-accenting (roughly in the sense of absence of a pitch accent where one may otherwise be expected), as can be seen by contrasting the following two exchanges, where capitals denote a pitch-accented syllable:

(26)   After Mary came, what happened next?

     a. She PRAISED JOHN.

     b. # She PRAISED John. (Wagner 2005:3)

(27)   Mary met John. What happened then?

     a. # She PRAISED JOHN.

     b. She PRAISED John. (Wagner 2005:6)

---

[10]In fact, the discussion in §2.3 leads us to expect that non-affirmative uses with the former sense should also be possible, and this prediction is, indeed, borne out, e.g.: *Stilton is just old cheddar.*

In (26), *John* is new material, and so de-accenting it in the response (26b) is odd. On the other hand, in (27), *John*, and more specifically the event of Mary meeting John, is salient, having featured in the question. This means that a structure in which an event of the form *Mary X John* is presented as given, and only the fact that it is a praising event is presented as new, as in (27b), is possible.

In theories of givenness since Schwarzschild 1999, givenness has been defined in terms related to Selkirk's theory of intonational focus. That theory assumes that pitch accent on a word *F-marks* that word, and that F-marking of units containing that word is governed by rules of *focus projection*. The focus of a sentence is then identified with the maximal F-marked unit within that sentence:

(28) a. F-marking of the *head* of a phrase licenses the F-marking of the phrase.

     b. F-marking of an *internal argument* or a head licenses the F-marking of the head. (Selkirk 1995:555)

Crucially, in this theory, F-marking may only spread to a head X from complements of X, not from specifiers or adjuncts. This derives the contrast between the different foci corresponding to F-marking on the complement and focus projection as governed by (28) (shown below by different acceptable congruent questions), and the contribution of F-marking on the subject being restricted to subject focus:

(29)   [Mary [bought [a book [about [BATS]$_F$]]]]

     a. What did Mary buy a book about?

     b. What kind of book did Mary buy?

     c. What did Mary buy?

     d. What did Mary do?

     e. What's been happening? (Selkirk 1995:554)

(30)   [MARy]$_F$ bought a book about bats

     Who bought a book about bats? (Selkirk 1995:554)

Note, firstly, that attributive adjectives pattern like heads, rather than specifiers or adjuncts, in this respect:

(31)   [Mary bought [a big [red [CAR]$_F$]]]

     a. What big red thing did Mary buy?

     b. What big thing did Mary buy?

     c. What did Mary buy? (etc. . .)

Equally, attributive adjectives pattern like heads with respect to the requirement on deaccenting of given material:

(32) A: Why don't you have some French TOAST?
B: I've forgotten how to MAKE French toast (Schwarzschild 1999:142)

(33) {John drove Mary's red convertible. What did he drive before that?}
A: He drove her [BLUE]$_F$ convertible. (Schwarzschild 1999:146)

It seems that the patterns of F-marking, focus and givenness holding between an adjective and a nominal exactly parallel those holding between a head and a complement. Of course, this comes for free if the nominal *is* the complement of the phrase containing the adjective.[11] Adopting an analysis in which the attributive adjective phrase is a head, then, allows us to capture such information-structural effects within the noun phrase in a natural way.

4.2 Adjectives and Head Movement

Consider the following data from Danish. Danish definite articles have two forms, a suffixal form occurring on nouns unmodified by attributive adjectives, and a full word which appears when the noun phrase contains one or more adjectives:

(34) a. Hus   -et
House -the
'The house'

b. Det lange hus
'The long house'

c. *(Lange) huset (lange) (data adapted from Vangsnes 1999:102)

An appealing analysis of this alternation relies on N-to-D raising to generate (34a). If *-et* requires an N^0 host to attach to, then an attributive adjective phrase, if analysed as the head of the Adj–N constituent, should count as an intervener for the Head Movement Constraint, hence the ungrammaticality of (34c). This could, in turn, require use of the stand-alone article *det*, as in (34b):

---

[11]Schwarzschild offers an alternative analysis, preserving the adjunction analysis of adjectives, and relying on entailment relations to derive these patterns. While space prevents me from discussing his proposals in detail, I will note that his proposals apparently only work for affirmative adjectives, and the above demonstration of the defeasibility of such entailment relations could be problematic for his theory.

(35) a.

```
                        DP
                      /    \
                    D        NP
                  /   \       |
               Hus_i   -et    t_i
```

b.

```
                        DP
                      /    \
                    D        AdjP
                  /  |       /   \
               Hus_i -et  lange   NP
                                   |
                                   t_i
```

c.

```
                   DP
                 /    \
              Det      AdjP
                      /    \
                   lange    NP
                             |
                            hus
```
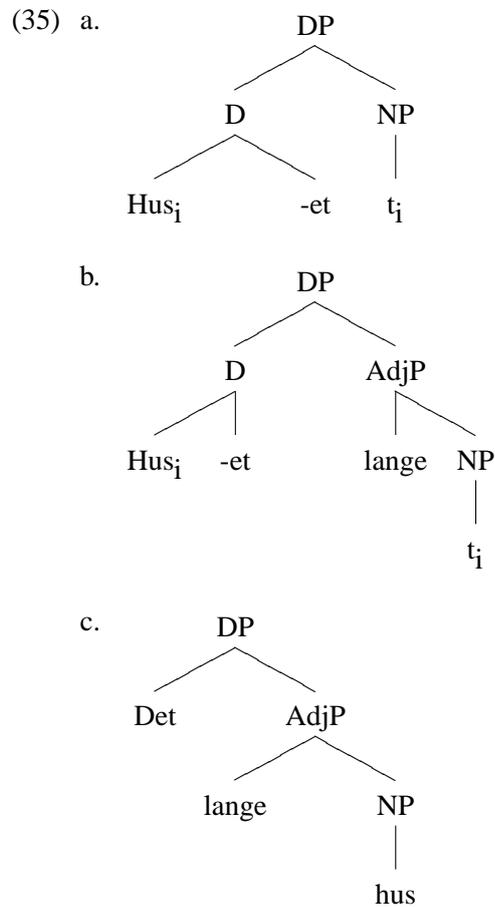
I refer the reader to Vangsnes 1999 (from which this analysis has been taken and simplified) for an account of many noun phrase word orders in a wide variety of Scandinavian dialects. Crucially, this account relies on the fact that adjectives, as heads, count as interveners for head movement. It is unclear how such data could be elegantly captured on other assumptions concerning the phrase structural status of adjectives.

5   Conclusion

This paper has shown the advantages of an analysis of attributive adjectives as second-order identity-typed functions taking nominal arguments. The contrast between this analysis and the evidence that predicative adjectives behave as properties motivated the proposal of a type-shifting operator JOIN, deriving the attributive use of adjectives from the predicative use. It was then argued that attributive adjectives subcategorise for arguments of given syntactic categories, as well as of given semantic types. In particular, an attributive adjective subcategorises for a

nominal sister. This suggests an analysis of the attributive adjective as the head of the Adj–N unit. A sketch of how this position might be accommodated within a model of lexical categories following Baker 2003 and Williams' (1994) theory of relativised heads was offered, before, finally, some further empirical consequences of the analysis of attributive adjectives as heads taking nominal complements were demonstrated.

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The Internal Structure of the Korean DP: Evidence from prenominal and postnominal classifiers *

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1   Introduction

In generative grammar, noun phrases have been considered as a lexical projection of N. N seems the most important element in noun phrases just as V does in sentences. However, it has been recognised that sentences are not the projection of V, but rather the projection of a functional category I or Agr. In the same vein, it is plausible to reconsider the projection of noun phrases as functional projections parallel to sentences. The similarities between noun phrases and sentences have been explored since the 1980s, and it is now generally assumed that noun phrases are DPs headed by D (Abney 1987; Szabolcsi 1994; Ritter 1991).

Although noun phrases are generally assumed to be contained within DPs, the internal structure of DP has been under long debate. Some argue that QP is a functional category which contains quantifiers and demonstratives, but it has also been proposed that Cl(assifier) should be posited as a functional category related to quantifiers and demonstratives in addition to QP (Borer 2004). The internal structure of DP can vary depending on the frameworks that account for word order variation. The order of heads and complements can differ on the basis of the parameter setting that a language chooses. Movements of some constituents such as possessors, and head nouns, or phrases are another way of explaining the word order difference. Word order, however, can be accounted for by a different story, which supposes that specifier-head-complement is a universal order in terms of asymmetric c-command (Kayne 1994).

In the literature, noun phrases in Korean have been assumed to be NPs, and little attention has been paid to their internal structure. As an article-less language, Korean was assumed to be argumental without the projection D. However, the lack of an overt projection does not necessarily mean that a language lacks a head (Cheng & Sybesma 1999). In this paper, I discuss the internal structure of Korean noun phrases from a perspective which presupposes noun phrases to be a projection of a functional category. Korean has a number of classifiers, which need

to appear with a numeral in order to count things, either prenominal or postnominal depending on the presence of a genitive marker *-ui*. This paper aims to show that prenominal and postnominal classifiers involve different movements within DP. I argue that Korean, generally assumed to be a head-final language, supports the hypothesis of a universal head initial setting rather than head parameters on the basis of the evidence that the universal head initial setting can derive the correct order of postnominal and prenominal classifiers.

2   The Noun Phrase as a Projection of a Functional Head

The parallelism between noun phrases and sentences in many languages has led us to recognise that D is the head of the noun phrase, since Abney (1987) proposed the DP-analysis. In §2.1, I present the sentence-like aspects of noun phrases proposed by Abney (1987). Then, on the basis of the supposition of bare nouns, I introduce the distinction made by Chierchia (1998) between argumental and predicative languages. §2.3 examines a unitary approach towards noun phrases in languages considered to have a Classifier Phrase (ClP) in order to count nouns (as argued in Borer 2004).

2.1   D as the Head of the Noun Phrase

Abney's (1987) dissertation stands out as a first attempt to introduce the DP-analysis. His objective is to capture the similarities between the overt agreement between the subject and verb in sentences, and between the noun and its possessor in noun phrases in Yup'ik, Hungarian, and Turkish. For instance, a Hungarian possessor bears nominative case, which appears in the subject of the sentence as in (1) and (2):

(1)   az en   vendeg-e-m
       the I-Nom guest-Poss-1sg
       'my guest'

(2)   a te   vendeg-e-d
       the you-Nom guest-Poss-2sg
       'your guest'

It is generally assumed that nominative case in a sentence is assigned under government by Agr in the Government-Binding theory. A sentence is regarded as an IP headed by a functional category, I. Abney's main argument is that a noun phrase is also a projection of a functional category, D, just as a sentence is a projection of Infl. Hence, nominative case in a noun phrase should also be assigned by Agr under D.

Abney proposes that possessors and determiners occupy different positions, namely a specifier of DP and a head of DP respectively, as shown in (3):

(3)

```
              DP
            /    \
          DP      D̄
          |      /  \
     possessor  D    NP
                |
            determiner
```
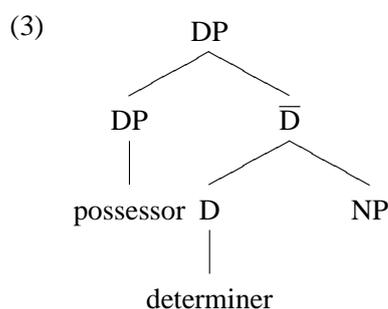
When a possessor 'John's' co-occurs with a determiner 'the', as in (4), it gives rise to ungrammaticality. Abney assumes that AGR under D, which assigns genitive case to a possessor, does not co-occur with determiners in English, in order to account for (4). It is, however, allowed to take a determiner 'every' with a possessor 'John's' as in (5) if we assume that 'every' is a quantifier adjoining to N' like adjectives. The problem with this assumption is that the co-occurrence of a quantifier and a determiner, 'every' and 'the', as in the example (6), results in ungrammaticality. This indicates that the possessor does not appear in the same position as determiners.[1]

(4)   * John's the book

(5)   John's every wish

(6)   * the every wish

2.2   Mass Nouns and Bare Plurals

Languages vary as to whether they allow bare plurals and bare mass nouns, or not. Many argue that noun phrases can be differentiated in arguments and predicates. Chierchia (1998) proposes that languages can be classified into three distinct groups. In languages such as Chinese, NPs are argumental, hence they can occur in argument positions without the projection of D. A language group like Romance is characterised by having predicative NPs, hence, in order to occur in argument positions, they need the D projection. Germanic and Slavic allow both predicative and argumental NPs, and are categorised as a third group.

Chierchia assumes that nouns in an argumental type language (e.g. Chinese) denote kinds, since they are argumental. Hence, nouns without determiners can appear in any position. Determiners, which function to quantify nouns, have to

---

[1]Other evidence that possessors and determiners are not in complementary distribution comes from the data in Hungarian. It is clear that, in Hungarian, possessors are able to appear with determiners like (1):

(1)   John   minden/ezen/azon/mindket kalapja
       John's every/this/that/both   hat
       (adopted from Abney 1987)

apply to kinds in argumental languages. However, determiners in general are assumed to take predicates and turn them into arguments, so they need a predicative restriction. If nouns are already argumental, applying determiners to kinds is problematic. Chierchia, however, argues that it is not problematic if it is assumed that determiners not only function as a quantificational device, but are also able to shift kinds into predicates, henceforth they can have a proper restriction. However, this shift results in the newly transformed predicate being mass, and this implies that all nouns in argumental languages are mass. Chierchia assumes that mass nouns are already pluralised when they are picked out of the lexicon, hence they cannot have a singular/plural distinction. This explains why argumental languages like Chinese cannot count things directly, but require classifiers. Following Krifka (1989), classifier phrases are considered to turn mass denotations into countable individuals. For instance, Chinese needs classifiers to count objects which lack a plural marker, as illustrated in (7):

(7)   liǎng zhāng   zhuōzi
        two   Cl(assifier) table
        'two tables'

However, it has been pointed out that it is not desirable to assume such a difference in the interpretation of a syntactic category, N, among languages, since it is preferable to have a one-to-one syntax-semantics mapping. Cheng and Sybesma (1999) criticise Chierchia's (1998) assumption that bare nouns can occur freely in Chinese, unlike Italian, assuming that they are arguments, and do not need to project D. They argue that bare nouns in Mandarin can be interpreted as definite, as in (8b), or generic, as in (8c), in preverbal position, while an indefinite interpretation is not allowed in this position, as shown in (8a):

(8)   a.   Gou yao guo malu.
                dog want cross road
                'The dog wants to cross the road.'
                *'A dog wants to cross the road.'
        b.   Gou jintian tebic tingua.
                dog today very obedient
                'The dog/ dogs was/were very obedient today.'
        c.   Gou ai   chi rou.
                dog love eat meat.
                'Dogs love to eat meat.'

In Cantonese, the preverbal bare noun *gou* 'dog', as in (9), has only a generic reading:

(9)   Gou zungji sek juk.
        Dog like   eat meat

'Dogs love to eat meat.'

'A dog loves to eat meat.'

Following the assumption that weak indefinites are related to a null D, but definite and generic readings are associated with the projection of D, the data in (8) and (9) show that Chinese bare nouns are not in fact bare, but project D, contrary to the claim of Chierchia.

2.3   The Postulation of ClP and QP between DP and NP

Borer (2004), along with Cheng and Sybesma (1999), argues that the data in (8) and (9) support the postulation of a classifier system. According to Chierchia (1998), mass nouns are inherently plural, hence do not need be pluralised. However, Borer argues that mass nouns can be counted in some cases, as shown in (10), or count nouns can be used as mass, as in (11). These examples are unexpected on the basis of Chierchia's analysis:

(10)   a.   a wine, a love, a salt

       b.   wines, loves, salts

(11)   a.   too much chicken

       b.   that's quite a bit of table for the money (adopted from Borer 2004)

Borer claims that a purely structural approach to the mass and count distinction provides a better understanding. She proposes that nouns in all languages are predicates and they are not marked as either count or mass. Assume that all nouns are mass by default if more structure is not provided. To count items, they need to be individuated, and this dividing function is achieved by the projection of classifiers in Chinese, and, in English, by plural marking and the indefinite article. Therefore, in Chinese, and English as well, count interpretation is derived from the structural sense, namely the existence of ClP, and mass interpretation results from the absence of this phrasal node.

In Borer's system, each head bears open values, which must be assigned range by their specifier. In Armenian, where both classifiers and plural markers are available, the structure of the noun phrase with a classifier and a numeral, 'two umbrellas' in (12), is represented in (13):

(12)   yergu had hovanoc uni-m
         two   Cl umbrella have-1s
         'I have two umbrellas'

(13)   yergu had hovanoc

$$
\begin{array}{c}
\text{DP} \\
\diagup \quad \diagdown \\
\text{D} \qquad \text{QP} \\
\langle e \rangle_d
\end{array}
$$

(tree diagram)

DP
- D: $\langle e \rangle_d$
- QP
  - yergu^1
  - $\langle e^1 \rangle_{\#}$ ... ClP
    - had^2
    - Cl: $\langle e \rangle^2{}_{DIV}$
    - NP: hovanoc
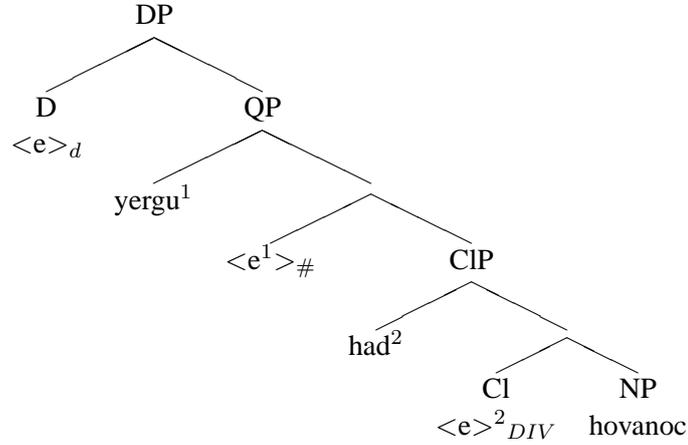
QP has the function of assigning quantity or dividing things. The quantifier *yergu* 'two' assigns range to an open value and transmits a referential index to it. The classifier *had* assigns range to the open value under the Cl(assifier) node, and is coindexed with it. 'DIV' indicates division and '#' stands for quantification.

In (14), the structure of a plural noun *hovanoc-ner* 'umbrellas' is represented:

(14)   yergu hovanoc-ner uni-m
       two   umbrella-pl have-1sg.
       'I have two umbrellas'

(tree diagram)

ClP
- hovanoc $\langle \text{div}^1 \rangle$
- $\overline{\text{Cl}}$
  - $\langle e^1 \rangle_{DIV}$
  - NP
    - ~~hovanoc~~
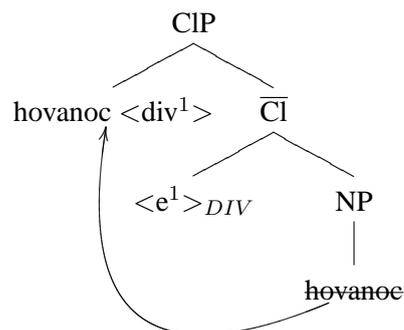
In Armenian, classifiers and plural markers cannot co-occur. The complementary distribution of classifiers and plural markers can be accounted for by the following assumption: both classifiers and plural markers are assumed to be able to assign range to the open value in Cl. However, the plural marker is not a functional morpheme like a classifier, but it is a spellout of a head feature $\langle \text{div} \rangle$ of the moved head *hovanoc*, which assigns the range to the open value under Cl. Since a plural marker and a classifier appear in the same position, Spec ClP, they cannot co-occur.

Borer's proposal does not mean that Chierchia's claim is totally wrong, but we can assume that the count interpretation is derived from the existence of ClP, and the mass interpretation results from the absence of this phrasal node in all languages including Chinese and English. Therefore, the postulation of ClP can explain the existence of classifiers in languages such as Korean and Chinese which always require classifiers to count objects, and the count reading in languages such as English, which lack classifiers, since Cl is the node for individuating any objects, mass or count.

3   The Basic Data

Korean is classified as an SOV language. The object must follow the subject, except in the case of an emphasised word. As shown in (15), heads like P or T follow their complements DP and VP respectively. Hence, Korean seems to be head-final.

(15)   John-eke sunmul-ul   ju-ess-ta
       John-to   present-Acc give-Past-Decl.

       '(I) gave a present to John'


```
                    TP
                   /  \
                 DP    T̄
                 |    /  \
                pro  VP    T
                    /   \
                  PP     VP
                 /  \    /  \
               DP    P  summul-ul
               |     |  ju-ess-ta
             John   eke
```
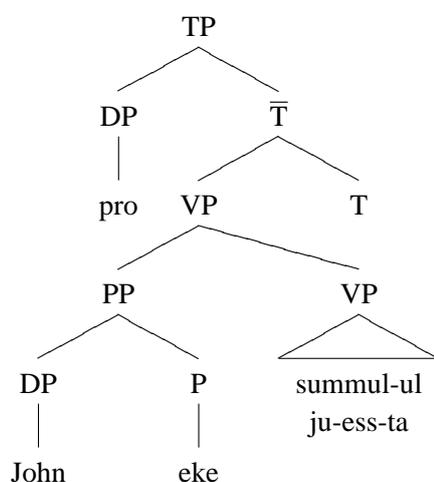
3.1   Plurals and Classifiers

Korean has a number of classifiers, and each noun must come with a specific classifier when being counted. Classifiers specify the type and the property of the noun that they go with, and can be grouped into two types: prenominal or postnominal. The classifier follows the noun, as in (16), or precedes the noun and accompanies a Genitive marker -*ui*, as in (17):

(16)   hakseng du myeng
         student two Cl

          'two students'

(17)   du myeng-ui hakseng
          two Cl-Gen   student

          'two students'

It is also possible to omit a classifier in the case of animate nouns, as shown in (18a) and (18b). In contrast, inanimates cannot be counted without classifiers, as shown in (19). They must appear with classifiers, otherwise the sequence sounds ungrammatical.

(18)   a.   hakseng dul
              student two

              'two students'

       b.   du hakseng
              two student

              'two students'

(19)   a.   * chaeksang/chaek/jongi/os dul
              desk/book/paper/cloth   two

              'two desks/books/papers/clothes'

       b.   * du chaeksang/chaek/jongi/os
              two desk/book/paper/cloth

              'two desks/books/papers/clothes'

As an argumental language, Korean has overt classifiers, since nouns other than animates must take classifiers with a numeral. Korean, however, also has a plural marker *-dul*, contrary to Chierchia's (1998) claim that nouns in argumental languages are all mass and lack a plural marker; hence they need a classifier system. Note that it seems that the plural marker cannot appear with classifiers in Korean; since the acceptability is more degraded when both classifier and plural marker are used together, as shown in (20a):

(20)   a. ?? ai-**dul** du **myeng**-i jip-e   i-ss-ta.
              child-Pl two Cl-Nom home-at be-Pres-Decl.

              'There are two children at home.'

       b.   ai-**dul** dul-i   jip-e   i-ss-ta.
              child-Pl two-Nom home-at be-Pres-Decl.

              'There are two children at home.'

From the complementary distribution of classifiers and the plural marker we can assume that the plural marker *dul* in Korean is a special kind of classifier that specifies the property of animates. The plural marker cannot appear with other classifiers, since it is not possible to use more than one classifier at the same time. Following Chierchia (1998), we can argue that Korean is another example of a classifier language which has a plural marker as a default classifier. In this sense,

Chierchia's system can account for the Korean data in that nouns cannot be counted directly, but require classifiers.

However, there is another way of analysing the plural marker, given that there is a count/mass distinction in Korean. Following this argument, Korean is viewed as having two counting systems, one for classifiers and the other for plural marking. According to Kang (1998), Korean plurals have the same range of readings that English bare plurals do. In (21a), the noun has a kind reading, and an existential reading is available in (21b). (21c) has a generic reading:

(21) a.   gonryong-dul-i   myeljong doi-ess-ta.
            dinosaur-Pl-Nom extinct   become-Past-Decl.

            'Dinosaurs are extinct.'

      b.   gongwen-e saram-dul-i   iss-ta.
            park-in   person-Pl-Nom be-Decl.

            'There are people in the park.'

      c.   toki-dul-un   saram-ul   musewe ha-n-ta.
            rabbit-Pl-Top person-Acc afraid   do-Pres-Decl.

            'Rabbits are afraid of humans.'

Kang argues that the existence of plural marking, similar to English plural -*s*, supports the hypothesis that Korean has a count and mass distinction. Since, in Korean, plural marking is optional for animates, we can assume that animates operate under the system that has a plural like English, whereas inanimates take a classifier system. Whether Chierchia's generalisation or Kang's assumption works for Korean plural marking will not be discussed further, but will be left for future research.

4   The Structure of Postnominal Classifiers

Korean has two options for counting nouns, depending on the position of classifiers. This section will examine the structure of postnominal classifiers. Following Borer (2004), given that all nouns are mass and require to be individuated before they are counted, the portioning out process is accomplished by a classifier system in languages like Korean, and by a plural inflection or an indefinite article in languages like English. As Borer claims, QP is responsible for assigning quantity, and Cl serves to individuate nouns. Hence, the basic structure that I assume for quantified phrases is one that has three functional heads: D, Q, and Cl.

As discussed in §3, Korean is generally assumed to be head-final. In line with this, the structure of the postnominal classifier phrase in (22) can be given as (23):

(22)   hakseng du myeng
          student two Cl

(23)

```
                              DP
                           /      \
                        QP          D
                      /    \
                  Spec      Q̄
                         /     \
                     ClP         Q
                    /   \         |
                Spec     C̄l       du
                       /    \
                    NP        Cl
                   /  \        |
              hakseng          myeng
```
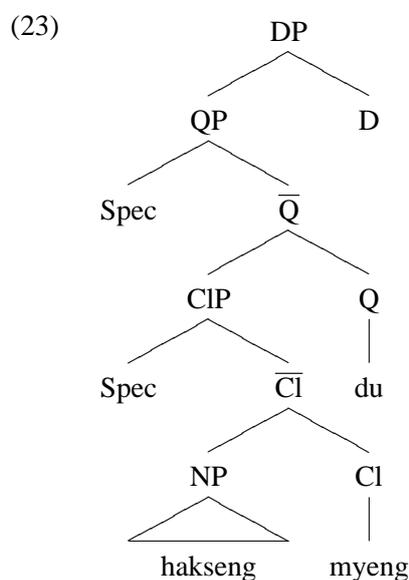
The structure in (23), however, does not match the phrase in (22). The head parameter explains word order variation on the basis of parameter setting, but it is not sufficient to account for the postnominal classifiers in Korean. The problems of head parameters has been investigated by many researchers (e.g. Giorgi & Longobardi 1991; Szabolcsi 1994; Valois 1991; Cinque 1994), who argue for head movements in noun phrases. A head can only move to the c-commanding head position, and cannot skip over the c-commanding head position and move to the next head position.

Giorgi and Longobardi (1991) examine the internal structure of Italian noun phrases within a Government and Binding framework. Although their generalisations are formulated under the assumption that noun phrases are headed by N, they suggest that their work is still compatible with the DP analysis. They assume that N assigns an internal θ-role under a non-maximal projection N', and an external one in a higher projection. With this in mind, they also argue that a simple parameter 'head first/ head last' is not adequate to account for word order in Germanic and Romance. In Italian, possessives can express internal arguments, as shown in (24) and (25), and they can appear both prenominally and postnominally:

(24)   la mia   cattura / la cattura mia
        'my (theme) capture'

(25)   la mia   descrizione / la discrizione mia
        'my (agent of theme) description'

Giorgi and Longobardi argue that the above data shows that internal arguments are base-generated under N', not N", and move to a higher position. When a possessor appears prenominally, it is assumed to move to the Spec position, but when it moves to a postnominal position, it is first raised to the right of N', from an internal argument position, and then moved to the postnominal adjective position as in (26),

given that Italian possessives are realised as adjectives:[2]

(26)

     N'''

    N'' possessor/adjective

    N' external argument

    N internal argument
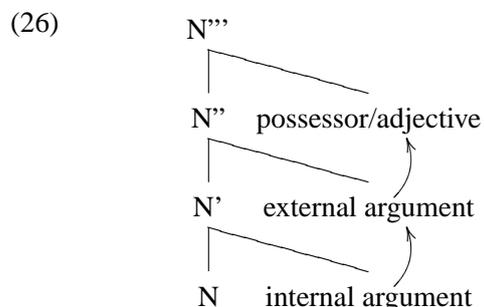
In French, adjectives in event nominals can occur either prenominally or post-nominally, although there is a rigid restriction on the co-occurrence of adjectives (Valois 1991). Valois argues that N movement results in the postnominal position of adjectives. As in (27), the noun *invasion* moves to Num, and the adjective appears postnominally:[3]

(27) L' $[_{NumP}$ $[_{Num}$ invasion$_i$ $[_{CaP}$ probable $[_{NP}$ t$_i$ de Jupiter]]]
    the   invasion probable of Jupiter
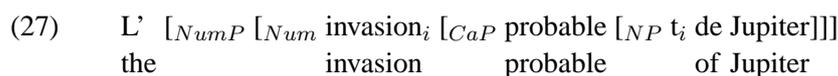
Adjectives in French can also sometimes appear prenominally. Valois proposes that the prenominal position of adjectives is derived from incorporation. To get the order in (28), the head noun *invasion* moves to Case. Then, the adjective *complète* moves to the left of the head. These movements form a complex *complète invasion*, and this complex moves to the head Num. Finally, the adjective *fréquente* moves to the left of the complex, so (28) is derived by serial movements, as shown in (29):

---

[2]In English, an article cannot appear with a possessive, whereas in Italian it can. Also, a possessive in Italian can appear in a postnominal position optionally, as in (2) and (3), while this is not possible in English, as in (1):

(1) the my book/* the book my

(2) il mio libro / il libro mio
   the my book / the book my

(3) il mio regalo a Maria / il regalo mio a Maria
   the my present to Maria / the present my to Maria

Possessives as external arguments should be generated postnominally, and they may stay in that position, or move to a prenominal position at S-structure. Giorgi and Longobardi propose that this is because possessives in Italian are realised as A(djective)s, but Ds in English; therefore Italian possessives can co-occur with an article, just as there is no problem for adjectives and determiners to co-occur.

[3]The internal structure of DP proposed by Valois has three functional categories, following Ritter (1990). The first one is D, the next is Number, which bears the number feature of the noun phrase, and the last one is Ca(se), which projects the genitive structural case marker in DP (equivalent to Szabolcsi's N+I node). The internal structure of DP is as follows:

  $[_{DP}$ D $[_{NumP}$ Num $[_{CaP}$ Ca$[_{NP}$ N]]]]
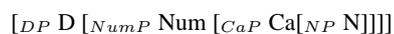
(28)   La fréquente complète invasion de Jupiter
         the frequent   complete invasion of Jupiter

(29)   la [$_{NumP}$ [$_{Num}$ fréquente$_z$ [$_{Num}$ [$_{Ca}$ complète$_k$ [$_{Ca}$ invasion$_i$]]$_x$]]
         [$_{CaP}$ t$_z$ [$_{CaP}$ t$_x$ [$_{NP}$ t$_k$ [$_{NP}$ t$_i$ de Jupiter]]]]]

Since the correct order of Korean postnominal classifiers cannot be derived by head parameters, as presented in (23) (repeated here as (30)), let us examine the option of head movement.

(30)   hakseng du   myeng
         student   two Cl

         'two students'

The Cl head moves and adjoins to Q in order to check the strong uninterpretable [+class] feature given on the Q head as shown in (31):

(31)
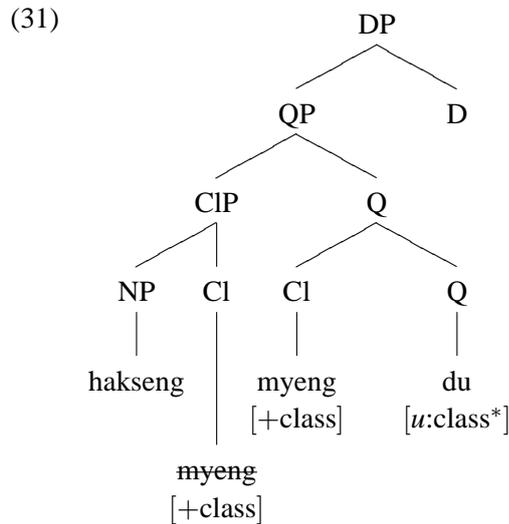
Movement, however, cannot explain the word order of (30). This indicates that head movement fails to derive the correct word order of postnominal numeral phrases in Korean.

Kayne (1994) claims that there is no parametric variation among languages, but that the order of 'specifier-head-complement' is a universal one. His main idea is that hierarchical structure determines linear order, based on asymmetric c-command as defined in (32), and UG cannot contain parameters. If X asymmetrically c-commands Y, then X precedes Y.

(32)   X asymmetrically c-commands Y iff X c-commands Y and Y does not
         c-command X.

He also argues that a head always appears between specifier and complement, so specifier-head-complement, or complement-head-specifier orders are available. This implies that complements must follow the head and specifiers must precede

the head within Kayne's approach. Therefore, specifier-head-complement is the only possible option following the asymmetrical c-command relation. Kayne proposes that SOV is strictly impossible in any language unless it is derived by movement. If we apply Kayne's hypothesis to the Korean data in (30), this results in the representation shown in (33):

(33)

```
              DP
          ┌───┴───┐
          D       QP
               ┌───┴───┐
               Q       ClP
               │     ┌──┴──┐
              du    Cl     NP
                    │      │
                  myeng  hakseng
```
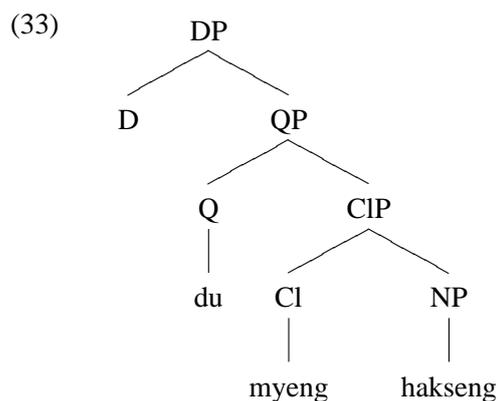
In (33), the numeral *du* occupies the head Q, and the classifier *myeng* is in Cl. However, the head initial setting itself cannot derive the postnominal numeral phrase. Even if the head N raises to the next head Cl, and then moves to Q in turn, as shown in (34), we cannot derive the phrase in (30):

(34)

```
                    DP
             ┌──────┴──────┐
             D             QP
                      ┌─────┴─────┐
                     Spec         Q̄
                              ┌────┴─────┐
                              Q          ClP
                          ┌───┴───┐   ┌───┴───┐
                      hakseng     Q  Spec     C̄l
                       myeng      │       ┌────┴────┐
                                 du      Cl         NP
                                      ┌──┴──┐       △
                                   hakseng  Cl   hakseng
                                            │
                                          myeng
```
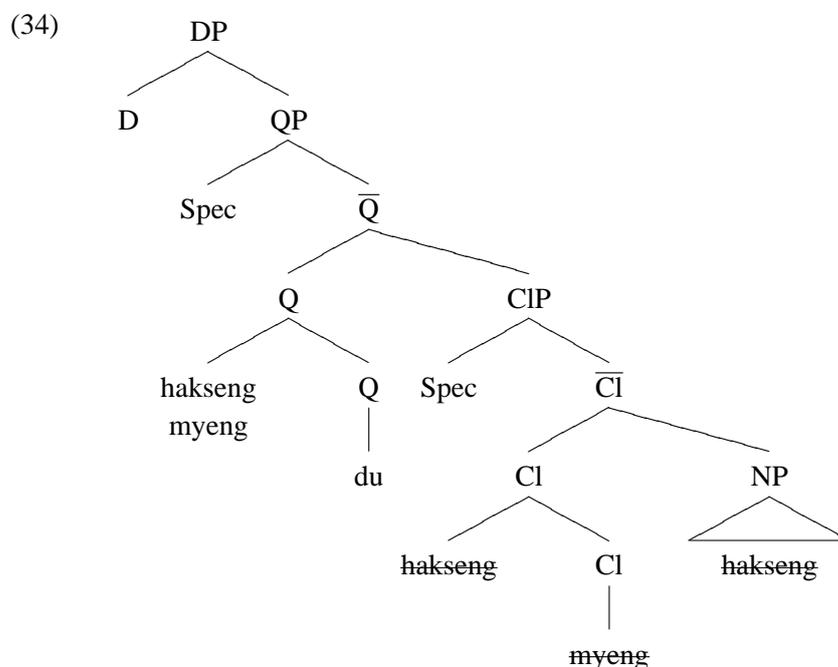
As discussed in Bhattacharya (1998), phrasal movements can be a solution for the structure of the postnominal classifier phrase. In Bengali, when a numeral and

classifier follow a noun as shown in (35), the nominal has a specific meaning taking a prior discourse reference:

(35)   oi   lal boi du-To
         those red book two-Cl

         'those two red books'

(36)   oi   du-To lal boi
         those two-Cl red book

         'those two red books'

The structure of (35) is shown in (37), where the NP *lal boi* 'red book' moves to Spec ClP, assuming that (36) is the base configuration:

(37) $_{DP}$ oi [$_{ClP}$ [$_{NP}$ lal boi $_i$ duTo t$_i$]]

Bhattacharya proposes an optional feature of specificity on the Cl head, and this attracts the NP to its specifier position. If the specificity feature of Cl is not selected, the DP is not specific, as in (36). Bhattacharya assumes that the specificity feature of the Cl head is interpretable, so feature checking is delayed until LF, following Chomsky (1995).

Let us now turn back to the Korean example in (30), repeated here as (38):

(38)   hakseng du   myeng
         student   two Cl

(39)   du   myeng-ui hakseng
         two Cl-Gen   student

It has been generally assumed that there is no difference in meaning between (38) and (39). However, in (38), the noun has a specific reading which emphasises the exact number of students (i.e. two out of two students) whereas in (39) it has the possibility that the range of the noun *hakseng* is uncertain (i.e. two out of two or two out of more than two students). I assume that when Q has a strong feature [+range*], it attracts the NP to the specifier of QP to check the feature as shown in (40):

(40)

```
                    DP
                   /  \
                  D    QP
                      /  \
                    NP    Q̄
                    |    /  \
                hakseng Q   ClP
                        |   /  \
                       du Spec  C̄l
                    [+range*]  /  \
                             Cl    NP
                             |
                           myeng  hakseng
```
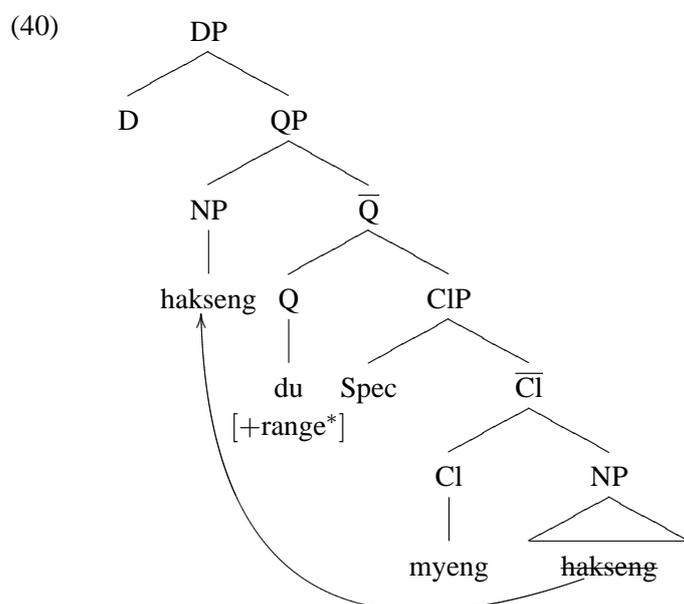
To overcome the problem of head final setting, Kayne's (1994) universal head ini-tial word order is adopted, and then the NP movement is applied in order to derive the correct order of the postnominal classifier phrase. The next section discusses the structure of prenominal classifiers.

5   The Structure of Prenominal Classifiers

Prenominal classifiers appear with the Genitive marker *-ui* in Korean. Following Borer (2004) and Kayne (1994), we can derive a structure of a prenominal classi-fier noun phrase as shown in (41). In Borer (2004), QP is responsible for assigning quantity, and ClP is for individuating nouns. This is marked as '#' and 'div' re-spectively, and the numeral *du* assigns an open value on the head Q as the classifier *myeng* does on the Cl head.

(41)   du   myeng-ui saram
       two Cl-Gen   person

```
                    DP
                   /  \
                  D    QP
                      /  \
                     Q    ClP
                     |    /  \
                   du¹  Cl    NP
                  <e¹>#  |     |
                      myeng-ui²  saram
                        <e²>
```
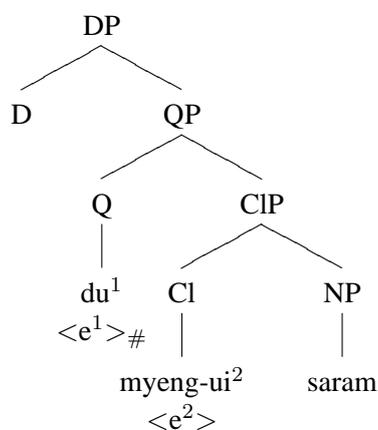
Numeral and classifier always co-occur unless the noun is an animate. As discussed before (shown here in (42a)), a numeral without a classifier, when occurring with an inanimate noun, gives rise to ungrammaticality regardless of the existence of the Genitive marker -*ui*.

(42)   a.   * du jangmi / *du ui   jangmi
                two rose   / two Gen rose

              'two roses'

        b.   du *songi*-ui jangmi
              two Cl-Gen   rose

              'two roses'

This indicates that a numeral-classifier-Gen complex is a constituent, which appears in a single position rather than in separate positions such as Q or Cl, as shown in (41). I suggest that a prenominal numeral construction in fact forms a constituent, and has the structure of (43) rather than (41):

(43)

```
                          DP
                    ┌─────┴─────┐
                    D           QP
                    │      ┌─────┴─────┐
                  Spec           Q̄
                    │       ┌─────┴─────┐
                   du       Q          ClP
                songi-ui    │      ┌─────┴─────┐
                [+class] [u:class*]Spec       Cl̄
                                │         ┌────┴────┐
                           du songi-ui    Cl       NP
                                                    │
                                                 jangmi
```
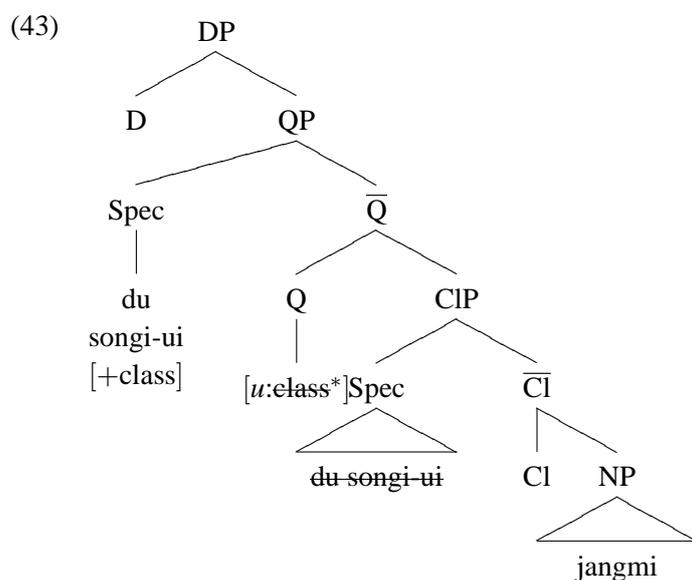
In (43), given that the numeral-classifier-Gen complex is a constituent, it originates in Spec ClP, and then moves to Spec QP. We can assume that the head Q has a strong uninterpretable [+class] feature, and it can be checked and valued by the moved complex.

Note that the Genitive marker *-ui* which goes with a classifier is the same marker which occurs in a possessive, as shown in (44):

(44)   na-**ui**   chaek
       I-GEN   book

       'my book'

```
                 DP
            ┌─────┴─────┐
           DP           D̄
            │      ┌─────┴─────┐
          na-ui    D          NP
                               │
                             chaek
```
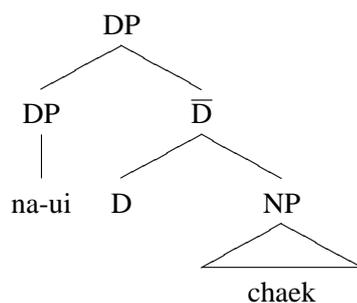
The question is whether the Genitive marker *-ui* in a classifier phrase is a true possessive, given that they are both realised as the same morpheme. If we examine the distribution of both possessive and classifier phrases with *-ui*, this seems to show that the Genitive with a classifier is not likely to be a true possessive. In (45), the possessive *na-ui* can precede a demonstrative *gue*, whereas the numeral and classifier complex with a Genitive marker preceding the demonstrative *gue* in (46) does not sound as natural as (45):

(45)   na-ui gue chaek
         I-Gen that book
         'my the book'

(46)   ?? du   gwen-ui gue chaek
         two Cl-Gen that book
         'the two books'

This implies that a numeral construction with a Genitive is not a true possessive which occupies the specifier position of DP, and is clearly different from the possessive on the grounds that the numeral-classifier-Genitive starts off in Spec ClP and moves to Spec QP to check an uninterpretable feature on Q.

Recall that Korean has a plural marker -*dul* which can be used for animate nouns as shown in (47):

(47)   du   saram-dul
         two person-Pl
         'two people'

Following Borer (2004), the pluralised phrase in (47) has the structure of (48):

(48)
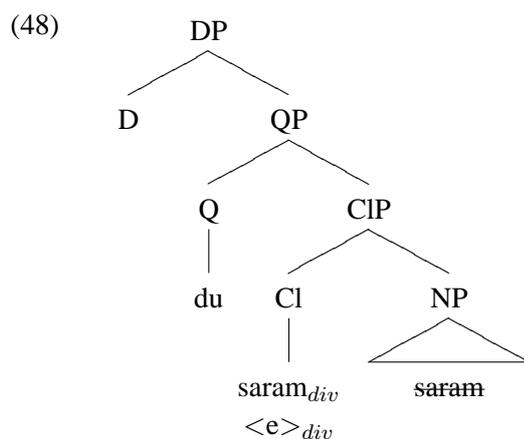
Within Borer's system, the Cl head has an open value, and it can be valued by the moved head *saram* 'person' to the Cl head. Since a plural marker is not a functional morpheme like a classifier, it is a spell out of the feature 'div' on the Cl head assigned by the moved N *saram*.

6   Conclusion

In this article, I have proposed that several functional heads – Cl, Q, and D – exist in noun phrases. Cl is responsible for individuating nouns of all types, and Q for assigning quantity. If the head of noun phrases in Korean is assumed to be final, the correct word order of postnominal classifiers cannot be derived. As an alternative, heads are assumed to be initial, following Kayne's (1994) universal

'specifier-head-complement' system. It has been shown that the movement of NP to Spec QP to check the strong feature [+range] on Q results in the postnominal numeral-classifier.

Given that a prenominal numeral without a classifier or a Genitive marker gives rise to ungrammaticality, the numeral-classifier-Gentive complex is in fact a constituent; this implies that they occur under the same position, namely Spec ClP. This prenominal numeral complex in Spec ClP moves to Spec QP in order to check the strong feature [+class]. The genitive marker *-ui* in a prenominal classifier phrase shares the same morpheme as the possessive *-ui*. Their different distribution, however, supports the idea that the Genitive *-ui* in a classifier complex is not a true possessive. The analysis given here indicates that prenominal and postnominal classifiers involve different movements within DP.

I also argue that plural marking is an instance of a default classification, since it is optionally used just for animates. This assumption allows Korean to be classified as a classifier language which has a classifier system and lacks plural marking. On the other hand, on the basis of the fact that Korean plural marking has the same interpretations as English plurals, it can be argued that Korean has a split system where animates have plural marking just as English does, while inanimates take a classifier system. Which argument is exactly right for Korean plural marking needs further research.

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Split Topicalisation – Motivating the Split[*]

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1 Introduction

The phenomenon of split topicalisation, exemplified by sentences such as (1), has attracted much attention (see, amongst others, Fanselow, 1988; van Riemsdijk, 1989; Tappe, 1989; Haider, 1990; Haegeman, 1995; and Fanselow & Čavar, 2002) as a result of its paradoxical properties which, on the one hand, indicate that the topic and source are base generated independently in their surface structure positions, and, on the other hand, seem to exhibit evidence of a movement relation.

(1) Briefe hat sie mir   noch keine geschrieben
     Letters has she to-me still   none written

     'As for letters, she has still not written me any'

The analyses thus far remain both unsatisfactory and confused. Firstly, the phenomenon associated with split topics, or, as Fanselow terms them, discontinuous NPs,[1] has not, in itself, been clearly defined or delineated, with regard to similar phenomena, such as remnant *v*P fronting (2) and floating quantification (3):

(2) Briefe geschrieben hat sie noch keine/nicht
     Letters written   has she still   none/not

     'As for writing letters, she has still not done so'

(3) Briefe hat sie schon   alle geschrieben
     Letters has she already all written

     'As for letters, she has already written them all'

[1]This is actually a somewhat misleading term, given that we no longer assume it to be the NP which is discontinuous, but, rather, the DP. I shall maintain this name throughout the paper, however, since I am referring to work from the pre-DP era.

Secondly, a lot of the argumentation to this point relies on assumptions which are now out of date. For example, van Riemsdijk (1989) suffers largely from the assumptions of a pre-Bare Phrase Structure and DP-hypothesis framework.

It is my aim in this paper to distinguish clearly the phenomenon at hand (§2), to consider its features and theoretical implications along with the arguments both for and against the involvement of movement in an analysis (§3), to look at some of the proposed analyses (§4) and, ultimately, to propose a more up-to-date and explanatorily motivated account (§5). In so doing, I shall look at the syntactic and semantic differences between full topicalisation and split topicalisation constructions – (4a) and (4b) respectively. Whilst the syntax has already been considered in the many analyses already referred to, the semantics has not. In my analysis, I argue that whilst movement is necessarily involved, it is not movement of the whole DP, but rather of a subpart, as in van Riemsdijk's account. I shall then go on to explain the splitting semantically, as a result of information structure, and, more specifically, partitivity.

(4)   a. Keine Gänse habe ich gekauft
          No   geese have I   bought

      b. Gänse habe ich keine gekauft
          Geese have I   none bought

2   Delineating the Problem

As noted already, the concept of a discontinuous NP can be used as a cover term for a range of phenomena which may or may not be subsumed under one analysis. For the purposes of this paper, I shall narrow down the examples I wish to consider to those of the type given in (1), which involve an indefinite negative topic, the N of which is found in the *Vorfeld* whilst the negative determiner remains in situ. As such, I shall assume that *keine* is, indeed, a D element, and not a variant spell out of the negative element *nicht*.[2] I also distinguish cases where the N alone is fronted, from those whereby the remnant *v*P is fronted, as in (2). The latter are considerably more complicated to analyse, since we are faced with a constituency problem, with regard to what is fronted, and although remnant analyses provide a potential explanation for this (e.g. Müller, 2004), considerable motivation is required:

---

[2]Something which might be considered, given the alternative to (1):

(1)   Briefe hat sie mir   noch nicht geschrieben
      Letters has she to-me still   not   written

The contrast between these two alternatives is something which I am looking at further in my current doctoral research.

(5) *v*P remnant fronting:

```
                    vP
              _____
             /           \
           DP          geschrieben]
          /  \
      keine   [Briefe
```
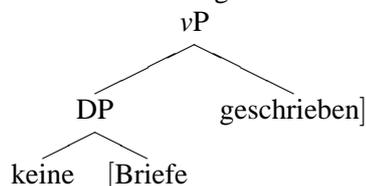
Finally, I also set aside the case of floating quantifiers. Although it is not clear that *keine* itself is not quantificational in some sense, standard floating quantifiers share the distribution of adverbials which *keine* does not (cf. Bobaljik, 2003).

3 Features of Discontinuous NPs

As noted by Fanselow (1988), the phenomenon of discontinuous NPs occurs in a wide variety of languages such as Warlpiri, Dyirbal, Latin and German. Several features remain consistent across all of these languages. Firstly, Fanselow claims the NP never occurs in more than two distinct subparts - determiner and noun. Secondly, one θ-role is always shared by the two parts of this NP. Thirdly, in languages which allow for discontinuous NPs, there is always rich agreement morphology between adjectives, determiners and nouns, and, furthermore, there is an unclear distinction between these categories, with adjectives and determiners being able to constitute complete NPs by themselves:

(6) a. Ich habe *den* noch nicht gefunden
          I   have *the* yet   not   found
          'I have not yet found it/him'

     b. Ich kenne *keinen in Uppsala*
          I   know *none in Uppsala*
          'I know noone in Uppsala'

     c. Ich kenne *nur zufriedene*
          I know *only satisfied*

          'I know only satisfied (people)'

     d. Ich hätte   gern   *das rote*
          I   would-have fondly *the red*
          'I would like the red one'
          (example 13, Fanselow 1988:98)

Fourthly, the interpretation of a discontinuous NP is always as a topic, hence the term *split topicalisation*. Elements in the *Vorfeld* are always predicative, not referential. Furthermore, as I shall argue in §5, these elements are, in some way at least, necessarily partitive.

Fifthly, it has generally been held that the two parts of a discontinuous NP are able to stand alone as independent constituents. As such, Fanselow (1988:99) claims that the element in the *Vorfeld* must therefore be either plural or a mass noun, e.g.:

(7) a. Bücher hat er keine gelesen
         Books has he none read

     b. Bücher hat er gelesen

     c. *Buch hat er keines gelesen
         Book has he none   read

     d. *Buch hat er gelesen

     e. Geld   hat er keines
         Money has he none

     f. Geld hat er

He does, however, also give the example:

(8) Hemd trägt er keines
     Shirt   wears he none

which he claims to be fine. From my poll, native judgments on both (7c) and (8) seem to vary. Whether or not they are allowed, however, is perhaps of less significance than the unanimous acceptance of their counterparts in (9):

(9) a. Ein Buch hat er keines gelesen
         A   book has he none   read

     b. Ein Hemd trägt   er keines
         A   shirt   wears he none

From such examples, it is clear that not all instances of 'splitting' are reconstructable. This is the major argument used by those who favour a non-movement based account. I shall not actually provide a satisfactory solution to this problem in this paper. However, what I do hope to do is to show that the motivation for a movement account is much stronger, despite this issue, and to therefore propose an account which both motivates and explains such movement.

Finally, then, the major argument in favour of a movement based account comes from the fact that discontinuous NP constructions appear to be bound by island constraints:[3]

(10) a. *Gänse kann ich mich   nicht erinnern,   wen   welche angefallen
         Geese can I   myself not   remember, whom any   attacked
         haben
         have

---

[3]Recent work by Boeckx (2003) and Adger & Ramchand (2005) suggests that locality is no longer necessarily a diagnostic for movement, since we can separate AGREE from MOVE, and the former can also be constrained by locality. However, I shall put this point aside for future research.

'As for geese, I cannot remember who has been attacked by any'

b. *Gänse belegt es Lorenz' These, dass Enten keine aufziehen
   Geese proves it Lorenz's thesis, that ducks none bring-up

   'As for geese, Lorenz's thesis proves that ducks do not bring any of them up'

c. *Gänse sagte Karl Maria wurde keine kaufen
   Geese said Karl Maria would none buy

   'As for geese, Karl said Maria wouldn't buy any'

d. *Gänse kaufte ich drei Enten und vier polnische
   Geese bought I   three ducks and four Polish

   'As for geese, I bought three ducks and four Polish ones'

e. *Gänse traf ich einen Mann, der keine essen darf
   Geese I   met a   man, who none to-eat may

   'As for geese, I met a man who may not eat any'
   (example 36, Fanselow 1988:105)

4   Possible Analyses

In this section, I outline some past approaches to the phenomenon at hand. Firstly, in §4.1, I look at a base generation account, put forward by Fanselow (1988), which gives us the structure in (11a). Then, in §4.2, I show why movement is necessary, at least in addition to base generation, giving us the structure in (11b). In §4.3, I outline van Riemsdijk's (1989) simple movement account which utilises the structure in (11c). Finally, I consider a more recent Copy and Deletion approach employed by Fanselow & Čavar (2002) (§4.4).

(11)   a. $[\text{XP}_i \ldots \text{keine pro}_i]$
       b. $[\text{XP}_i \ldots [\text{keine pro}_i] \, t_i]$
       c. $[\text{XP}_i \ldots \text{keine } t_i]$

4.1   Base Generation

Fanselow (1988, e.g. 15) uses the observations about the impossibility of reconstruction to argue that the two 'parts' of the NP are actually two distinct maximal projections. Taken at its simplest, this proposal would mean they should be base generated in situ, giving, at first approximation, the following structure:

(12) $[_{NP}\text{Gänse}]$ hat er $[_{NP}\text{keine}]$ gekauft

This, of course, is problematic, though, since two distinct NPs appear to share one and the same θ-role. In analogy to clitic left dislocation structures (13) which arise in Romance languages, however, Fanselow posits that there must be a (covert) pronominal element (*pro*) in the structure which is $\overline{\text{A}}$-bound by the first NP in the

Vorfeld, just as *la* is in (13), and thus allows us to apply the θ-criterion to the chain, and not the individual elements:

(13) A Maria$_i$ creo   que José la$_i$ quiere
      To Maria$_i$ I-think that José she$_i$ loves

      (example 20, Fanselow 1988:100)

(14) [$_{NP}$Gänse$_i$] hat er [$_{NP}$keine *pro$_i$*] gekauft

The existence of *pro* should also explain the agreement phenomena we see, since it is only licensed through rich morphological inflection.

4.2   Base Generation and Movement Combined

Nevertheless, as already pointed out, such an account cannot explain the island effects which play a role in the licensing of discontinuous NPs. The compromise which Fanselow (1988:106) therefore proposes is:

(15) [$_{NP}$Gänse$_i$] hat er [$_{NP}$keine *pro$_i$*] [t$_i$ gekauft]

whereby the trace is an anaphor, A-bound by *keine pro*. Here, since *Gänse* is assumed to move, it is constrained by locality conditions, and therefore we can explain the island effects.

We also meet with some problems here, however. Firstly, a point which is overlooked by Fanselow, is that we now reintroduce the problem of violating the θ-criterion by assigning one role to two distinct elements (the chain *Gänse . . . t* and the NP *keine pro*).

Secondly, the analysis as shown in (15), looks remarkably akin to the structure which would produce a weak crossover violation in English, where the *pro* intervenes (like a pronoun) between the antecedent topic and its trace (the antecedent *wh* and its trace):

(16) Weak Crossover:

    a. *$\overline{\text{A}}_i$ pro$_i$ A$_i$
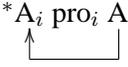
    b. $\overline{\text{A}}_i$ pro$_i$ $\overline{\text{A}}_i$
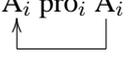
    c. *Who$_i$ does his$_i$ mother love t$_i$?
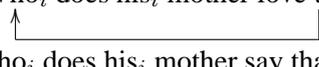
    d. Who$_i$ does his$_i$ mother say that we should love t$_i$?

The standard line with regard to German is that we do not get weak crossover effects in local $\overline{\text{A}}$-movement constructions like this, because we scramble first, and then $\overline{\text{A}}$-move. Accordingly, the following is fine:

(17)   Jeder Junge$_i$ wird seine$_i$ Mutter lieben t$_i$
        Every boy$_i$ will his$_i$ mother love   t$_i$

Scrambling is generally assumed not to be possible for indefinites, however, unless they are given a specific interpretation, which, for example, (18) doesn't have:

(18)   Hemd hat er keines gekauft

Thus, we should not be able to derive (18) either by scrambling first as in (19a) (because it is indefinite) or by one direct movement as in (19b) (because of weak crossover violations):

(19)   a.   Hemd$_i$ hat er t'$_i$ keines pro$_i$ t$_i$ gekauft

        b.   Hemd$_i$ hat er keines pro$_i$ t$_i$ gekauft

All in all, it would seem that, despite its intentions, Fanselow's account involving an additional non-overt element simply fails to be theoretically plausible.

4.3   A Simple Movement Account

Van Riemsdijk (1989) proposes a simple theory of movement, not involving any intervening pronouns or bound elements. Given that adjuncts and complements of the NP can be found either in the *Vorfeld* or in the source position, he assumes that the split must take place at the $\overline{\text{N}}$ level, i.e. between the two $\overline{\text{N}}$s in the following structure (1989:122):
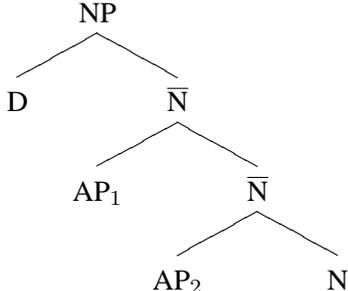
(20)   NP
            ╱   ╲
          D $\overline{\text{N}}$
                  ╱   ╲
              AP$_1$ $\overline{\text{N}}$
                        ╱   ╲
                    AP$_2$ N

The main problem here is that this, of course, contradicts standard X-bar theory which disallows movement of $\overline{\text{X}}$ and the resulting S-structures whereby an $\overline{\text{X}}$ is not dominated by its maximal projection node. Van Riemsdijk assumes, however, that, in particular cases, the language may permit the *regeneration* of the missing structure, and, in some instances, even the partial *relexicalisation* of the regenerated structures (thus accounting for the double occurrence of the indefinite in the example of *ein . . . keines*, and explaining why reconstruction is not possible):

(21)

```
              CP
             /  \
            /    \
           N̄      \
           |       \
           N        C̄
           |       / \
         Hemd     /___\
              hat er keines gekauft
```
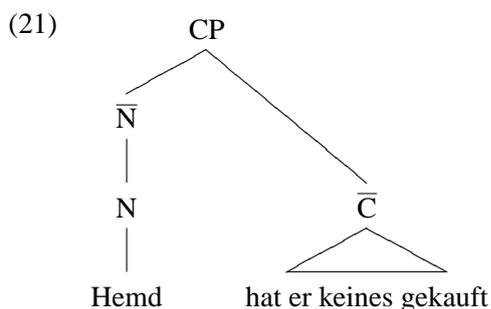
Here, under regeneration, N̄ would 're-grow' its NP-node, including its determiner:

(22)   N̄   →   NP
                            /   \
                           D   N̄
                           | |
                          ein   N
                                 /_\
                                Hemd
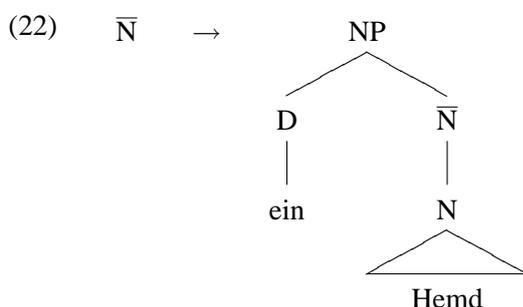
The spelt out version is thus:

(23)

```
              CP
             /  \
            /    \
          NP      \
          /\       \
         /__\       C̄
       Ein Hemd    / \
                  /___\
              hat er keines gekauft
```
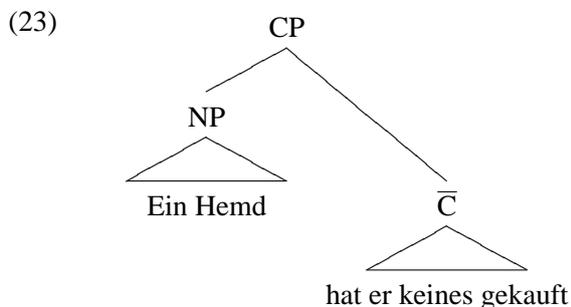
Relexicalisation should be subject to a strict recoverability requirement, how-ever: only words that are fully determined by the features of the head of the moved phrase may be relexicalised (hence the need for rich agreement morphology).

Many have objected to this account as not being independently motivated. If we look at it from the perspective of more recent developments, however, we find there to no longer be a problem with regard to the movement of an X̄ constituent. Firstly, given Bare Phrase Structure, this would be permissible anyhow, since anything with a label may move (cf. Hornstein, 2005; Adger & Ramchand, 2005). More-over, however, given the existence of DPs, we no longer need to 'split' an NP at all, but simply move the NP (or AP) out from within the DP. Regeneration, therefore, becomes essentially unnecessary. We still, however, need to assume relexicalisa-tion in order to explain how come we may spell out the indefinite twice. Moreover,

the main objection to this account remains the lack of obvious motivation for the split to occur at the level at which it does.

4.4   Copy and Deletion

A more recent account of the discontinuous NP phenomenon comes from Fanselow & Čavar (2002), who suggest a method known as *distributed deletion*, employing the Copy and Deletion (C and D) approach to movement of Minimalist syntax (Chomsky, 1995; Nunes, 2001), but implementing it in such a way that the deletion operation following the copying step may affect part of *both* copies. That is, they assume deletion to mean non-pronunciation, and not obliteration (Groat & O'Neil, 1996; Fanselow & Čavar, 2001). So, whilst standardly the C and D approach is defined as in (24), Fanselow & Čavar argue that it may also end as in (25) or (26):

(24)   a.   ...... α ......
           Copying $\rightarrow$

       b. α ... α ......
           Full Deletion of Lower Copy $\rightarrow$

       c. α ... $\bcancel{\alpha}$ ......

(25)   Full Deletion of Upper Copy $\rightarrow$
       $\bcancel{\alpha}$ ... α ......

(26)   Partial deletion of Each Copy $\rightarrow$
       $[\alpha\bcancel{\beta}]$ ... $[\bcancel{\alpha}\beta]$ ......

A sample derivation of a split topicalisation construction would thus be:

(27)   a.   hat er keine Bücher gelesen
           has he no   books   read
           Copying of the noun phrase $\rightarrow$

       b.   keine Bücher hat er keine Bücher gelesen
           Partial deletion in both copies $\rightarrow$

       c.   ~~keine~~ Bücher hat er keine ~~Bücher~~ gelesen

Whilst this analysis does, to some extent, account for island effects, if we take the step from (a) to (b) above to involve movement, it again falls short of explaining why we cannot get full reconstruction. The example of *ein ... keines* is once more predicted to be base merged together as *keines ein*, and thus it remains to be stipulated as a spell out condition why this may not be overtly pronounced. Moreover, there is, once again, no obvious motivation for the copying process to take place.

In the final part of this paper, I wish to propose my own account, involving only simple movement like in van Riemsdijk's and Fanselow's & Čavar's analyses, but employing a clause structure and information structural features which give an explanation both for the motivation as well as for some of the additionally noted

interpretative effects of this discontinuous construction. Basically what I want to do is motivate the split.

5 An Updated Analysis

5.1 Recent Developments and My Clause Structure

Much recent work in the Minimalist Framework employs the notion of the phase, introduced by Chomsky (2000), to allow for both cyclic lexical access and cyclic spell out. Basically, the phases, which Chomsky takes to be CP and vP (later refined to v*P, the type of vP found in transitive - and possibly also experiencer - constructions), as well as possibly DP, replace the cycles or bounding nodes of earlier theory.

Aside from the phase, another seminal development is the introduction of the split CP layer by Rizzi (1997). On the basis of Italian data, Rizzi argues for the existence of four smaller projections within the left periphery, namely ForceP, TopP, FocP and FinP, with TopP being allowed to recur on either side of FocP:

(28) Rizzi's Left Periphery:

ForceP

Force^0 TopP*

Top^0 FocP

Foc^0 TopP*

Top^0 FinP

Fin^0 IP
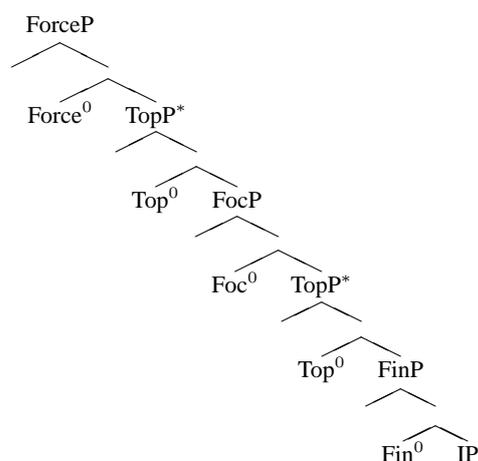
There have been proposals floating around since at least Starke (1993) that the CP layer might be reiterated lower down in the clause. A number of these proposals relate to quantificational information (Butler, 2004). Others base their arguments around information structure - e.g. Belletti (2004) for the Italian vP and Jayaseelan (2001) for the Malayalam and various Germanic language vPs, as well as Dimitrova-Vulchanova and Giusti (1998), Haegeman (2004), and Svenonius (2004) for the DP. McNay (forthcoming b) presents an overview of this data, and, furthermore, motivates an alternative breakdown of the recursive periphery, based predominantly on the information structural feature [±Link] (see also McNay, 2004, and McNay, forthcoming a), and the need for a bifurcation of the phase head (Chomsky, 2005).

The basic idea of the [+Link] feature is to mark the fact that an element has been selected from a *poset* (set of possible alternatives) (Ward and Birner, 2001:121). This feature is an edge feature (Chomsky, 2005), and requires checking in SpecLinkP. At the sentential level, any kind of topic or contrastive focus is valued as [+Link]. So, for example, in a case of full topicalisation such as (29), the topic *keine Gänse* is contrastive, and selected from a set of alternative topics, such as in (30):

(29)   Keine Gänse hat sie gekauft
       No   geese has she bought

(30)   {keine Hühner,
        keine Enten,
        keine Wasserhühner,
        keine Teichhühner...}
        {no hens,
        no ducks,
        no coots,
        no moorhens...}

As such, it moves to SpecLinkP - in the *Vorfeld* - to check its [+Link] feature. This explains the propensity of topics to occur in sentence-initial position. The lower SpecLinkP positions (at the edge of the *v*P and DP phases) also check [+Link] features. Since German is a V2 language, if a sentence contains two [+Link] elements, i.e. two contrastive foci, or a contrastive focus and a topic, then one of them must be spelled out in the SpecLink$_v$P position, since they cannot both occur (overtly, at any rate) in the *Vorfeld*.[4] This is also presumably the position to which the remnant arguments move in instances of VP ellipsis and pseudogapping.[5]

Following Chomsky (2005), however, I show (McNay, forthcoming b) that LinkP alone is not sufficient at the phase edge - we need a further projection through which [−Link] elements might move on their way out of the phase. To this end I propose AgrP, as the sister of Link^0, to check features such as case, tense, and ϕ features. Following Richards (2001)[6], AgrP may have multiple specifiers, thus allowing for all arguments to transit through this projection. Furthermore, whilst LinkP may be operator-like, AgrP is not. Both, however, act as escape hatches from the phase.

My overall structure for the phase edge thus looks like this:[7]

---

[4]see McNay (forthcoming a) for examples of this.

[5]A line of research which I am following up with Kirsten Gengel.

[6]Richards calls his projection Agr$\forall$P, where the $\forall$ refers to the fact that all arguments must move through this one position to check for case. However, I prefer to simply call the projection AgrP to avoid confusion with quantification.

[7]I shall ignore the NegPs for the purposes of this paper, since I am assuming *keine* to be a D element, anyhow. However, in future research, I intend to show that it is actually formed as a composite of a negative head in Neg$_D$P cliticising onto the indefinite determiner *eine(n)*. As such, it

(31)

```
                LinkP
               /    \
                   ‾‾‾‾
                   Link
                  /    \
              Link⁰    AgrP
                      /    \
                        ‾‾‾
                        Agr
                       /   \
                   Agr⁰    NegP
                          /    \
                            ‾‾‾
                            Neg
                           /   \
                       Neg⁰    XP
```
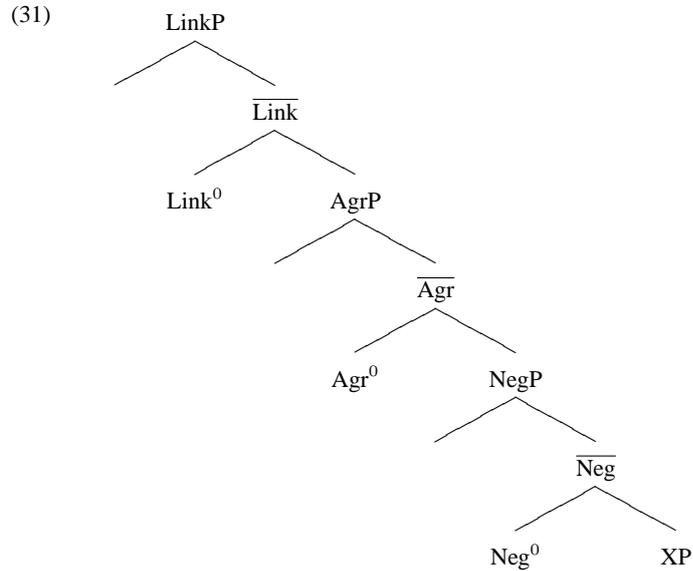
As mentioned above, recent research (Dimitrova-Vulchanova & Giusti, 1998; Haegeman, 2004; Svenonius, 2004) has argued convincingly for parallelism between the CP and DP phase edges. In what follows, I shall show how this theoretical assumption, applied to my structure in (31), gives an account for split topicalisation.

5.2   Partitivity and Linkhood – A Semantic Motivation for Split Topicalisation

In this final section I shall take the same feature – [+Link] – I use for topichood/contrastivity in the clause, to capture the concept of partitivity within the DP domain. I shall then use this notion of partitivity to explain and motivate the splitting of DPs in the phenomenon of split topicalisation.

Compare, again, the cases of full topicalisation and split topicalisation given respectively in (32a) and (32b):

(32)   a.   Keine Gänse hat sie gekauft
            No   geese has she bought

---

will contrast with the Neg$_v$P negative operator *nicht*, thus explaining the contrast in the scope of the negation between the following:

(1)   a.   Briefe geschrieben hat sie mir   noch keine aber Postkarten (hat sie schon
           Letters written   has she to-me still none but postcards (has she already
           geschrieben)
           written)

      b.   Briefe geschrieben hat sie mir   noch nicht aber angerufen hat sie schon   oft
           Letters written   has she to-me still not but called-up has she already often

     b. Gänse hat sie keine gekauft
          Geese has she none bought

Clearly, in both cases, *Gänse* is a topic, since it would otherwise have no reason to move to the *Vorfeld*. What I want to suggest here, however, is that the difference between (32a) and (32b) is that the latter, through having the N split apart from its negative indefinite determiner *keine*, acquires a partitive reading.[8] This partitive reading clearly takes us back to the notion of the *poset* discussed in (30). If the entire DP is selected from such a *poset*, as is the case in (32a), then it transits up to SpecLink$_T$P through SpecLink$_D$P, and is interpreted there as topic. Since the whole DP – *keine Gänse* – appears in SpecLink$_D$P, we do not obtain the partitive reading. The interpretation is therefore just *'As for geese, she bought none'*. In the case where splitting occurs, however, as in (32b), we get the added partitive implicature of *'As for* those *geese, she bought none* of them'.

My claim, then, is that the splitting in discontinuous NPs is caused when the NP, but not the full DP, is marked as [+Link$_D$], and therefore has to move to SpecLink$_D$P to check this feature. From here it then moves on up (via SpecLink$_v$P) to SpecLink$_T$P, since it also marked as [+Link$_T$], in the sense of being [+Topic]. The partitive reading is brought about by the fact that it is solely the noun, and not the whole DP, which moves up to SpecLink$_D$P as shown:

(33)   Partitive Split DP
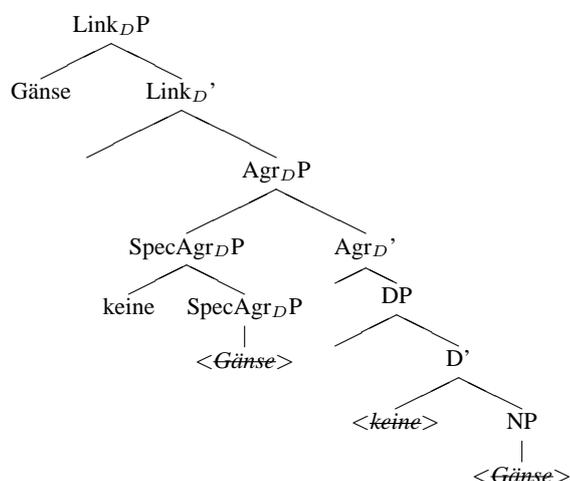
When the whole DP moves, we still obtain a topic reading, but not a partitive one:

(34)   Non-Partitive Non-Split DP

```
                    Link_D P
                   /        \
          keine Gänse      Link_D'
                          /       \
                        Agr_D P
                       /       \
              <keine Gänse>   Agr_D'
                             /      \
                            DP
                            |
                        <keine Gänse>
```
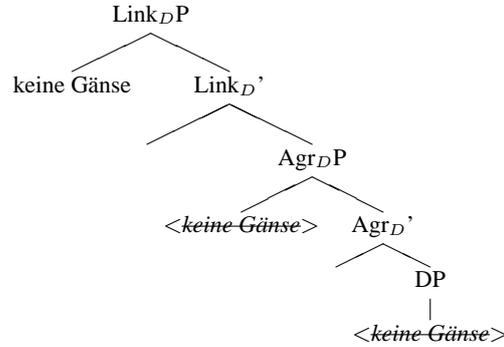
In both instances, the negative D *keine* moves up to SpecAgr$_D$P to check for case agreement. It then moves on up to SpecLink$_v$P, since it is also marked as [+Link] in the sense of being part of the topic. It cannot move to SpecLink$_T$P, however, since it is now split from its noun, and stuck lower down in the derivation. Linearity forces it therefore to follow this constituent, and V2 for German means we cannot have more than one constituent in SpecLink$_T$P (35):

(35)   *Gänse hat sie keine gekauft*

```
              Link_T P
             /        \
         Gänse       Link_T'
                    /       \
                  hat      Agr_T P
                          /       \
                        sie      Agr_T'
                                /      \
                            <hat>      TP
                                      /   \
                                     T'
                                    /   \
                                <hat>   Link_v P
                                         . . .
```
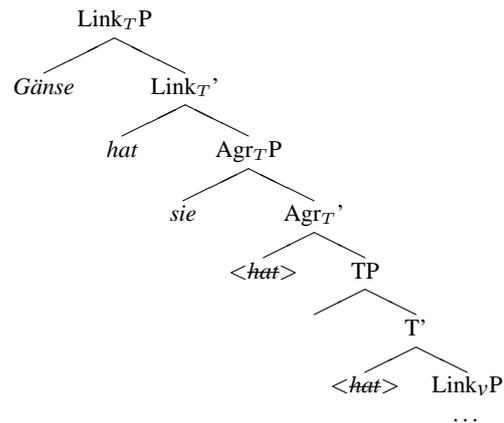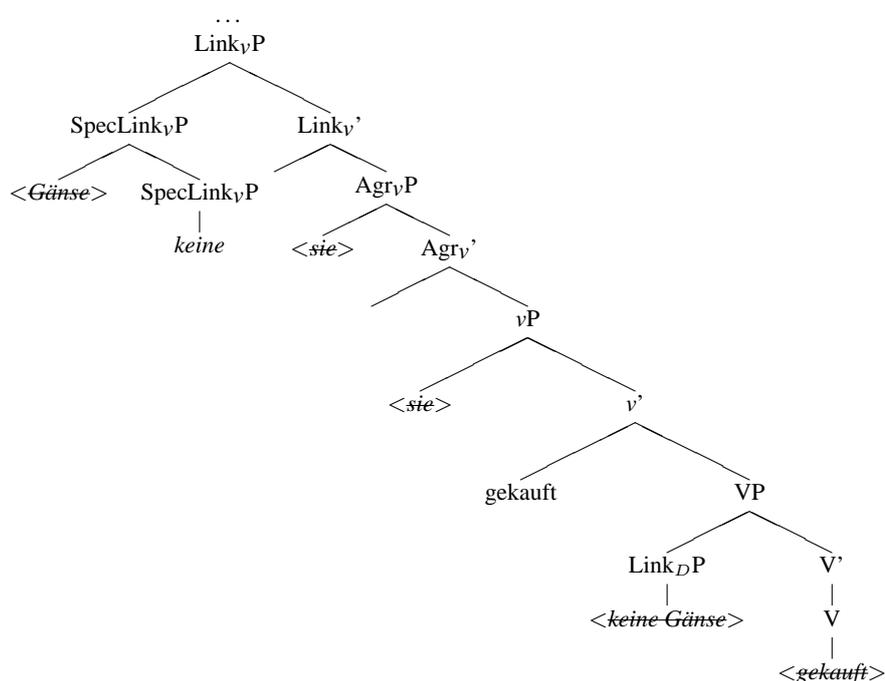
It should further be noted that whilst, in Dutch, the standard SVO sentence in (36a) (taken from Landman, 2004) may be topicalised to give (36b), or may have the nominal topicalised, and the indefinite determiner replaced by a negative particle low down as in (36c), producing a de dicto reading (as opposed to the de re reading of (36b)), split topicalisation, as in (36d) and (36e) is not generally possible,[9] unless a partitive interpretation is forced by the addition of *een van* ('one of'), as in (36f):[10][11]

(36)   a.   Dafna zoekt geen griffioenen
            Dafna seeks no   griffins

       b.   Geen griffioenen zoekt Dafna
            No   griffins   seeks Dafna

       c.   Griffioenen zoekt Dafna niet
            Griffins   seeks Dafna not

       d.   *Griffioenen zoekt Dafna geen een
            Griffins   seeks Dafna none one

---

[9]Although Hans Broekhuis (p.c.) informs me that these sentences would be acceptable in some dialects of Dutch.

[10]Thanks to Erik Schoorlemmer (p.c.) for pointing this out to me.

[11]n.b. The same constraint seems to hold for Italian whereby splitting can only occur in the presence of the clitic particle *ne*, which, again, implies partitivity (thanks to Vieri Samek-Lodovici (p.c.) for raising this point).

> e. *Griffioenen zoekt Dafna geen
>   Griffins   seeks Dafna none
>
> f. Griffioenen zoekt Dafna geen een van
>   Griffins   seeks Dafna none one of
>
>   'As for griffins, Dafna is not looking for any of them'

The conclusion, therefore, seems to be clear:

- partitivity is the motivating semantic factor behind the splitting in the phenomenon of discontinuous NPs;

- the concept of partitivity can be captured neatly using my information structural feature [+Link];

- the [+Link] feature, along with the recursive LinkP projections at the edge of each phase, provides an explanation for the syntactic movement within the splitting phenomenon.

6   Conclusion and Future Outlook

In this paper, I have argued that the phenomenon of discontinuous NPs ought, indeed, to involve movement, and that, therefore, the term split topicalisation is appropriate. I further hope to have motivated this movement, as well as the reason behind the specific point at which the split takes place, as being due to topicality and partitivity - both notions which can be marked by the presence of the [+Link] feature which necessitates movement to the edge of the phase - to SpecLinkP - to be checked.

What has not been solved is the question of reconstruction, and the problem of needing to doubly spell out the indefinite determiner both in the *Vorfeld* and in the lower position. However, I have intimated towards my future line of research, where I hope to show that *keine* is, in fact, not a D element per se, but a Neg head within DP which needs to cliticise onto the indefinite determiner *ein(en)* in order to be spelt out. However, since the split occurs between the DP and NegP levels, we are forced to spell out two copies of the D element, one to allow the negative head to be pronounced, and one to overtly show the agreement features checked by the DP as it moves up through Agr_DP en route to Link_DP. This, however, remains work in progress.

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Tracking the Progress of a Polarity Shift in Romanian

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1   Introduction

Negative Polarity Items (NIPS) are context-sensitive expressions that are only licensed in a specific set of contexts, including all types of negation, e.g.:

(1)   Clausal negation:
    a.   I haven't seen anyone
    b.   *I've seen anyone

(2)   Constituent negation:
    a.   No witness remembered anything
    b.   *The witness / two witnesses remembered anything

The literature on polarity items deals with questions such as (cf. Hoeksema et al 2001):

- The semantic licensing question: what semantic features license polarity items?

- The lexical sensitivity question: what types of expressions may be sensitive to polarity?

- The syntactic licensing question: in what types of syntactic configurations may polarity items be licensed?

The suggestion put forth in this paper is that the Romanian data presented below are best viewed in the light of a fourth question, raised by Ladusaw 1996:

- The Status Question: what is the theoretical status of a structure containing *an unlicensed polarity item*? Are such ill-formed strings syntactically well-formed but uninterpretable or do they have well-defined interpretations which make them pragmatically unusable? (Ladusaw 1996:326, emphasis mine)

2   The Romanian Data: The Canonical Distribution and Interpretation of *Decât*

Romanian is a (pro-drop and) negative concord language in the sense of Labov 1972, i.e. multiple occurrences of morphologically negative constituents express a single semantic negation (the principal overt negative marker is generated under Neg^0 rather than being associated with SpecNegP). It is a strict negative concord language according to the classification of Giannakidou 2000, in that the sentential negative marker must always be present in the structure containing the n-word. These details will help in understanding the distribution and interpretation of an NPI that seems to be undergoing a polarity switch.

In Romanian, the adverb *decât* (IPA /dekɨt/, from Lat. *de+quantus*, possibly *quotus*) is used in two types of constructions: in order to introduce a comparative NP or a comparative clause (in which case it means 'than'), and before an exclusive/restrictive NP or clause (meaning 'only', 'just', restrictive 'but'). Examples (3) and (4) illustrate the comparative, and examples (5) and (6) illustrate the restrictive use:

(3)   Cartea   este mai   bun*ă* decât filmul
      book.the is   more good than   movie.the
      'The book is better than the movie'

(4)   Cartea   este mai   bun*ă* decât m*ă*   aşteptam
      book.the is   more good than I-acc.refl. expected
      'The book is better than I expected'

(5)   Nu vreau   decât dou*ă* bilete
      not want-1sg only two   tickets
      'I want just two tickets'

(6)   Nu vreau   decât s*ă*   te   ajut
      not want-1sg only to-subj.compl. you-acc.sg help-subj
      'I only want to help you'

Crucially, in examples (5) and (6), *decât* must be licensed by negation, either by the clausemate negator, as in (5), or by the matrix negator, as in (6). The lack of an overt negative licensor results in ungrammaticality. This is the main difference between *decât* and two other adverbs whose restrictive meaning partly overlaps with its own, namely *doar* and *numai* (both meaning 'only / just'). Compare:

(7)   Vreau   doar/numai dou*ă* bilete
      want-1sg only/just   two   tickets
      'I want just two tickets'

(8)   Nu vreau   doar/numai dou*ă* bilete, vreau   patru
      not want-1sg only/just   **two**   tickets, want-1sg **four**
      'I don't want just two tickets, I want four'

The words written in bold indicate the use of phonological stress as a marker of contrast.

(9) Vreau   doar/numai să   te   ajut
     want-1sg only/just to-subj.compl. you-acc.sg help-subj
     'I only want to help you'

(10) Nu vreau   doar/numai să   **privesc**, vreau   să   mă
     not want-1sg only/just to-subj.compl. look,   want-1sg to-subj I-acc.
     implic
     involve-subj
     'I don't just want to look, (what) I want (is) to get involved'

(11) *Vreau   decât   două bilete
     *want-1sg only/just two   tickets
     'I want just two tickets'

(12) *Vreau   decât   să   te   ajut
     *want-1sg only/just to-subj.compl. you-acc.sg help-subj
     'I only want to help you'

The ungrammaticality of (11) and (12) determines the status of *decât* as a negative polarity item (NPI): the standard diagnostic for NIPS is the ill-formedness of declarative sentences containing the item but no negator or other downward-entailing operator, in Ladusaw's terms. Ladusaw 1980 introduces the notion of downward entailment in order to explain Klima's notion of 'affective' value arbitrarily associated with NPI-triggering contexts: a context is downward entailing if superset values entail subset values and an expression occurring in the context can be replaced by a more restricted expression without changing the truth value of the whole sentence. Conversely, another NPI diagnostic is the well-formedness of declarative sentences containing the item together with a negator (see examples (5) and (6)).

Traditional normative Romanian grammar (*Gramatica Academiei*, henceforth GA) explicitly states that *decât* can only occur in a negative environment (translation, glosses, example numbers and bold emphasis mine):

'Restrictive constructions can involve various sentence parts, which co-occur with adverbs such as *numai, doar*, or, in negative sentences, *decât*, and are used as an expression of exclusiveness. For instance, in the sentence:

(13) Nu putem primi lângă noi decât   bărbaţi fără
     not can-1pl receive near us DECÂT men   without
     şovăire
     hesitation
     'We can only admit the company of resolute men', Sadoveanu,
     O. XIII 479

the restrictive construction *decât bărbați* ('but / only / just men') includes the direct object. (GA II:84)

The negative exception adverbial can be introduced by the adverb *decât*:

(14) Ținea   mânele   tinerei   dame
      hold-3sg.impf hands.the-fem.pl. young-gen. lady-gen.
      strânse   întru ale   sale   cu o
      clasped-fem.pl. in   of-poss.fem.pl his-fem.pl. with a
      familiaritate neiertată   altui   decât
      familiarity   unforgiven other-masc.sg.dat. than
      unui   bărbat
      a-masc.sg.dat. husband

      'He was clasping the young lady's hands with a familiarity which would have been allowed only to a husband', Negruzzi, S. I 37 (GA II:205)

The exception clause expresses exception in relation to the matrix clause. Whereas the embedded exception clause expresses a positive fact, the matrix is **always negative**.

(15) Barocul... nu face   altceva   decât
      baroque.the not do-3sg.pres. other.thing than
      să   dezvolte   datele   prime
      SĂ-subj.compl develop-subj. data.the-fem.pl. primary
      ale   clasicismului
      of-poss.fem.pl. classicism.the-gen

      'The Baroque does nothing else but to develop the raw data of Classicism', Călinescu, *Impresii asupra literaturii spaniole* (Bucuresti, 1946), p. 15 (GA II:338)

The exception clause always refers to a certain sentence part in the matrix clause, which can be expressed by means of a noun and an indefinite or a negative pronominal adjective (*alt* 'other', *vreun* 'any', *nici un* 'no'), by an indefinite or a negative pronoun (*altceva* 'something else', *altcineva* 'someone/anyone else', *vreunul* 'anyone', *nimeni* 'nobody', *nimic* 'nothing'), by a similar verb, and by a negative or an indefinite adverb (*niciodată* 'never', *nicicând* 'at no time', *nicăieri* 'nowhere', *vreodată* 'ever'). (GA II:339)'

3 Recent Developments in the Distribution of *Decât*

A major change is taking place in the licensing of *decât*: the adverb occurs without an overt negative licensor, giving rise to precisely those contexts which are ruled out by (traditional) grammar. This usage, which I remember noticing for the first time in 2000, seems to be characteristic of the southern part of the country. To the best of my knowledge, it has not been seen in writing yet, except for internet forum postings. It seems to be a favourite with songwriters, and knowing the dates of release of various songs featuring '*decât* + affirmative verb' helps track the progress of the construction. To me, as well as to normative grammarians and speakers from other parts of the country, the examples below are as ill-formed as ill-formed can get, but more and more speakers in and around Bucharest seem to disagree with this grammaticality judgment. These are usage samples I found on various internet sites; examples (23) to (25) are taken from songs, and the reason for quoting more than just the relevant parts is that they provide a fair indication of the type of Weltanschauung where the (now) aberrant construction thrives.

(16) eu nu am   ştiut   să-i   zic
     I   not have-1sg know-pple SĂ-subj.compl-he-clitic3sg.dat. tell-subj.
     mare lucru, ştiam   decât   de nişte asterixuri şi   cam atât
     big   thing, know-1sg.impf. DECÂT of some asterisks and about this
     'I wasn't able tell him/her too much, I only knew about some asterisks and that's it'
     www.computergames.ro/forum/archive/index.php/t-55774.html

(17) Eu am decât   o   întrebare
     I   have DECÂT one question
     'I only have one question'
     forum.softpedia.com/lofiversion/index.php/t49834.html

(18) Am   decât   o   pagină personală
     have-1sg DECÂT one page   personal
     'I only have one webpage of my own'
     matrimoniale.3x.ro/forum/viewtopic.php?pid=8084

(19) Eu am decât   doi   cercei   normali...dacă   şi
     I   have DECÂT two-masc. earring-masc.pl. normal-masc.pl....if and
     asta se   poate numi   piercing...
     this SE-reflexive-3sg can-3sg call-infin. piercing
     'I only have two normal earrings...if you can call that piercing...'
     www.fanclub.ro/archive/index.php/t-11473.html

(20) Am   decât   17 ani
     have-1sg DECÂT 17 years
     'I'm only 17'
     www.trabi.ro/club.asp

(21) Am   decât   o   melodie, Whispers in the Dark, pe
      have-1sg DECÂT one song,   Whispers in the Dark, on-acc.marker
      care   o   ascult mai   ales   seara
      which listen-1sg more   chosen evening.the

      'I only have one song, Whispers in the Dark, which I usually listen to in
      the evening'
      forum.jurnalul.ro/index.php/topic,1381.15.html

(22) Am   obţinut   decât   un 0-0 la Piteşti cu   Internaţional,
      have-aux.1sg/pl obtain-pple DECÂT a   0-0 at Piteşti with International,
      pe un teren desfundat
      on a   pitch muddy
      'We only got a 0-0 draw playing against International at Pitesti on a very
      muddy pitch'
      site.neogen.ro/Ss1916/

(23) m-au   costat   decât   330   printatu
      I-acc.clitic have-aux.3pl cost-pple DECÂT 330   printing.the
      'Printing only cost me 330'
      www.computergames.ro/forum/archive/index.php/t-55454.html

(24) documentaţia costă decât   250.000
      paperwork.the costs DECÂT 250.000
      'The paperwork costs just 250 000 ROL'
      anunturigratuite.com/anunturi/romania/afaceri/oferta/22/anunturi.aspx

(25) Animal X, *Pentru ea* ('For Her', released 2002)

      Vreau   decât   să   mă   asculţi
      want-1sg DECÂT SĂ-subj.compl I-acc listen-subj

      'I only want you to listen to me'
      http://www.muzicabuna.ro/cms/versuri/animal_x/pentru_ea_1.html

(26) Animal X,*Nu simţi la fel* ('You Don't Feel the Same', released 2002)
      a. Mai vreau   decât   o   noapte să   îţi   arăt
         more want-1sg DECÂT one night   SĂ-subj.compl. you-dat.sg. show
         că   te   iubesc
         that you-acc.sg. love-1sg.ind.pres.
         'Give me just one more night to show you that I love you'
      b. Nu vreau   decât   să   înţelegi   că îmi
         not want-1sg DECÂT SĂ-subj.compl understand-2sg.subj. that I-dat.
         lipseşti
         miss-2sg.ind.pres.
         'I only want you to understand that I miss you'
         http://www.muzicabuna.ro/cms/versuri/animal_x/nu_simti_la_fel.html

Note that the usage of *decât* is inconsistent: its occurrence is ungrammatical in (26a), since there is no negative licensor, but the construction in (26b) is well-formed.

(27)   Bambi, *Las grijile acasă* ('I Leave My Worries Behind', released 2003)

Şi   vreau   decât   să   mă   distrez
and want-1sg DECÂT SĂ-subj.compl I-acc.reflexive entertain-subj.

'and all I want is to enjoy myself / have fun'
http://www.versuri.ro/versuri/bambi_am+sa+las+grijile+acasa.html
'I'm a complicated nature, I don't like to waste too much time meditating, and all I (ever) want is to have fun'

(28)   au   venit decât   trei   invitati
have-3pl come DECÂT three guests

'only three guests have come'
(Quoted in the 19-25 May 2005 issue of a cultural review, as a paragon of ungrammaticality)

4   Attempted Account

Examples (16) to (28) illustrate a change of polarity in progress, a phenomenon by no means rare or unattested:

> 'Polarity items may lose their polarity character, whereas other lexical items may (suddenly?) become polarity items. Paramount examples are English *ever*, which used to mean 'always' but has developed into a negative polarity item, and its Dutch counterpart *ooit*, which has undergone the same development, but is now rapidly developing new, non-polar usage possibilities.' (van der Wouden 1997:72)

Since there must be some productive process of NPI-formation, according to Ladusaw 1980, one might reasonably expect the converse and argue that the examples listed above illustrate a productive process of Affirmative Polarity Item formation; another, more interesting, possibility is to view polarity not as a binary value (a polarity item is either negative or positive), but as a three-place switch allowing for a stage when an item is inert for polarity. The data are insufficient and it is too early to assume that *decât* is switching from 'negative' to 'inert', but the observed changes are in line with several known facts about polarity items that may justify such a claim.

The first characteristic is that of polyfunctionality: Haspelmath 1993 has shown that many of the items that could be considered of negative polarity are polyfunctional, where polyfunctionality is understood as a spectrum of related functions. In the case of *decât*, these functions include its comparative, restrictive, exclusive and

exceptive uses; while in its comparative use *decât* is inert for polarity, in its other uses the data indicate that it is switching from 'negative' to 'inert' or 'affirmative'.

If polarity switch can be regarded as a case of grammaticalisation, another relevant property is layering, as described by Hoeksema 1994 (germane to Haspelmath's polyfunctionality):

> 'A final relevant property of grammaticalization is "layering": next to the grammaticalized use, older, nongrammaticalized uses often stay around. For example, the polarity item *need*, used as a modal auxiliary, has a main verb counterpart which is not polarity-sensitive (cf. *You need not worry* and *I need you*). Layering is in fact so rampant that there are hardly any "pure" NIPS that have no other uses as well.' (Hoeksema 1994)

Applied to *decât*, this would mean that NPI-*decât* has not only a comparative counterpart attested by traditional grammar, but also an affirmative counterpart, which I propose to call *unlicensed decât*, which is not downward-entailing in Ladusaw's sense and whose meaning is *exactly n*, as in example (17) repeated here as (29 for the sake of convenience:

(29) Eu am decât   o   întrebare
      I   have DECÂT one question
      'I only have one question' i.e., not more not less than one

In standard Romanian, this non-monotonic operator would be NPI-*decât*, licensed by negation:

(30) Eu nu am decât   o   întrebare
      I   not have DECÂT one question
      'I only have one question' i.e., not more not less than one

Unlicensed *decât* (or logophoric *decât*, in the sense of Progovac 2000:94: 'By 'logophoric' here I will simply mean 'not formally licensed'') can be seen as part of the 'constant interplay of weakening and strengthening' of negation discussed by Jespersen (1924:335). Note that 'Jespersen's Cycle is responsible for the birth of both negative concord and negative polarity' (Horn & Kato 2000:6). It may be the case that the semantics of *decât*, i.e. its restrictive/exclusive meaning, is forceful enough to warrant its occurrence in contexts where there is no overt negative licensor, as argued in Linebarger 1980:

> 'The role of semantics in the distribution of NIPS seems to be to determine the acceptability of sentences with NIPS which are not in the immediate scope of NOT. A sentence with such an untriggered NPI may still be acceptable if the literal meaning assigned to its LF may be construed as 'alluding' to some proposition in whose logical form the representation of the NPI is in the immediate scope of NOT.' (Linebarger 1980:165)

A third factor that may shed some light on the puzzling development of *decât* is Anastassia Giannakidou's notion of 'sensitivity'. In discussing the semantics of polarity items, Giannakidou (1997, 2001) introduces the notion of sensitivity, understood as agreement or disagreement in terms of semantic features, determining the restricted distribution of polarity items. 'Sensitive expressions are semantically "deficient": they cannot be interpreted in every environment, but only in those environments which fulfill their interpretative demands. As sensitive expressions, PIs are thus dependent on semantic features of the context for grammaticality' (Giannakidou 2001:101). Crucially, polarity items are 'special' expressions in that they encode a sensitivity feature. Sensitivity features are semantic features, part of the lexical representation of polarity items, and they encode the semantic 'deficiency' of these items. 'Sensitivity features are present in the lexical semantics of PIs at least at an abstract level and may, but need not, correspond to syntactically active features' (Giannakidou 1997:15). Sensitivity in polarity items is the source of limited distribution; sensitive expressions are semantically 'deficient': they cannot be interpreted in every environment, but only in those environments which fulfill their interpretative demands. 'As sensitive expressions, PIs are thus dependent on semantic features of the context for grammaticality' (Giannakidou 2001:101). Sensitivity is multiple and language-specific; polarity items will be licensed by some property and anti-licensed by another, and different languages will instantiate different kinds of sensitivity. According to Giannakidou's theory, *decât* may become inert for polarity because of a perceived disagreement between its semantics and the semantics of the negative context, that is, between its non-monotonicity and the monotonic downward entailment of negation. By analogy with *doar* and *numai*, it will be properly interpreted in affirmative contexts as meaning 'exactly n'; taking the analogy further, one may predict that in negative contexts *decât* will no longer mean *exactly n*, but will become cancellable. Compare example (32) below with examples (8) and 10):

(31) Are decât   17 ani
     has DECÂT 17 years

(32) Nu are decât   17 ani,   are 18
     not has DECÂT 17 years, has 18
     's/he isn't just 17, s/he's 18'

5   Conclusion: *Prospice*

As already stated, it is too early to tell whether unlicensed *decât* will oust NPI-*decât* or even become so frequent as to warrant its reception of the 'Grammar of the Academy' seal of approval. There is also the question of idiomatic negative expressions such as 'N-ai decât' ('not have-2sg DECÂT'), meaning 'suit yourself', 'have it your way', 'do whatever you please, I don't care'. Should we expect idiomatic *decât* to occur in a parallel, affirmative context? The best one can do

at the moment is to keep a close eye on the evolution of unlicensed *decât* in the media and on its (probable) spread throughout the country. A more substantial account of this polarity change will only be possible when there are enough data available. As yet, Ladusaw's status question still remains to be answered.

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Nonsubject Agreement and Discourse Roles[*]

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1   Introduction

Conditions on verb agreement are often assumed to be definable in purely syntactic terms. In some languages, however, the verb shows more agreement with topical arguments than with nontopical arguments. For example, Toivonen (2002) speculates that the generalization governing the distribution of partial and full subject agreement in Inari Sami involves reference to the discourse topic: full agreement is used with topical subjects, while partial agreement is used with nontopical subjects. In the following, we will explore the effect of discourse roles on agreement with nonsubjects. Nonsubject agreement is correlated with discourse roles in many languages: in particular, the verb agrees with the *secondary topic*, defined below.

We first examine Northern Ostyak, a language in which the verb agrees with topical objects and not with nontopical objects. Thus, agreement patterns in Ostyak appear to depend on discourse roles. We propose that object agreement in Ostyak is in fact determined by the syntactic role of the argument: the verb agrees with the primary object. The appearance of a correlation with the discourse role of the argument comes about because of the very close alignment between discourse roles and syntactic roles in this language. Primary objects in Ostyak are always associated with the secondary topic role, while secondary objects must be nontopical. We present a formal analysis of these patterns within the theory of Lexical Functional Grammar, which allows for a formal representation of discourse roles in information structure as well as grammatical functions.

We then examine Maithili, a language in which agreement patterns are determined by reference not to syntactic structure, but to information structure. In contrast to Ostyak, nonsubject agreement is possible not only for objects, but for possessors, instruments, and other syntactic roles; agreement depends not on the syntactic role of the argument, but on whether or not it bears the secondary topic role in information structure.

Our work shows that processes that are often thought to be driven purely by syntactic structure, such as agreement, can in fact make reference to other levels of structure, but that careful examination is needed to determine whether agreement refers directly to information structure, or only indirectly, by virtue of a tight alignment between discourse roles and grammatical functions.

2   Information Structure and Discourse Roles

We begin by defining our terms. Following Lambrecht (1994), we assume that information structure mediates between sentence meaning and form by creating a pragmatically structured proposition which reflects the speaker's assumptions about an addressee's state of knowledge at the time of an utterance. A proposition may be divided into the *pragmatic presupposition* and the *pragmatic assertion*. The pragmatic presupposition is a set of propositions which the speaker assumes that the addressee knows at the time of the utterance, whereas the pragmatic assertion is the proposition which the addressee is expected to learn as a result of hearing the sentence. Obviously, this structuring is largely dependent on the context in which the utterance occurs. This distinction underlies the definitions of the units of information structure adopted in the paper.

Narrow focus   Focus is 'the semantic component of a pragmatically structured proposition whereby the assertion differs from the presupposition' (Lambrecht 1994: 213). In this paper we are primarily concerned with narrow focus or *argument focus* extending over one participant in the event, as in (1).

(1)   a. What is Bill eating?

b. He is eating pizza in the kitchen.

The pragmatic function of the answer in (1b) is to provide a missing argument to a presupposed open proposition *Bill is eating X*. The pragmatic assertion associated with (1b) is *X = pizza*, so the object *pizza* is under narrow focus. Because a focus element stands in an unpredictable informational relation to a proposition, focus expressions must be overtly present, and may not be null. Some syntactic forms are explicit markers of focus; for example, wh-questions target narrow focus, and arguments under the scope of focus items such as *only* or *even* are also focused.

Wide focus   In contrast to narrow focus, wide focus or *predicate focus* serves to augment information about a particular referent, normally expressed by the subject, as in (2).

(2)   a. What is Bill doing? or: What about Bill?

b. He is eating pizza in the kitchen.

The pragmatic presupposition in (2b) can roughly be represented as something like *Bill is doing X*, while the pragmatic assertion is *X = eating pizza in the kitchen*. The focus does not extend over a single participant as in (1b), but instead over the whole VP *is eating pizza in the kitchen*. Wide focus corresponds to the traditional notion of *comment*. Lambrecht (1994) refers to its syntactic expression as the *focus domain*, suggesting that every constituent within this domain bears focus status.

Topic   Following much previous research (Reinhart 1982, Gundel 1988, Lambrecht 1994, and others), we define topic as the entity that the proposition is about. As such, it is defined on referents. For example, (2b) is construed as information about the individual named Bill; thus, the referent of the pronoun *he*, the individual Bill, is the topic. The topic stands in an 'aboutness' relation to the proposition because it is assumed by the speaker to be the centre of current interest about which the assertion is made. In Lambrecht's (1994: 54) terms, it carries the pragmatic presupposition of saliency by virtue of being important enough for the addressee to consider it a potential centre of predication.

In order for the utterance to be assessed about the topic, the latter must have a certain pragmatic reality — a mental representation in the mind of the interlocutors (Lambrecht 1994: 162–165). For this reason, discourse-old expressions are most easily interpreted as topics. Furthermore, as a presuppositional part of the proposition, the topic is pragmatically predictable and recoverable. Therefore, unlike focus, topics may remain formally unexpressed, or they may receive reduced expression as an anaphoric pronoun rather than as a full phrase (Givón 1983, Ariel 1988, Gundel et al. 1993). Topics must also be referential, because if the topic has no reference the statement cannot be evaluated as true or false (Reinhart 1982, Gundel 1988, Lambrecht 1994: 150–160).

Secondary topic   Topic need not be unique: more than one referent can be under discussion at the time of the utterance, so that the utterance simultaneously increases the addressee's knowledge about both of them. Thus, we can distinguish the *primary topic* and the *secondary topic* (Givón 1984, Polinsky 1995, 1998, Nikolaeva 2001) or the primary and subordinate topic (Erteschik-Shir 1997). Consider the discourse in (3):

(3)   a.   Whatever became of John?

     b.   He married Rosa,

     c.   but he didn't really love her. (Lambrecht 1994: 148)

In (3b) the subject is topical, and the utterance is not assessed to be about the object referent (Rosa). In (3c) the situation is different: although it is construed primarily as information about John, it also increases the addressee's knowledge about Rosa, namely, the fact that she was not loved by John. In the interpretation of (3c), both Rosa and John are salient and are under discussion. Thus, the corresponding NPs may both be characterised as topics. Such topics are expected to stand in a certain relation to each other, established before the relevant sentence is uttered.

Nikolaeva (2001: 26) defines the secondary topic as 'an entity such that the utterance is construed to be ABOUT the relationship between it and the primary topic'. In (3), the relationship between topics is pragmatically established by (3b) and constitutes a subset of the presupposed information associated with (3c). The

new assertion in (3c) is meant to update the addressee's knowledge about this relation. The pragmatic presupposition (the old information) associated with (3c) is that there is a relation *X* between John and Rosa, while the pragmatic assertion that the addressee is supposed to learn as a result of uttering the sentence is *X* = *didn't really love*.

It is worth noting that secondary topic as defined above is not the same as what Butt and King (1996, 2000) refer to as 'background information' or what Vallduví (1992) refers to as 'tail', although in some cases these notions can overlap. Following Choi (1999), Butt and King characterise information in terms of two features: [±New] and [±Prominent]. Topic is [−New] and [+Prominent], focus is [+New] and [+Prominent], completive information is [+New] and [−Prominent], and background information is [−New] and [−Prominent]. Like focus, completive information is new to the addressee but, unlike focus, it is not associated with the difference between pragmatic assertion and pragmatic presupposition. According to this classification, the phrase *in the kitchen* in (1b) is a part of completive information.

There are several differences between Butt and King's notion of background information and our notion of secondary topic. First, although both secondary topic and background information are informationally old, they differ in terms of prominence. Secondary topic is [+Prominent], just like the primary topic, although the primary topic may be more prominent than the secondary topic. Second, since the secondary topic is presupposed to stand in some relation to the primary topic, the utterance normally involves a verb that has at least two arguments: the primary topic argument, normally the subject, and the secondary topic argument, normally the direct object (Nikolaeva 2001). There is no such requirement for background information; some examples cited by Butt and King involve one-place verbs and no referential NPs other than the subject.

3   Topical OBJ Agreement: Ostyak

3.1   Agreeing and Nonagreeing Objects in Ostyak

It has often been observed that there is a correlation between agreement and topichood (Givón 1976). We will examine object agreement in Northern Ostyak, a Finno-Ugric language spoken in Russia, following the analysis of Nikolaeva (1999, 2001). In Ostyak, subject agreement is obligatory, while object agreement is optional. Intransitive verbs agree with the subject in person and number (4a). Transitive verbs either agree with the subject alone (4b), or with the subject and the direct object, as in (4c)-(4e). Object agreement forms indicate the number (but not the person) of the direct object. There is no verb agreement with arguments other than subject and object.

(4) a. ma je:lən   o:məs-l-əm
       I   at.home sit-Pres-1SgSubj
       'I am sitting at home.'

   b. ma tam kalaŋ   we:l-s-əm
      I   this reindeer kill-Past-1SgSubj
      'I killed this reindeer.'

   c. ma tam kalaŋ   we:l-s-∅-e:m
      I   this reindeer kill-Past-SgObj-1SgSubj
      'I killed this reindeer.'

   d. ma tam kalaŋ-ət   we:l-sə-l-am
      I   these reindeer-Pl kill-Past-PlObj-1SgSubj
      'I killed these reindeer.'

   e. ma tam kalaŋ-ŋən   we:l-sə-ŋil-am
      I   these reindeer-DU kill-Past-DualObj-1SgSubj
      'I killed these (two) reindeer.'

Subject markers differ in these forms. For example, the 1Sg subject marker in the absence of object agreement is *-əm*, as in (4a) and (4b); with the singular object it is *-e:m* (4c), and with the dual or plural object it is *-am*, as in (4d) and (4e). Similar distinctions obtain for the whole paradigm. The object marker for the singular object is always phonologically null, so the subject marker with singular objects, such as *-e:m*, is a portmanteau morpheme referring both to the subject and the object. In further glosses, object agreement verbs will be glossed simply as Obj, without indicating the object marker specifically.

Agreeing and nonagreeing objects have different discourse status. Objects that do not trigger agreement have many properties associated with the focus function, while objects that trigger agreement have some topical properties. Following Nikolaeva (2001), we will treat agreeing objects as secondary topics.

3.2   Alignment of Grammatical and Discourse Roles in Ostyak

3.2.1   FOCUS and Nonagreeing Objects

Nikolaeva (1999, 2001) shows that nonagreeing objects are nontopical and share a cluster of semantic and pragmatic properties that are associated with narrow or wide focus.

The following examples demonstrate that objects in narrow focus do not show agreement. Objects under the scope of focus items such as 'only' or 'even', as well as contrastive objects, never trigger agreement.

(5) a. ma tup wul a:n il   pa:jət-s-əm   / *pa:jət-s-e:m
       I   only big cup down drop-Past-1SgSubj / *drop-Past-Obj.1SgSubj
       'I dropped only the/a big cup.'

  b. luw   ma-ne:m jir-əs   / *jir-s-əlli
     he   I-Acc   tie.down-Past.3SgSubj / *tie.down-Past-Obj.3SgSubj
     anta naŋ-e:n
     not   you-Acc
     'He tied me down, not you'

Example (5b) shows that traditional descriptions of Ostyak, which suggest that agreement is conditioned by definiteness of the object, are incorrect: the first person pronoun in (5b) is definite, but agreement is disallowed.

In many SOV languages, the focused constituent must be immediately preverbal, independent of its semantic role and grammatical function (Kim 1988, É. Kiss 1995, Butt and King 1996). Ostyak is such a language, with a grammaticalised focus position immediately before the verb. The questioned object and the focused answer in (6) appear in this position. In object questions and answers, agreement must be absent, even if the object is definite.

  (6) a. mati   kalaŋ   we:l-əs   / *we:l-s-əlli
          which reindeer kill-Past.3SgSubj / *kill-Past-Obj.3SgSubj
          'Which reindeer did he kill?'

       b. tam kalaŋ   we:l-əs   / *we:l-s-əlli
          this reindeer kill-Past.3SgSubj / *kill-Past-Obj.3SgSubj
          'He killed this reindeer.'

It is also possible for (6b) to be construed as an answer to the question *What did he do?*. In this case, the object is not the narrow focus, but is a part of the wide focus domain. Both types of objects are nontopical, and the verb agrees with neither.

Nonagreeing objects appear in the preverbal focus position if the questioned constituent does not appear there; example (7a) is ungrammatical because the non-agreeing object does not appear preverbally. (7b) shows that this requirement does not hold for objects that trigger agreement, whose position in the clause is fairly free.

  (7) a. *Pe:tra mo:jpər u:r-na   wa:nt-əs
          Peter   bear   forest-Loc see-Past.3SgSubj
          'Peter saw a bear in the forest.'

       b. Pe:tra mo:jpər u:r-na   wa:n-s-əlli
          Peter   bear   forest-Loc see-Past-Obj.3SgSubj
          'Peter saw a bear in the forest.'

Nonreferential objects also fail to trigger agreement, even if they do not appear in the preverbal focus position and are not part of the focus domain. In (8), narrow focus is associated with a non-object (*xalśa* 'where'), so the object is not in narrow focus, but instead seems to correspond to what Butt and King (1996) call 'completive information':

(8) ma li-ti   pil   xalśa kas-l-əm?   / *kas-l-e:m
    I   eat-Part companion where find-Pres-1SgSubj / find-Pres-Obj.1SgSubj
    'Where shall I find a companion to eat with?'

This correlation between nonreferential and focus entities is observed in other works, e.g. Webelhuth (1992) and Choi (1999). The proper generalisation about nonagreeing objects is, then, that they may not be topical. When they appear in the preverbal focus position, they bear the focus role. When they do not appear in the focus position, they must be nonreferential and therefore nontopical.

3.2.2 TOPIC and Subject

As is common crosslinguistically, the primary topic in Ostyak is systematically associated with the subject. In (9), the context *What about X?* or *What happened to X?* establishes the primary topic role for *X* in the answer. The object cannot bear the primary topic role in these cases; the answers in (9) must appear in the passive, with the logical subject in locative case, and their active counterparts would be strictly ungrammatical in the given context. Passivisation is conditioned by the need for the primary topic to bear the subject role.

(9)   What happened to Peter?

    a. (luw) Juwan-na re:sk-əs-a
       he   John-Loc hit-Past-Pass.3SgSubj
       'John hit him.'

    b. (luw) Juwan-na ke:si-na   ma-s-a
       he   John-Loc knife-Loc give-Past-Pass.3SgSubj
       'John gave him a knife.'

Passivisation is also required when the agent bears the focus function, as in (10), since topic and focus functions cannot be associated with the same element.

(10) kalaŋ   Juwan-na we:l-s-a   anta Pe:tra-jna
     reindeer John-Loc kill-Past-Pass.3SgSubj not   Peter-Loc
     'It was John who killed the reindeer, not Peter.'

Nonreferential quantified expressions such as *anybody* or *nobody*, as well as the wh-question words *who* and *what*, do not occur as subjects of transitive clauses. As (11) demonstrates, when they correspond to the logical subject argument, the clause must be passivised; the subject is required to be referential, as is typical of topics.[1]

---

[1]We have no data in which both the subject and object are nonreferential, as in statements like *Nobody saw anything*. More research is needed to determine how such statements can be expressed in Ostyak.

(11) a. tam xu:j xoj-na   an wa:n-s-a
        this man who-Loc not see-Past-Pass.3SgSubj
        'Nobody saw this man.'

   b. *xoj tam xu:j an wa:nt-əs   / wa:nt-əs-li
      who this man not see-Past.3SgSubj / see-Past-Obj.3SgSubj
      'Nobody saw this man.'

3.2.3 Secondary TOPIC and Agreeing Objects

According to the definition given in §2, agreeing objects are topical: the verb must
be marked for object agreement if the object is the secondary topic and stands in
the required relation with the primary topic, the subject. The verbs with object
agreement in examples (12b) and (12c) are felicitous as an answer to the question
in (12a). Nonagreeing objects are not permitted in this context.

(12) a. What did you do to this reindeer?

   b. (ma) tam kalaŋ   we:l-s-e:m   / *we:l-s-əm
      I   this reindeer kill-Past-Obj.1SgSubj / kill-Past-1SgSubj
      'I killed this reindeer.'

   c. (ma) we:l-s-e:m   / *we:l-s-əm
      I   kill-Past-Obj.1SgSubj / kill-Past-1SgSubj
      'I killed it.'

Ostyak transitive clauses with object agreement assert that a certain relationship
holds between the referent of the subject and the referent of the object.

Consistent with this claim is the fact that objects that trigger agreement may
correspond to a referential null, as in (12c). In fact, in texts almost half of the
clauses with object agreement have no overt object (Nikolaeva 2001). The use
of lexical NPs as objects that trigger agreement is a marked option and is usually
motivated by the need to disambiguate between several referents. Furthermore, as
shown by the text analysis in Nikolaeva (2001), 83% of the objects that trigger
agreement have been mentioned in the previous discourse, while only 17% are
discourse-new. This also argues in favor of the analysis of the object that triggers
agreement as topical, as discussed in §2. Further arguments for the secondary topic
status of the object that triggers agreement are presented in Nikolaeva (2001).

3.3 Object and secondary object

Besides their different discourse roles, agreeing and nonagreeing objects differ syn-
tactically in a number of ways. Nikolaeva (1999: 346) provides the table in (13),
which indicates that agreeing objects exhibit more properties of core grammatical
functions than nonagreeing objects:

(13) Syntactic properties of subjects and objects in Ostyak:

	Subject	Agreeing object	Nonagreeing object
Verbal agreement	+	+	−
Control of coreference in participial clauses with subject agreement	+	+	−
Control of possessive reflexivisation	+	+	−
Quantifier float	+	+	−
Possessor topicalisation	+	+	−

Line 2 of the table indicates that Ostyak has adverbial participial clauses whose subject can corefer with an argument in the matrix clause. If the subject of the participial clause corefers with the subject or the agreeing object, there is obligatory agreement marking in the participial clause; otherwise, no agreement marking is allowed. This and other tests indicate that the subject and the agreeing object share many core properties, while the nonagreeing object shares fewer of these properties.

These syntactic differences can be explained by assuming that the agreeing object is the primary object, the OBJ in LFG, while the nonagreeing object is the restricted or secondary object OBJ_θ (Bresnan and Kanerva 1989). The restricted object OBJ_θ is a term or direct function, but differs from OBJ in being a semantically restricted function. We claim that Ostyak exhibits a strong association between discourse roles and syntactic roles, as shown in (14), which allows the restatement of generalisations about agreement in Ostyak in purely syntactic terms:

(14)

Grammatical function	Discourse role	Agreement
SUBJ	TOPIC	Subject agreement
OBJ	TOPIC2	Object agreement
OBJ_θ	nontopic	No agreement

Despite their apparent differences, then, English and Ostyak both define agreement patterns in terms of grammatical functions rather than discourse roles. In Ostyak it appears that agreement is determined by discourse role, but this is only illusory, and comes about because of the strong relation between discourse roles and grammatical function.[2]

---

[2]We note that our proposal differs from the alignment of discourse roles with grammatical functions proposed for Urdu and Turkish by Butt and King (1996). Butt and King analyse the strong/specific object as OBJ_θ, and the weak/nonspecific object as OBJ. If the strong/specific object is in fact associated with the secondary topic role at information structure, as we suspect, their proposal aligns secondary topic with OBJ_θ, and the nontopical argument with OBJ.

3.4   Analysis

LFG assumes that the different facets of structure of an utterance are best represented by separate but related grammatical submodules. The phrasal structure of the sentence is represented by a phrase structure tree, the *constituent structure* or *c-structure*. Grammatical functions like subject and object are represented by an attribute-value matrix, the *functional structure* or *f-structure*. We also require a level of *information structure* (Choi 1999, Butt and King 2000), related to other grammatical levels within the *projection architecture* of LFG (Kaplan 1987). This framework provides the needed tools to analyse the relation between grammatical functions and discourse roles and to provide a formal treatment of verb agreement in Ostyak.

3.4.1   Syntactic Agreement

In many languages, including English, verb agreement depends on purely syntactic factors, and not on discourse relations. The constituent structure tree and functional structure for the sentence *David smokes* are given in (15), with the relation between nodes of the c-structure tree and f-structures indicated by arrows. The functional structure for the subject *David* has three features: PRED, whose value is the main predicate 'DAVID' of the subject phrase; the person feature PERS with value 3; and the number feature NUM with value SG, or singular.

(15)   David smokes.

$$
\left[
\begin{array}{ll}
\text{PRED} & \text{'SMOKE}\langle\text{SUBJ}\rangle\text{'} \\[2mm]
\text{SUBJ} & \left[
\begin{array}{ll}
\text{PRED} & \text{'DAVID'} \\
\text{PERS} & 3 \\
\text{NUM} & \text{SG}
\end{array}
\right]
\end{array}
\right]
$$
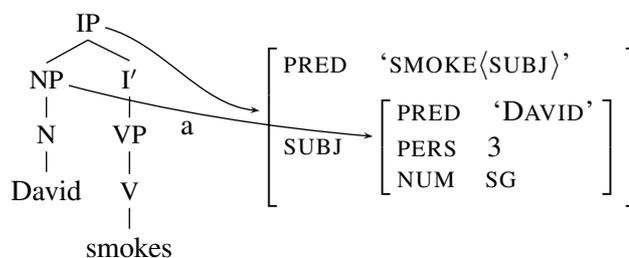
The person and number values are lexically specified for the subject functional structure by the subject *David*, and also by the verb *smokes*, as shown in the lexical entries in (16). Since these specifications are compatible, the sentence is acceptable.

(16)   *David*   (↑ PRED) = 'DAVID'
                      (↑ PERS) = 3
                      (↑ NUM) = SG

        smokes   (↑ PRED) = 'SMOKE⟨SUBJ⟩'
                      (↑ SUBJ PERS) = 3
                      (↑ SUBJ NUM) = SG

In contrast, the sentence *They smokes* is ungrammatical. This is due to incompatible specifications for the value of the NUM feature of the subject, as indicated by the clashing values **SG/PL** in (17): *they* has plural (PL) number, while *smokes* requires its subject's number to be SG.

(17) *They smokes.

IP
NP   I'
N   VP
they V
       smokes

$$\begin{bmatrix} \text{PRED} & \text{`SMOKE}\langle\text{SUBJ}\rangle\text{'} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{`THEY'} \\ \text{PERS} & 3 \\ \text{NUM} & \textbf{SG/PL} \end{bmatrix} \end{bmatrix}$$
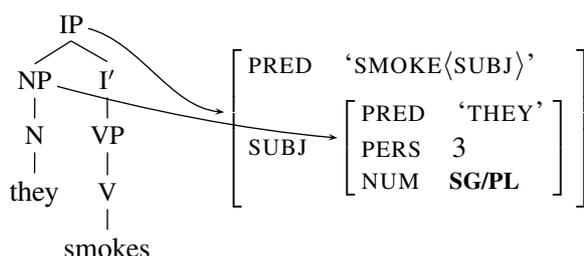
3.4.2 OBJ Agreement and the Syntax/Information Structure Mapping

We have seen that the treatment of Ostyak verb agreement requires a theory of the relation between grammatical functions and information structure: the Ostyak verb agrees with the OBJ, which is obligatorily aligned with the secondary topic. The verb does not agree with the secondary object OBJ_θ, which must be nontopical.

Following Butt and King (2000), we assume a formal level of *information structure*, an attribute-value structure containing the attributes TOPIC, TOPIC2, and FOCUS. Since we are mainly concerned with these three discourse roles, we will not include a representation of wide focus, background, or completive information in the information structures we discuss below. Unlike Butt and King, we assume a direct relation between f-structure and information structure, in order to capture the alignments between grammatical functions and information structure that we see in Ostyak. In formal terms, we assume that there is a *projection function* (Kaplan 1987) which relates f-structures to information structure. We will refer to the function from f-structures to information structures as i.[3]

(18) V' $\longrightarrow$ XP   V
                 ($\uparrow$ GF) = $\downarrow$ $\uparrow$ = $\downarrow$
                 ($\uparrow_i$ FOCUS) = $\downarrow_i$

We first examine nonagreeing verbs. As an answer to the question *What did you kill?*, example (19) has no object marking.

---

[3]For a more detailed explanation of equations like those in (18), see Dalrymple (2001, chapter 7).

(19) ma tam kalaŋ   we:l-s-əm
      I   this reindeer kill-Past-1SgSubj
      'I killed this reindeer.'

Functional structure: Information structure:

$$
\begin{bmatrix}
\text{PRED} & \text{'KILL}\langle\text{SUBJ,OBJ}_\theta\rangle\text{'} \\[2mm]
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'I'} \\ \text{PERS} & 1 \\ \text{NUM} & \text{SG} \end{bmatrix} \\[6mm]
\text{OBJ}_\theta & \begin{bmatrix} \text{PRED} & \text{'REINDEER'} \\ \text{PERS} & 3 \\ \text{NUM} & \text{SG} \end{bmatrix}
\end{bmatrix}
\qquad
\begin{bmatrix}
\text{TOPIC} & \begin{bmatrix} \text{PRED} & \text{'I'} \end{bmatrix} \\[4mm]
\text{FOCUS} & \begin{bmatrix} \text{PRED} & \text{'REINDEER'} \end{bmatrix}
\end{bmatrix}
$$

In this structure, the subject is directly related to the topic, as required in Ostyak. The nonagreeing object is OBJ_θ, and bears the focus role in this example because it appears in focus position, as required by the rule in (18). We provisionally represent TOPIC and FOCUS as single-valued rather than set-valued features (though see Butt and King 2000 for discussion of an alternative view). The verb in (19) has the following lexical entry:

(20) *we:l-s-əm* $(\uparrow \text{PRED}) = \text{'KILL}\langle\text{SUBJ,OBJ}_\theta\rangle\text{'}$
                  $(\uparrow \text{SUBJ})_i = (\uparrow_i \text{TOPIC})$
                  $(\uparrow \text{OBJ}_\theta)_i \neq (\uparrow_i \{\text{TOPIC}|\text{TOPIC2}\})$
                  $((\uparrow \text{SUBJ PRED}) = \text{'PRO'}$
                  $((\uparrow \text{SUBJ})_i \text{ PRED}) = \text{'PRO'})$
                  $(\uparrow \text{SUBJ PERS}) = 1$
                  $(\uparrow \text{SUBJ NUM}) = \text{SG}$

The second line in this lexical entry establishes the relation between the subject and the topic. The third line prevents the OBJ_θ from being linked to a topical role TOPIC or TOPIC2. The fourth and fifth line of the lexical entry contribute an optional pronominal PRED for the subject at f-structure and information structure. As is standard in LFG, when there is a full noun phrase subject, it provides the PRED for the subject, but when there is no overt subject, the verbal affix acts as a pronominal subject.

An agreeing verb takes an OBJ argument rather than an OBJ_θ, and the OBJ is linked to the secondary topic:

(21) ma tam kalaŋ   we:l-s-e:m
      I   this reindeer kill-Past-Obj.1SgSubj
      'I killed this reindeer.'

<div align="center">Functional structure: Information structure:</div>

$$
\begin{bmatrix}
\text{PRED} & \text{`KILL}\langle\text{SUBJ,OBJ}\rangle\text{'} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{`I'} \\ \text{PERS} & 1 \\ \text{NUM} & \text{SG} \end{bmatrix} \\
\text{OBJ} & \begin{bmatrix} \text{PRED} & \text{`REINDEER'} \\ \text{PERS} & 3 \\ \text{NUM} & \text{SG} \end{bmatrix}
\end{bmatrix}
\quad
\begin{bmatrix}
\text{TOPIC} & \begin{bmatrix} \text{PRED} & \text{`I'} \end{bmatrix} \\
\text{TOPIC2} & \begin{bmatrix} \text{PRED} & \text{`REINDEER'} \end{bmatrix}
\end{bmatrix}
$$
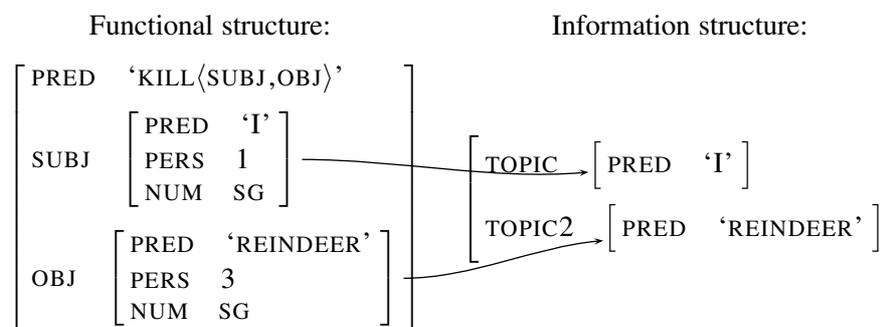
The lexical entry in (22) accomplishes this. Here the verb specifies that its OBJ is singular and is linked to TOPIC2 at information structure. It also provides an optional pronominal PRED for its object, since with an agreeing verb, an overt object noun phrase need not appear. It is otherwise similar to the lexical entry in (20):

(22) *we:l-s-e:m*   ($\uparrow$ PRED) = 'KILL$\langle$SUBJ,OBJ$\rangle$'
      ($\uparrow$ SUBJ)$_i$ = ($\uparrow_i$ TOPIC)
      ($\uparrow$ OBJ)$_i$ = ($\uparrow_i$ TOPIC2)
      (($\uparrow$ SUBJ PRED) = 'PRO'
       (($\uparrow$ SUBJ)$_i$ PRED) = 'PRO')
      ($\uparrow$ SUBJ PERS) = 1
      ($\uparrow$ SUBJ NUM) = SG
      (($\uparrow$ OBJ PRED) = 'PRO'
       (($\uparrow$ OBJ)$_i$ PRED) = 'PRO')
      ($\uparrow$ OBJ NUM) = SG

3.5   Grammatical and Anaphoric Agreement: Chichewa

In some respects, object agreement in Ostyak resembles that of Chichewa, a Bantu language spoken in Malawi, as analysed by Bresnan and Mchombo (1987). As in Ostyak, Chichewa object agreement is optional, and correlates with the topicality of the object. However, a closer look reveals that in the examples above, Ostyak object agreement is *grammatical* agreement. In contrast, object agreement in Chichewa is always *anaphoric* agreement, involving the incorporation of an object pronoun.

Bresnan and Mchombo (1987) provide compelling evidence to show that in a Chichewa sentence like (23), the object agreement affix is actually an incorporated

pronoun, whereas the subject agreement affix encodes grammatical agreement:

(23) njûchi zi-ná-wá-luma   alenje
     bees   Subj-Past-Obj-bite hunters
     'The bees bit them, the hunters.'

$$\begin{bmatrix} \text{PRED} & \text{'BITE}\langle\text{SUBJ,OBJ}\rangle\text{'} \\ \text{TOPIC} & \begin{bmatrix} \text{PRED} & \text{'HUNTERS'} \end{bmatrix} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'BEES'} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'PRO'} \end{bmatrix} \end{bmatrix}$$

When an overt noun phrase appears and is interpeted as the object, as in (23), it is a floating topic phrase, anaphorically linked to the incorporated pronominal object. Some of the evidence that Bresnan and Mchombo present for this is the fact that the relation between the floating topic phrase and the verb can be nonlocal, since the incorporated pronoun is the syntactic object of the verb, not the full noun phrase.

The Chichewa verb in (23) is associated with the following lexical specifications:

(24) *zi-ná-wá-lum-a*   (↑ PRED) = 'BITE⟨SUBJ,OBJ⟩'
                        ((↑ SUBJ PRED) = 'PRO')
                        (↑ OBJ PRED) = 'PRO'

In (24), the subject and object specifications differ: the predicate PRED of the subject is optionally specified as pronominal by the verb, as indicated by the parentheses around the specification in the second line of the entry, whereas the PRED of the object is obligatorily specified. As in Ostyak, the optional PRED specification for the subject allows for the pro-drop behavior that is found in Chichewa. In contrast, the PRED specification for the object is obligatory: the object of this verb is an incorporated pronoun.

Bresnan and Mchombo (1987) point out that in languages with incorporated pronominal objects, the verb cannot govern the case of the full noun phrases that are anaphorically linked to the incorporated pronominals, since these full noun phrases are not arguments of the verb. This, then, allows us to distinguish between anaphoric and grammatical agreement. Crucially, pronominal objects in Ostyak must appear in accusative case, even if object agreement is present on the verb:

(25) ma naŋ-e:n   wa:n-s-e:m
     I   you-Acc see-Past-Obj.1SgSubj
     'I saw you.'

This shows that object noun phrases in Ostyak are governed by the verb, and that the object agreement affixes represent grammatical agreement and not pronominal incorporation, in line with the treatment presented above.

4   TOPIC Agreement: Maithili

4.1   Agreement Patterns in Maithili

We have seen that in Ostyak, apparent correlations between the appearance of verb agreement and the discourse role of the argument are best explained in terms of a strong correlation between discourse roles and syntactic roles. This is not the case in all languages, however. Agreement patterns in some languages are best defined not in syntactic terms, but by reference to information structure. A characteristic of such languages is that not only the object, but other arguments as well, can control nonsubject agreement.

In Maithili, an Indo-Aryan language spoken in India, the verb agrees with the controlling NP in person and honorific grade: High-Honorific, Honorific (H), Mid-Honorific (MH), and Non-Honorific (NH) (Yadav 1996). Agreement with the subject is obligatory, but in addition Maithili has optional secondary agreement with a nonsubject NP. The grammatical function of the controller of secondary agreement may vary: in (26a) it is an object (*you*), in (26b) it is a possessor of the subject (*your*), and in (26c) it is a possessor of the object (*your*). Thus, secondary agreement in Maithili is an instance of what Comrie (2003) calls 'trigger-happy agreement', where agreement is possible with more than one different syntactic role.

(26) a. həm to-ra   kitab d-əit   ch-iəuk
         I   you.NH-Obj book give-Part be-1.2NH
         'I gave a book to you (NH).'

     b. toh-ər   babu   æl-thunh
         your.NH father.H came-3H.2NH
         'Your (NH) father (H) came.'

     c. o   tora: ba:p-ke   dekhalthunh
         he.H your.NH father-Obj saw.3H.2NH
         'He saw your (NH) father.'

Stump and Yadav (1988) argue that the principles governing agreement with the nonsubject are pragmatic in nature. They claim that the agreeing NP is pragmatically the most prominent NP in the clause other than the subject, where prominence is a function of three interrelated properties: (i) emphasis, (ii) honorific grade, and (iii) animacy. Emphasis has do to with the extent to which the speaker chooses to highlight the referent. High honorific grade and animacy do not automatically ensure agreement, but work on a relative basis: the higher the honorific grade and animacy of a nonsubject NP, the more likely it is to control secondary agreement. In other words, in all three cases prominence is a matter of pragmatic construal of the situation by the speaker. It seems reasonable, then, to subsume the three factors mentioned above under the notion of topicality, as suggested by

Comrie (2003), if topicality is understood as pragmatic saliency; given the classification in §2, then, secondary agreement is triggered by the secondary topic TOPIC2. Though Stump and Yadav do not give explicit information about the context of use of sentences with secondary agreement, our analysis predicts that they are used in a context in which the individual referenced by secondary agreement is highly salient, and the assertion specifies the relation between the referent of the subject of the sentence and this individual. On this view, example (26c) asserts a relation between the referent of the subject 'he' and the addressee — that is, between 'he' and 'you' rather than between 'he' and 'your father'. Animate NPs and those with higher honorific grade tend to have topical status, because their referents are likely to be salient for the speaker.

Stump and Yadav show that secondary agreement with possessors cannot be analysed as possessor raising. The agreeing possessor in Maithili remains NP-internal, and is not an argument of the main verb. There is no inflectional evidence, other than agreement itself, for possessor raising in this language: both the agreeing and nonagreeing possessors appear in genitive case and cannot assume either nominative or objective marking. Additionally, the agreeing possessor is not separable from the possessed noun. Although word order in Maithili is generally quite free, any reordering of the constituents in which the possessor does not immediately precede the possessed is ungrammatical. Further, the agreeing possessor never behaves as an argument for the purposes of such syntactic processes as transitivisation, causativisation and passivisation. The only possible passive for (26c) is (27a), in which the passive subject corresponds to the active object. Example (26c) cannot have a passive such as (27b), in which the passive subject is the possessor in the active sentence.

(27) a. tohar ba:p   dekhal gel
         your father seen   went.3NH
         'Your father was seen.'

      b. *tõ ba:p(-ke)   dekhal gele
         you father-Obj seen   went.2NH
         ('You were seen father.')

In sum, discourse role and not grammatical function is the primary determinant of agreement patterns in Maithili. Apparent syntactic constraints on secondary agreement are in fact found: for example, Stump and Yadav note that objects of postpositions generally cannot control secondary agreement.[4] We attribute this to constraints on how topical arguments can be expressed in the language; in particular, topical arguments are not expressed as objects of postpositions in Maithili. This fits with the general tendency for topical arguments to be expressed by core grammatical functions, either subjects or objects.

---

[4]Bickel et al. (1999) describe a dialect of Maithili which allows secondary agreement with other grammatical functions, including objects of postpositions.

4.2 Analysis

The functional structure and information structure for example (26c), repeated here, are as follows:

(28) o   tora: ba:p-ke   dekhalthunh
     he.H your.NH father-Obj saw.3H.2NH
     'He saw your (NH) father.'

$$
\begin{array}{ll}
\text{Functional structure:} & \text{Information structure:}
\end{array}
$$

$$
\begin{bmatrix}
\text{PRED} & \text{'SEE}\langle\text{SUBJ,OBJ}\rangle\text{'} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'HE'} \\ \text{PERS} & 3 \end{bmatrix} \\
\text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'FATHER'} \\ \text{PERS} & 3 \\ \text{POSS} & \begin{bmatrix} \text{PRED} & \text{'YOU'} \\ \text{PERS} & 2 \end{bmatrix} \end{bmatrix}
\end{bmatrix}
\qquad
\begin{bmatrix}
\text{TOPIC} & \begin{bmatrix} \text{PRED} & \text{'HE'} \\ \text{STATUS} & \text{H} \end{bmatrix} \\
\text{TOPIC2} & \begin{bmatrix} \text{PRED} & \text{'YOU'} \\ \text{STATUS} & \text{NH} \end{bmatrix}
\end{bmatrix}
$$
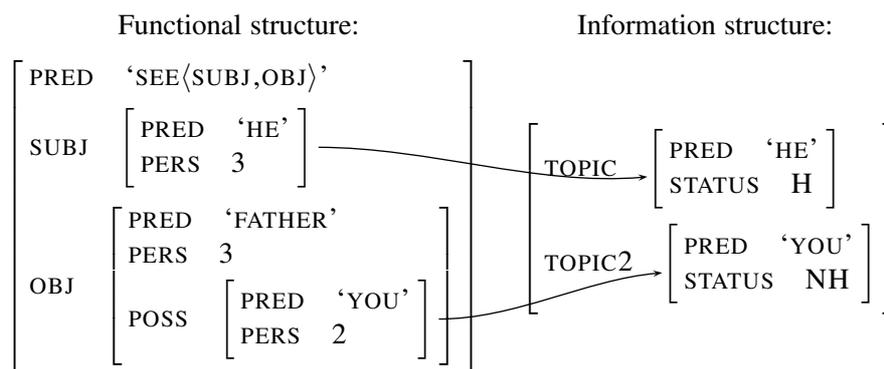
We assume that the subject is linked to the TOPIC role here, though we do not have enough information about Maithili to know whether this holds for all verbs, as in Ostyak, or is only a default alignment. Accordingly, we do not encode the TOPIC/SUBJ alignment in the lexical entry below, though further research may reveal that this is in fact necessary. In accordance with the analysis proposed above, we treat secondary agreement as encoding the alignment between a nonsubject argument and TOPIC2.

The lexical entry for the verb in (28) is given in (29):

(29) *dekhalthunh* $(\uparrow \text{PRED}) = \text{'SEE}\langle\text{SUBJ,OBJ}\rangle\text{'}$
     $((\uparrow \text{SUBJ PRED}) = \text{'PRO'}$
     $((\uparrow \text{SUBJ})_i \text{PRED}) = \text{'PRO'})$
     $(\uparrow \text{SUBJ PERS}) = 3$
     $((\uparrow \text{SUBJ})_i \text{STATUS}) = \text{H}$
     $(\uparrow \{\text{GF (POSS)}\}\text{-SUBJ})_i = \%\text{T}$
     $(\%\text{T PERS}) = 2$
     $\%\text{T}_i = (\uparrow_i \text{TOPIC2})$
     $(\%\text{T}_i \text{STATUS}) = \text{NH}$

This rather complicated lexical entry encodes the following requirements. The second and third line contribute an optional pronominal PRED for the subject to the functional structure and information structure, as described above for Ostyak. The subject must be third person, and its information structure status is H (for

Honorific). The sixth line gives the local name %T to a functional structure bearing some grammatical function, or the possessor of some grammatical function, and the seventh line specifies that %T is second person. The next lines align this functional structure with the TOPIC2 role and specify its status as NH (for Non-Honorific).

5 Conclusion

Agreement is often crosslinguistically assumed to be a purely syntactic process, referring to syntactic roles like subject and object. This works unproblematically for languages like English and Latin, where agreement patterns do not depend on discourse role. The situation is different in Ostyak, since agreement here does seem to depend on information structure: the verb agrees with topical objects, but not with nontopical objects. In fact, agreement patterns in Ostyak are defined in completely syntactic terms, just as in English or Latin. The crucial difference between these languages and Ostyak is the obligatory linkage between grammatical functions and discourse roles: primary objects in Ostyak are always secondary topics, while secondary or restricted objects are nontopical.

The situation is different again in Maithili, where secondary agreement does not depend on syntactic role. The Maithili verb agrees with the object, the possessor of the object, or the possessor of the subject. Agreement in Maithili must instead be defined in terms of discourse role: agreement is with the secondary topic. Apparent syntactic constraints on agreement are a consequence of constraints on how the secondary topic can be syntactically realised; in the dialect described by Stump and Yadav (1988), objects of prepositions cannot be secondary topics, and so the verb cannot agree with them. Thus, we see that although agreement is syntactically constrained, different languages can exploit the syntax-information structure interface in different ways to determine agreement patterns. Examining these patterns can illuminate our understanding of the syntax-information structure interface.

Acknowledgments

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The Syntax and Semantics of Denominative *-*ye/o*-Verbs in Ancient Greek*

Peter Barber

1   Introduction

In this paper, I investigate the syntax and semantics of the *-*ye/o*-[1] verbal suffix in Proto-Greek, the reconstructed ancestor of Ancient Greek. This study addresses questions which may be of historical and theoretical interest; for on the one hand, this suffix is of considerable importance in the Indo-European verbal system, and on the other hand, an investigation of the syntax and semantics of reconstructed forms confronts us with a number of technical difficulties which deserve examination.

We know that this suffix was inherited from Indo-European, the prehistoric common ancestor of Greek, Latin, Sanskrit etc. It served to derive present tense verb stems from both verbal roots and nominal stems. It became very productive during the history of many of the Indo-European daughter languages, including Proto-Greek. However, very little has yet been established about the function of the *-*ye/o*- suffix, either in Proto-Greek or indeed in Indo-European.

I will suggest that in Proto-Greek, verbs derived from nouns and adjectives by means of the *-*ye/o*- suffix exhibit predictable syntactic behaviour. In the cases which I have examined, there is evidence that this behaviour is determined by the semantics of the base noun or adjective from which the verb is derived. We will consider the rôle of animacy and argument structure.

2   What do we Reconstruct and Why?

Investigation of the *-*ye/o*- suffix is not entirely straightforward; for at an early stage of Greek, all instances of *y were lost by regular sound change. How then do we know that a Greek verb once had the suffix *-*ye/o*-, or indeed that such a suffix ever existed in Greek?

2.1   Evidence for *-ye/o- in Greek

We can use a combination of comparative evidence and language internal patterns to show that many Ancient Greek verbs once had the *-ye/o- suffix. We find that whole classes of verbs in Greek exhibit characteristic allomorphy between the present stem and other tense stems. These alternations ultimately reflect inherited patterns of suffixation, as comparison with other Indo-European languages reveals.

For the purposes of this paper, I will focus on verbs whose root ended in a resonant. Consider the following examples:

μαίνομαι	ἐμάνην	μανοῦμαι
maín-omai	**e-mán**-eːn	**man**-ộːmai
'I am furious'	'I was made mad'	'I will go mad'
(1sg pres. med-pass.)[2]	(1sg aorist pass.)	(1sg fut. mid.)

χαίρω	ἐχάρην	χαρῶ (late)
kʰaír-oː	**e-kʰár**-eːn	**kʰar**-ộː
'I rejoice'	'I rejoiced'	'I will rejoice'
(1sg pres. act.)	(1sg aorist intransitive)	(1sg fut. act.)

We see in these examples that the present stem forms exhibit a diphthong /ai/ in the root. The aorist and future stems on the other hand have an /a/ vocalism. Contrast this with the pattern shown in the next example:

ἅλλομαι	ἅλεται	ἁλοῦμαι
háll-omai	**hál**-etai	**hal**-ộːmai
'I leap'	'he may leap'	'I will leap'
(1sg pres. med-pass.)	(3sg aorist subj. mid.)	(1sg fut. mid.)

Here we see gemination of the root final /ll/ in the present stem, contrasting with ungeminated /l/ in the aorist.

Comparison of these Greek present tense verb forms with corresponding forms in languages which did not lose *y, shows that the *-ye/o- suffix is to be reconstructed for these present stems. The regular phonological outcomes of this suffix are ultimately implicated in these Greek morphological alternations.

When we compare μαίνεται [maínetai] 'he rages' (3sg pres.) with the corresponding Vedic form *mán-ya-te* 'he thinks', we can see that the Vedic verb exhibits a morphologically transparent suffix *-ya-*, the regular outcome of the Indo-European suffix *-ye/o-*. The Greek verb on the other hand shows a diphthong vocalism in the present stem. The verb χαίρω [kʰaíroː] 'rejoice' seems to correspond to the Vedic verb *hár-ya-ti* 'enjoy'.[3] Again, where Vedic has *y after a

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[2]The abbreviation med-pass. indicates medio-passive voice.

[3]The Vedic root vocalism is not directly comparable. It has an unexpected full grade root, whereas Greek exhibits the expected zero grade form. The resolution of this problem will depend on whether we can find enough convincing evidence to reconstruct full grade *-ye/o- verbs for Indo-European.

resonant, Greek exhibits a diphthong in the root.

When we compare ἅλλομαι [*hállomai*] 'I leap' with Latin *sal-iō* 'I leap', we can see that Latin has the suffix *-iō*, the regular development of Indo-European *-ye/o-*, while Greek exhibits gemination of the root final */l/*.

So it seems that even though **y* was lost in Greek, sequences of *consonant* + **y* left characteristic phonological outcomes and, in turn, these produced morphological alternations. By internal reconstruction, we can use this allomorphy as indirect evidence for the prehistoric *-ye/o-* suffix, even in verbs for which there is no direct comparative data available from other languages.

When the Proto-Greek *-ye/o-* suffix attached to roots ending in */r/* and */n/* with root vocalisms other than */a/*, the results were slightly different:

θείνω[4]	θενῶ.
tʰȩ́:n-o:	***tʰen-ô:***
'I strike'	'I will strike'
(1sg pres. act.)	(1sg fut. act.)
κρίνω	κρινῶ,
krí:n-o:	***krin-ô:***
'I distinguish'	'I will distinguish'
(1sg pres. act.)	(1sg fut. act.)
πλύ́νω	πλυνῶ
plú:n-o:	***plun-ô:***
'I clean'	'I will clean'
(1sg pres. act.)	(1sg fut. act.)

Instead of the development of a diphthong, these verbs show *lengthening* of */e/*, */i/* and */u/* in the present stem. Ultimately, we attribute these compensatory lengthenings to the prehistoric loss of **y*.[5]

2.2 Denominative *-ye/o-* Verbs

Just as we can identify alternation between different verb stems, we can recognise the same kind of alternation between the present stems of certain verbs and the stems of certain nouns and adjectives:

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[4]Often [ẹ:] or [ọ:] are represented by 'spurious diphthongs' (ει and ου) in Greek orthography.

[5]Evidence from other morphological categories shows that in roots which end in a resonant, an */o/* vowel in the root became a diphthong */oi/*, when **y* followed, e.g. κοινός [*koinós*] 'common' < **kom-yo-s*.

ἀγγέλλω   ἄγγελος
aŋgéll-o: *áŋgel-o-s*
'I announce'   'messenger'
(1sg pres. act.)   (nom. sg. noun)

καθαίρω   καθαρός -ή, -όν
katʰaír-o: **katʰar-ós**
'I purify'   'pure'
(1sg pres. act.)   (nom. sg. adjective)

This relationship arises because the *-ye/o-* suffix could form verbs from nominal stems, i.e. denominative verbs.

In this paper, I will consider the use of the *-ye/o-* suffix to derive verbs from noun and adjective stems, but I will focus on those derived from adjectives. While it is widely believed that this suffix was capable of performing a denominative function in Indo-European, there are no clearly inherited examples;[6] so I will confine this study to the denominative verbs of Proto-Greek.

3   The Semantics of Denominative *-ye/o-* Verbs

The most obvious way to characterise the semantics of a denominative verb is to consider the relationship which it bears to its base noun or adjective. Clearly, we can only consider this relationship when both the verb and its base noun or adjective are attested; so, I shall only consider as denominative those verbs for which we still have the base form securely attested.[7]

Before embarking on a more detailed examination, I shall consider a few illustrative examples, so that we can see in advance the surprisingly wide range of possible relationships which *-ye/o-* denominatives can enter into with their base forms. I do not discuss at this stage the exact *morphological* relationship between each verb and its base. For the moment let us focus on the *semantics*.

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[6]For a discussion of some of the most promising evidence for inherited denominatives see Tucker (1988).

[7]I exclude therefore some possibly early denominatives, whose base noun is only attested late or in grammarians.

	Denominative Verb	**Base**
1)	ἀγγέλλω	ἄγγελος
	aŋgéllo:	*áŋgelos*
	'I **act as** messenger'	'messenger' (noun)
2)	τεκμαίρομαι	τέκμωρ or τέκμαρ
	tekmaíromai	*tékmo:r or tékmar*
	'I **judge** from signs'	'sign' (noun)
3)	ἱμείρω	ἱμερός
	himeíro:	*himerós*
	'I **experience** desire'	'desire, longing' (noun)
4)	πημαίνω	πῆμα
	pe:maíno:	*pê:ma*
	'I **inflict** distress'	'distress' (noun)
5)	ἀφραίνω	ἄφρων
	apʰraíno:	*ápʰro:n*
	'I **am** (being) foolish'	'foolish' (adj.)
6)	καθαίρω	καθαρός
	katʰaíro:	*katʰar-ós*
	'I **make** pure'	'pure' (adj.)

Such diversity and apparent unpredictability has led to the assumption that the IE *-ye/o- suffix simply served to derive a verb but did not determine its meaning:

> '*-ye/o- n'a aucune valeur sémantique propre: il sert simplement à la derivation'
> *-ye/o- does not have any intrinsic semantic value: it is simply used for derivation.* (Meillet 1937:219, translation my own)

We should to consider whether this is the case. Clearly we cannot say that the *-ye/o- suffix forms verbs with any one semantic value. However, in many cases considered in this paper, we shall see that the meaning of the denominative verb and indeed its syntax appear to result from a systematic and non-trivial interaction between the denominative suffix and the semantics of the base noun or adjective.

We can certainly identify several distinct types. Examples (1) and (5) seem to suggest very similar semantic relationships between verb and base. We could capture the meaning of the verb in (1) with a semantic frame such as '**I am an X**' or '**I act as X**', where **X** is the meaning of the base *Noun* from which the verb is derived. The semantics of the verb in (5) could be captured with almost identical semantic frame: '**I am X**' or '**I act X**', where **X** is the meaning of the base *Adjective*

from which the verb is derived. I ascribe the minor differences between these schemes to the constraints on nouns and adjectives imposed by English syntax, rather than to anything linguistically significant. Let us describe the relationship of these verbs to their bases as *Predicative.*

Examples (3) and (4) seem to exhibit contrasting ways of deriving verbs from abstract nouns. In (3), the subject of the verb appears to be an *Experiencer*, while in (4), the subject is an *Agent.*

The verb in example (2) appears to exhibit a semantic relation to its base which could be captured by the schema '**I use an X**', where **X** is the meaning of the base noun. We shall describe this as an *Instrumental* sense. However, when we consider further examples, we shall see that the semantics of this category are not at all clear cut.

In example (6) the semantics of the verb could be captured as '**I make X**', where **X** is the meaning of the base adjective. This is a *Factitive* relation.

4   Some Morphological Categories

There is an important morphological complication to notice about the *-*ye/o-* denominatives built from resonant final stems. They are never built from exactly the same stem as the base noun or adjective. The stem of the base is modified in one of a limited number of ways. The patterns of stem modification and suffixation seen here are generally considered to be of great antiquity, even if none of these verbs can itself be shown to be inherited from Indo-European.

4.1   Ablaut

Before we can understand the suffixation patterns of the *-*ye/o-* suffix, we must consider the phenomenon of ablaut. Ablaut is an ancient pattern of allomorphy inherited from Indo-European. Morphemes which exhibit ablaut could be found in one of three shapes: the *full grade*, which contains a short */e/* or */o/* vowel; a *lengthened grade*, which contains a long */e:/* or */o:/* vowel; or a *zero grade* which has no vowel at all. Consider the following generalised ablauting morpheme shapes (C = any consonant, R = any resonant):

Full Grade:	*CeR-* or *CoR-*
Lengthened Grade:	*Ce:R-* or *Co:R-*
Zero Grade:	*CR-*

4.2   Denominatives Built from Nominals Exhibiting Ablaut

Many nouns and adjectives in Greek with resonant final stems exhibit ablaut in the final part of the stem; we find systematic patterns of allomorphy in the paradigm:

Lengthened grade	Full Grade
ποιμήν	ποιμένος
poimé:n	*poimén-os*
'herdsman' (nom. sg.)	(gen. sg.)
ἄφρων	ἄφρονος
á-pʰro:n	*á-pʰron-os*
'foolish' (nom. sg.)	(gen. sg.)

The *-ye/o-* denominative verbs derived from such forms were built from the *zero-grade* of these stems: **poimn-* and **a-pʰrn-*. But a string such as **poimnyo:* could not be parsed as two syllables either in Indo-European or in Proto-Greek. At an early stage, the resonants (**r, *l, *m,* and **n*) had syllabic allophones (**r̥, *l̥,* **m̥* and **n̥*). This allowed a string such as **poimn-yo:* to be parsed as three syllables: **poimn̥-yo:*. Such a sequence developed into **poimanyo:* in Proto-Greek. Thereafter **y* was lost leaving a diphthong in the stem, ποιμαίνω [*poimaíno:*] 'I act as a herdsman'. Similarly, **a-pʰrn̥-ye/o-* develops into ἀφραίνω [*apʰraíno:*] 'I am (being) foolish'.

4.3   Denominatives Built from Nominals which do not Otherwise Exhibit Ablaut

Forms built from otherwise non-ablauting resonant final stems also show the zero grade of the nominal stem, when the *-ye/o-* suffix is added. The denominative verb μελεδαίνω [*meledaíno:*] 'I care for' is built from the zero grade of μελεδών [*meledó:n*] 'care, sorrow', which has the same lengthened grade stem throughout the paradigm. The verb appears to arise from **meledan-yo: < *meledn̥-yo:*.

The verb πημαίνω [*pe:maino:*] 'I inflict distress' at first glance appears anomalous; for it exhibits a resonant final stem, yet it is based on πῆμα [*pê:ma*] 'distress, anguish' (nom. sg.), cf. πήματος [*pé:matos*] (gen. sg.), which appears to have a stem ***pe:mat-***. However, on comparative grounds we can reconstruct a stem **pe:mn-* with a stem final nasal which is otherwise not preserved in Greek. The stem *pe:mat-* is a later Greek innovation. So the denominative verb actually preserves a more ancient state of affairs.

4.4   Denominatives Built from Thematic Stems

Many of the nominal stems which we have been including among our resonant final forms are not strictly resonant final at all. They have an alternating '*thematic*' vowel suffix *-e/o-*, e.g. ἄγγελ-ο-ς [*áŋgel-o-s*] 'messenger' (nom. sg.), cf. ἄγγελ-ε [*áŋgel-e*] 'O messenger!' (voc. sg.). However for the purposes of *-ye/o-* verb derivation, they behave as though there were no thematic suffix on the stem; it is simply replaced by the *-ye/o-* verbal suffix. So the verb formed from ἄγγελος [*áŋgelos*] is not **aŋgeleo: < *aŋgel-e-yo:*, but ἀγγέλλω [*aŋgéllo:*] 'I act as mes-

senger' < *aŋgel-yo:. It is formed by replacement of the thematic suffix by the verbal *-ye/o- suffix.

This type of derivation does not exhibit any change in the stem beyond the loss of the thematic vowel. So the *-ye/o- verbs built in this way do not attach to a zero grade stem (unless the base is already a zero grade form). The noun ἵμερος [hímeros] 'desire, longing' forms the verb ἱμείρω [himeíro:] 'I desire', and **not** *himaíro: from a putative zero grade *himr̥-ye/o-, or indeed *himereo: < *himer-e-yo:. The verb καθαίρω [katʰaíro:] 'I make pure' < *katʰar-yo:, looks as though it is built from a zero grade stem; however this is only because the base adjective καθαρός [katʰar-ós] 'pure' has the stem katʰar-, once the thematic vowel has been removed.

It has been suggested that this type of derivation with thematic vowel deletion is archaic.[8] We will see that this type exhibits exactly the same semantic patterns as the ablauting type. This may lend support to the idea that both types are equally old.

5   The Range and Nature of the Evidence.

Now that we have established how to recognise denominative *-ye/o- verbs and have briefly discussed the range of semantics and modes of derivation, I shall attempt to consider all the denominatives built from adjectives with resonant final stems, which are attested in literary authors who were active in and before the 4th Century BC. It would not be sufficient to study only the forms found in Homer, since there may be misleading gaps in the data. On the other hand, to include forms which are only attested in much later authors may distort any inherited patterns which we are able to detect. The lists of forms are based on study of the relevant pages of Kretschmer & Locker (1977).

Since we are primarily interested in the relationship between the base noun or adjective and the corresponding denominative verb, I will also exclude even early denominatives whose base noun is attested very late or only in grammatical works. We need to have an accurate means of determining the meaning of both the base word and the derived verb, in order to understand the function of the *-ye/o- suffix.

In an examination of this kind, we need to recognise some inherent methodological compromises. We are attempting to uncover what may have been a set of *synchronic* rules in an unattested language, using *diachronically diverse* source material, which may be attested many hundreds of years after this suffix disappeared. We cannot be sure that the meanings of the attested denominatives and their bases have not diverged significantly in the period since they were formed. We must simply try to judge the likelihood of this, both on a case by case basis, and in the context of any patterns which we find in the data. We cannot be sure that the rules for denominative formation stayed constant in every dialect from which

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[8]See Tucker (1990:117ff.)

our data are drawn. We must simply adopt the working hypothesis that all the data are relevant, unless we can show it to be aberrant in some principled fashion.

Unfortunately, due to constraints on space, it will be necessary in most cases to rely on Liddell et al. (1996) for the meaning of Greek forms. Furthermore, by necessity I present a limited subset of the meanings exhibited by these denominatives and their bases. I have certainly attempted in each case to present the meaning which most clearly brings out a relationship between the verb and its base. However, I have also cited any meanings which do not appear to be a straightforward development of this putatively original meaning. The truly satisfactory approach would be to consider each verb and its nominal base in all the contexts in which they occur. However, as we shall see, such a task is far beyond the scope of a short paper. I will however examine a few key examples in greater detail.

6   Denominatives from Adjectives

Let us consider first the *-*ye/o*- denominatives built from ablauting adjectives:

ἀφραίνω (Hom. etc.)[9]   ἄφρων (Hom. etc.)
apʰraíno: *ápʰro:n*
'I **am (being)** foolish' 'foolish'

πιαίνω (Pi., A. etc.)   πίων (Hom. etc.)
piaíno: *pío:n*
'I **make** fat'   'fat'

Clearly these forms represent two very different semantic and syntactic types. In the first example, ἀφραίνω [*apʰraíno:*], the meaning of the verb is equivalent to predicating the base adjective of the verbal subject. The resulting verb is intransitive:

ἀφραίνεις Μενέλαε διοτρεφές
apʰraíneis Menélae diotrepʰés
be.mad   Menelaus Zeus.nurtured
(2sg pres.) (voc. sg.) (voc. sg.)

 'You are mad, Menelaus nurtured of Zeus' (Il. 7.109)

In the second example, πιαίνω [*piaíno:*], the verb has a *factitive* sense in relation to its base adjective and is obligatorily *transitive*:

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[9]The abbreviated forms in brackets beside these forms indicate the authors in which the word is first attested. The abbreviations used are those found in Liddell et al. (1996).

ἔγωγε	μὲν δὴ	τήνδε	πιανῶ[10]	χϑόνα
égo:ge	*mèn dè:*	*té:nde*	*pianô:*	*kʰtʰóna*
I	ptcl. then	this	fatten	land
(nom. sg.)		(acc. sg.)	(1sg fut.)	(acc. sg.)

'I myself will fatten this land' (A. Th. 587).

So there seem to be two different semantic derivations in spite of the apparently identical morphological derivation of the verb from its base adjective.

Let us now consider two examples of the thematic vowel deletion type:

στωμύλλω (Ar.)	στωμύλος (Ar., Pl., Theocr. etc.)
sto:múllo:	*sto:múlos*
'I am talkative'	'talkative'

ποικίλλω (Hom. etc.)	ποικίλος (Hom. etc.)
poikíllo:	*poikílos*
'I elaborate'	'multicoloured, manifold, diversified'

Here again there is a semantic and syntactic split. The first example, στωμύλλω [*sto:múllo:*], shows a meaning which is equivalent to predicating the base adjective of the verbal subject. It is intransitive:

ἀλκυόνες	αἳ	παρ᾽ ἀενάοις	θαλάσσης	κύμασι	στωμύλλετε
alkuónes	*haì*	*par aenáois*	*tʰalásse:s*	*kú:masi*	*sto:múllete*
Kingfishers	who	by ever.flowing	sea	waves	chatter
(voc. sg.)	(nom. pl.)	(dat. pl.)	(gen. sg.)	(dat. pl.)	(2pl pres.)

'O Kingfishers, who chatter by the sea's everflowing waves' (Ar. Ra. 1310)

The second example, ποικίλλω [*poikíllo:*], shows a factitive sense in relation to its base adjective and is obligatorily transitive:

ἐν δὲ	χορὸν	ποίκιλλε
en dè	*khoròn*	*poikille*
on and	dancing.place	elaborates
	(acc. sg.)	(3sg pres.)

'And he wrought a dancing place on it' (i.e. on the shield of Achilles Il. 18.590)

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[10]πιανῶ [*pianô:*] is a future tense form and did not have the *-ye/o-* present stem suffix. This example illustrates the point that the various tense stems of such denominative verbs exhibit the same semantic relationship to their base as the present stem built with the suffix *-ye/o-*. The explanation for this probably lies in the history of these verbs. It is generally accepted that in the first instance, only present stem denominatives were created. Other tense stems were constructed analogically on the basis of the present stem.

So these examples show that the semantic relationship between the base word and the verb is not constant within a morphological class. Similarly both the *predicative* and the *factitive* meanings are found in both of the morphological types illustrated here. So it seems that the means of derivation is not a significant factor in determining the meaning of these verbs. So what does determine the relationship between the base adjective and the derived verb? Is the process random?

6.1   Denominatives with a Predicative Sense

Let us look at further examples of verbs of the predicative type formed from adjectives. Often these verbs have more than one meaning and we can understand these alternative meanings as developments of the 'I am X' sense. However, this is not true in all cases. This inconsistency requires some discussion. I give the meanings which are compatible with the 'I am X' pattern in bold:

λιταίνω [*litaíno:*] '**I pray, entreat**' (only E. El. 1215) built from λιτανός [*litanós*] 'praying, supplicant' (The adjective is first attested in Aeschylus, but Homeric λιτανεύω [*litaneúo:*] seems to presuppose the same base form, so we can infer that it is ancient);

ἀτασθάλλω [*atastʰállo:*] '**I am insolent to**' (In Homer we only find the present participle e.g. Od. 19.57) built from ἀτάσθαλος [*atástʰalos*] 'reckless, presumptuous' (Hom. etc.);

ἀτάλλω [*atállo:*] '**I gambol, skip**; bring up a child'[11] (Hom. etc.) built from ἀταλός [*atalós*] 'tender, delicate (of youth)' (Hom. etc.);

κωτίλλω [*ko:tíllo:*] '**I chatter; beguile, cajole**' (Hes., Theogn. etc.) built from κωτίλος [*ko:tílos*] 'chattering; lively, persausive' (Anacr., Theogn, S. etc.);

αἰόλλω [*aióllo:*] '**I shift rapidly**; variegate'[12] (Hom., Hes., Nic.) built from αἰόλος [*aiólos*] 'nimble; glittering, changeful of hue' (Hom., h. Hom. etc.);

σκερβόλλω [*skerbóllo:*] '**I scold, abuse**' (Ar. Eq. 821) built from σκέρβολος [*skérbolos*] 'scolding, abusing' (Call. fr. 281., Hsch.);

κινύρομαι [*kinú:romai*] '**I wail, bewail**' (A., Ar., etc.) built from κινυρός [*kinurós*] 'wailing' (Hom., etc.);

μινύρομαι [*minú:romai*] '**I warble, hum**' (A., Ar. etc.) built from μινυρός [*minurós*] 'whining' (Hom.).

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[11]The meaning of this verb is difficult to understand in terms of the base adjective. I discuss the problems associated with this form in §6.1.5 below.

[12]The transitive meaning 'variegate' does not appear to be compatible with the 'I am X' pattern. I discuss this form and some other problematic examples in §6.1.5 below.

Observe that in many of these examples, an optional transitive syntax develops beside the putatively primary intransitive usage 'I am X'. Consider the verb κωτίλλω [*ko:tíllo:*]; in the following example it is used intransitively (adjectival agreement is indicated by co-indexing in the gloss):

μὴ   δὲ γυνή   σε   νόον   πυγοστόλος ἐξαπατάτω
mè: dè guné: se   nóon   pugostólos eksapatá:to:
not and woman$_I$ you$_J$ mind$_K$ lewd$_I$ deceive[13]
          (nom. sg.)   (acc. sg.) (acc. sg.)   (3sg impv.)

αἱμύλα   κωτίλλουσα, τεὴν διφῶσα   καλιήν.
haimúla   ko:tíllo:sa, teè:n dipʰô:sa kalié:n.
wheedling$_I$ chattering$_I$ your$_L$ seek.after$_I$ hut$_L$
               (pres. pple)   (pres. pple) (acc. sg.)

'And do not let a lewd, wheedling, chattering woman deceive you in your mind, for she covets your house.' (Hes. Op. 373-4)

In the next example, κωτίλλω [*ko:tíllo:*] is being used transitively, the direct object is given in bold type:

γυναικὸς ὢν   δούλευμα μὴ κώτιλλέ   **με.**
*gunaikòs ò:n dó:leuma mè: kó:tillé **me.***
woman   being slave   not cajole   **me.**
(gen. sg.)   (nom. sg.) (2sg impv.) (acc. sg.)

'Since you are a woman's slave, do not cajole me.' (S. Ant. 756)

We should note that the semantic relation of the direct object to the verb is very different in such cases from that found in the obligatorily transitive factitive type. Furthermore, even in the transitive usages of these forms, the same predicative relation between the base adjective and the subject of the derived verb still holds.

What do these forms have in common which cause them to have predicative semantics, while verbs such as πιαίνω [*piaíno:*] and ποικίλλω [*poikíllo:*] have a factitive relation to the adjective? We have already seen that morphology does not appear to be involved.

Let us briefly consider the *English translations* of the adjectival bases in this predicative group: 'praying', 'reckless', 'tender', 'chattering', 'nimble', 'abusive', 'wailing' and 'whining'. While the English translations are clearly not a valid means of analysing Greek semantic patterns, they give us a starting point and allow us to develop a working hypothesis.

We can quickly notice some potential common factors in the semantics of these adjectives. One such factor is animacy. In English, adjectives such as these would

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[13]This verb is used ditransitively here.

typically only be predicated of *animate*[14] nouns, unless a metaphorical effect were being sought. Is this true of these adjectives in Greek? If so, this might allow us to draw a contrast with adjectives which form factitive verbs, such as πίων [*pío:n*] 'fat' and ποικίλος [*poikílos*] 'multicoloured'; for the equivalent English adjectives can be predicated of both *animate* and *inanimate* nouns.

6.1.1   Is Animacy a Factor in Greek?

Clearly, we must take care that any apparent pattern in the semantics of these adjectives is not an artefact of our English translation. We need to confirm that there are analogous selection restrictions in these Greek adjectives. Do we even have a clear notion of which nouns are treated as animate or inanimate in Greek? Can we devise independent criteria? These are questions which we will have to address, if we are to formulate any kind of robust analysis.

It is simple enough to show that an adjective from which a factitive verb is built may be predicated of inanimate nouns and sometimes of animate nouns as well. The adjective πίων [*pío:n*] 'fat', which builds the verb πιαίνω [*piaíno:*] 'I make fat', can modify

> 'thighs' (πίονα μηρία [*píona me:ría*] 'fat thighs' in Od. 11.773);
> 'fields' (πίονες ἀγροί [*píones agroí*] 'rich fields' in Il. 23.832);
> beasts (πίονος αἰγός [*píonos aigós*] 'of a fat goat' in Il. 9.207); and
> 'men' (ἄνρωπος ... πίων [*ánthro:pos ... pío:n* 'fat man' in Ar. Ra. 1092) etc.

It is reasonably clear that *fields* and *thighs* are not animate, while *men* and *goats* are animate.

It is more difficult to show that the adjectives which build the predicative denominatives are predicated only of animate nouns. Such a claim can only be considered probable, if a significant sample of forms exists, and no animate forms are found in that sample. Clearly it is impractical to discuss every occurrence of every relevant adjective here. However, we can look at an illustrative example. I have used the online TLG®[15] corpus to find all occurrences of the adjective ἄφρων [*ápʰro:n*] 'foolish' in literary authors who were active in and before the 4th century BC.[16]

In what follows, I only give one instance of each noun, even if multiple examples exist. First, I list all the clear examples of ἄφρων [*ápʰro:n*] modifying the

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[14]I am using the term *animate* here, not in reference to grammatical gender, but in order to distinguish nouns like *farmer* (animate) from nouns like *stone* (inanimate). Broadly, the referent of an animate noun will have some measure of independent volition. For the moment, I shall simply assume that I am entitled to use such a notion of *animacy* in Greek. An animacy hierarchy has been implicated in the morphological and syntactic analyses of many languages (e.g. Silverstein 1976).

[15]Thesaurus Linguae Graecae http://www.tlg.uci.edu/

[16]Naturally, there are a number of problems with using online corpora for such a task: potential corrections and changes in the corpus over time; errors in text entry etc. However, the practical advantages may outweigh the disadvantages in this case, since such a search reveals interesting patterns, and provides plenty of material for discussion.

names of gods and humans. In some of the examples given below, the noun in question does not occur in the same sentence as the adjective itself, but is nevertheless to be understood as belonging with it:

> *Odysseus* (Il. 3.220); *Telemachus* (Od. 21.102); *Adoudios the Persian* (X. Cyr. 7.4.1.6); *Agesilaus* (X. Ages. 2.7.4); *Roikos* (Call. Dian. 221); *Ares* (Il. 5.761).

We also find ἄφρων [*áp^{h}ro:n*] with nouns having human, animal, or divine reference. These are the clear examples:

> ἄνθρωπος [*ánt^{h}ro:pos*] 'human' (Pl. Alc. 2. 139b.1);
> κούρη [*kó:re:*] 'maiden' (i.e. Athena, Il. 5.875);
> νομοθέτης [*nomot^{h}éte:s*] 'lawgiver' (Pl. Lg. 769d.5);
> κοινῶνος [*koinô:nos*] 'partner' (Pl. Ep. 315d.5);
> ἀνήρ [*ané:r*] 'man' (Pl. Grg. 497e. 4);
> παιδίον [*paidíon*] 'child' (Thphr. Sens. 45.1);
> σύμβουλος [*súmbo̦:los*] 'advisor, counsellor' (Pl. Ti. 69d.3);
> πάϊς [*páïs*] 'child' (Il. 11.389);
> φώς [*p^{h}ó:s*] 'man' (Od. 6.187);
> ξεῖνος [*ksê:nos*] (Od. 17.586);
> φῦλον [*p^{h}û:lon*] 'tribe, race, class' (Call. Del. 184);
> λαγῶς [*lagô:s*] 'hare' (X. Cyr. 1.6.40.11).[17]

We find ἄφρων [*áp^{h}ro:n*] agreeing with non-overt human verbal subjects or with pronouns which co-refer with humans. This is a selection of examples:

> με [*me*] 'me' (E. Fr. 969.2);
> σε [*se*] 'you' (e.g. the nurse in Od. 23.12);
> οὕτοι [*hoûtoi*] 'these' (Arist. EE. 1247b. 25);
> ὅσοι ἐφαγον τῶν στρατιωτῶν [*hósoi ep^{h}agon tô:n stratio:tô:n*] 'those of the soldiers who ate (honey)' (X. An. 4.8.20.3);
> τινες [*tines*] 'certain people' (Pl. Alc. 2. 139c. 5);
> 2pl subject (E. Hel. 1151); etc.

6.1.2   Can ἄφρων [*áp^{h}ro:n*] Modify Inanimate Nouns?

We find only two examples of unambiguously inanimate concrete nouns being modified by this adjective. However, we cannot ignore them. We find the phrase εἴδωλα ἄφρονα [*eído:la ap^{h}roná*] 'mindless statues' (X. Mem. 1.4.4). Here, Xenophon is referring to the characters of fiction, who do not have minds, as opposed to real living beings. Given that Xenophon is explicitly telling us in this passage

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[17] I shall not include here examples such as τὸν … ἄμουσον [*tòn … ámo̦:son*] 'the unmusical man' (Pl. R. 349e 5.); for they involve the use of the article with an adjective as a substantive. The animacy of such forms is unlikely to be a feature of the adjective itself.

that they are inanimate, it would be disingenuous to attempt to interpret εἴδωλα [*eído:la*] as anything but inanimate.

Xenophon also provides the second counterexample to the tendency of this adjective to select for animacy. We find ἄφρων [*áphro:n*] modifying σῶμα [*sô:ma*] 'body' (X. Cyr. 8.7.20.2). Again this is precisely in a context where the inanimacy of the body is being contrasted with the animacy of the spirit (ψυχή [*psukʰé:*]).

It may be possible to account for these counterexamples, if we briefly consider the history and structure of ἄφρων [*áphro:n*]. In terms of its *etymology*, one would expect this adjective to be eminently suited to modifying and being predicated of inanimate nouns; for in origin it is a compound form with the literal meaning 'not having a mind'. However, in its early usage, the adjective is found almost exclusively with animate nouns with the meaning 'foolish'. In Xenophon, however, the meaning of the adjective appears to be literal. It is quite possible that this rare usage represents a later reanalysis of the compound.

In any case, we should note that the denominative verb formed from ἄφρων [*áphro:n*] does not reflect this literal reading of the base adjective. Its use always seems to be consistent with the meaning 'be foolish, silly' rather than literally 'have no mind'. This may lend support to the notion that the literal meaning of the compound in these Xenophon passages is a later development.[18]

6.1.3 The Animacy of Abstract Nouns

So far, we have found the adjective ἄφρων [*áphro:n*] with nouns and pronouns which are unarguably *animate*. However, it can also be found agreeing with a large number of clearly *abstract nouns*. I have found the following examples:

> λόγος [*lógos*] 'argument' (E. HF 758);
> λύμη [*lú:me:*] 'mischief' (A. Eu. 377);
> βίος [*bíos*] 'life' (Pl. leges 733e.6);
> προθῡμία [*protʰu:mía*] 'zeal' (E. HF 310);
> ψῡχή [*psu:kʰé:*] 'life, spirit' (Pl. Soph. 247a.3);
> καρτέρησις [*kartére:sis*] 'patience' (Pl. Alc. 2. 139b.9);
> τόλμα [*tólma*] 'boldness' (Pl. La. 193d.1);
> νεότης [*neóte:s*] 'youth' (Pl. Com. 9.359.8);
> βούλευμα [*bó:leuma*] 'resolution, purpose' (E. Ph. 1647);
> θεῖον [*tʰeîon*] 'divinity' (Pl. Epin. 982d 6.);
> θῡμός [*tʰu:mós*] 'soul, spirit' (Od. 21.105);
> πνεῦμα [*pneûma*] 'respiration, breath, spirit' (Diog. Apoll. fr. 19.43).[19]

It is unclear whether our working hypothesis is affected by the observation that an adjective such as ἄφρων [*áphro:n*] can modify abstract nouns. We have supposed

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[18]The literal use of ἄφρων [*áphro:n*] is also found in Pl. Epin. 983d 5.

[19]This example is difficult to assess. πνεῦμα [*pneûma*] can be used in a range of meaning of varying abstraction. Without a better understanding of Greek medical thought, I am unable to judge how concrete this usage may be in this passage.

that this adjective should only modify animate nouns. What is the animacy of an abstract noun? I think the evidence indicates that abstract nouns are not specified for animacy.

Ultimately, it would be far better if we could find independent criteria which could tell us whether a noun was animate or not. In other words, we would hope to find another syntactic or morphological phenomenon in Greek which is sensitive to animacy. If two independent constructions were to behave in a parallel fashion, then this would provide strong support for any resulting analysis.

6.1.4   The Agent Construction with Passive Verbs

A possible 'animacy test' would be the choice of construction used to express the *agent* or *instrument* with passive verbs. In Classical Greek, there were several ways of expressing the demoted external argument of verbs in passive constructions. It seems that the animacy of the noun in question may have influenced the choice of construction. After a certain stage, there seems to be a preference for animate noun agents to be found in the *genitive case* after the preposition *hupó*. Inanimate instruments tend to appear in the *dative case* without a preposition. If this tendency were borne out in a consistent fashion, then we could have an independent means of assessing the animacy of nouns in Greek.[20]

The initial results seem promising, insofar as they show that the *hupó* passive agent construction could be used with some of the animate concrete nouns we found in constructions with ἄφρων [*áphro:n*]:

> ἄνθρωπος [*ánthro:pos*] 'human' (Pl. Sym. 196b 7);
> ἀνήρ [*ané:r*] 'man' (Hdt. 5.5.5).

It also seems possible to use it with some of the same abstract nouns which we found with ἄφρων [*áphro:n*]:

> θεῖον [*theîon*] 'divinity' (X. Hell. 7.5.13.4);
> πνεῦμα [*pneûma*] 'respiration, breath, spirit' (Hipp. de morbiis 1.29.15).

Conversely, we find *no examples* of this construction with the otherwise extremely common noun μηρία [*me:ría*] 'thighs'. Similarly we do not find it with ἀγρός [*agrós*] 'field'. These facts fit well with the idea that *me:ría* and *agrós* behave differently because they are inanimate.

There are three main problems with exploiting this phenomenon. Firstly, we know that although the agent construction with *hupó* is already present in Homer, it is a comparatively recent development and is not especially common (George 2002:39). Hence, we would be attempting to probe the prehistoric properties of nouns using a phenomenon which could not have existed at that earlier time. [21]

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[20]The situation is considerably more complex that the one I have briefly described, with several competing constructions. For a full account see George (2002).

[21]Of course, we could argue, in precisely the same way, that our survey of the selection restrictions of adjectives, using texts from as late as the 4th century, is also a rather indirect approach.

The second and much greater problem is that there is *no guarantee* that any given animate noun will be found with the *hupó* passive agent construction. It therefore becomes very hard to assess how seriously we can take the absence of such evidence in any individual case. I have failed to find this construction with many nouns which we would consider animate, nor have I found it with some of the abstract nouns which we saw construed with ἄφρων [*ápʰro:n*] in §6.1.3:

λαγῶς [*lagô:s*] 'hare';
καρτέρησις [*kartére:sis*] 'patience';
νεότης [*neóte:s*] 'youth';
λύμη [*lu:me:*] 'mischief'.

The third problem with using these data is that sometimes inanimate nouns appear to use the *hupó* passive agent construction. We find the clause ἡ ψυχή …ἕλκεται ὑπὸ τοῦ σώματος [*he: psukʰé:… hélketai hupò toû só:matos*] 'The soul is dragged by the body' (Pl. Phd. 79c.6). Even if this is an unusual case, it creates a problem when we try to assess the significance of an occurrence of the *hupó* agent construction. Animacy is neither a necessary nor a sufficient condition for the occurrence of the *hupó* agent construction.

Conversely, we cannot use the *dative instrument* construction in any simple way as a test for *inanimacy*, since from the earliest stage, it was possible to have a dative animate agent.

Of course, further study may show that many of these apparent irregularities and inconsistencies can be accounted for, and that deeper regularities underlie this behaviour. However this is not the place for the large scale investigation which would be necessary to reveal such results.

6.1.5   Problems and Exceptions Amongst the Predicative Group

Leaving aside these complications, our semantic scheme seems to work reasonably well for most of the examples given above. Adjectives which select for animacy form predicative denominative verbs. However, there are a few problems. In clear contrast to ἀφραίνω [*apʰraíno:*] 'I *am (being)* foolish', we find the apparently *factitive* εὐφραίνω [*eupʰraíno:*] 'I make happy' (Hom. etc.) formed from εὔφρων [*eúpʰro:n*] 'happy' (Hom. etc.). This seems like a fatal exception to the notion that animacy could be correlated with the behaviour of these denominatives; for surely we do not suppose that an adjective meaning 'happy' could be predicated of inanimate nouns? Moreover, it seems to imply that any attempt to discover conditions for the occurrence of predicative or factitive meaning in denominatives is ultimately futile; for the base compound adjectives are so similar in morphology and semantics that any attempt to find consistent features to distinguish them would almost certainly result in an *ad hoc* formulation.

However, such attempts may be unnecessary: εὔφρων [*eúpʰro:n*] may have the sense 'happy', but equally it can have the active sense 'cheering, making glad' (e.g.

used of οἶνος [*oînos*] 'wine' at Il.3.246). In this sense, the adjective is regularly construed with *inanimate* nouns. So we would predict that the derived verb should be factitive. However, we might have expected such a verb to have the factitive meaning 'I make cheering'. This would perhaps be difficult to distinguish from a predicative usage 'I am cheering'. The predicative analysis should allow for intransitive usage, whereas the factitive interpretation should demand a consistently transitive verb. I shall not pursue this question further here. However, this example certainly provides a clear case where our English semantic intuitions do *not* provide any sure guide to the semantics of Greek forms.[22]

Similarly, ἐχθαίρω [*ekʰtʰaíro:*] 'I hate' (Hom. etc.) built from ἐχθρός [*ekʰtʰrós*] 'hated; hostile' (Hom. etc.) at first appears anomalous, since when we consider the adjective in the sense 'hated', we might expect the derived verb to mean 'I am hated'. However, when we consider the secondary sense 'hostile', then the interpretation 'I am X' produces the attested verbal meaning 'I hate'.

Do these examples indicate that the semantics of such denominative verbs always have an element of *unpredictability*? Perhaps there is a generalisation to be drawn from the examples εὐφραίνω [*eupʰraíno:*] 'I make happy' and ἐχθαίρω [*ekʰtʰaíro:*] 'I hate'? In both cases, the base adjective was ambiguous between an active meaning 'cheering', 'hostile' and a passive meaning 'happy', 'hated'. Does the active meaning regularly prevail in such cases? This possibility may be worth investigating; however, I shall not pursue the question further here.

We saw that αἰόλλω [*aióllo:*] 'I shift rapidly' is built from αἰόλος [*aiólos*] 'nimble'. This meaning conforms with the 'I am X' pattern which we have noticed so far. However, αἰόλλω [*aióllo:*] can also mean 'I variegate'. When used in this way, it appears to represent a *factitive* to αἰόλος [*aiólos*] in its other sense 'glittering, changeful of hue'. It is interesting that we seem to find two clearly different uses of the denominative verb (predicative and factitive) where the base adjective is itself ambiguous.

It is possible that the two meanings of αἰόλλω [*aióllo:*] are based on the two different meanings of αἰόλος [*aiólos*]. If this is the case, then the semantic pattern which we have seen so far would predict that αἰόλος [*aiólos*] in the sense 'nimble' should only have been predicated of animate nouns (hence giving the predicative sense of the verb), while αἰόλος [*aiólos*] 'glittering, changeful of hue' should also be found with inanimate nouns (giving the corresponding factitive interpretation of the verb). I shall not pursue this question in this paper, but these predictions are eminently testable.

A surprising member of the predicative group of verbs is χλιδαίνομαι [*kʰlidaínomai*] 'I am luxurious, lead a sensual life' (medio-passive only), beside χλιδανός [*kʰlidanós*] 'luxurious'. It is surprising because one would expect that an adjective like 'luxurious' would be capable of being predicated of inanimate nouns, hence demanding a factitive sense in the verb. However, the adjective is

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[22]I shall not pursue this question any further here. In the light of §7 we would need to carefully reconsider the meaning of the base adjective and the contexts in which it is used.

only attested three times in the period of interest. Once it modifies an unambiguously animate noun:

χλιδανᾶς ἔχων   ἑταίρας
kʰlidanâ:s ekʰo:n   hetaíras
luxurious_I having   female.companions_I
(acc. pl.)   (pres. pple) (acc. pl.)

  'having luxurious female companions' (E. Cyc. 500)

Once it modifies an abstract noun:

χλιδανῆς ἥβης   τέρψιν
kʰlidanê:s hé:be:s   térpsin
luxurious_I youth_I   pleasure_J
(gen. sg.) (gen. sg.) (acc. sg.)

  'pleasure of luxurious youth' (A. Pers. 5.44.)

We have already seen that adjectives of this type can modify abstract nouns. This is not an obvious counterexample to our semantic pattern.

The third instance is in a fragmentary context where the modified noun has not been preserved (Sapph. Supp. 21.8). In short, this verb does not provide a counterexample to our pattern, though since it is so infrequently attested we cannot base anything significant on this one result.

The verb φαείνω [*pʰaé:no:*] 'shine, give light; bring to light' (Hom., Hes., Call.) built from φαεινός [*pʰae:nós*] 'shining' (Hom.), presents something of a problem. The adjective φαεινός [*pʰae:nós*] regularly modifies *inanimate* nouns (e.g. πῦρ [*pû:r*] 'fire' Il.5.215; σελήνη [*selé:ne:*] 'moon' 8.55; δόρυ [*dóru*] 'tree, spear' 4.496 etc.), yet the verb does not seem to be obviously factitive. Conceivably 'bring to light' could be interpreted as factitive 'I make shine bright', but then 'shine' seems to be unambiguously predicative. How can this be resolved? One possibility is to note that in the absence of exotic technology, anything which 'makes something shine bright', must itself 'shine'. Hence the apparently predicative usage could be a secondary development.

An alternative explanation may be found if we consider the history of φαείνω [*pʰaé:no:*] in a little more depth. There is a phonological problem with this form which rules out any possibility that is very old. If φαεινός [*phae:nós*] derives from an earlier *$bʰH_2$-wes-no-s*,[23] then according to the patterns we have seen so far, this should have yielded a denominative verb *$bʰH_2$-wes-n̥-yo: > *pʰawesaino:*. Such a form should not have yielded the historically attested φαείνω [*pʰaé:no:*]. So we

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[23]The regular phonological development of this sequence in Greek is not a straightforward question and I can not discuss the issues here. However, whatever view we take of the development of laryngeals in this position, it is at any rate clear that φαείνω [*pʰaé:no:*] cannot continue a form of any great antiquity.

know that φαείνω [p^haéno:] must represent a later innovation and cannot be used as evidence in any discussion of the semantics of the prehistoric *-ye/o- suffix.

The verb ἀτάλλω [atallo:] 'I gambol; bring up a child' (Hom. etc.), which was built from ἀταλός [atalós] 'tender, delicate', presents something of a problem. It is fairly clear that the first meaning of the verb 'gambol' could be derived from a predicative sense, if the base adjective originally meant 'childlike' *vel sim.* Leumann (1950:139-141) has argued that ἀταλός [atalós] has an unusual derivational history. He claims that is was a late creation, backformed from a compound ἀταλάφρων [a-taláp^{h}ro:n] 'tender minded'. None of this in itself would explain why the denominative verb can mean 'bring up a child', unless we simply argue that by the time this verb formed, the rule system had started to break down.

6.2 Denominatives with a Factitive Sense

The predicative usage of *-ye/o- has long been recognised. However, the factitive *-ye/o- verbs have not attracted significant comment. Let us consider some more examples:

πιαίνω [piaíno:] 'I make fat' (Pind., A. etc.) built from πίων [pío:n] 'fat' (Hom. etc.);

πεπαίνω [pepaíno:] 'I make ripe' (Ar., X., E. etc.) built from πέπων [pépo:n] 'ripe' (Hom. etc. note that the sense is metaphorical in Homer 'kind');

δαιδάλλω [daidállo:] 'I work cunningly, embellish' (Hom., Pind. etc. It should be noted that the active is only attested in the present and imperfect) built from δαίδαλος [daídalos] 'cunningly wrought, spotted' (Pind., A. It is found as a personal name in Homer etc. Homer also uses δαίδαλον [daídalon] as a neuter substantive 'cunning work');

ποικίλλω [poikíllo:] 'I elaborate, change' (Hom. etc.) built from ποικίλος [poikílos] 'multicoloured, manifold, diversified' (Hom. etc.);

γογγύλλω [goŋgúllo:] 'I make round' built from γογγύλος [goŋgúlos] 'round' (S., Pl. etc.);[24]

καμπύλλω [kampúllo:] 'bend' (Hp.) built from καμπύλος [kampúlos] 'bent, crooked' (Hom., Pind., Hp., A.);

στρογγύλλω [stroŋgúllo:] 'round off, make round' (Alexis fr. 246, Nic.) built from στρογγύλος [stroŋgúlos] 'round, spherical, curved' (Ar., X., Hp. etc.).

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[24]The use which we can make of this form is doubtful. It is restored in Ar. Th. 56 by Porson for the unmetrical γογγυλίζει [goŋgulízdei], cf. Hesch. γογγύλλειν [goŋgúllein], συστρέφειν [sustrép^{h}ein]. However the codex has γογγυλεῖν [goŋguleîn].

We have been working with the hypothesis that the *-*ye/o*- denominative formation gives a factitive sense when the base adjective does not *select for animacy*. So if an adjective can be used of inanimate nouns, then the denominative verb based on it will be factitive, regardless of whether the adjective can also be used to modify animate nouns. We have already seen examples of animate and inanimate nouns with πίων [*pío:n*] 'fat'. Let us consider some more examples:

πέπων [*pépo:n*] 'ripe' can be found with σίκυος [*síkuos*] 'cucumber' (Hp. Morb. 3.17);

δαίδαλος [*daídalos*] 'cunningly wrought, spotted' can be found with πέπλος [*péplos*] 'woven cloth' (A. Eu. 635);

ποικίλος [*poikílos*] 'multicoloured, manifold, diversified' can be found with δράκων [*dráko:n*] 'serpent' (Pi. P. 8.46) and λίθος [*lít^hos*] 'rock' (Hdt. 7.61);

γογγύλος [*goŋgúlos*] 'round' can be found with πέτρος [*pétros*] 'stone' (A. Fr. 199.7);

καμπύλος [*kampúlos*] 'bent, crooked' can be found with τόξα [*tóksa*] 'bow' (Il. 3.17);

στρογγύλος [*stroŋgúlos*] 'rounded, spherical, curved' can be found with λίθος [*lít^hos*] 'rock' (X. Eq. 4.4).

So there is a clear difference between the lexical properties of these adjectives and those of the adjectives which form predicative denominative verbs. These adjectives are regularly construed with incontestably *inanimate* nouns. It is far *rarer* to find examples construed with *animate* nouns. It is striking that this group also form denominative verbs with obligatorily transitive syntax and factitive meaning.

6.2.1   Some Further Observations on the Factitive *-*ye/o*- Verbs

There are a number of further examples worthy of comment. καθαίρω [*kat^haíro:*] 'purify, cleanse' (Hom. etc.) appears to be a factitive built from καθαρός [*kat^arós*] 'pure' (Hom. etc.). This conforms to our scheme, since inanimate nouns can be 'pure'. However, one might be tempted to explain the meaning of the verb as predicative, by appealing to a secondary sense which has been claimed for the adjective καθαρός [*kat^arós*] 'purifying'. This sense is perhaps found in two passages: Pi. O. 1.26 and Theocr. 24.96. In the first case the meaning 'purifying' has been claimed for the adjective, since it is attributed to a cauldron which has been used to cook Pelops. Hence, it could be argued that such a cauldron could hardly be 'pure', and so must be interpreted as 'purifying'. However, our scheme provides an explanation for the factitive verb in any case, so nothing crucial rests on these judgements.

It is interesting to find in this group the verb γεραίρω [*geraíro:*] 'I honour, I make honoured/majestic' (Hom. etc.), which is built from γεραρός [*gerarós*]

'honoured, majestic' (Hom. etc.). We would expect an adjective 'honoured' to be used exclusively of animate nouns and hence demand a verb with predicative sense. But in fact our intuitions turn out to be wrong and the semantic patten which we have posited makes the correct prediction; γεραρός [*gerarós*] can be used of people, but also of 'hands' or even 'tables', e.g. γεραρώτερος ... Ὀδυσσεύς [*geraró:teros ... Odusseús*] 'most honoured Odysseus' (Il. 3.211); γεραρὴ τράπεζα [*gerarè: trápezda*] 'table of honour' (Xenoph. 1.9).

The verb μελαίνω [*melaíno:*] (Hom., Nic. etc.) is built from μέλας [*mélas*], μέλανος [*mélanos*] 'black' (Hom. etc.). We would predict that this would have the factitive sense 'I make black' and indeed it does:

> τὸ ἀπορούμενον, διὰ τί ὁ μὲν ἥλιος **μελαίνει** τὴν σάρκα, τὸ δὲ πῦρ οὔ
> *tò aporó:menon, dià tí ho mèn hé:lios **melaínei** tè:n sárka, tò dè pû:r oú*
> 'The puzzle of why the sun **blackens** the flesh but fire does not'
> (Theophr. De igne Fr. 38 line 8.), (cf. Arist. 966b.22, etc.)

It is interesting to note that Homer only has medio-passive forms for this verb. These have an inchoative meaning, as do all the medio-passive forms of factitive verbs in Greek:

> ἣ δὲ **μελαίνετ'** ὄπισθεν ἀρηρομένη δὲ ἐῴκει
> *hè: dè **melaínet'** ópisthen are:roméne: dè eo:íkei*
> 'And it [the field] **grew black** behind and seemed as if it had been ploughed'
> (Il.18.548)

As our rules predict, Homer can not use the active verb μελαίνω [*melaíno:*] to indicate that the subject of the verb is black. He has to resort to medio-passive inchoative forms, whereas he could use ἀφραίνω [*aphraíno:*] etc. with active endings in the sense 'be foolish'. Our theory can explain this curious fact because we would predict that the active forms would have a factitive value. The fact that such early attested examples behave as our theory predicts may support our attempt to project these facts back into Proto-Greek.

However, contrary to our expectations, in at least one instance, the active verb appears to mean 'become black':

> ὅσον μὲν οὖν ἂν παλαιότατον ὂν τῆς σαρκὸς τακῇ, δύσπεπτον γιγνόμενον
> **μελαίνει** μὲν ὑπὸ παλαιᾶς συγκαύσεως
> *hóson mèn oûn àn palaiótaton òn tê:s sarkòs takê:i, dúspepton gignómenon*
> ***melaínei** mèn hupò palaiâ:s suŋkaúseo:s*
> 'Therefore all the oldest part of the flesh that is decomposed becomes tough
> and **becomes black** by the continued combustion' (Pl. Tim. 83a)

This usage does not conform to either of the semantic patterns which we have identified for active verbs with the *-ye/o-* suffix: predicative or factitive. It is an

inchoative active form and appears to have an identical meaning to earlier medio-passive forms. The solution to this problem may lie in the exclusively medio-passive morphology in the early history of this verb. The active forms may have only been created after the Homeric period. If this were the case, then the semantics of the active forms could not be taken to reflect the semantics of the *-*ye/o*- suffix itself, for *y* was lost in Greek before Homer; this suffix could not have existed as such at that later time. If this inchoative active form was created analogically, it is not at all clear what the model for this could have been or how the analogy operated. Naturally, the formulation of a satisfactory explanation will require a careful examination of the diachronic developments in the meaning of this verb. However, I will not pursue the question any further here.

7   Conclusions and Further Questions

In this paper, I have attempted to show that there are rules governing the syntax and semantics of denominatives formed from adjectives in Greek, and that these rules are amenable to a certain amount of analysis. I argued that there is a correlation between the selection properties of certain adjectives and the syntax and semantics of their corresponding denominative *-*ye/o*- verbs. Adjectives which agree only with animate nouns yield predicative verbs (I am X), while adjectives which agree with both animate and inanimate nouns yield factitives. Clearly, further work is needed to demonstrate the validity of these patterns. I hope that a fuller analysis of the selection restrictions of all the adjectives in question will yield useful results. A parallel approach would be to develop independent syntactic, semantic or morphological heuristics which are sensitive to animacy.

In this paper, I have not considered the reasons why the animacy restrictions of adjectives might be correlated with the behaviour of these verbs. To develop this question in any depth would go beyond the scope of this preliminary study. However, we can at least consider some possibilities. Are we to assume that there was a feature [± *animate*] operating in the grammar of Proto-Greek and that this feature was directly responsible for the syntax and semantics of these denominatives? Alternatively, is there some other independent factor which can explain the behaviour of both the adjectives and the verbs?

There are certain disadvantages in assuming that the animacy selection properties of these adjectives are directly responsible for all these phenomena. Firstly, although such an analysis would effectively describe the correlation which we have observed, it would not provide any *explanation* for these patterns. After all, why could a verb such as καθαίρω [*kathaíro:*] not have meant 'I am pure' rather than 'I make pure'? Equally, why could κινύρομαι [*kinú:romai*] not have meant 'I cause someone to wail' rather than 'I wail'? In each case, both potential verbal meanings seem equally plausible and do not cause any obvious semantic infelicities. Secondly, if animacy is the relevant feature, then it is perhaps a little unexpected that the factitive type should be the unmarked construction, rather than the predicative

type, which the naïve observer might have assumed to be semantically less marked.

A more promising line of explanation may be found, if we consider the possibility of an independent factor, which affects both the animacy properties of adjectives and the properties of denominative verbs derived from them, namely *argument structure*.

Let us consider again a few of the adjectives which form predicative denominative verbs: στωμύλος [*sto:múlos*] 'talkative'; λιτανός [*litanós*] 'praying'; ἄφρων [*ápʰro:n*] 'foolish'; etc. We should note that adjectives of this class carry an implication that the noun with which they are construed is an *Agent* or an *Experiencer*.

Conversely, when we consider the adjectives which form factitive verbs, a different pattern emerges. For example, something which is ποικίλος [*poikílos*] 'multicoloured' or πίων [*pío:n*] 'fat' appears to be a *Theme* rather than an *Agent* or *Experiencer*. Indeed, the *Theme* semantics of nouns construed with an adjective such as δαίδαλος [*daídalos*] 'cunningly wrought' seem undeniable.

So there is a distinction to be found in the argument structure of these two classes. It is a fairly simple matter to explain the animacy selection properties of the base adjectives of both classes in terms of their argument structure. The class of adjectives with *Agent* and *Experiencer* arguments are construed only with animate nouns. This makes perfect sense when we consider that *Agents* and *Experiencers* are obligatorily animate. On the other hand, the class of adjectives with a *Theme* argument shows no such restriction. Again this accords well with the observation that *Themes* can be animate or inanimate.[25]

We might also be able to understand the behaviour of the two types of denominative verbs in terms of the argument structure of their base adjectives. The *-ye/o-* suffix may simply spell out the argument structure of the base. For example, someone who is στωμύλος [*sto:múlos*] 'talkative' is a potential *Agent*. This *Agent* argument is realised as the subject of the derived verb στωμύλλω [*sto:múllo:*] 'I chatter'. Someone who is ἄφρων [*ápʰro:n*] 'foolish' may be regarded as the *Experiencer* of a mental state. This *Experiencer* argument is realised as the subject of the verb ἀφραίνω [*apʰraíno:*] 'I am foolish'. By contrast, when a denominative verb is formed from the class of adjectives with *Theme* argument structure, we find that the *Theme* argument is *not* realised as the subject of the active verb. This may be because unaccusative verbs are not particularly common in Greek,[26] or perhaps there is a restriction on the semantics of the *-ye/o-* suffix. Instead, the *Theme* argument is realised as the denominative verb's object and a new *Agent* argument is created, which serves as the verb's subject. Given such an argument structure, the obligatorily transitive nature of these verbs and their factitive (perhaps more properly *causative*) semantics become readily explicable.

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[25]It is perhaps by chance that we do not find verbs built from adjectives with an obligatorily animate *Theme* argument (eg. Star-struck).

[26]There are a few verbs with *Theme* subjects in Greek, e.g. πίπτω [*pípto:*] 'I fall'; ἀποθνήσκω [*apotʰné:isko:*] 'I die'; φθίνω [*pʰtʰíno:*] 'I perish'; θάλλω [*tʰállo:*] 'I flourish'; and ῥέει [*rʰéei:*] 'It flows'. However, the examples are few and far between and do not appear to represent a productive pattern in Greek.

If the denominative *-ye/o- suffix simply spells out the inherent argument structure of the base, then we might also be able to explain the syntax and semantics of denominatives built from nouns. For example there may be an inherent *Experiencer* argument in an abstract noun such as ἱμερός [*himerós*] 'desire'. It seems that this *Experiencer* argument is spelt out as the subject of the corresponding denominative verb ἱμείρω [*himeíro:*] 'I desire'. An abstract noun such as πῆμα [*pê:ma*] 'distress' seems to have both an *Agent* argument and an *Experiencer* argument. In this case, we must assume that a hierarchy of semantic rôles ensures that the *Agent* argument is realised as the subject of the resulting denominative verb πημαίνω [*pe:maíno:*] 'I inflict distress', while the implicit *Experiencer* argument can be realised as the verb's direct object.

Perhaps verbs formed from concrete nouns may be explained in a similar fashion, though there are many complications. Many appellatives appear to imply that their referent is a potential *Agent*. A noun such as ἄγγελος [*áŋgelos*] 'messenger' forms a denominative verb ἀγγέλλω [*aŋgéllo:*] 'I act as a messenger', where the implicit *Agent* argument is spelt out as the subject of the verb. Conversely, a concrete noun without any such *Agent* argument behaves rather differently, a denominative verb formed from such a noun often seems to exhibit *instrumental* semantics. For example, τέκμωρ [*tékmo:r*] 'sign' yields the *instrumental* verb τεκμαίρομαι [*tekmaíromai*] 'I judge from signs'.

If this approach proves to be fruitful, then we may have returned, by a somewhat circuitous route, to Meillet's original stance:

> '*-ye/o- n'a aucune valeur sémantique propre: il sert simplement à la dérivation'
> *-ye/o- does not have any intrinsic semantic value: it is simply used for derivation.* (Meillet 1937:219, translation my own)

Clearly much remains to be investigated before we can claim a full understanding of the *-ye/o- denominative suffix. We have observed some clear semantic patterns, but we have not given any consideration to their origin or degree of antiquity. Furthermore, in the light of explanations based on argument structure, we may need to re-assess some of the problematic examples which we have highlighted in this paper.

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The Modern Japanese Complementisers *no* and *koto* and their Old Japanese Precursors: A diachronic explanation for free variation

Janick Wrona

1 Introduction

This paper argues that there is a certain degree of free variation involved in the distribution of the Modern Japanese (ModJ) complementisers *no* and *koto*.[1] It further argues that this state of free variation is due to historical circumstances which occurred about 1300 years ago and have persisted ever since.

The structure of the paper is as follows. §2 briefly presents some data and contains an outline of previous research on the distribution of the complementisers *no* and *koto*. I will also present evidence that *no* and *koto* are in free variation in certain contexts and discuss their categorial status. In §3, I will briefly outline the Old Japanese (OJ) complement system focusing on the precursors of *no* and *koto*. In §4, I will outline the changes from the pre-OJ to the OJ complement system that introduced the precursors of *no* and *koto* into the Japanese complement system and show that they replaced a single member resulting in a certain degree of free variation. In §5, I show that there is a diachronic correspondence between the precursor of ModJ *no* and its OJ equivalent, and finally I will summarise my findings in §6.

2 Modern Japanese complementisers *no* and *koto*

Some examples of the complementisers *no* and *koto* are given in (1) - (3):

(1) Taroo-wa [Ziroo-ga biiru-o   nomu no/*koto]-o mita
     Taroo-TOP Ziroo-NOM beer-ACC drink NO-ACC   saw
     'Taroo saw that Jiroo was drinking beer'

(2) [Otukisan-ni roketto-ga   tuita   koto/*no]-o kangaeteiru
     moon-DAT   rocket-NOM landed KOTO-ACC thinking
     'thinking about the fact that a rocket has landed on the moon'

(3)   Taroo-wa [Ziroo-ga tegami-o dasita koto/no]-o   sitteiru
        Taroo-TOP Ziroo-NOM letter-ACC posted KOTO/NO-ACC knows
        'Taroo knows that Ziroo sent the letter'

In (1), it is only possible to use the complementiser *no*. Inserting the complementiser *koto* in lieu of *no* results in an ungrammatical sentence. In (2), the reverse is true. It is not possible to use the complementiser *no*; only *koto* is allowed in this context. In contexts like (3), both *no* and *koto* are possible. The major factor that determines the choice of complementiser is the matrix predicate. Immediate perception verbs like *miru* 'see' exclusively select *no*–complements, whereas verbs of thinking like *kangaeru* 'think' exclusively select *koto*-complements. Verbs of knowledge and acquisition of knowledge like *sitteiru* 'know' can occur with both *no* and *koto*-complements.

2.1   The distribution of *no* and *koto*

Table 1 is a summary of types of complement-taking predicates (CTPs), based largely on Josephs (1976), and the type of complementiser they take:

CTP	NO	KOTO
Perception	✓	-
Helping	✓	-
Stopping	✓	-
Ordering/request	-	✓
Proposal/advice	-	✓
Deduction/thinking	-	✓
Learning	-	✓
Wishing	-	✓
Prevention	✓	✓
Expectation	✓	✓
Prediction	✓	✓
Understanding/realisation	✓	✓
Commentative	✓	✓

Table 1: Summary of types of complement-taking predicates (CTPs)

2.2   Previous research on the distribution of *no* and *koto*

Before summarising some of the research that has been carried out over the past 30-odd years, it might be instructive to look at Josephs' (1976) efforts to come to grips with the complementiser distribution in ModJ:

> 'Of particular difficulty is the question of accounting for the distribution of the abstract sentential nominalizers *no, koto*...'
> (Josephs 1976: 313)

Some of the earliest work dealing with *no* and *koto* treated the two elements as synonymous (Makino 1969; Nakau 1973), but since Kuno (1973), most scholars have assumed a semantic or pragmatic distinction between *no* and *koto*. Rather than giving an historical account of the scholarship on the distribution between *no* and *koto*, I will summarise the semantic and pragmatic proposals for a distinction and show why they do not work.

2.2.1 Factivity versus non-factivity

It has long been clear that a distinction between factive/non-factive does not account for the occurrences of *no* and *koto*. Kuno (1973) suggests that the ModJ complementiser *to* is non-factive whereas *no* and *koto* are factive. Since non-factive predicates like *yasasii* 'is easy' or *kitai suru* 'expect' select *no/koto*-complements, this cannot be the whole story (as Kuno himself was aware).

2.2.2 Abstract versus concrete

Kuno (1973) further argues that the distinction between *no* and *koto* can be captured in terms of the semantic labels *abstract* (*koto*) and *concrete* (*no*). If a predicate calls for a concrete event or action as a complement clause, *no* is used. Thus only *no* is appropriate in (1) because one can only *see* concrete events. On the other hand, only *koto* is appropriate in (2) because the predicate *kangaeru* 'think' calls for an abstract concept as its complement clause. In (3) both *koto* and *no* can be used because one can have knowledge of both concrete and abstract events. However, it is not clear that one can only think about abstract events. It is perfectly possible to think about concrete events as well, but contrary to expectation, it is not possible to use *no* with verbs like *kangaeru* 'think'. More importantly to the present paper, it is not at all clear that Japanese speakers make a distinction along the line of abstract versus concrete with predicates that can select both *koto* and *no*, like *sitteiru* 'know' in (3) and *higeki da* 'is a tragedy' in (4):

(4)   [Jon-ga   kekkon tyokugo sindesimatta <u>koto/no</u>]-wa   higeki
      John-NOM marriage just after died   KOTO/NO-TOP tragedy
      da
      COP
      'That John died just after getting married is a tragedy'

It is not entirely clear in what sense *John's dying just after getting married* can be construed as an abstract event in relation to the matrix predicate *higeki da* 'is a tragedy'.

2.2.3 Direct versus indirect

Josephs (1976) builds on Kuno's observations and comes the conclusion that '*no* is used as a nominalizer when the matrix predicate imposes connotations of direct-

ness, simultaneity, immediacy, or urgency on the event of the embedded proposi-
tion' (Josephs 1976: 324), whereas '*koto* is used when the matrix predicate imposes
connotations of indirectness, nonsimultaneity, or nonrealization on the embedded
proposition' (ibid.). Again, this may explain some cases, but it is unclear why, for
instance, complement clauses of predicates of learning, such as *narau* 'learn' and
manabu 'learn' have to be abstract concepts, when complement clauses of verbs
like *siru* 'get to know' can be either abstract concepts or concrete events. Simi-
larly, my informants report that they do not perceive of a difference along the line
Josephs suggest in cases like (4) above.[2]

2.2.4   Event versus proposition

Horie (2000) investigates the complement system from a cognitive perspective at-
tempting to find the same semantic distinctions underlying the distribution of *no*
and *koto* elsewhere in the grammatical system. Horie is basically in agreement
with Josephs that *no* and *koto* distribute along the lines of a directly perceived
event (*no*) versus indirectly perceived event (*koto*). Horie calls the former "event"
and the latter "proposition". He concedes, however, that the distribution is far from
clear-cut saying that '*no* is also capable of encoding "proposition", but *koto* doesn't
normally encode "event"' (Horie 2000:17). If *no* and *koto* can encode either events
or propositions, then the semantics encoded in *no* and *koto* cannot be very strong.

2.2.5   Scalar approaches

N. McCawley (1978) and Suzuki (2000) abandon attempts to find a strict dichotomy
between *no* and *koto* in favour of a scalar approach where *no* encodes a higher de-
gree of truth than does *koto*. This goes a long way towards accounting for the
distributional overlap between the two complementisers because the distinction is
not formulated as a strict dichotomy, but as a graded distinction.

2.3   Partial free variation

I would like to suggest that the complementisers *no* and *koto* are in free variation
in the contexts where both occur. Free variation is not a situation that one would
expect to exist for very long, if at all. It has been argued that free variation does
not exist, but is a result of the investigator's lack of thoroughness (Preston 1996,
quoted in Ellis (1999:21)). However, in the case of Japanese *no* and *koto*, it seems
that different speakers imbue the two complementisers with different character-
istics. Thus, while the complementiser distribution in individual speakers might
be guided to some extent by whatever characteristics the speaker invests in them,
complementiser distribution in the speech community is not systematic and cannot
be acquired by children beyond the collocational restrictions summarised in Table

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[2]It should be noted that Josephs partly bases his conclusions on constructions that are not com-
plement clauses at all, but internally headed relative clauses (e.g. his example (20b) on page 329).

1 above. So the collocational restrictions between *no* and perception verbs, for instance, will have to be learned, but with commentative predicates both *no* and *koto* can be used and the learner will find that he/she is not corrected by their carers when they invest some difference between the use of *koto* and *no* with commentative predicates.

It is beyond the scope of this paper to conduct a large-scale corpus based investigation of the distribution of *no* and *koto*, but I believe it is telling that 30-odd years of research are no closer to accounting for the differences between *no* and *koto* in cases where both occur. It is also interesting to note that some of the later efforts (e.g. Suzuki 2000) suggest a scalar approach where there is no strict distinction between *no* and *koto*.

2.4   The categorial status of *no* and *koto*

I would like to suggest that *no* and *koto* are complementisers in C^0. As noted by Fukui & Sakai (2003), the existence of functional projections in Japanese has often been assumed *a priori*. They suggest a Visibility Guideline for Functional Categories in which they, very sensibly, argue that there must be empirical evidence for a functional category to be posited. In the case of *no* and *koto* it is not so much a question of visibility, but of the interpretation of the two elements. In particular the question is whether they are lexical or functional elements. In the following I will present some evidence that *no* and *koto* can be interpreted as C-elements.

2.4.1   *no* as N or C

The categorial status of *no* as a C-element has been assumed *a priori* by some researchers (e.g. Hiraiwa & Ishihara 2001, Suzuki 2000), but they rarely present arguments in favour of the analysis. Murasugi (1991), on the other hand, has explicitly argued that *no* in complement clauses is a noun (projecting to N'-level).[3] Firstly, she argues that Nominative-Genitive (so-called *no-ga*) conversion can only take place in relative clauses and nominal complements (op. cit. 105):

(5)   a.   [kinoo   Taroo-<u>ga</u>   katta] hon
           yesterday Taroo-NOM bought book

           'the book that Taroo bought yesterday'

      b.   [kinoo   Taroo-<u>no</u> katta] hon
           yesterday Taroo-GEN bought book

           'the book that Taroo bought yesterday'

(6)   a.   Taroo-wa [kinoo   Ziroo-<u>ga</u>   kita no]-o siranakatta
           Taroo-TOP yesterday Ziroo-NOM came N-ACC didn't know

           'Taroo didn't know that Ziroo came yesterday'

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[3]In Murasugi (2000: 246), she is less categorical saying that "[t]his *no* [i.e. in complement clauses, JW] is somewhat difficult to distinguish from the *no* as a complementizer."

      b.   Taroo-wa [kinoo   Ziroo-<u>no</u> kita no]-o siranakatta
             Taroo-TOP yesterday Ziroo-GEN came N-ACC didn't know
             'Taroo didn't know that Ziroo came yesterday'

However, this is not a very strong argument. Murasugi herself argues that *no* in pseudoclefts is of the category C, but Nominative-Genitive conversion is at least marginally acceptable in pseudoclefts. Watanabe (1996:394) presents additional evidence from comparative clauses:

(7)   ohn-wa [Mary-<u>no/ga</u>   yonda yori] takusan-no hon-o   yonda
        John-TOP Mary-GEN/NOM read   than many-GEN book-ACC read
        (Modified from Watanabe 1996:394)

yori 'ablative, than' is certainly not a noun in ModJ, but a postposition, and Watanabe concludes that "Ga-No Conversion should not be related to the presence of a nominal head" (ibid.).[4] Secondly, Murasugi (1991:106) argues that *no* is a noun in complement clauses since it is possible to replace *no* with nouns like *zizyutu* 'fact', *uwasa* 'rumour' etc. depending on the matrix predicate. However, the possibility of replacement does not guarantee that the structure is preserved. *That*-complement clauses in English and *el que*-complement clauses in Spanish can be replaced by *fact-* and *el hecho de que*-constructions in some contexts, but it is probably not desirable to claim that they are the same construction.[5] Thirdly, Murasugi uses evidence from dialects to show that the *no* in complement clauses cannot be the same as the genitive *no*. In the Toyama-dialect, for instance, the genitive case marker is realised as *no* whereas the element in complement clauses is realised as *ga*. This does not, however, rule out the possibility that the element in complement clauses is a C-element, since Toyama (and most other Japanese dialects, it seems) only has a two-way distinction between gentive-(pro)noun/complementiser. A fourth argument for the nominal status of *no* is due to Fukui (1995:115f). He argues that only noun phrases can take case particles but this has been convincingly refuted by e.g. Murasugi (1991:109ff).

    Thus it has not been successfully demonstrated that *no* in complement clauses is a (pro)noun. Watanabe (1996:391ff) has suggested that *koto* in complement clauses selected by non-presuppositional predicates (verbs or ordering, requesting and wishing) and in imperatives is a (subjunctive) C-element. *No* has a similar usage when selected by non-presuppositional predicates (verbs of preventing, expectation):

(8)   [hanzai-ga syoorai okoru no]-o   boosi sinakereba narimasen
        crime-NOM future occur no-ACC must prevent

        'We must prevent crime from occurring in the future'
        (from Josephs 1976:323)

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[4]Etymologically, however, *yori* comes from **ywori* 'after'.

[5]I am grateful to Henrik H. Müller and Diana Paz for helping me out with the Spanish facts.

As mentioned above, a standard argument for the noun-status of *no* in complement clauses is that it can be replaced by other nouns that have clear lexical content. However, *no* cannot be replaced by a noun in a context like (8), so proponents of the *no*-as-noun idea would have to say that *no* in (8) is of a different category from e.g. *no* in (6) above.

   No is frequently used in contexts like (9):

(9)   a.   Tookyoo-e iku no? (with rising intonation)

        b.   Dare ga iku no? (with rising intonation)

Some people have claimed that *no* in examples like (9) is a Q-morpheme sitting in C, but there are, to the best of my knowledge, no good arguments to treat this *no* as different from the *no* in complement clauses. *No* in (9) signifies a non-declarative sentence, just as Watanabe suggests for *koto* in imperatives and non-presuppositional complement clauses. In OJ, the Adnominal form of predicates is used in exactly the same way as *no* in (9b) and there is no reason to suggest that the Adnominal form is a Q-morpheme:[67]

(10)   *nani so ko no kwo no kokoda kanasiki*
       why PRT dem GEN child GEN so   is.lovely.ADN
       'Why is this girl so lovely?'
       M 14.3373 (Musashi province)

   The interrogative mood in (9a) is carried by intonation, not by *no*. However, it is not possible to interpret (9a–b) as DPs (or NPs) with *no* as the nominal head. It is clearly a C-element.

   A further argument for the C-status of *no* comes from the Fukushima dialect. In contrast to the Toyama dialect which had a two-way distinction between genitive-(pro)noun/complementiser, the Fukushima dialect has a three-way distinction between genitive, (pro)noun and complementiser. Hirayama et al. (1993, *no*-entry) report that genitive is realised as [ŋa], the (pro)noun as [ŋaN] and the complementiser as [no]. It is obvious that the distinction between the nominal [ŋaN] and complementiser [no] is not an original distinction, but a later univerbation of a sequence of the two members of a two-way distinction, i.e. the genitive [ŋa] plus the [no] (N>C), a distinction seen in numerous Japanese dialects (Toyama, Fukuoka, Aichi), but not in Standard Japanese. The diachronic development notwithstanding, the Fukushima dialect does present evidence that the distinction between N and C is mentally represented in Japanese.

2.4.2 *koto* as N or C

The fact that *koto* as a noun still exists in contexts like *kono koto* 'this fact' is probably a major reason why only few attempts have been made to determine the

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    [6]Since intonation is the only feature carrying the interrogative mood in (9a), these are next to impossible to find in historical data.

    [7]Abbreviations used for glosses in Old Japanese: ADN=Adnominal form, CONCL=Conclusive form, CONT=Continuative, COP=Copula; EXCL=Exclamative, NOM=Nominal form, PRT=particle.

categorial status of *koto* in complement clauses. The consensus seems to be that
it is a noun in complement clauses too.[8] However, Watanabe (1996) suggests that
koto is a C-element in a subset of its complement usages, namely those where *koto*
marks non-presuppositional complement clauses. Non-presuppositional *koto* oc-
curs with verbs of ordering, requesting and wishing. However, the use of *koto* as a
C-element must follow the reanalysis of *koto* from N>C by at least some speakers
(cf. the Korean cognate *kes* 'fact, COMP'). Therefore it is doubtful that the analysis
of *koto* as a C-element should be restricted to just the non-presuppositional con-
texts. Since there is no compelling evidence that *koto* in complement clauses is
a noun, but there does exist evidence that *koto* can be a C-element as argued by
Watanabe (1996), it makes sense to treat both non-presuppositional and presuppo-
sitional usages of *koto* as C-elements.

3   The Old Japanese complement system

Table 2 is an overview of the OJ complement system (for a detailed analysis see
Wrona (2003/2004, 2005a):

Central System	Peripheral System
Nominal	Adnominal
To-complement	*Koto*-complement
(Relative clauses)	(Paratactic)
-	(Participial)

Table 2: The Old Japanese complement system

The distinction into a central and peripheral system is based partly on diachronic
facts, partly on proliferation of the complement types. The OJ complement sys-
tem was clearly a system in transition, with some complement types on the way
out of the system (participial, paratactic and relative clauses), or the language as a
whole (Nominal), whilst other types were making their way into the system (Ad-
nominal and *koto*-complements). The OJ complement system was essentially a
two-member complement system in which Nominal complements encoded propo-
sitions presupposed to be true and *to*-complements encoded propositions for which
the speaker could not accept epistemic responsibility (details omitted). The third
member of the central system, relative constructions, played a limited, but unique
role, encoding direct perception complements only. The three complement-types
that are of importance to this paper (Nominal, Adnominal and *koto*-complements)
are exemplified in (11)–(13):

(11)   [Kimi-ga kiki-*tutu   tuge-naku]-mo   usi
         you-GEN hear-CONT tell-NEG.NOM-PRT is.sad.CONCL

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[8]Ono (2002:10) suggests that *koto* is a noun which functions as a nominaliser sitting in C. How-
ever, he does not present any arguments for this analysis.

'It is sad that you have heard it, but not told me'
M 19.4207

(12)   [kwopu<u>ru</u>]-*pa* tomo*si*
        love.ADN-TOP is.painful.CONCL

        'That I('m in) love is painful'
        M 4.489

(13)   …[ware-*mo* obo-ni   mi*si*] <u>koto</u> kuya*siki*   *wo*
        I-PRT   afar-COP.INF saw   <u>C</u>   is.regrettable.ADN EXCL

        'it is regrettable that I only saw her from afar!'
        M 2.217

Nominal and Adnominal complements take their names after the morphological form of the predicates that construct the complement clause. Thus (11) involves the Nominal form *tuge-naku* of *tuge-zu* 'tell.NEG.CONCLUSIVE' and (12) involves the Adnominal form *kwopuru* of *kwopu* 'love.CONCLUSIVE.'

3.1   Adnominal complements

The precursor of *no*-complements is Adnominal complements. The Adnominal form has a number of functions in OJ, of which its complement function is relatively unimportant synchronically in the sense that it does not have any complement usages that are not more frequently performed by another member of the central system (relative clauses or Nominal complements). I have argued elsewhere (Wrona 2003, 2003/2004, 2005c) that the diachronically primary function of the Adnominal form is to construct relative clauses and that most of the other functions it has in OJ can be derived from this function. Adnominal complements were not part of the complement system, whether central or peripheral, in pre-OJ. What is important from a diachronic point of view is that the Adnominal forms functions in pre-OJ and early OJ are related to complementation. These functions are also the ones where there is a semantic-syntactic contrast between the Adnominal and Nominal form in OJ. This is summarised in Table 3:

Construction	Adnominal form	Nominal form
Relative clauses	+	-
Formal noun constructions	+	-
Headless relatives	Omitted head	Abstract nominalisations
Pseudo-clefts	Focused argument	Focused adjunct
Perception complements	Direct perception	Indirect perception
Adjunct clauses	+	-[9]

Table 3: Contrastive usages of the Nominal and Adnominal form in OJ

As argued in detail in Wrona (2003/2004, 2005a), all of those functions of the Adnominal form are derivable from its usage in relative constructions.

3.2 *koto*-complements

Koto-complements have existed since the earliest Japanese sources. As with Adnominal complements, OJ *koto*-complements are relatively unimportant synchronically in the sense that they do not have any complement usages that are not more frequently performed by the Nominal form. The only OJ usage that is uniquely performed by *koto*-constructions is in collocation with predicates of non-existence (as in (14a)), again clearly derived from relative clause usages with *koto* 'word, fact' as the head. In collocation with predicates of non-existence, the *koto*-construction contrasts with the Nominal form (as in (14b)):

(14) a. [*tayuru*] <u>*koto*</u>   <u>*naku*</u>
          break   off.ADN KOTO not-exist.INF

          'it never stops'
          M 17.4002

    b. [aki   *tuke-ba*   *momodi tiraku*]-*pa*   <u>tune-*wo*</u>
        autumn reach-when cherry   scatter.NOM-TOP forever-ACC

        nami koso
        not-exist

        'the scattering of the cherry blossoms when Autumn comes is because nothing is forever'
        M 19.4161

The function of the *koto*-construction is to widen the scope of negation. In (14a) the negative predicates *naku* takes scope over the event in the *koto*-construction. In (14b), on the other hand, the negative predicate *nami* only has scope over the temporal noun *tune* 'forever', not over the event in the Nominal construction. Again, it is essential to note that the *koto*-construction in (14a) is *not* a complement clause, but related to complement constructions.

3.3   Distribution of Nominal, Adnominal and *koto*-complements

Table 4 summarises the distribution of Nominal, Adnominal and *koto*-complements in OJ vis-á-vis the complement-taking predicate (CTP).

    The usages marked by an asterisk denote that there is a semantic(-syntactic) contrast between the members. Adnominal perception complements are direct perceptions, whereas Nominal perception complements are indirect perceptions. *Koto*-constructions with a negative predicate have a scope-expanding function. Pseudoclefts with the Adnominal form focus arguments, whereas pseudoclefts with the Nominal form and *koto*-constructions focus adjuncts (see Wrona 2005b for details). In all other usages, at least two members, but sometimes three, are, to all appearances, in free variation. Examples (11)–(13) above showed that all complement types can be selected by commentative predicates. In (15)–(17) the three types are selected by knowledge verbs:

CTP	Nominal	Adnominal	*koto*
Commentative	✓	✓	✓
Quantitative	✓	-	✓
Knowledge	✓	✓	✓
Perception	✓	✓*	✓
Desiderative	✓	-	-
Negative	✓	-	✓*
Utterance	?	-	✓
Propositional attitude	✓	-	✓
Pseudoclefts	✓	✓*	✓

Table 4: Distribution of Nominal, Adnominal and *koto*-complement in OJ

(15)   [*wigupi tuku kapa-mata-ye-no   pisigara-no*
        dam-post erect river-fork-stream-GEN water-chestnut-GEN

        sasikyeku]   *sira-ni*
        erected.NOM know-NEG

        'Not knowing that in the river-fork stream where the dam-posts are
        erected, the water-chestnuts' stems extend'
        (NS 36)

(16)   [*yosami-no ike-no   wigupiuti-ga   sasi-kyeru*]
        Yosami-GEN pond-GEN dam-post-constructor-GEN erected.ADN

        sira-ni
        know-NEG

        'Not knowing the dam-posts constructor had erected (dam-posts) on the
        Yosami pond where the water collects'
        (KS 44)

(17)   [so-no   pito *no*   *umugasiki*   koto]. . .-*wo* tupi-ni
        dem-GEN person-GEN is.good.ADN KOTO-ACC readily-cop.INF

        ewasurezi
        cannot   forget

        'we cannot readily forget that people were good'
        S 7.18-19

Notice in particular (15) and (16). In the two OJ texts *Kojikikayô* (KS) and *Nihon-shokikayô* (NS) the same event is often described. The pair in (13) and (14) is such a case, and the interesting thing to note is the different complement-types used. In (13) a Nominal complement is used and in (14) an Adnominal complement is used. It is difficult to see any difference between the two examples. They are not entirely identical, but there is no difference to be found that can be generalised to the OJ corpus at large to account for the distribution of the Adnominal and Nominal complements.

Wrona (2003/2004) was an attempt to find differences between Nominal complements, Adnominal complements and *koto*-complements based on an exhaustive investigation of all the Japanese sources in OJ. Syntactic, semantic and, to the extent it was possible, pragmatic differences were sought after, but none were found. Influences on sociolinguistic variables are difficult to check for in corpus as small as the OJ one. So it cannot be ruled out that a larger corpus would have revealed some sociolinguistic explanation for the distribution. However, it is important to keep in mind that there is historical evidence that Adnominal complements and *koto*-complements take over from Nominal complements, and in such a situation it is perhaps not unexpected that a certain degree of free variation arises. This is arguably what we see in certain contexts in OJ (cf. Table 4 above).

4 Changes in progress in the Old Japanese complement system

Between the Old Japanese period and the ensuing Early Middle Japanese period, the Nominal form disappears all but completely. The functions of the Nominal form are taken over by the Adnominal form and *koto*-constructions. In OJ it is clear that this process is already in progress. It is difficult to say what caused the demise of the Nominal form, but there are two possible scenarios. In the first scenario, the Adnominal form and the *koto*-construction are gaining ground, pushing out the Nominal form. In the second scenario, the Nominal form is disappearing and the Adnominal form and *koto*-constructions fill the void left behind by the disappearance of the Nominal form. Whatever the precise reason, the changes in the subset of the complement system under investigation here can be schematised as follows:

Pre-Old Japanese	Old Japanese	Early Middle Japanese
	Adnominal complements	Adnominal complement
Nominal complements	Nominal complements	
	Koto-complement	*Koto*-complement

As mentioned in the previous section, neither Adnominal complements nor *koto*-complements formed part of the complement system in pre-OJ. However, their pre-OJ functions were related to complement ones. The Adnominal form was originally used to construct relative clauses, but some of the relative clause usages come close to the complement system. As headless relative clauses (or rather a null-*pro* headed relative clause; see Wrona 2005b for a detailed analysis), they contrast with the Nominal form in pseudoclefts and perception complements. *Koto*-constructions, which were originally relative clauses, seem to be semantically very close to the Nominal form. This is clear from the identical function the Nominal form and *koto*-construction carry out in pseudoclefts focusing adjuncts (see Wrona 2005b for details).

Given that the functions of the Adnominal form and *koto*-constructions were

closely related to complement functions carried out by the Nominal form, it is no surprise that speakers reanalysed the Adnominal form and *koto*-constructions as part of the complement system.

5 Diachronic correspondence between OJ Adnominal and ModJ *no*

So far I have suggested 1) that ModJ complementisers *no* and *koto* are in partially free variation; 2) that ModJ complementisers *no* and *koto* are C-elements; 3) that the Adnominal form and *koto*-constructions in OJ took over the functions of the Nominal form in the complement system and 4) that there was a degree of free variation between Adnominal complements and *koto*-complements (and Nominal complements). In this section, I will show that there is a diachronic correspondence between OJ Adnominal>ModJ *no*, and how this was manifested in historical sources.

Before discussing *no* and the Adnominal form, it should be mentioned that there is a diachronic correspondence between OJ *koto* and ModJ *koto*, but since this is quite clear I will not dwell on it.

Looking at the commonalities between the functions of the Adnominal form in OJ and the functions of ModJ *no* is enough to arouse suspicion that they may be related somehow:

	ModJ *no*	OJ Adnominal
Complements	✓	✓
Pronominal	✓	✓
Pseudoclefts	✓	✓
Circumnominal RCs	✓	✓
Adjunct clauses	✓	✓
Suppressed assertion	✓	✓
Relative clauses	-*	✓

Table 5: The functional similarities between ModJ no and the OJ Adnominal form.

Table 5 shows remarkable similarities in function. The only blemish on an otherwise perfect match is that *no* is not used in pronominal relative clauses.[10] However, it is extremely interesting to note that children go through a stage between the ages of 2–4 where they insert *no* between the relative clause and the head noun (Murasugi 1991, 2000):

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[10]*no* is, however, used in circumnominal relative clauses like the following:

 Taroo-wa [ringo-ga sara-no   ue-ni   atta no]-o   totte, . . .
 Taroo-TOP apple-NOM plate-GEN topLOC was no-ACC took

 'Taroo took the apple which was on the table and . . . '

(18)   ohana   motteru no wanwan
        flowers holding NO doggy
        'a doggy holding flowers'

5.1   The historical development of *no*

I suggest that *no* developed along the following lines:

(19)   Cop>(Cop, Gen)>(Cop, Gen, N)>(Cop, Gen, N, C)

(19) shows that one usage does not, strictly speaking, turn into another. Rather, new usages arise in addition to the older ones. Furthermore, the innovative usages may arise as a reanalysis of any of the older ones, not necessarily from the latest one.

Frellesvig (2001) has shown that the original function of *no* is a copula-function. In OJ, *no*'s main-function is genitive, but it clearly retains its older copula-function. In Early Middle Japanese *no* also functions as a (pro)noun. The probable source of this reanalysis is found in OJ examples where *no* could be either the genitive case particle or the head of N:[11]

(20)   sipu*ru*   sipi-*no-ga*   sipikatari
        insist.ADN Shii-GEN-GEN forced-talk
        'the forced talk of (the one) from Shii who insisted'
        M 3.236

I suggest that this is an example of N'-deletion. Due to contextual recoverability, the noun one would expect between the sequence of particle (*no-ga* in (20)) has been omitted. This means that *no* is a genitive case particle rather than a (pro)noun. However, the construction is ambiguous and therefore provides a good basis for re-analysis Gen>N. There is another possible example:

(21)   *Kusurisi-pa tune-no-mo   aredo*
        Doctor-TOP ordinary-GEN-PRT exist
        'Among doctors, there are ordinary (ones), but ...'
        BS 15

Considering Relieving's etymology of *no* as the Adnominal form of the copula, *no* in (21) could be interpreted as an instance of the Adnominal form of the copula. However, the construction also provide a basis for reanalysis of *no* as a (pro)noun.

In the latter half of the 16th century, occurrences of *no* as a complementiser begin to emerge:

(22)   uta   tatemature to ofoserarekeru toki   to aru   <u>no</u> fa uta-no
        song give!   C said   when C write c-TOP song-GEN
        tehon ni tatemature to aru   <u>no</u> nari
        model as give!   C write C COP

---

[11]I doubt that *no* as a genitive in (20)–(21) is a D-element. If this were the case one would have to say that the relative clause *sipuru* 'insist' in (20) is on top of the DP *sipi-no* 'of Shii'.

'that (someone) writes "when they said present a song" is (=means) "to
write give a song as example"'
(cited in Hashimoto 1975: 216)

The two occurrences of *aru* 'exist' preceding *no* are historically the Adnominal
form of *ari* 'is', but at this point in history there is no longer a clear distinction
between the Conclusive-Adnominal. From the 10th century to the 16th century a
functional merger takes place in which the Adnominal form comes to be used in
contexts where the Conclusive was previously used. This means that there is no
longer a separate form available that is used in the contexts listed in Table 5.

5.2   From Adnominal form > *no*

I suggest that the reason *no* emerged as a C-element is due to the lack of an overt
C-element where speakers think there is a need for one. There are two reasons
why the C-element would be lacking. Firstly, the functional merger of Conclusive-
Adnominal led to a reanalysis CP>TP. The Adnominal morpheme resides in C^0
(cf. Kaplan & Whitman 1995, Wrona 2005a), whereas the Conclusive only projects
to TP-level. When the Adnominal form began to be used in contexts where the
Conclusive was formerly used, it led to a CP>TP reanalysis. Secondly, speakers
who take their cue for CPs in the presence of an overt C-element like the Adnom-
inal morpheme would find this lacking with some verbs and auxiliaries since not
all verb classes and auxiliaries have a segmentally distinct Adnominal form. This,
in turn, prompted speakers to insert an overt element, namely *no*.

   As mentioned above, Japanese children go through a stage where they insert
a *no* between the relative clause and the head (cf. (18) above). In pre-Modern
Japanese, this construction is also found, but not produced by children.

(23)   [[. . . taye-*mu*]   no kokoro]
          end-CONJ.ADN NO heart
          'the intention to end it' or 'the feeling that it will end'
          M 12.3071, M 14.3507

Examples of the structure [[relative clause] *no* head noun] can be found through-
out the history of Japanese, so claiming that they are mere aberrations cannot be
the whole story. The reason that *no* is inserted here is that relative clauses are
CPs (cf. Kaplan & Whitman 1995, Wrona 2005a). This is easy to imagine since
many verb and auxiliaries have a segmentally distinct Adnominal form used in
relative clauses. The only appropriate position for the Adnominal morpheme is
in C^0. However, not all verb classes and auxiliaries have a segmentally distinct
Adnominal form. In (23), the Adnominal and Conclusive form of the conjectural
morpheme *-(a)mu* is the same. If speakers who interpret relative clauses as CPs
believe that an overt relational element is part and parcel of relative clauses, then
genitive *no* would be a very good candidate to express that relation. For these
speakers, *no* would probably be a genitive rather than a C-element, but subsequent

generations may interpret *no* as a C-element. This is the likely source of *no* as C-elements in Japanese. This forces the question of why *no* as a C-element became obligatory in all the contexts in Table 5 except the very one in which it arose, i.e. relative clauses. One possibility is that the usefulness of *no* is greater in other types of clauses where the Adnominal form was required than in relative clauses. Even though the morphological form of predicates in relative clauses is no longer distinct, there are syntactic cues showing that they are relative clauses (such as a noun immediately following the predicates). In non-relative clauses there are fewer syntactic cues signalling the subordinate nature of the clauses.

6   Conclusion

This paper has argued that the ModJ complementisers *no* and *koto* are in partially free variation in certain contexts. It further argues that the source of this state of free variation was brought about by changes in the OJ complement system around 1300 years ago. More specifically, the OJ precursors of ModJ *no* and *koto* entered into the complement system in partially free variation when a single, central member of the complement system disappeared. Finally, I showed that the OJ Adnominal form and ModJ *no* constitute a diachronic correspondence thus perpetuating the state of partially free variation initiated almost 1300 years ago.

Sources

<u>M</u>=Man'yôshû in Nihon Koten Bungaku Taikei volume 4–7; <u>NS</u>=Nihonshokikayô in Nihon Koten Bungaku Taikei volume 3; <u>KS</u>=Kojikikayô in Nihon Koten Bungaku Taikei volume 3; <u>S</u>= Kitagawa, Kazuhide (1985), Shoku Nihongi Senmyô: Kôhon, sôsakuin; <u>BS</u>=Bussokusekiuta in Nihon Koten Bungaku Taikei volume 3.

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On the Nature of Subjective Modality*

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Introduction

This paper attempts to contribute to the debate on subjective modality. To achieve this aim, I will draw upon the insights of both general works on modality and the Japanese tradition. In particular, my work builds on the theories of John Lyons and the Japanese linguist Haruhiko Kindaichi.

§1 starts by providing a theoretical overview of the distinction between subjective and objective modality, and then goes on to present a battery of tests that can be used to determine the degree of subjectivity of modal expressions. §2, the anchor of the paper, builds on the insights from the preceding section, and aims to give a detailed account of the Japanese epistemic modal *daroo*. Finally, I emphasise the importance of a structural and empirical approach in the context of analysing modals.

1 Subjective and Objective Modality

In Japan, the distinction between subjective and objective modality has been well known since the 1950's, though the terminology used is not the same as in 'western' frameworks. Since then, the most distinctive characteristic of the indigenous theories on modality has been the emphasis upon subjectivity. The most cogent analysis of subjective modality, in my view, is Kindaichi (1953). His seminal article, succinctly and clearly written, is a model of scholarly excellence. The topic is also a familiar one in the western linguistic literature, and the expressions 'subjective modality' and 'objective modality' were coined by Lyons (1977).[1]

The primary question to ask is exactly what is meant by the word subjective in the context of modality. There are three points to consider. Firstly, as the term suggests, subjective modality is anchored to the speaker, as Lyons (1995:337) makes clear when he defines 'locutionary subjectivity' as:

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[1]For an excellent survey of the western literature see Verstraete (2001).

'[...] the locutionary agent's (the speaker's or writer's, the ut-
terer's) expression of himself or herself in the act of utterance: lo-
cutionary subjectivity is, quite simply, self-expression in the use of
language.'

Secondly, while objective modality is propositional and truth-conditional, sub-
jective modality is non-propositional and non-truth-conditional.

Thirdly, as Kindaichi observes, subjective modals express the speaker's state
of mind *at the time of the utterance*. This crucial point is also made by Nakau
(1979:227), who emphasises the notion of the speakers instantaneous present.[2]

The difference between 'objective' and 'subjective' expressions seems to corre-
spond to the distinction Austin (1975) drew between constative and 'performative'
utterances, and the three features 'speaker-oriented', 'non-truth-conditional', and
'momentaneous' also capture the nature of performative utterances. In Austin's
wording: 'There is something which is *at the moment of uttering being done by
the person uttering*' (1975:60; emphasis in original). This connection between
subjectivity and performativity has been noted in the literature by, for instance,
Verstraete, who claims that '[...] the mechanisms behind the various criteria that
have been proposed can be explained in terms of one basic functional principle of
performativity' (2001:1506; emphasis in original).[3]

My main concern in this paper is how the theoretical distinction between sub-
jective and objective modality can be empirically investigated. The following cri-
teria, adopted from both the Japanese and the general literature on modality, can
be employed to determine the degree of subjectivity and performativity:

A Subjective modals are morphologically invariable (Kindaichi 1953).[4]

B Negation cannot take scope over subjective modality (Nakau 1979; Sug-
imura 2000).

C Subjective modality cannot be embedded in the antecedent of conditional
sentences (Lyons 1977, 1983).

D Past tense cannot take scope over subjective modals (Kindaichi 1953).

E Subjective modals (in Japanese) cannot be adnominalised (Kindaichi 1953).

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[2]Nakau defines modality in these terms. Therefore, his use of the term 'modality' is equivalent to
what we here call 'subjective modality'.

[3]Another very interesting proposal is found in Nuyts (2001). He argues that the distinction be-
tween subjective and objective epistemic modality can be explained in terms of evidentiality.

[4]Kindaichi also observes the similarity between his 'non-inflectional auxiliaries' and *kan-
dooshi* 'interjections' and *kandoojoshi* 'final particles'. A similar observation is made by Goddard
(1998:167), who notes that discourse particles and interjections are similar in both their form and
function. He states that 'both kinds of element are morphologically invariable, and, from a func-
tional point of view, both tend to express a speakers immediate 'here-and-now' attitudes, thoughts,
and desires.'

F 'Subjective modality always has wider scope than objective modality' (Lyons 1977:808). In Japanese this is manifested by the fact that exlusively subjective markers always appear in sentence-final position while no such restriction applies to objective expressions (Kindaichi 1953).

G 'No simple utterance may contain more than a single subjective epistemic modality (though this single modality may be expressed [. . .] in two or more places).' (Lyons 1977:808).

H Subjective modality cannot be questioned (Nakau 1979; Sugimura 2000).

I Subjective modality cannot appear in complement clauses of propositional attitude verbs, e.g. know (Lyons 1983). [5]

In the next section I will show how these tests can be applied. Due to limitations of space, the analysis will be confined to the epistemic modal *daroo*, whose subjective behaviour is well known in the literature.

2   The Conjectural *daroo*

This section provides a descriptive structural account of the conjectural particle *daroo*. Special attention will be paid to the grammatical properties relating to the degree of subjectivity, and the criteria identified in the previous section will be used.

Let us start by considering some basic data. The form marks that the speaker is making an epistemic judgment about the propositional content of the sentence, and it can possibly be translated as 'I think', 'I suppose', 'I reckon', 'I guess', or 'I

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[5]More precisely, Lyons states that subjective modals, for example the subjective epistemic must, can occur in this position, but that the modality in such situations has been propositionalised. In effect, this means that subjective modality cannot appear in complement clauses of propositional attitude verbs, without first being objectified. The same point also applies to criterion C (about conditional sentences).

wonder'.[6] Consider the following examples:[7]

(1)   Ashita   wa   ame ga   fur-u   daroo.
       tomorrow TOP rain NOM fall-NPAST CONJ

       'I suppose it will rain tomorrow.'

(2)   Moo   tsui-ta   daroo.
       already arrived-PAST CONJ

       'I suppose (s/he) has already arrived.'

Kindaichi (1953) states that *daroo* is essentially subjective, and that this charac-
teristic is formally reflected in the fact that the form is morphologically invariable
(criterion A fulfilled).[8] He therefore classifies *daroo* as a *fuhenkajodooshi* 'non-
inflectional auxiliary verb', which is a term he uses for expressions that are some-
thing in between predicate extensions and final particles. Indeed, *daroo* is highly
performative and it seems to be used almost exclusively to express subjective epis-
temic modality, as will be illustrated in detail below, and it does not exhibit any
inflectional morphology.

    The formation can be described as follows. *Daroo* can follow the nonpast or
the past form of verbs as in (1) and (2) above, and it can also come after the nonpast
or past form of adjectives, as in:

(3)   Peter wa   haya-i/hayakat-ta   daroo.
       Peter TOP fast-NPAST/fast-PAST CONJ

       'I suppose Peter is/was fast.'

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[6]A further use of *daroo* is when the speaker wants to confirm something with the listener, or, as
in the following example, urge the listener to do something:

    Ik-u   daroo?
    go-NPAST CONJ

    'You will go, won't you?'

  This usage can probably be regarded as an extension of the conjectural use. Sentences are often
ambiguous between the two readings. For instance, the sentence

    Kare wa   kuru   daroo
    He   TOP come.NPAST CONJ

    'I think he will come'

could also mean 'He will come, won't he?' depending on the intonational contour of the utterance.
I am not concerned with this difference here, and I have chosen to provide only one translation for
each example sentence.

[7]The abbreviations used in this section are: ACC = accusative, ASSUM = assumptive, COMP =
complementiser, CONJ = conjectural, COP = copula, DES = desiderative, EV = evidential, FP = final
particle, GEN = genitive, GER = gerund, NEG = negation, NML = nominaliser, NOM = nominative,
NPAST = non-past tense, PAST = past tense, QP = question particle, QUOT = quotative, STAT =
stative, TOP = topic marker.

[8]It should be pointed out that there is a polite form of this particle: *deshoo*. However, this form
can be seen as belonging to a different register, rather than being an inflected form of *daroo*. This is
also the position taken by Kindaichi.

Daroo also follows directly after the stem of nominal adjectives and after nouns, as in (4) and (5) below. We can consider this as a case where the copula is phonologically null, and accordingly represent this zero-copula with the symbol ∅.

(4)   Kore wa   benri ∅   daroo.
       this   TOP useful COP.NPAST CONJ
       'I guess this is useful.'

(5)   Are wa   fune ∅   daroo.
       that TOP ship COP.NPAST CONJ
       'I suppose that is a ship.'

However, if the event described has past time reference, then *daroo* appears after the overtly expressed past tense form of the copula, as can be seen in (6) and (7):

(6)   Kore wa   benri dat-ta   daroo.
       this   TOP useful COP-PAST CONJ
       'I guess this was useful.'

(7)   Are wa   fune dat-ta   daroo.
       that TOP ship COP-PAST CONJ
       'I suppose that was a ship.'

Other possible positions are after an adverb, after the nominaliser *no*, and also after the connective particle *kara* 'because', as is illustrated below. The situations here are reminiscent of (4) and (5) where the presence of an unexpressed copula was assumed, and we can conveniently employ the same notation of a zero copula:

(8)   Pabu ga   shimar-u   made moo sukoshi ∅   daroo.
       pub   NOM close-NPAST until more a.little   COP.NPAST CONJ
       'I think that the pub will close before long.'

(9)   Peter wa   naze itsumo uso o   tsuk-u   no   ∅
       Peter TOP why always lie   ACC tell-NPAST NML COP.NPAST
       daroo.
       CONJ
       'I wonder why Peter is always lying.'

(10)   Okusan ga   kowa-i   kara   ∅   daroo.
       wife   NOM scary-NPAST because COP.NPAST CONJ
       'I suppose it is because he is afraid of his wife.'

The form can also occur on its own, as is illustrated below:

(11) a.   Kare wa   ko-na-i   to   omo-u.
           he   TOP come-NEG-NPAST COMP think-NPAST
           'I dont think he will come.'

     b.   Daroo ne.
           CONJ FP

           'I suppose (that he wont come).'

After this very basic presentation of *daroo* we are now in a position to consider the degree of subjectivity. We have already seen that *daroo* is invariable in form, and criterion A has thus been fulfilled. Let us now make use of the other eight criteria listed in the previous section.

    Firstly, negation cannot take scope over *daroo* (criterion B fulfilled). In other words, the modality itself cannot be negated, as we can see in the following ungrammatical example (Kato and Fukuchi 1989:115):[9]

(12)   * Kare wa shiken ni toot-ta   daroo (de) na-i.
         He   TOP exam in pass-PAST CONJ (COP).NEG-NPAST

         (Probably intended to mean something like) 'I do not suppose that he passed the exam.'

Secondly, the form cannot appear in the antecedent of a conditional sentence (criterion C fulfilled):

(13)   * Moshi ame ga   fur-u   daroo nara ashita   no   haikingu
         if   rain NOM fall-NPAST CONJ if   tomorrow GEN hiking

         wa   chuushi   da.
         TOP cancelation COP.NPAST

         'If it is probable that it will rain tomorrow then the hiking will be called off.'

    Thirdly, *daroo* does not have a past tense form, nor can the modal expression be propositionalised by using the past tense of the copula (criterion D fulfilled). This is illustrated by Kato and Fukuchi (1989:115) in the following example, which is seriously ungrammatical:

(14)   * Kanojo wa ronbun o   kakiage-ta   daroo dat-ta.
         she   TOP thesis   ACC write up-PAST CONJ COP-PAST

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[9]It should be pointed out that I have found two examples in the literature that could be taken to contradict what I am saying here. They are both taken from Yamaguchi (2001:460), and she in turn has found the examples in two novels. The first example is from Fortuné Du Boisgobeys novel *La Vieillesse de Monsieur Lecoq* (1878) which was translated into Japanese under the title *Shibijin* by Ruiko Kuroiwa (1892), and the second sentence originates from *Wagahai wa neko de aru* 'I am a cat' written by Soseki Natsume (1905):

    Musume no   koto o   nehorihahori   kik-u   daroo jana-i   ka.
    daughter GEN thing ACC about every detail ask-NPAST CONJ NEG-NPAST QP

    'Don't you think that (he) will probably be inquisitive about my daughter?'

    Kita-gat-te-ru   n   daroo jana-i   ka.
    come.DES-EV-GER-STAT NML CONJ NEG-NPAST QP

    'Don't you think that he would probably like to come?'

However, my informant dubbed the former example 'ungrammatical' and the latter one 'strange'.

(Presumably intended to mean) 'It was probable that she wrote up her thesis.'

As the examples presented so far have demonstrated, a significant feature of daroo is that the expressions that can follow it are limited.[10]

This brings us to the fourth point, which is that *daroo* resists adnominalisation (criterion E fulfilled). However, there are data that seem to provide counterevidence for this view. Let us therefore consider some examples from the literature where *daroo* appears in adnominal position in relative clauses:[11]

(15)   Kare ga   ku-ru   daroo koto wa kii-te   i-ru.
         he   NOM come-NPAST CONJ fact TOP hear-GER be-NPAST

         'I have heard that he probably will come.' Saji (1989:155)

(16)   Kore ga   seikoo su-ru   daroo koto wa   utagainai.
         this   NOM success do-NPAST CONJ fact TOP no doubt

         'There is no doubt that this will probably come out well.' (Yamaguchi, 2001:461)

(17)   Kare wa   shoochi su-ru   daroo koto wa   machigainai.
         he   TOP consent do-NPAST CONJ fact TOP reliable

         'There is no doubt that he will probably agree.' (Tanaka 1971:468)

In these sentences, *daroo* is modifying the structural noun *koto*.[12] My informant found them somewhat peculiar, but would not mark them ungrammatical. Examples like these seem to be borderline cases; they are not completely unacceptable but there is something strange about them.[13] Furthermore, Yamaguchi (2001:460) presents an example where *daroo* adnominalises to an ordinary noun:

(18)   Kare ga   saigo ni kuru   daroo hito   da.
         he   NOM end   in come.NPAST CONJ person COP.NPAST

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[10]Mention should be made, however, of the fact that there are final particles (illocutionary force markers) that can come after *daroo*. For example, as we saw in (11), the form can occur with ne attached to it.

[11]There are no relative pronouns in Japanese. A relative clause is formed when the modifying constituent occurs in adnominal position. For example, the first example below is a declarative sentence, and the second a relative clause:

Inu ga   hoe-ta
dog NOM bark-PAST
'The dog barked'

Hoe-ta   inu
bark-PAST dog.
'The dog that barked'

[12]Structural nouns are nouns that require modification.

[13]Tanaka (1971:468), who also states that *daroo* strongly resists adnominalisation, points out that these kinds of examples are very rare and that they can be found in translational style. I think this sounds very reasonable.

'He is the man who probably will be the last to come.'

However, this sentence is very odd, and my informant simply judges it 'ungrammatical'. It is important to point out though that Yamaguchi says that this is a recent phenomenon. I shall not dwell upon this point since the fact remains that all the examples of adnominalisation are considered unnatural by my informant.

Fifthly, *daroo* cannot be followed by any other modal (or evidential) construction, such as the reportative *soo da* 'I hear' or *rashii* 'seem':

(19)   * Ame ga   fur-u   daroo soo   da.
         Rain NOM fall-NPAST CONJ QUOT COP.NPAST

       (intended to mean) 'I hear that it will probably rain.'

(20)   * Ame ga   fur-u   daroo rasi-i.
         rain   NOM rain-NPAST CONJ seem-NPAST

       (intended to mean) 'It seems that it is probably going to rain.'

The unacceptability of the above sentences stems from the general principle that objective modality cannot take scope over subjective modality (criterion F fulfilled). Of course, this is not to say that *daroo* cannot co-occur with other modals. For instance, it can be placed after the assumptive predicate extension *hazu da*:

(21)   Nanika   at-ta   hazu   ∅   daroo.
       something be-PAST ASSUM COP.NPAST CONJ

       'I think that something must have happened.'

This example nicely illustrates that subjective epistemic modality can take scope over objective epistemic modality.[14]

Thus it appears that *daroo* cannot be part of the propositional content of the sentence, and that Japanese grammarians are right in regarding the form as essentially subjective. However, there are still some points that need to be considered. Firstly, the interrogative particle *ka* can take scope over *daroo* as in:[15]

(22)   Tracey wa   kuru   daroo ka.
       Tracey TOP come.NPAST CONJ QP

       'I wonder if Tracey will come.'

If subjective modality cannot be questioned, then it seems odd that the epistemic daroo can be followed by an interrogative particle (criterion H unfulfilled). This problem is also noted by Kindaichi (1953) who argues that the question in this case is directed to the addressee, but that it is nevertheless the inference of the speaker him/herself that is being questioned; therefore this does not cause any problems, since the modality still can be said to originate from the locutionary agent. In my

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[14]Furthermore, since the combination with any other subjective modal construction is impossible, criterion G is fulfilled.

[15]Interestingly, as is noted by Kato and Fukuchi (1989:116), *daroo* often co-occurs with the interrogative words *dare* 'who', *naze* 'why', and *nani* 'what'.

view, it is also possible to regard the darooka construction as a separate independent construction with the meaning 'I wonder' or 'Do you think?', which would also solve the problem.

Another problematic fact is that *daroo* can be followed by the complementiser to and the verb *omou* 'think' (criterion I unfulfilled):

(23)   Ashita   wa ame ga   fur-u   daroo to   omou.
        tomorrow TOP rain NOM fall-NPAST CONJ COMP think

        'I think that it will probably rain tomorrow.'

The function of the expression to *omou* 'I think' in this example seems to be to reinforce the modality.[16] That is, the meaning of the above sentence remains basically the same even if we delete *to omou*:

(24)   Ashita   wa ame ga   fur-u   daroo.
        tomorrow TOP rain NOM fall-NPAST CONJ

        'I think it will rain tomorrow.'

The fact that the propositional attitude verb *omou* 'think' can come after *daroo* is a bit puzzling if we regard *daroo* as an essentially performative and subjective marker of subjective epistemic modality. This point has not been noted, to my knowledge, by Japanese grammarians. Of course, they have observed and described the fact that the combination *daroo to omou* is possible, but they have not discussed this in relation to subjectivity. It could be that it is possible to explain away the above example by saying that *to omou* 'I think' only reinforces the subjectivity of the utterance. However, what if we are dealing with a third person subject? And what about other epistemic verbs, for example *shinjiru* 'believe'? Consider the following two examples in which *daroo* does not seem to be used performatively:

(25)   Kare wa ame ga   fur-u   daroo to   omot-te   i-ta.
        He   TOP rain NOM fall-NPAST CONJ COMP think-GER be-PAST

        'He was thinking that it was probably going to rain.'

(26)   Kare wa ame ga   fur-u   daroo to   shinji-te
        He   TOP rain NOM fall-NPAST CONJ COMP believe-GER
        i-ru.
        be-NPAST

        'He believes that it is probably going to rain.'

In these sentences the modality clearly has been propositionalised.

To summarise: in this section, I have outlined the basic descriptive facts about the modal *daroo*. It can be concluded that *daroo* can be described as a particle, which is invariable in form and used almost exclusively to express subjective epistemic modality. However, even if the form is essentially highly performative and

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[16]In this connection it is worth pointing out that a phenomenon called modal harmony has been observed in the literature. 'Modal harmony' is described by Bybee et al. (1994:214–225) and Lyons (1977:807–808).

subjective, it is important to remember that it can be objectified (propositionalised) when appearing within clausal complements of propositional attitude verbs like *omou* 'think' and *shinjiru* 'believe'.

3   Conclusion

What this paper has attempted to demonstrate is that the distinction between subjective and objective modality is amenable to empirical justification by means of a wide range of tests taken from both the Japanese and the general literature. As an example, the conjectural *daroo*, which displays a highly subjective character, was used.[17] The advantage of this kind of approach is that the tests involved are based on overt features, and thus it is language itself that guides us to the correct semantic description of a particular item.

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The Loss of Ergativity in Dari Modal Verbs

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1   Introduction

The Iranian languages are well-known for their split ergative case-marking and cross-referencing[1] patterns conditioned by tense or aspect. The Pamir languages (Payne 1980), Balochi (Farrell 1995), Kurdish (Bynon 1980), Pashto (Tegey 1978), and Persian all display, or once displayed, ergative marking solely in the past tense or perfective aspect.[2] The origins of split ergativity in Iranian have been particularly well studied, and the pattern has been shown to have resulted from the reanalysis of a possessive-like perfect aspect construction in Old Iranian, from which the past tenses of the modern Iranian languages derive (Benveniste 1952; Anderson 1977).[3] While the processes involved in the development of ergative marking are well documented (Dixon 1994), the processes resulting in the loss of ergativity have been less studied.

In this paper, we will consider the cross-referencing system in one Iranian language, Dari,[4] an endangered language of the Northwestern subbranch, which displays a typical distribution of ergativity. Verbs in the nonpast tenses mark agreement with argument noun phrases through an accusative pattern and in the past

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[1]In other words, agreement of a verb with its arguments.

[2]We follow the terminology of Dixon (1994): the three core arguments of a verb are A, the subject of a transitive verb, O, its object, and S, the subject of an intransitive verb. An accusative pattern groups the S and A arguments, such that they receive case-marking or cross-referencing distinct from that of O. An ergative pattern, in contrast, groups S and O.

[3]Some scholars argue that it was not a possessive-like construction that was reanalysed as ergative in the past tenses but a passive-like construction (Cardona 1970; Pirejko 1979). This is a debate that is not relevant to the subject at hand.

[4]The examples in this paper are drawn from fieldwork on Dari undertaken during the summer of 2003 in the Zoroastrian village of Qāsemābād in Yazd, Iran, and from informant work carried out later with native speakers residing in the United States. We are sincerely grateful to the Dari Language Project and its patrons for their generous financial support of this research.

Dari (also called Gabri or Behdināni) is a little-studied language spoken by fewer than 8,000 people, all of whom are members of Iran's Zoroastrian religious minority. The language is distinct from the Afghani dialect of Persian, which is also called Dari by its speakers.

A number of late nineteenth and early twentieth century European scholars conducted cursory surveys of Dari, and among them Ivanow (1934, 1938, 1939) is of most value to modern purposes. Windfuhr (1989) provides a short summary of this literature. Within Iran, some more recent, descriptive works on the language have been published: two limited dictionaries of words and phrases (Surush Surushiān 1978; Mazdāpūr 1995) and two descriptive accounts of Dari verbal morphology (Firuzbaxsh 1997; Puladi-Darvish 2000).

tenses (simple past, present perfect, and past perfect) through an ergative pattern. This split is adhered to by all the language's verbs except the modal verbs: in both the nonpast and past tenses of 'must', 'can', and 'want', cross-referencing follows an accusative pattern.[5] The synchronic forms of these three modal verbs, however, show strong evidence for their having once possessed ergative cross-referencing in both the nonpast and past tenses. We will argue that they did indeed at one time show ergative marking. We will accordingly trace a course for their development to accusative marking, in which the relevant diachronic changes are cross-linguistically well-attested. We then ask why 'must', 'can', and 'want' alone shifted to an accusative pattern, while all other verbs retained a split ergative pattern. We suggest, following Dixon (1994), that the Dari modal verbs' loss of ergativity was motivated by their unique semantics.

2   Past Tense Ergativity

The ergative pattern in Dari's past tenses is manifested formally through two sets of affixes. A series of suffixes, identical to that used in the nonpast to express agreement with the subject (2), displays cross-referencing of the verb's S and O NP arguments, as in (1), where the 1sg suffix -*e* agrees in person and number:[6]

(1)   Past

      a.   (mē) dāvū-**e**
           I   run:past-**1sg**
           'I ran'

      b.   (in) oš-di-**e**
           s/he 3sg-see:past-**1sg**
           'he saw me'

(2)   Nonpast

      a.   (mē) dāv-**e**
           I   run:pres-**1sg**
           'I run'

      b.   (mē) in-rā   bin-**e**
           I   s/he-acc. see:pres-**1sg**
           'I see him'

We give the complete paradigm for the cross-referencing suffixes in (3):

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[5]Dari does not possess morphological case-marking.

[6]In the orthography we use for Dari, *ē* represents a mid-low front unrounded vowel, *a* a low front unrounded vowel, *ū* a mid-high back rounded vowel, and *ā* a low back vowel. All other symbols have their standard values.

(3)   Cross-Referencing Suffixes (Ergative S- and O-Agreement)[7]

	sg.	pl.
1	*-e*	*-im*
2	*-i*	*-id*
3	*-⊘/-ā*	*-ēn*

Note that the suffixes when they refer to O are only realized in the absence of an explicit NP.

A series of bound pronominals expresses head-marking of the verb's A NP argument,[8] as in (4), where the 1sg pronominal *om-* marks agreement with the transitive subject:

(4)   (mē) **om**-di-i
        I   **1sg**-see:past-2sg
        'I saw you (sg.)'

The complete paradigm of bound pronominals expressing ergative head-marking of the A function is given in (5):[9]

(5)   Simple Past Cross-Referencing Pronominals (Ergative A-Agreement)

	sg.	pl.
1	*om-*	*mo-*
2	*od-*	*do-*
3	*oš-*	*šo-*

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[7]The third person singular suffix is a zero form in the past tenses and *-ā* in the nonpast and subjunctive.

[8]The use of bound pronominals to mark agreement with A is common amongst the world's ergative languages (Dixon 1994:46).

[9]The present and past participle also display ergative head-marking, though in these tenses A-marking occurs through a different set of bound pronominals: 1 *me-*, 2 *de-*, 3 *še-*. O and S are marked by the same set of suffixes. For example:

(i)   (mē) me-dizā-i
        I   1sg-see:pres.pf-2sg
        'I have seen you (sg.)'
(ii)   (mē) me-dizābo-i
        I   1sg-see:past.pf-2sg
        'I had seen you (sg.)'

We mention the present and past participle ergative pattern merely in passing, since parallel tenses do not exist for 'must', 'want', and 'can'.

3   Modal Verb Ergativity

'Must', 'want',[10] and 'can' historically comprised a formal modal verb system that was unified on the basis of shared ergative cross-referencing in all tenses.[11] While the three modal verbs have all subsequently shifted to accusativity, they are no longer formally unified. 'Must' and past tense 'can' show an 'extended ergative' accusative pattern, while 'want' and nonpast 'can' currently exhibit a 'canonical' accusative pattern.

3.1   'Must'

The historical ergative cross-referencing of the modal verbs is still apparent in the transitive 'must' construction (6). The order of morphemes recapitulates that of transitive verbs in the past tense: A is marked by a bound pronominal and O by a suffix.

(6)   Transitive 'Must'

    a.   (mē) **om**-veo   di-**i**
       I   **1sg**-must:pres see:past-**2sg**
       'I must see you (sg.)'

    b.   (mē) **om**-vevyust   di-**i**
       I   **1sg**-must:past see:past-**2sg**

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[10]While we have grouped 'want', 'must', and 'can' together, 'want' does differ from the other two modals in one important way. Unlike 'must' and 'can', 'want' and the verb it occurs with may take non-coreferential subjects in Dari, as exemplified by the sentence in (i).

(i)   (mē) māv   ke in kzā-om bebin-ā
     1sg want:pres:1 that 3sg house-my see:subj-3sg
     'I want him to see my house'

Lest our grouping of the Dari modals be objected to on the basis of this difference, it should be noted that we are concerned here only with those instances in which the subject of 'want' is coreferential with that of its accompanying verb, when it patterns in this respect like 'must' and 'can'. This distinction is reflected in different syntactic constructions. The obligatory complementizer *ke* in the non-coreferential construction in (i) is illicit in the coreferential construction in (ii).

(ii)   *(mē) māv   ke kzā-om bebin-e
      1sg want:pres:1 that house-my see:subj-1sg
      'I want to see my house'

[11]The semantics of 'must', 'want', and 'can' easily fall within the category of modality, which involves the speaker's 'own beliefs or attitudes, or their own will and authority' with respect to an utterance (Lyons 1995:330). But it is necessary to distinguish the semantic category of modality from the grammatical category of modality, which is the grammatical expression of these attitudes and opinions (Palmer 1986:16). The identification of a formally unified system is paramount to defining the expression of grammatical modality in a given language.

'I had to see you (sg.)'

This ergative pattern arose in 'must', we hypothesize, through the innovation of a new construction composed of the sequence inflected modal verb-plus-inflected past tense main verb. Because it is the modal verb's inflectional features that specify the tense of the clause as a whole, the tense marker on the main verb, although identical in form to the past (4), no longer conveys tense meaning. It does, however, still critically express agreement with A and O through its historical ergative markings (6).

The shift to the current accusative cross-referencing then occurred when speakers extended the bound pronominal marking A (6) on the verb to mark S as well (7).

(7)   Intransitive 'Must'

    a.   (mē) **om**-veo   dāvu
          I   **1sg**-must:pres. run:past
          'I must run'

    b.   (mē) **om**-vevyust   šo
          I   **1sg**-must:past go:past
          'I had to go'

This generalization of morphological marking from the subject of a transitive to the subject of an intransitive is a shift well attested amongst the world's languages. Anderson (1977:353ff) and Dixon (1979:78) suggest that the extension of marking from A to S is made probable by virtue of their status as subjects. In addition, Harris and Campbell (1995:266) argue more generally that extension of morphological marking may proceed from either A to S, as in Dari, or vice versa (condition (ii) of their Complementarity Principle.)

Thus, the 'must' construction inherited ergative marking as a result of its origins in the concatenation of a tense-inflecting 'must' modal verb and a person / number-inflecting past tense verb. This ergative pattern then transitioned to the present day accusative pattern through generalization of the A cross-referencing prefix to S. We summarize this progression in the following table:

(8)   Reconstructed cross-referencing pattern for 'must'

	O	S	A
Stage 1: Ergative	suffix	suffix	pronominal
Stage 2: Accusative	suffix	pronominal	pronominal

While the current distribution of cross-referencing in the 'must' construction is essentially accusative, it differs in one respect from the 'canonical' accusative pattern used in the non-modal nonpast tense (2). The O function, not marked formally in this latter pattern, is marked here by a suffix. This type of accusative pattern is commonly called 'extended ergative,' since such a distribution often arises through extending A-marking to S (Dixon 1994:63-4).

'Want', though it shows historical evidence of having passed through an extended ergative stage similar to that of 'must', today displays a canonical accusative cross-referencing pattern.

3.2 'Want'

In the 'must' construction, historical ergative marking is evidenced by the maintenance of A-marking bound pronominals and their extension to mark S. In the 'want' construction, these pronominals have been reanalysed as part of the 'want' morpheme, creating allomorphy as a consequence. Phonetic reduction accompanying this process collapsed the number distinction so that the current allomorphy is conditioned only on the person of S or A: *māv* for 1st person, *dāv* for 2nd person, and *šāv* for 3rd person, as in (9) and (10).

(9)   Intransitive Nonpast 'Want'

    a. (mē) **māv**   veš-e
        I   want:pres:**1** go:subj-1sg
        'I want to go'

    b. (tā)   **dāv**   veš-i
        you(sg.) want:pres:**2** go:subj-2sg
        'you (sg.) want to go'

    c. (in) **šāv**   veš-ā
        s/he want:pres:**3** go:subj-3sg
        'he wants to go'

    d. (mū) **māv**   veš-im
        we   want:pres:**1** go:subj-1pl
        'we want to go'

    e. (šmū) **dāv**   veš-id
        you(pl.) want:pres:**2** go:subj-2pl
        'you (pl.) want to go'

    f. (iyē) **šāv**   veš-ēn
        they want:pres:**3** go:subj-3pl
        'they want to go'

(10)   Transitive Past 'Want'

    a. (mē) tā-rā   **māvyust** bebin-e
        I   you(sg.)-acc. want:past:**1** see:subj-1sg
        'I wanted to see you (sg.)'

    b. (tā)   in-rā **dāvyust** bebin-i
        you(sg.) s/he-acc. want:past:**2** see:subj-2sg
        'you (sg.) wanted to see him/her'

    c. (in) mū-rā **šāvyust** bebin-ā
        s/he we-acc. want:past:**3** see:subj-3sg

            's/he wanted to see us'

Note also that the 'want' construction no longer takes a verbal complement in the past tense form but one in the subjunctive form, which shows agreement with S and A through agreement suffixes, as in (11) and (12):

(11)   Intransitive 'Want'

        a.   (mē) māv   veš-**e**
             I   want:pres:1 go:subj-**1sg**
             'I want to go'

        b.   (mē) māvyust   veš-**e**
             I   want:past:1 go:subj-**1sg**
             'I wanted to go'

(12)   Transitive 'Want'

        a.   (mē) tā-rā   māv   bebin-**e**
             I   you(sg.)-acc. want:pres:1 see:subj-**1sg**
             'I want to see you (sg.)'

        b.   (mē) tā-rā   māvyust   bebin-**e**
             I   you(sg.)-acc. want:past:1 see:subj-**1sg**
             'I wanted to see you (sg.)'

Because of the loss of A-agreement by the bound pronominals and the adoption of a subjunctive-inflecting verb, 'want' no longer shows an extended ergative accusative pattern but the canonical accusative pattern characteristic of the non-modal nonpast. Following the 'want' construction's exchange of the past tense form main verb for one in the subjunctive showing subject agreement through the series of suffixes, the bound pronominals' functional redundancy led to their loss of grammatical content and reanalysis as part of the 'want' morpheme.[12] This progression is summarised in the following table:

(13)   Reconstructed cross-referencing pattern for 'want'

	O	S	A
Stage 1: Ergative	suffix	suffix	pronominal
Stage 2: Extended Ergative	suffix	pronominal	pronominal
Stage 3: Canonical Accusative	—	suffix	suffix

This shift was motivated, we hypothesize, by pressures to match the existing accusative pattern of the non-modal nonpast tense, in which S and A are marked by suffixes and O is not marked. This type of change is predicted by condition (i) of Harris and Campbell's (1995) Complementarity Principle, which states that change is possible between grammatical relations that are 'instances of the same

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[12]We might speculate further that this shift from an extended ergative to a canonical accusative pattern occurred in two steps. The canonical pattern was first analogised from the non-modal nonpast tense to the nonpast tense of 'want', then to 'want' in the past tense.

grammatical relation under different syntactically characterizable circumstances' (262). In Dari, the O, S, and A arguments are represented in the non-modal nonpast and in the past and nonpast tenses of the 'want' construction. The non-modal nonpast construction is complimentary to the nonpast 'want' construction on the basis of a distinction of modality and to the past 'want' construction on the basis of both modality and tense. The result of the extension from the canonical accusative pattern in the non-modal nonpast to the past and nonpast 'want' constructions is summarised in the following table:

(14)   Cross-referencing patterns for 'want' and non-modal nonpast

	O	S	A
Nonpast 'want'	—	suffix	suffix
Past 'want'	—	suffix	suffix
Non-modal nonpast	—	suffix	suffix

Despite the different accusative patterns of the 'must' and 'want' constructions, they both show the same fundamental transition from ergativity to accusativity. 'Want' has simply further shifted to a canonical accusative pattern.

3.3 'Can'

The modal verb 'can' shows a cross-referencing pattern split between the extended ergative accusative pattern and the canonical accusative pattern. In the past tense, 'can' patterns like the modern 'must' construction; bound pronominals mark A and S and a suffix marks O, as in (15).

(15)   Past 'Can'

    a.   (mē) **om**-šašte   šo
           I   **1sg**-can:past go:past
           'I was able to go'

    b.   (mē) **om**-šašte   did-**i**
           I   **1sg**-can:past see:past-**2sg**
           'I was able to see you'

The past 'can' construction's formal similarities to 'must' suggest that it followed a similar, if not identical, path of development.

The nonpast 'can' construction patterns like 'want'. Suffixes mark agreement with A and S, while O is not marked, as in (16).

(16)   Nonpast 'Can'

    a.   (mē) šei   tom-**e**
           I   can:pres. come:past-**1sg**
           'I can come'

    b.   (tā)   om šei   vot-**i**
           you(sg.) me can:pres. say:past-**2sg**

'you can say (it) to me'

The canonical accusative pattern of the nonpast 'can' construction developed through a series of changes paralleling but not duplicating those undergone by 'want'. In nonpast 'can', the use of the suffixes to mark S and A was not introduced through the innovation of a new construction built upon a subjunctive main verb as it was in 'want'; rather, the past stem construction was retained and the suffixes marking O simply shifted to mark S and A instead.[13] The process resulting in a canonical accusative cross-referencing pattern in nonpast 'can' is analogous to that in 'want' for the purposes of our analysis, since both have resulted in S and A being marked by suffixes. Thus, although nonpast 'can', like 'want', has shifted to an accusative pattern, 'can' shows the same fundamental transition from ergative to accusative head marking.

4   Conclusion

The ergative cross-referencing that was introduced in the Dari modal verb system, through a historical accident incumbent on the development of ergativity in the past tenses, has been completely replaced by accusativity. As a result of the specific processes undergone by the modal constructions in arriving at their respective synchronic accusative patterns, 'must', 'want', and 'can' no longer constitute a formally cohesive system. 'Must' and past 'can' show an extended ergative accusative pattern, while 'want' and nonpast 'can' have progressed to a canonical accusative pattern.

In our account of these changes, we have organised the data into 'stages' in an effort to make clear the relationships among the three verbs. We have not intended to make any predictions regarding the future development of Dari's modal verb system. Whether or not the diachronic processes operating over the modal verbs will reach 'completion,' or, for that matter, whether they will continue to operate in the same manner, is a question for speculation. Nonetheless, the occurrence of change creating symmetry or consistency within a particular grammatical system is a widely attested phenomenon. In this sense, the stages we propose above may provide a reasonable hypothesis for the verbs' progression as a system to a canonical accusative cross-referencing pattern.

We have argued that the Dari modal verbs 'must', 'want', and 'can' once comprised a formally cohesive system characterised by ergative cross-referencing that has subsequently shifted to accusativity. Having proposed a cross-linguistically motivated reconstruction of the diachronic stages involved in that change, we now suggest a possible reason for it. Namely, we hypothesise that the unique loss of ergative cross-referencing by the modal verbs in Dari follows from their semantics.

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[13]Interestingly, while in the case of 'want', this resulted in allomorphy through reanalysis of the prefixes as part of the stem, in 'can', the bound pronominals seem to have left no trace.

Modals are members of a class of verbs which never occur independently but always accompany another verb that expresses the core semantics of the sentence.[14] In Dixon's (1994) terminology, modals are 'secondary concept' verbs, which must be coreferential with the subject of their accompanying verb: S if the latter is intransitive and A if it is transitive. Because of these semantics, Dixon proposes that the secondary concept verbs are not couched in terms of language-specific groupings of S, A, and O but rather in terms of a universal grouping of S and A.[15] Inherently, secondary concept verbs are syntactically nominative/accusative. This view of modals as secondary concepts provides a potential explanation for the morphological cross-referencing shift we have examined above. Diachronic forces can be seen as 'ironing out' surface structure to parallel syntactic and semantic structure, a perspective expressed clearly in Silverstein (1976:121):

> 'languages in general do show a relationship between surface morphological patterns and syntactic distributions on the one hand, semantic classes on the other hand. If our semantic representations are systematically related to, if not identical with, underlying forms, and these, in turn, are systematically related to surface patterns...we should in fact expect some recurrent relationships between semantic and surface levels.'

Under this view, we predict a general tendency for secondary concept verbs to show accusative morphological marking, regardless of how the morphology or syntax pattern elsewhere. This is precisely what we find in the Dari modal verbs, an illustration of one way in which ergative morphological marking may be lost.

Dari, like many other Iranian languages, possesses ergative cross-referencing in the past tenses. The synchronic forms of 'must', 'want', and 'can' evidence that this ergative cross-referencing pattern was extended to the modal verbs and subsequently lost. We have argued that this shift follows from their inherently accusative semantics.

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[14]Other verbs that behave similarly, when they are expressed as verbs, are: 'should', 'might', 'not', 'begin', 'finish', 'try', 'need', and 'hope' (Dixon 1994:134).

[15]Kibrik (1987) disputes Dixon's generalization that secondary concept verbs pattern nominative/accusative universally on the basis of a study of 'must', 'can', 'want', and other verbs in twenty Daghestanian languages. Dixon (1994) denies that the Daghestanian data discredit his generalization.

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wh-Question Formation in Nguni

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1   Introduction

In this paper, we present ongoing work on the syntax of wh-questions in Nguni. Nguni belongs to the Southern Bantu language groups (= Zone S, in terms of Guthrie's (1967) classification) and comprises a group of closely related, i.e. structurally and lexically similar, languages (S 40: Zulu, Xhosa, Swati, Ndebele). The examples in this paper are from Zulu, but the major claims about Zulu syntax also hold for the other Nguni varieties.

We examine the positions in which wh-phrases appear in questions and analyse our findings within the context of a broader typology of wh-questions. One important characteristic of Zulu wh-questions is that an argument wh-phrase may appear both ex situ (in a cleft wh-construction) and in situ but never in the structural subject position Spec TP (i.e. Zulu shows a *Wh-in-Spec-TP restriction). We argue that the [+wh]-feature which is located in C^0 of a question is weak in Zulu and hence does not trigger wh-ex-situ. Instead, the ex situ wh-cleft construction comes about as the result of the (optional) selection of a strong [+focus]-feature, and we argue that this feature is checked by the clefted wh-phrase, which is located in the specifier of a focus phrase. This analysis makes it possible to explain why Zulu obeys the *Wh-in-Spec-TP restriction. Furthermore, we show how the assumption that the [+wh]-feature in Zulu is weak also explains two other characteristics of Zulu wh-constructions, i.e. that Zulu, in contrast to other optional wh-in-situ languages like Duala or French, allows for partial wh-movement and for wh-in-situ in embedded questions.

In §2, we illustrate the basic properties of wh-constructions in Zulu, and we discuss the restriction that wh-phrases in Zulu may not appear in Spec TP. §3 focuses on partial wh-movement and wh-in-situ/wh-ex-situ in direct and indirect questions, and §4 outlines our analysis of these data.

2 Optional wh-in-Situ and the *Wh-in-Spec-TP Restriction in Zulu

Zulu is an optional wh-in-situ language. The examples (1)–(2) show that both wh-in-situ and wh-ex-situ is possible with wh-objects:[1]

(1)   a.   U-bona **ini**?
           U-bona-**ni**?
           2^{nd}SG-see(-)what9
           'What do you see?'

      b.   U-bona **ubani**?
           U-bona **bani**?
           2^{nd}SG-see whom1a
           'Whom do you see?'

(2)   a.   Y-**ini**   o-yi-bona-yo?
           COP-what9 RC2^{nd}SG -OC9-see-RS

           'What is it that you see?'

      b.   Ng-**ubani**   o-m-bona-yo?
           COP-who1a RC2^{nd}SG -OC1a-see-RS

           'Who is it that you see?'

In Zulu, both subject and object wh-phrases can be realised as *ini*, 'what' (class 9), and *ubani*, 'who', (class 1a). If a wh-phrase appears in situ, its initial vowel may be dropped (see (1a'–b')); the monosyllabic *-ni* is then suffixed to the verb stem.[2] Note that Zulu allows for argumental pro-drop, an aspect to which we return in §4.1.

The wh-ex-situ construction in Zulu is realised as a wh-cleft, (2). The copula is a prefix which has the allomorphs *y-* and *ng-* in wh-constructions; the choice between these two forms depends on the noun class of the noun (see §4.1).[3] The

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[1]In Bantu languages, each noun belongs to a particular noun/gender class. Class membership determines agreement with nominal modifiers, verbs, adjectives, etc. In the glosses, we mark the Zulu noun classes and agreement according to Meinhof's (1906) numbering system of Proto-Bantu. Morphemes are glossed as follows: Aux = past tense auxiliary; COP = copula; DEM = demonstrative pronoun; EXPL = expletive prefix; FOC = focus marker; OC = object clitic; PASS = passive; PL = plural; PRT = wh-particle; RC = relative concord; RS = relativising suffix; SG = singular; SP = subject prefix.

[2]Speakers generally prefer the reduced variants of the in situ wh-phrases, although full forms are accepted in all contexts where the reduced forms can occur. In contrast to the reduced wh-phrase, the non-reduced phrase seems to have a referential interpretation (cf. Hendrikse & Poulos (1980)); for example, (1b) could be translated as 'Whom *specifically* do you see?'. In the text, we provide in situ examples with reduced and non-reduced forms indiscriminately.

[3]The copular prefixes, in particular *ng-*, are often omitted in spoken Zulu. However, this seems to be a purely phonological deletion process, since the depressor-effect of the copula (= lowering of the tone of the first syllable of the following noun) is maintained even if the copula itself is not pronounced. We assume that in the relevant cases, the form of the copula which is prefixed to the noun is zero (∅).

form copula+noun is followed by a full sentence which seems to have all the properties of a relative clause in Nguni (but see the discussion in §4.2). The verb *bona* in (2) is prefixed with the so-called relative concord, which differs from the regular subject prefix in that it expresses relativisation and agreement with the subject of the relative clause simultaneously. In object relatives, an object clitic attaches to the verb stem which agrees with the head noun in noun class (cf. *-yi-* in (2a) and *-m-* in (2b)); furthermore, a phrase-final verb usually bears a relativising suffix *-yo* (see Zeller 2004 for more details).

In Zulu, a preverbal subject wh-phrase cannot appear in the derived subject position, i.e. in Spec TP, as is shown in (3a–b) for an active and a passive sentence. (4) illustrates that the wh-ex-situ variants of both sentences are possible:

(3)   a.   * **Ubani** u-banga   lowo msindo?
           who1a SP1a-cause DEM3 noise3

           'Who is making that noise?'

      b.   * **Ubani** u-ya-shay-wa?
           who1a SP1a-FOC-beat-PASS

           'Who is beaten?'

(4)   a.   Ng-**ubani** o-banga   lowo msindo?
           COP-who1a RC1a-cause DEM3 noise3

           'Who is it that is making that noise?'

      b.   Ng-**ubani** o-shay-wa-yo?
           COP-who1a RC1a-beat-PASS-RS

           'Who is it that is beaten?'

Importantly, as illustrated in (5), wh-elements that are not allowed to appear in Spec TP, (5a), may appear in the (postverbal) VP-internal (Spec *v*P)-position in the so-called impersonal *ku*-construction, (5b) (van der Spuy 1993). Like English, and in contrast to languages such as Icelandic, most Zulu dialects do not seem to allow for transitive expletive constructions (see Chomsky 1995 for an attempt to derive this typological variation; see also fn. 4.); the *ku*-construction is therefore not available for the examples in (3) and (4)). (5c) again illustrates that wh-ex-situ is always possible:

(5)   a.   * **Ubani** u-fike?
           who1a SP1a-arrived

      b.   Ku-**fike**   bani?
           EXPL-arrived who1a

      c.   Ng-**ubani** o-fikile?
           COP-who1a RC1a-arrived

           'Who arrived?'

It seems that the examples in (3) and (5a) are ruled out because of a general property of Spec TP in Zulu:

(6)   *Wh-in-Spec-TP

(6) must be a parameterised property, since it is well-known that languages such as English allow for wh-phrases to appear in Spec TP.[4] It has been noted that (6) is also operative in languages other than Zulu. For example, wh-subjects are excluded from occurring in Spec TP in other Bantu languages such as Kinyarwanda (Maxwell 1981), Dzamba (Bokamba 1976) and Kitharaka (Muriungi 2003) and also in Austronesian languages such as Malagasy, Tagalog, and Javanese, which are optional wh-in-situ languages like Zulu (see Sabel 2002, among others). The examples in (7)–(9) are from Kinyarwanda and illustrate the same pattern as the Zulu examples in (3)–(5) above:

(7)   a.   Umugore jiše   nde?
              woman   killed who

              'Who did the woman kill?'

       b.   Ni-**nde**   umugore jíše ?
              FOC-who woman   kill

              'Who did the woman kill?'

(8)   a.   * **Nde** jiše   umunhu?
              who killed man

              'Who killed the man?'

       b.   * **Nde** jiš-we   na umunhu?
              who killed-PASS by man

              'Who was killed by the man?'

(9)   a.   Ni-**nde**   u-íše   umunhu?
              FOC-who SP-killed man

              'Who killed the man?'

       b.   Ni-**nde**   u-íš-we   na umunhu?
              FOC-who SP-kill-PASS by man

              'Who was killed by the man?' [Kinyarwanda]

(7) shows that wh-in-situ and wh-ex-situ (also a wh-cleft construction) are possible with a wh-object (Sabel 2002). In (8a), it is demonstrated that a wh-subject may not appear in Spec TP; (8b) illustrates the same restriction for a derived grammatical

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[4] See, for example, the discussion of the vacuous movement hypothesis in Chomsky (1986, 1995, chapter 4). The absence or presence of the *Wh-in-Spec-TP restriction in a language is only one parametric property of Spec TP. Another parametric property concerns the licensing of nominative subjects in the Spec TP position of infinitives; nominative subjects in this position are found in languages such as European Portuguese and Spanish, but not, for example, in English and German. As is well-known, the licensing of empty pro-subjects in a language also depends on the properties of this position (and its head T^0). Further parametric properties of Spec TP are whether it can be filled with indefinite subjects (as in English), or not (as for example in Malagasy, see Keenan 1976), and whether it allows for multiple specifiers and hence for transitive expletive constructions (Chomsky 1995).

subject in a passive construction (compare (3b)). The only possibility to rescue these sentences is to construct them with the wh-subject ex situ, as in (9).

What could be the reason behind the *Wh-in-Spec-TP restriction? We claim that (6) is a corollary of a more general principle that bans focused constituents from appearing in subject position. Notice that focused non-wh-phrases may also not occur in Spec TP in Zulu:

(10) a. Abafana ba-ya-sebenza.
          boy2   SP2-FOC-work
          'The boys are WORKING'

      b. Abafana ba-sebenza kakhulu.
          boy2   SP2-work   a.lot
          'The boys are working A LOT'

(11) a. * Abafana ba-sebenza.
            boy2   SP2-work
          'The BOYS are working'

      b. Ng-abafana aba-sebenza-yo.
          COP-boy2   RC2-work-RS
          'It is the boys who are working'

The affix -*ya*- in Zulu marks focus on the verb in the present tense, (10a). If another constituent in the VP is focus-marked, -*ya*- does not occur. However, in contrast to (10b), where focus is on the adverb, subject focus cannot be expressed by simply combining a focused subject DP in Spec TP with the unmarked verb form, as in (11a). The only way to express subject focus is by means of the cleft construction; (11b) hence patterns with the wh-ex-situ examples provided in (2) and (4) above.

The incompatibility of focus and subject position is not entirely surprising, given that even in subject-prominent languages, subjects are often associated with typical topic functions such as definiteness and referentiality (Givón 1976). Furthermore, according to Givón (1976), subjects in languages with subject-verb agreement are the result of a diachronic process in which the left-dislocated topic phrase of a topic-comment construction was reanalysed as the subject of the neutral sentence pattern; in the same process, a pronoun that originally expressed anaphoric agreement with the shifted topic was reanalysed as a subject agreement marker (see also Lehmann 1976 on the topic-comment 'ancestors' of subject-predicate constructions in modern Indo-European languages). One might therefore assume that some languages still show a reflex of this diachronic development in that the inherent topichood of subjects is synchronically still prominent enough to prevent focus-marked constituents from occurring in subject position (cf. in this regard Hendrikse & Poulos (1980), who observe that indefinite NPs are not licensed in sentence-initial position in Xhosa). As for wh-constructions, it is well-known that a wh-phrase in a wh-question represents the focus (the new information) of the sentence (while the rest of the proposition is presupposed). A possible explanation

for (6) may therefore be sought in the semantic incompatibility of wh-phrases and topics.[5]

However, a semantic account for (6) predicts that wh-phrases are banned from Spec TP in all languages, and it is not clear how the fact that (6) is a parameterised property of Spec TP can be captured in this approach. We therefore claim instead that there is a *syntactic* explanation for why wh-subjects cannot occur in Spec TP in Zulu, which is nevertheless related to the semantic fact that wh-phrases are inherently focused. We suggest below that the focus character of wh-phrases can be morpho-syntactically implemented by assuming that they bear a [+wh]- as well as a [+focus]-feature (see Sabel 1998, 2000, 2002, 2003). On the basis of this idea, our explanation for (6) is then derived as a consequence of the analysis of the syntax of wh-questions in Zulu that we present in the following sections.

3   Wh-in-Situ, Wh-ex-Situ and Partial Wh-movement

In this section, we turn to the positions that wh-phrases in Zulu may occupy if they originate in embedded sentences. Consider the examples in (12), with wh-objects:

(12)   a.   [$_{CP}$ U-cabanga   [$_{CP}$ ukuthi uBev u-thenge   **ini**]]?
                  2ndSG-think   that   Bev1a SP1a-bought what9

            'What do you think Bev bought?'

       b.   [$_{CP}$ Y-**ini**   o-cabanga   [$_{CP}$ ukuthi uBev
                  COP-what9 RC2ndSG-think   that   Bev1a
            u-yi-thengile ___]]?
            SP1a-OC9-bought
            'What do you think Bev bought?'

       c.   [$_{CP}$ U-cabanga   [$_{CP}$ ukuthi y-**ini**   a-yi-thengile-yo
                  2ndSG-think   that   COP-what9 RC1a-OC9-bought-Rs
            uBev ___]]?
            Bev1a
            'What do you think Bev bought?'

(12a) is a direct question with wh-in-situ in an embedded clause; the wh-phrase appears in the position in which it receives its theta role. (12b) is the 'full wh-movement' variant of this sentence (see fn. 6); the wh-phrase is realised in the left periphery of the matrix clause, the sentence in which it takes scope. Importantly, (12c) shows that Zulu allows for *partial wh-movement*. In partial wh-movement constructions, the wh-phrase neither appears in situ nor in the position in which it is interpreted. In Zulu, the wh-phrase appears instead in an intermediate cleft

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[5]Independent evidence for this generalisation comes from languages such as Japanese where topics are morphologically marked with the topic-marker -*wa*. In Japanese, a wh-phrase with the topic marker obligatorily receives a contrastive (topic) interpretation (Miyagawa 1987). Similarly, examples such as (8) seem to be possible if the wh-phrase receives a contrastive (topic) reading.

position following the complementiser, but it still takes sope in the matrix [+wh]-position.[6]

Notice that, due to the restriction in (6), subject wh-phrases are also banned from embedded Spec TP positions, as shown in (13a). However, the wh-subject is again possible in VP-internal position, as is shown by the impersonal *ku*-construction in (13b):

(13) a. * [$_{CP}$ U-cabanga [$_{CP}$ ukuthi [$_{TP}$ ubani u-sebenzile [$_{vP}$ ___]]]]?
          2ndSG-think   that   who1a SP1a-worked

      b. [$_{CP}$ U-cabanga [$_{CP}$ ukuthi [$_{TP}$ ku-sebenze   [$_{P}$ bani]]]]?
          2ndSG-think   that   EXPL-worked   who1a
          'Who do you think worked?'

In constructions with more embedded sentences, the wh-phrase can appear in all intermediate cleft positions. The examples in (15), based on (14), show all possible positions which a wh-ex-situ subject can occupy in a direct question from an embedded clause. It may appear in the full wh-movement construction (15a), or in the two intermediate positions in the partial wh-constructions in (15b–c):

(14)   [$_{CP}$ U-cabanga [$_{CP}$ ukuthi ba-the   [$_{CP}$ uPeter u-sebenzile]]].
        2ndSG-think   that   3rdPL-said   Peter1a SP1a-worked
        'You think that they said Peter worked.'

(15) a. [$_{CP}$ Ng-**ubani** o-cabanga   [$_{CP}$ ukuthi ba-the   [$_{CP}$ ___
          COP-who1a RC2ndSG-think   that   3rdPL-said
          u-sebenzile]]]?
          SP1a-worked

      b. [^{CP} U-cabanga [^{CP} ukuthi ng-**ubani**   aba-the   [^{CP} ___
          2ndSG-think   that   COP-who1a RC3rdPL-said
          u-sebenzile]]]?
          Sp1a-worked

      c. [^{CP} U-cabanga [^{CP} ukuthi ba-the   [^{CP} ng-ubani   ___
          2ndSG-think   that   3rdPL-said   COP-who1a
          o-sebenzile]]]?
          RC1a-worked
          'Who do you think they said worked?'

The question is whether the distributional possibilities for wh-phrases in Zulu follow a systematic pattern from a typological point of view. Sabel (1998) shows that languages with optional wh-in-situ exhibit a correlation between *partial wh-movement* and *wh-in-situ in embedded questions* and can accordingly be divided

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[6]In §4.2 we discuss the possibility that a wh-phrase such as ini in (12b–c) has not moved from its base position in the subordinate clause (indicated by (12a)), but is merged into the matrix (12b) or intermediate clause (12c). We continue to use the terms 'full wh-movement' and 'partial wh-movement' to refer to constructions such as (12b–c), but we remain agnostic at this stage about the position from which the wh-phrase has moved.

into two groups. Optional wh-in-situ languages such as Babine-Witsuwit'en, Iraqi Arabic, and Malagasy allow for both partial wh-movement and for wh-in-situ in embedded questions (Type A languages). In contrast, optional wh-in-situ languages such as Duala and French, which do *not* allow for partial wh-movement, also do *not* allow for wh-in-situ in embedded questions (Type B languages). These properties of the latter type of languages are illustrated by the following examples from Duala, an SVO-Bantu language spoken in Cameroon. (16) shows that Duala has optional wh-in-situ:

(16) a. O   bodi **nja** moni
          you give who money

      b. **nja** o   bodi no moni?
          who you give PRT money

          'Who did you give the money to?' [Duala]

If we turn to direct questions from embedded sentences, we observe that wh-in-situ is again possible, (17a), and that wh-elements may also appear ex situ in the highest clause, where they are interpreted, (17b). However, the partial wh-construction is impossible in Duala, as illustrated in (18):

(17) a. [$_{CP1}$ o   ta   o   pula [$_{CP2}$ na Kuo a keke [$_{CP3}$ wanea
              you AUX you want   that Kuo he try   bring

          muna-o **nje**]]]
          child-his what

      b. [$_{CP1}$ **nje** o   ta   no pula [$_{CP2}$ na Kuo a keke [$_{CP3}$ wanea
              what you AUX PRT want   that Kuo he try   bring

          muna-o ___]]]?
          child-his

          'What did you want Kuo to try to bring to his child?"

(18) a. * [$_{CP1}$ o   ta   o   pula [$_{CP2}$ (na) **nje** Kuo a keke no [$_{CP3}$
                you AUX you want   that what Kuo he try   PRT

          wanea muna-o ___]]]?
          bring child-his

      b. * [$_{CP1}$ o   ta   o   pula [$_{CP2}$ (na) Kuo a keke [$_{CP3}$ **nje** wanea
                you AUX you want   that Kuo he try   what bring

          no   muna-o ___]]]?
          PRT child-his

      c. * [$_{CP1}$ o   ta   no pula [$_{CP2}$ (na) **nje** Kuo a keke [$_{CP3}$ wanea
                you AUX PRT want   that what Kuo he try   bring

          muna-o ___]]]?
          child-his

          [Duala]

(19) shows that wh-in-situ in embedded questions is impossible in Duala. Wh-ex-situ is obligatory in this context:

(19) a. * [$_{CP}$ Na si bi   [$_{CP}$ Kuo a-andi **nje**]].
          I   not know   Kuo he-buy what

    b.   [$_{CP}$ Na si bi   [$_{CP}$ **nje** Kuo a-andi no ___]].
          I   not know   what Kuo he-buy PRT

        'I don't know what Kuo bought.' [Duala] (Epée 1976:161)

Given that Zulu allows for partial wh-movement, it is predicted that, in contrast to Duala, embedded questions allow for wh-in-situ. This prediction is realised, as is shown by (20b):

(20) a. [$_{CP}$ Ngi-buze   [$_{CP}$ ukuthi y-**ini**   uPeter
          1stSG-asked   that   COP-what9 Peter1a
          a-yi-thengile-yo]].
          RC1a-OC9-bought-RS

    b.   [$_{CP}$ Ngi-buze   [$_{CP}$ ukuthi uPeter u-thenge-**ni**]].
          1stSG-asked   that   Peter1a SP1a-bought-what9

        'I asked what Peter bought.'

We conclude that Zulu fits well into the typology of optional wh-in-situ languages. Like Babine-Witsuwit'en, Iraqi Arabic and Malagasy, Zulu is a Type A language.

4   The Analysis

4.1   FocP and Feature Checking in Zulu

In this section we develop an account for the Zulu data discussed above which is based on the feature-checking mechanism of the Minimalist Program (Chomsky 1995, 2000) and the analysis of wh-constructions proposed in Sabel (1998, 2000, 2002, 2003). The central idea of this analysis is that wh-phrases do not only check [+wh]-features, but also [+focus]-features.[7] Whereas a [+wh]-feature is always located in the position where the wh-phrase takes its scope (i.e. in C^0), a [+focus]-feature may occur in C^0, but also in Foc^0, the head of a focus phrase FocP, in some languages. For reasons outlined in Sabel's work mentioned above, we assume that the position of wh-words is universally determined by properties of the [+wh]- and the [+focus]-features and that typological variation with respect to wh-questions in the languages of the world is determined by two parameters: (i) which of the two features ([+wh] or [+focus]) is strong and hence triggers wh-movement in a

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[7]Note that the idea to analyse wh-movement as an instance of focus-movement is sometimes traced back to the (semantic) fact that a wh-element is inherently a focus (see §2). For example, in a sentence such as *I wonder what Susan said*, the wh-word is the ('information') focus of the question/clause *what Susan said* since the wh-phrase designates what is not presupposed as known (see Sabel 1998, 2000 for references).

language, and (ii) which specifier (Spec CP or Spec FocP) serves as the position in which a strong [+focus]-feature is checked in a language. Furthermore, the possibility of having both wh-ex-situ and wh-in-situ in a language can be explained by the assumption that the strong feature which triggers wh-movement is optionally selected for the numeration.

The way parameter (i) is set in a language can be determined by taking a look at the properties of embedded questions, where C^0 carries a [+wh]-feature due to the selectional properties of the matrix verb. Following Sabel (1998), we assume that if a language has a strong [+wh]-feature, this feature is obligatorily selected by the matrix verb in an embedded question, even if the strong [+wh]-feature is otherwise optional. Therefore, if a language has wh-in-situ in embedded questions (= Type A language), this means that the [+wh]-feature is always weak in this language (and hence need not be checked). In contrast, if wh-in-situ is not possible in embedded questions (as in Type B languages), then it follows that the [+wh]-feature is strong and therefore requires a wh-phrase in Spec CP in order to be checked. As we saw above, Zulu allows for wh in situ in embedded questions. Hence, the [+wh]-feature in Zulu is weak. Since Zulu exhibits wh-ex-situ as well, this alternative must be triggered by an optionally realised strong [+focus]-feature. In contrast, in Type B languages such as Duala, wh-ex-situ is triggered by a strong [+wh]-feature, which is obligatory in selected and optional in unselected contexts.

With respect to (ii), we assume that the strong [+focus]-feature is realised in Foc^0 in Zulu and that FocP is generated above VP/vP and below TP (cf. Ndayiragije 1999). If the strong [+focus]-feature is selected, a wh-phrase has to be realised in Spec FocP in order to check this feature. Otherwise we get wh-in-situ. Evidence for the claim that ex situ wh-phrases in Zulu are not in Spec CP is provided by the word order in embedded questions, (20a), and by partial wh-movement constructions, (12c), (15b), which show that the wh-phrases occur in a position following the complementiser. In addition, note that focused constituents in cleft-constructions and ex situ wh-phrases occupy the same position (compare (21) and (12b–c)), and hence cannot co-occur, (22):

(21)   a.   [Y-**indoda** o-cabanga   [ukuthi uBev   u-yi-bonile ___]].
            COP-man9 RC2ndSG-think   that   Bev1a SP1a-OC9-saw

            'It was the man who you think that Bev saw.'

       b.   [U-cabanga [ukuthi y-**indoda**   uBev a-yi-bonile-yo ___]].
            2ndSG-think   that   COP-man9 Bev RC1a-OC9-saw-RS

            'You think that it was the man that Bev saw.'

(22)   a.   * [U-cabanga ukuthi [y-**ini**   ng-**umama**   abantwana
            2ndSG-think that   COP-what9 COP-mother1a child2
            aba-m-nike   yona]]?
            RC2-OC1a-gave it9

            'What do you think that the children gave to MOTHER?'

b. * [U-cabanga ukuthi [y-**imali**   ng-**ubani**   abantwana
2ndSG-think that   COP-money9 COP-who1a child2
aba-m-nike   yona]]?
RC2-OC1a-gave it9

'To whom do you think the children gave the MONEY?'

As was shown in §2, ex situ wh-phrases in Zulu, like the focused constituents in (22), obligatorily combine with a copula verb *ng-* or *y-* (or ∅ see fn. 3) which is prefixed to the wh-element. The fact that these copula affixes are genuine verbs is illustrated by nominal predicate constructions such as (23), in which the subject agreement marker is prefixed to the copula:

(23) a.   UThandi u-**ng**-umfazi
Thandi1a SP1a-COP-woman1

'Thandi is a woman.'

b.   UThemba u-**y**-indoda
Themba1a SP1a-COP-man9

'Themba is a man.'

At first sight, one might be led to believe that copula allomorphy in Zulu is phonologically conditioned, since nouns whose initial vowel is *i-* take the copula *y-*, whereas the majority of all other nouns take *ng-*. However, on closer inspection, it turns out that the choice of the copula prefix cannot be determined by the phonological properties of the head-noun, but must take its noun class into account:

(24) a. class 1:   a. ngumfana, 'it is a boy'   b. *lumfana   c. *yumfana
b. class 14:   a. ngukudla, 'it is food'   b. *lukudla   c. *yukudla
c. class 11:   a. (*)ngudonga, 'it is a wall' b. ludonga   c. yudonga

As (24) shows, nouns of class 11 start in the vowel *u-*. Interestingly, the copula for class 11 nouns is usually *l-* or *y-* (depending on the dialect of the speaker); for many speakers, the copula *ng-* is not possible with nouns in this noun class. Importantly, other nouns with the prevowel *u-*, such as those of class 1 or 14 in (24a–b), never permit copulas *l-* or *y-*. This means that the choice of the copula cannot be treated as a mere phonological phenomenon, but is determined via grammatical agreement between the noun class (gender) features of the noun and the copular verb. We assume that this agreement is established by specifier-head agreement in the focus phrase FocP.

On the basis of these considerations, we arrive at the following analysis of (the relevant aspect of) wh-ex-situ cleft constructions such as (25) in Zulu (*v*P is ignored in (26), and we postpone the discussion of the structural relation between the wh-phrase and the following clause to §4.2):

(25)   Ng-**ubani**   o-m-bona-yo?
COP-who1a RC2ndSG-OC1a-see-RS

'Whom did you see?' ('It is who that you see?')

(26)
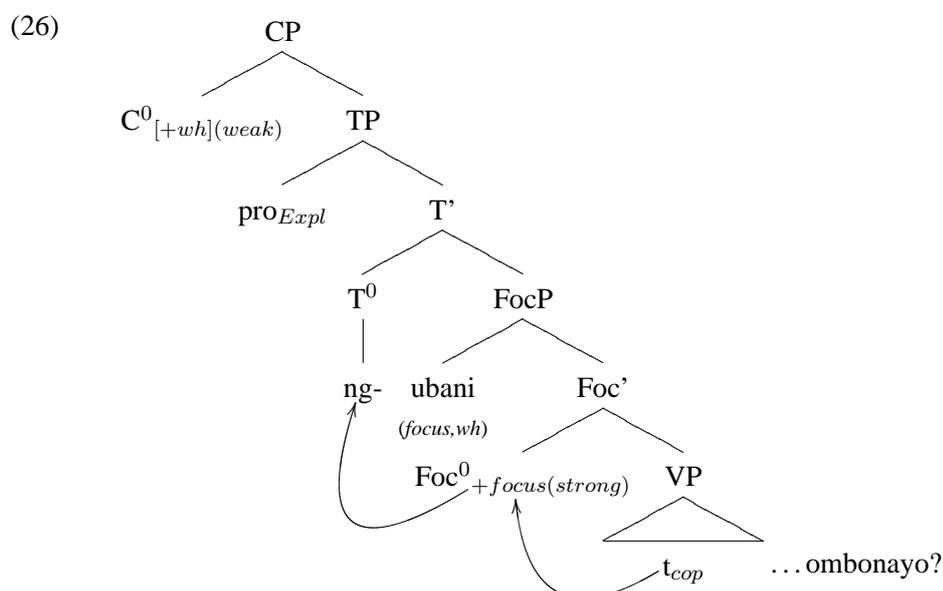
In wh-ex-situ constructions such as (25) and (26), where a strong [+focus]-feature is realised, the wh-phrase is located in Spec FocP where it checks the [+focus]-feature in Foc^0. The strong [+focus]-feature selects the copula (VP) in (26). We assume that Zulu, a language with a 'rich' verbal inflection paradigm, has V-to-T movement for both finite full verbs and auxiliaries. Therefore, the prefixal copular verb moves first from V^0 to Foc^0, where agreement between the copula and the wh-phrase in Spec FocP is established, and then further to T^0, where it precedes the wh-phrase in Spec FocP and can be prefixed to this phrase at PF.

The C^0-head in (26) contains a [+interpretable] [+wh]-feature (in terms of Chomsky's 1995 analysis) which, as pointed out above, establishes the scope of the wh-phrase in (26). Since the [+wh]-feature in Zulu is weak, it does not need to be checked by an overt wh-phrase in Spec CP. Instead, the non-local relation between the [+wh]-feature of the wh-phrase in Spec FocP and the weak [+wh]-feature in C^0 is licensed via unselective binding at LF.[8]

(26) also shows that Spec TP in the cleft construction is filled with an expletive pro-subject in Zulu. This assumption is well-motivated, because Zulu has all the properties that are characteristic of a null subject language. First, we have already seen in a number of examples that Zulu freely allows for (argumental) pro drop (see e.g. (1), (12), (14), (20)). Second, example (15a) in §3 above shows subject extraction across a complementiser and hence demonstrates that in Zulu, this kind of movement does not induce that-t-effects. Finally, Zulu (optionally) allows for subject-inversion, as was already illustrated by the impersonal *ku*-construction in

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[8]Unselective binding refers to the idea that a wh-phrase which is not in a local Spec-Head relation with a [+wh]-feature in C^0 is nevertheless licensed if it is bound (coindexed and c-commanded) by the [+wh] C^0 scopal position in which the wh-phrase is interpreted. The idea that licensing of wh-phrases may be achieved non-locally via binding through a [+wh] head is expressed in Chomsky (1995:291), among others.

(5b) and (13b) above. Since Zulu behaves in all relevant respects like a null subject language, it is plausible to assume that Zulu realises expletive null subjects in the cleft construction. In contrast, a language such as English, which does not allow for null expletives, requires the overt expletive *it* in Spec TP in a cleft wh-construction:

(27) $_{CP}$ [$_{TP}$ *It* [$_{T}$ *was* [$_{FocP}$ *the book* t$_v$$'$ [$_{VP}$ t$_v$ [$_{CP}$ *that Peter bought*]]]]].

Following standard assumptions, we assume that the null expletive in (26) is merged into Spec TP to check T^0's EPP-feature, whereas argumental pro would be merged in Spec *v*P.

The structure in (26) also accounts for the word order found with wh-ex-situ in embedded questions. The CP in (26) would represent the embedded question, and the [+wh]-feature on the C-head would be the result of the lexical properties of the matrix verb, which selects the [+wh]-feature on the embedded C-head.

Partial wh-movement constructions are also derived in this way. The only difference is that here, a weak [+wh]-feature is realised in the C-head of the matrix clause; the matrix verb selects a CP like (26), but with a [-wh]-C-head. However, the strong [+focus]-feature is optionally realised on the embedded Foc^0-head, and consequently, the wh-phrase appears in a copula construction in the embedded clause.

Finally, if both the [+wh]-feature and the [+focus]-feature are weak, then we derive wh-in-situ constructions, since neither of these two features needs to be checked by a wh-phrase in a local specifier position. Both features can be checked via unselective binding, and the wh-phrase remains in situ. Note that, in contrast to (26), a weak [+focus]-feature does not select the copula (VP).

A welcome implication of our analysis is that it allows us to derive the *Wh-in-Spec-TP restriction, discussed in §2. Since FocP is automatically activated in all wh-questions, Spec FocP intervenes between the base position of wh-phrases (in P or VP depending on the argument structure of the verb) and Spec TP. If a wh-phrase were to undergo A-movement from its theta-position inside *v*P/VP to Spec TP, it would have to move to Spec FocP first in order to check the weak [+focus]-feature associated with the Foc-head.[9] But since Spec FocP is an A-bar position, further movement to Spec TP would result in *Improper Movement*, an illegitimate operation movement from an A- to an A-bar- and then again to an A-position is ruled out. The only way to save a construction with a wh-subject and a weak [+focus]-feature is to leave the subject in *v*P/VP and insert an expletive in Spec TP to check the EPP-feature (= the impersonal *ku*-construction, (5b)). If the [+focus]-feature is strong, no problem of Improper Movement arises. A copula is selected as part of the numeration, and we derive a structure like (26), in which the final landing site of the wh-element is Spec FocP.

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[9]Note that this possibility only arises when the [+focus]-feature in Foc^0 is weak, since a strong [+focus]-feature automatically selects a copula (VP) and gives rise to the cleft construction. Notice further that even though the [+focus]-feature in Foc^0 is weak, the wh-phrase would have to stop in Spec FocP on its way to Spec TP in order to check this feature as a free rider (see Sabel 2000:440 for discussion).

4.2   The Cleft Construction

In the analysis presented so far we have left open the relation between the clefted wh-phrase and the following sentence. In principle, there are two possible analyses. The traditional view assumes that the sentence which follows the focused phrase in wh-cleft and non-wh-cleft constructions is a relative clause. According to this view, a sentence such as (25) above is monoclausal; the wh-phrase and the relative clause form one constituent (in bold in (28)) which is merged into the structure as the complement of the copula and moves to Spec FocP to check the [+focus]-feature in the Foc-head:[10]

(28) $_{CP}$ [$_{TP}$ pro [$_T$ [$_T$ *ng-* $_v$ [$_{FocP}$ [$_{DP}$ **ubanii** [$_{CP}$ **O**P$_i$ [$_{TP}$ **pro** [***ombonayo***
        t$_i$]]]]$_j$ [$_{Foc'}$ t$_v$' [$_{VP}$ t$_v$ t$_j$]]]]]]

A strong reason to adopt an analysis like (28) for the Zulu wh-ex-situ construc-tions is that the verb in the sentence immediately following the clefted wh-phrase has relative clause morphology (see §2). Furthermore, the object wh-phrase in the cleft construction in (25) is represented in the embedded sentence by a resumptive object clitic pronoun which is attached to the verb stem. Bantu languages usually do not permit object markers to co-occur with object wh-phrases or focused ob-jects; notice that the verb in wh-object-in situ constructions in Zulu may not bear an object clitic. In contrast, object pronouns may occur in Bantu object relative clauses, a possibility which is attributed to the topic character of the moved rela-tive operator (see e.g. Bresnan & Mchombo 1987).

   The alternative analysis treats the whole sentence following the wh-phrase in the wh-cleft as a complement of the copular verb. According to this analysis, a sentence such as (25) is biclausal; the wh-phrase is merged inside the complement clause (in the position where it receives its theta role) and moves to the matrix Spec FocP to check the strong [+focus]-feature in Foc^0. This idea can be further specified by assuming that the complement clause also includes a FocP, and that the wh-phrase moves to the matrix Spec FocP in a successive-cyclic fashion, i.e. via the embedded Spec FocP, presumably also in order to check a strong [+focus]-feature in the embedded Foc-head:[11]

(29) $_{CP}$ [$_{TP}$ pro [$_{T'}$ [$_T$ *ng-* $_v$ [$_{FocP}$ [*ubani*]$_i$ [$_{Foc'}$ t$_v$' [$_{VP}$ t$_v$ [$_{CP}$ [$_{TP}$ **pro** [$_{T'}$ [$_T$

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[10]This view is also compatible with the analysis proposed in Kayne (1994), according to which the head noun of a relative clause construction (= the wh-phrase in examples such as (28)) has moved from a position inside the relative clause to a relative clause-initial specifier position:

(1)   a.   the claim that John made

      b. $_{DP1}$ the [$_{CP}$ [$_{DP2}$ claim $_i$ [$_{C'}$ that [$_{IP}$ John made t$_i$]]]]

DP1 checks the strong [+focus]-feature in Foc^0.

[11]This implies that a strong [+focus]-feature in a matrix clause immediately triggers the realisa-tion of a similar feature on every embedded Foc-head. See Sabel (2000) for details of this feature percolation process. Furthermore, note that Chomsky (2000) assumes that an additional EPP-feature is located in the C-system, which would force the wh-phrase also to move through intermediate Spec CP(s). We have not represented this feature and the respective movement in (29).

$$\textbf{\textit{ombonayo}}]_v \ [_{FocP} \ \textbf{t}_i \text{'} \ [_{Foc'} \ \textbf{t}_v \text{'} \ [_{VP} \ \textbf{t}_v \ \textbf{t}_i \ ] \ ]] \ ]]] \ ]]]]]]$$

In order to defend an analysis such as (29), one would have to address the fact that the verb in the complement clause in (29) is marked with the same morphology as a verb in a relative clause. However, notice that the morphological properties of the verb in cleft constructions such as (29) do not yet show convincingly that the sentence following the wh-phrase is in fact a relative clause. It is possible that the particular morphological marking observed in clefts and relative clauses reflects a specific syntactic movement operation which takes place in both relative clauses and complement clauses. What has been classified as relative clause morphology (relative concord and relativising suffix) could also be some kind of wh-agreement which is triggered by the movement of an operator in relative clauses, but also by movement of a wh-phrase in a wh-construction.

Furthermore, the occurrence of object clitics in object wh-constructions such as (25) may possibly be explained by the assumption that these alleged pronouns are in fact object agreement markers. As is argued in Woolford (2000) for KiRimi, object agreement in Bantu is triggered if the object moves out of the VP (object shift); the contrast between wh-in-situ (no object marker) and wh-ex-situ (obligatory object marker) in Zulu can perhaps be explained along these lines.

Lack of space prevents us from offering a thorough discussion and comparison of both analyses. The behavior of wh-constructions in island configurations may provide a key to decide between the analyses in (28) and (29). However, on the basis of the comments made in this section, we conclude this article by pointing out that our analysis of wh-ex-situ and wh-in-situ constructions in Zulu is compatible with both analyses in (28)–(29). As a general conclusion, we note that Zulu fits well into the typological class of optional wh-movement languages such as Babine-Witsuwit'en, Iraqi Arabic and Malagasy, which all construct wh-ex-situ as a result of checking a strong [+focus]-feature. Zulu provides further evidence for the claim that typological variation with respect to wh-questions in the languages of the world is determined by two parameters: (i) which of the two features ([+wh] or [+focus]) triggers wh-movement in a language, and (ii) which specifier (Spec CP or Spec FocP) serves as the position in which a strong [+focus]-feature would be checked in a language.

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Pronouns and procedural meaning:
The relevance of spaghetti code and paranoid delusion[*]

David Cram   Paul Hedley

This paper concerns the treatment of pronouns in current pragmatic theory. It has two objectives, one immediate and one larger. The immediate one is to explore the idea that pronouns have a 'procedural' dimension in their interpretation, assuming a distinction between procedural and conceptual meaning as drawn within Relevance Theory. The category of procedural meaning was initially introduced to deal with expressions which do not form part of the propositional meaning of an utterance, but serve as a procedural signal as to how the content is to be pragmatically processed. Consider, for example, the ironic reading of the sentence:

(1)   Well, you've been a real help!

The pragmatic particle 'well' is here functioning as an overt marker of how the semantic content of the rest of the sentence is to be understood. What it indicates is that the speaker intends the hearer to understand that she hasn't been a help at all, and that is pretty much all it seems to mean. By contrast with pragmatic particles of this sort, pronouns clearly aren't purely procedural, since they occupy NP slots, contribute to reference, and are thus centrally involved in the propositional content of the utterance. But we wish to elaborate the view that an element of procedural meaning plays an integral and essential role in the interpretation of pronouns, and argue that the proper understanding of the procedural/conceptual distinction hinges centrally on the pronoun case.

The second objective of the paper is to attempt a broader assessment of this approach to the pragmatics of pronoun interpretation by finding analogues outside our immediate theoretical framework. There is always the worry that a key theoretical construct such as the procedural/conceptual distinction as formulated here in terms of Relevance Theory will turn out to be 'theory-internal', in the sense that its formulation is a by-product of the way the model happens to be configured. In order to test the robustness of our relevance-theoretic approach to the interpretation of pronouns, we invite consideration of analogues to procedural processing in two adjacent disciplines.

The first of these is a comparison between pronouns in natural language and GOTO statements in computer programming instructions to 'jump' to a section elsewhere in a program so as to perform a packaged sub-routine, handle an exception, or the like. The introduction of GOTO statements was a milestone in the development of computer programming, but they proved to be hugely controversial: some (following Dijkstra 1968) have held that GOTO statements should be disallowed altogether, so as to avoid 'spaghetti code'; others have argued that GOTO statements are not in themselves dangerous, but can be implemented more safely and elegantly by means of structured programming. However, neither computational nor linguistic theorists seem to have explored the parallel between GOTO statements in computer programming and pronouns in natural languages, both of which target an antecedent in a procedural way. We suggest that this parallel could allow pragmatic theorists to tap computing expertise which would feed into the current debate about the procedural/conceptual distinction.

Our second parallel concerns the over-interpretation of utterances by those suffering from (non-bizarre) paranoid delusion. There has for some years been a mutually useful exchange between pragmatic theorists and clinical practitioners in the understanding of Asperger syndrome and mild autism: it turns out that the range of cognitive deficits involved (failure to appreciate ironic utterances and to track other implicational effects) constitute a natural class as predicted by Relevance Theory (Happé 1993, 1994). We argue here that the linguistic symptoms of paranoid delusion can be viewed as the pragmatic complement of those manifested in Asperger syndrome. Where subjects with Asperger syndrome fail to pick up conversational implicatures and can thus be said to have a pragmatic deficit, subjects with paranoid delusion have pragmatic over-shoot in the sense that they do not stop the search for intended meaning when they reach the locally optimal interpretation of an utterance, but recursively pursue an ulterior intention and meaning. We have dubbed such cases of over-interpretation 'praeter-relevance' on the assumption that the pragmatic mechanisms involved (although improperly checked or balanced) are in principle no different from those posited by Relevance Theory for the non-paranoid jumps to intended meaning (of the sort, for example, that Asperger subjects fail to make). If this assumption is correct, then an account of what is happening in paranoid over-interpretation will, we predict, be a testing ground for ideas about the balance between procedural and conceptual meaning.

Each of these analogues calls up a vast literature of its own, and the present authors cannot claim technical expertise in either domain. But we believe that the parallels are sufficiently intriguing from a theoretical linguistic point of view to warrant our drawing attention to them. We invite further discussion, and would welcome expert correction of our assumptions, data and arguments.

1   Pronouns and Procedural Meaning

The theoretical notion of procedural meaning has played a central role in the recent development of Relevance Theory, and, for that very reason, is understood in slightly different ways by different theorists. A convenient reference point is the definition of procedural semantics given by Carston:

> 'The category of linguistic semantics whose domain is those linguistic forms whose encoded meaning does not contribute a concept but rather provides a constraint on, or indication of, the way some aspect of pragmatic inference should proceed. (Carston 2002:379)'

Examples of expressions which are taken as falling within the domain of procedural semantics, other than the sort of pragmatic particle illustrated above, include illocutionary force indicators, presupposition triggers, focusing devices, parentheticals, interjections, and so on. Such expressions 'contribute to other aspects of speaker's meaning than explicit truth-conditional content, or encode aspects of meaning that are not plausibly analysed in conceptual terms' (Sperber and Wilson 2005:26). On this basis, Relevance Theory assumes a two-stage process of utterance interpretation, which has been characterised as follows:

> 'a modular decoding phase is seen as providing input to a central inferential phase in which a linguistically encoded logical form is contextually enriched and used to construct a hypothesis about the speakers informative intention. (Wilson and Sperber 1993:1) '

What is important here is the fundamentally different natures of the two types of operation, the first involving mental representations or concepts of some kind, and the second the computational manipulation of those representations. In the former case, the process is recognisable as relating to the sorts of meanings encoded by things like descriptions – what we normally think of as concepts in more cognitive terms. It is difficult to see how this sort of meaning could have a direct effect on an interpretative phase involving computational manipulation, a position which leads to Blakemore's (1987) conclusion that there are two sorts of meaning, relating respectively to these two separate phases. Computational meaning must, however, look rather different from what we are used to in conceptual terms, taking the form of constraints on the manipulations (inferences) to be performed in the process of utterance interpretation. Such meanings are what Blakemore terms procedures, or procedural meanings.

At one level, this argument would seem to boil down to the relative importance of the decoding and inference phases in utterance interpretation. If the latter only involves cosmetic tweaking of interpretation in context through implicature (as Grice would have it), the pure coding account has little to concern itself with: decoding would presumably result in a reasonably complete meaning ('what is said') in need of little inferential aid. If however, the inferential phase is rather

more significant (as claimed by many, relevance theorists among them), and is not only crucial in the derivation of implicit content, but also has a role to play in what is explicit (and even in the meanings of individual words in a sentence), the situation looks rather different. One of the clear advances of the relevance theoretic position on these questions is the growing appreciation of how widespread and deep-rooted semantic underspecification, and thus pragmatic inference, seems to be in human language. Even sentences which seem fully propositional exhibit a significant amount of context sensitivity. Consider the interpretation of the adjectives in the following two sentences:

(2)   Beth is depressed.

(3)   It is green.

In (2), does Beth's depression amount to 'feeling a bit low', is it clinical and being treated by drug therapy, or is it somewhere in between? Such considerations are surely an important part of the interpretation of the sentence, and of what the speaker intended to communicate by uttering that sentence. In (3), the interpretation of the adjective could cover an extremely wide area: for one thing, the shade of green intended will depend on what the pronoun refers to (a fruit, a book, a car, mould, etc.); furthermore, the interpretation will depend on whether all of the visible parts of the object are green or just some of them (a green apple), and whether that green applies to the inside as well as the outside of it (a green book). Carston calls this position 'The Underdeterminacy Thesis' (2002:19), pointing out that (to use Grice's terminology for a moment) linguistically encoded meaning underdetermines not only 'what is meant' by a speaker in a particular context, (a point few would dispute), but also 'what is said'.[1] Under this view, a decoding phase provides a basic linguistic form (perhaps some sort of logical form), which is then pragmatically enriched to form a fully fleshed-out proposition, and further inferential processing is needed to compute implicit parts of what the hearer is constructing as 'the speaker's meaning'. Under this view, linguistic meaning resembles speaker's meaning in the same way as a skeleton resembles a body (Sperber and Wilson 2005: Conclusion).

At a very basic level, the semantic distinction between conceptual and procedural meaning reflects a particular cognitive opposition – that between representation and computation. Utterance interpretation should arguably be described in terms of the formation and manipulation of conceptual representations. Now, we also want to claim that thoughts are structured strings of concepts (i.e. mental representations), and that human beings can typically be conscious of their thoughts. Native speakers of a particular language generally do have quite particular ideas

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[1]Note that Relevance Theory does not have the same conception of what is said, but uses a different notion, that of explicature: 'an ostensively communicated assumption which is inferentially developed from one of the incomplete conceptual representations (logical forms) encoded by the utterance' (Carston 2002:377). We use Grice's more intuitively accessible notion purely to make the point here.

about the meanings of lexical items in their language, or the concepts invoked by them. However, there are undoubtedly computational processes that occur in the mind to which human beings do not seem to have such direct access: for example, the phonological computations which result in phonetic form, or the syntactic computations used to construct an individual logical form. Blakemore's account predicts that the 'meanings' of linguistic items which encode procedural information should likewise be very difficult to 'bring to consciousness', and this is what we seem to find. It is unclear how speakers conceive of items like discourse connectives, and pinning down the 'meanings' of such words is notoriously difficult.

> 'If 'now' or 'well' encodes a proposition, why can it not be brought to consciousness? Why is it so hard for non-native speakers of German to grasp the meaning of 'ja' and 'doch'? [...] The procedural account suggests an answer to these questions. Conceptual representations can be brought to consciousness: procedures cannot. We have direct access neither to grammatical computations nor to the inferential computations used in comprehension. (Wilson & Sperber 1993:16) '

This linking of linguistic intuition and introspection is elaborated by Blakemore (2002) in connection with the notion of paraphrasing. Even when a concept is definitionally controversial, it seems that speakers can nevertheless 'bring it to consciousness' (Blakemore 2002:82). We are able to determine the comparative applicability of two different expressions in encoding a particular concept without having to perform extensive substitutability tests, which would, in theory, need to be undertaken for all contexts. However, such a state of affairs does not obtain for procedural items like 'but' or 'nevertheless'. Questioning native speakers on such expressions standardly results in an example of typical usage of the expression in question, or a description, rather than the sort of simple paraphrase produced for clearly conceptual expressions.[2]

One of the fundamental questions relating to procedural meaning is what sorts of elements can encode such meanings, and whether there is a natural class of elements that might fall into this category. Blakemore's initial conception of the conceptual/procedural divide was as a cognitive parallel to the truth conditional versus non-truth conditional distinction, the upshot of which would be the relegation of all procedural effects to the side of implicature. Much work has been done on procedural encoding from this perspective, taking items like non truth-conditional discourse connectives as paradigm cases,[3] but further research has shown that the two distinctions seem to cross-cut each other at a fundamental level, and that the actual situation must be rather more complex (Wilson & Sperber 1993, Blakemore

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[2]Compare items like 'cat', 'sleep', and 'slowly' with words like 'however', 'so' and sentence initial 'well'.

[3]For analyses of 'but' as encoding an instruction to process the clause that follows as contradicting and eliminating an assumption, see Blakemore (1987, 2002) and Iten (2000); for a slightly revised view see Hall (2004).

2002). There is growing evidence that there are, on the one hand, linguistic expressions which look as if they encode procedures of some sort, but which also contribute to truth conditional content, and, on the other hand, elements which seem to encode concepts and yet do not contribute to the truth conditional level. As Blakemore herself admits, her initial notions of procedural encoding 'must be broadened to include constraints on all aspects of inferential processing' (2002:4).

Pronouns are here a key example. The notion of pronominals as encoding procedures is widespread in the relevance theoretic literature, but relatively little explored, unlike the cases of discourse connectives and discourse particles. Few would disagree that an account of pronominals is fundamental to any theory of linguistic interpretation, a fact that has both been noted and addressed by many syntacticians,[4] and systematically neglected by many semanticists.[5] Standard accounts often talk of the application of processes of disambiguation and reference assignment, without detailing quite what these processes might involve, and the role of the semantics of the individual elements themselves. Consideration of the nature of procedural semantics in these terms seems to illuminate pronominals as natural exponents of this sort of meaning: pronoun meanings are notoriously difficult to describe, and those meanings do not appear in the proposition expressed at all – it is the referents of those pronouns that do that. Adopting such a procedural view of pronominal semantics has an interesting side-effect which predicts that whatever meaning a pronoun has does not appear on the surface: such meanings are of a different sort, their computational nature making them unsuitable for such surface expression. What is also clear is that pragmatic inference must have a significant role to play, given the importance of contextual entities (whether linguistic or otherwise) as referents for pronouns. We would argue that while research on discourse particles has revealed much about the nature or procedural meaning, it is an account of how pronominals work which should be considered as key to an understanding of procedural meaning in general. While they may not be purely procedural, as many discourse markers are argued to be, pronouns are procedural in a central, fundamental way, and the fact that they (and their interpretations) are often more complex should not distract us from this insight.

The significant question raised by much of this discussion is whether this proposed meaning split is demonstrable outside the relevance theoretic paradigm, or is purely a theory-internal construct with no external motivation. If there is evidence for some sort of natural class of procedural elements from outside the framework of Relevance Theory, as we suggest here that there is, the motivation for the existence of such a meaning split would look distinctly stronger.

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[4]Notably Chomsky and the detail of binding theory in GB syntax, where anaphors and pronominals form a central part of the theory.

[5]With some notable exceptions, such as Kaplan (1989) and his distinction between content and character: a striking forerunner of the relevance-theoretic opposition of conceptual and procedural meaning.

2   Pronouns and Programming

One potential analogue for the type of procedural processing that is involved in pronoun interpretation for human speakers is the programming language statement known as GOTO. Essentially, what this statement does is instruct the computer to jump to another point in the program, which is specified by a label or line number. Statements in a program are executed in a strictly linear fashion, in the order in which they are written, known in computer science as sequential flow of control.[6] This has its limitations for many sorts of computational operations. To take the simple example of an iteration, a language that only had the facility for such sequential execution would need to duplicate the code for the individual single operation the required number of times, resulting in very inefficient, long programs. If however, code can be reused with a means of instructing the computer to return to the beginning of a particular section of code and execute it again, or otherwise allow movement within the program, this is much preferable, and not only in terms of the program size. Most programming languages include such control flow statements of one sort or another that allow such management of variation in the sequential ordering of statements, typically of three sorts:

  (i)   statements may only be obeyed under certain conditions (choice)

 (ii)   statements may be obeyed repeatedly (loops)

(iii)   a group of remote statements may be obeyed (subroutines)

From the perspective of the linguist, rather than the programmer, what we seem to have here are statements which tell the computer running the program what to do with a particular section of code, what sort of process it needs to perform on it. What is also striking is that control flow statements are fundamentally different in nature from the rest of the body of the program: they do not enter into the computations themselves, but merely instruct the machine to follow a certain pattern or operation. (Such statements are typically reserved words, meaning that they cannot be used as variable names or labels.) We seem to have a clear analogue for linguistic procedural meaning here, both in the role that such elements play in directing the computations to be performed, and in their nature, being underlyingly different in an important manner from other elements.

The function of GOTO statements as an exponent of the manipulation of control flow provides an instructive parallel for the function of pronouns in natural language: both can be seen as instructions to jump to an antecedent.[7] A pronoun

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[6]See Bergin & Gibson (1996) for an overview of the history and development of programming languages; on the place of control flow and structured programming, see Knuth (1974, 2003).

[7]GOTO is one of a larger category of statements which trigger a jump to an antecedent. In using GOTO as the focus of the discussion regarding pronominals here, we mean GOTO + return, or the equivalent of a subroutine call (implemented directly as GOSUB in Basic, for example). We touch on other uses of GOTO later.

needs to be linked to some other element in the discourse context (whether that element is linguistic or not) by some process of back-tracking[8] in order to establish its reference. Similarly, one use of GOTO statements is to establish the reference or value of a variable by tracking to another location in the program. As we shall see, the nature of these variables is crucial here, and not only the processes involved in the instantiation of those variables (or pronouns), but in their scope and longevity as well. The idea of a subroutine is particularly interesting in this context: a subroutine, or section of code written for a specific purpose[9] (possibly even one external to the 'body' of the program) can be invoked from within the program by using a GOTO statement, the iterative use of which results in more compact, and possibly more efficient eventual programs. This process has remarkably close resemblances to pronoun resolution – what a hearer needs to do in order to understand a pronoun is precisely to perform the subroutine for pronominal interpretation that is outside the main process of interpreting the sentence, and return the output of that subroutine as the referent of the pronoun. The computational expression then acts as a complex variable, combined with an instruction on how it should be processed. In this sense we have an analogue for the linguistic pronoun in programming languages.

If the kinds of uses of GOTO just described are indeed a robust analogue for the role of the pronoun in human language, the question arises whether we can in the same way model the nature of the process of pronoun interpretation in human speakers. The claim that processes of reference resolution require pragmatic processing is an uncontroversial one, but one which points up an immediate problem with trying to model such processes in a simply computational way using GOTO statements. While human speakers have access to a wealth of general knowledge about the world, as well as a keen awareness of context and environment (both linguistic and physical), and given its scope and its fundamentally dynamic nature, such information is extremely difficult to provide for a computer. In addition, we would be obliged in such a model to leave aside the whole area of imputation of intentions and processes of 'mind-reading' (cf. Sperber 1994, Sperber & Wilson 2002), which many argue are key to utterance interpretation in general.

For the programmer trying to get to grips with problems of reference assignment, this leads to a situation in which claims of psychological plausibility (if there were any to begin with) are discarded in the search for a robust way of simulating the right sort of output: what many would call a hack. From the perspective of the linguist, the question is the relative significance of that hack, which is not a straightforward thing to assess. If, for example, we accept some version of Carston's view of underdeterminacy, we instantly hit problems with the computational model, as

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[8]We will not consider the controversial cases of cataphora (forward anaphora) here.

[9]Given the significant variation amongst different programming languages in terms of labels and conventions for referring to such operations, the concept of a 'subroutine' being considered here is one that is contained within the 'text' of a program, but may fall outside the 'FINISH' or 'END' instruction, being invoked through the use of GOTO statements. What some languages call a 'function' is slightly different, and we will consider this concept below.

such implementations need to be fully explicit in order to be executable. Having said that, computational models can still be instructive, as by trying to simulate outputs we stand to deepen our understanding of the potential mechanisms that might underlie them.

The conclusion that we should draw from all this is that if GOTO statements are of potential value as a formal analogue, they ought to be problematic in certain ways in the more general context of normal programming. This is indeed what we find. Given their power as a programming tool, and the fact that GOTO addition does not require restructuring of code, widespread and unconstrained use of GOTO statements has led to programmers producing inconsistent, incomplete and generally unmaintainable programs. Such code is often known as spaghetti, given its convoluted and tangled control structure. Programmers generally try to avoid GOTO statements at all costs (Dijkstra 1968), replacing their widespread use with structured, procedural programming and the use of structured flow commands (such as loops and if-then statements). Dijkstra argues that unrestricted GOTO statements should be abolished from higher-level languages because they complicate the task of analysing and verifying the correctness of programs (particularly those involving loops).[10] Theorists such as Donald Knuth (1974) take a more nuanced view, adopting the position that it is not GOTO statements *per se* that hold these dangers, but rather their uninformed misuse (or overuse). He argues that certain sorts of operation (such as exception handling) are actually most efficiently handled by the restricted, controlled use of GOTO statements. Yet again, this situation seems to chime with human linguistic experience of pronominals: overuse results in linguistic spaghetti in terms of reference resolution.

Even in a context which contains a limited number of possible referents, a succession of pronominal uses results in something that, while it is possible given enough time to work out to whom each pronoun refers, is all but uninterpretable in real time speech.[11] Take the passage from the Book of Genesis, chapter 32:vv. 24–27, in the King James' Version:

> '[24] And Jacob was left alone; and there wrestled a man with him until the breaking of the day. [25] And when he saw that he prevailed not against him, he touched the hollow of his thigh; and the hollow of Jacob's thigh was out of joint, as he wrestled with him. [26] And he said, Let me go, for the day breaketh. And he said, I will not let thee go, except thou bless me. [27] And he said unto him, What is thy

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[10]Note here that Dijkstra's criticism is not based on interpretation of computer code by its intended recipient (a computer), but on human users and maintainers of that code. If the program is 'correct' a proliferation of GOTOs and a tangled control structure is no interpretative problem for the machine itself. This also underlines the notion of intention in language interpretation, a notion which seems critical for humans, but has no analogue in computing. As has been suggested by some, producing spaghetti code is something that everybody else does – it is code generated by minds that think slightly differently from our own.

[11]This is an interesting parallel for the situation Dijkstra describes as the opposition between code that is executable by a machine, but convoluted and unmaintainable by a human reader.

name? and he said, Jacob. '

Having been introduced to Jacob and the man in v.24, there follow three instances of 'he' and two of 'him' before we are told that it was Jacob's thigh that was out of joint. The first two 'he's' are clearly intended to refer one to each individual, but either combination is possible in the context. Similarly, the two 'he's' in v.26 could be the same individual (either in fact), or different ones either way round. If we were to apply Dijkstra's anti GOTO dictum here, each use of the pronominal would be replaced by a full NP, resulting not only in repetition, but also in inefficiency. Disallowing the use of such powerful and efficient devices as pronouns in a communicative situation seems a step too far, and languages characteristically make use of such linguistic units. What we seem to need is some version of Knuth's nuanced view:[12] some mechanism to assess and control the formation of such spaghetti, whether we are talking about pronominals or instances of GOTO.

There is an underlying issue concerning variables in the context of multiple GOTOs: in computer programming variables both persist and have scope. In the case of subroutines, as described above, variables are difficult to constrain, and once assigned will persist over computations. Human language faces a similar problem with the indexical nature of pronominals, and the facility for the same variable to take on different values dependent on the context. At one level, this comes down to questions of locality with which linguists will be familiar, and which programmers also need to address. It is here that computing appeals to the function call (as distinct from the subroutine), which one might see as the logical extension of structured programming and sophisticated control flow statements – modularity. Here, questions of locality and variable scope are forced by the use of separate sub-programs that are called from within the executing code, and therefore allowing some of the variability needed, significantly reducing the probability of spaghetti code being produced.[13] The larger question is the conclusions we should draw from this ongoing comparison. Does this notion of structured programming including function calls constitute a computational programming 'hack' in order to force constraints on variables and control flow,or should we take these measures as being evidence that modularity (whether on a macro or micro scale) is necessary for such constraint in the wider context of language more generally?

In short, what we seem to be seeing are more global effects of pragmatic processing playing out in the field of reference resolution, whose sub-processes need oversight and constraint. In this context then, it seems to make sense to consider such linguistic pragmatic processing as constraining the formation of referential spaghetti, ensuring that the point is not reached where interpretation (by a human speaker) becomes difficult. The problem of untangling spaghetti (of whatever

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[12]The New International Version tries to tread this middle ground, replacing some pronouns with NPs or proper names, whilst leaving others.

[13]Languages like Perl for example have a concept of 'MYx', where the variable x is restricted to the immediate domain, and does not persist outside it.

sort) does not then arise, a point of view which seems to mesh well with considerations of efficiency within a general paradigm based on notions of cognitive effort and effect. In fact, the picture that appears from all of this is one on which it is considerations of relevance that are being mimicked by these programming ideas of structure and modularity. It is those generalised, cognitive principles which constrain processes of reference assignment, and for which an analogue would presumably be needed to account computationally for Knuth's nuanced view of GOTO inclusion. On the wider issue of generalised modularity, Relevance Theory does not claim the existence of a pragmatics module within the language abilities of the brain. Rather it suggests a model whereby such general utterance interpretation is performed by a dedicated understanding module within the central cognitive framework of mind-reading, one use of which relates to utterance interpretation (Sperber & Wilson 2002).

3   Pronouns and Praeter-Relevance

We turn now from a computational analogue to a cognitive one. There is a vast clinical literature dealing with aspects of language pathology that are relevant to pragmatic issues.[14] But it is indicative that a recent textbook should use the term 'pragmatic deficits' as a cover term when surveying a range of clinical groups of various kinds, despite having pointed out the complications involved in the word 'deficit' a page or two earlier (Cummings 2005:261). The paradigm case of pragmatic deficit that has recently been brought to the attention of linguists arose from the investigation of the linguistic behaviour of individuals with autism and Asperger syndrome.[15] The evidence seems to suggest that there is a striking match between a configuration of symptoms emerging from clinical diagnosis and a set of behaviours that constitute a natural class of phenomena established on quite independent grounds from the viewpoint of pragmatic theory. Thus in a paper published in the early 1990s, Francesca Happé summarised the evidence that individuals with Asperger syndrome typically 'fail to get' a range of intended meanings involving implicatures, sarcasm, metaphor, jokes and the like, and argued that this was, in the words of her sub-title, 'a test of Relevance Theory', which would predict that these phenomena would fall out *en bloc* (Happé 1993). While some aspects of Happé's findings have been called into question, notably a supposed difference between the interpretation of similes and metaphor which the theory arguably predicts (Langdon et al. 2002:82–86), the larger implications of such clinical evidence for pragmatic theory have been widely recognised. Further evidence from a range of cases involving neurolinguistic impairment provide patterns of linguistic behav-

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[14]See Crystal & Varley (1998) and Sabbagh (1999) for broad overviews, and Bishop (1997) on developmental aspects. For a summary of findings which are of immediate pertinence for Relevance Theory see Cummings (2003:chapter 9) and Wilson (2005).

[15]On autism and Asperger syndrome see Happé (1994) and Baron-Cohen (1995). For accessible and sympathetic accounts of these conditions, see Happé (1991), and Sacks (1995).

iour which likewise appear to match the type of deficit that pragmatic theory would predict.

What we would like to focus on, however, is the polar complement to such cases of pragmatic deficit, namely cases of paranoid delusion (and more specifically, non-bizarre paranoid delusion), where an individual overshoots rather than undershoots in the interpretation of an utterance.[16] In cases of pragmatic deficit, as represented by autism and Asperger syndrome, an individual will systematically fail to get the appropriate intended reading of an ironic utterance. In cases of paranoid interpretation, by contrast, an individual will indeed first arrive at an intended ironic reading, but typically will not stop there: an ulterior intention will be suspected and a further level of implicated meaning will be constructed. We should like to propose the term 'praeter-relevance' as a linguistic (rather than a clinical) identifier for such cases of pragmatic overshoot, on the hypothesis that the overshoot is guided by the same pragmatic principles as apply to the interpretation of utterances elsewhere.

In the history of European psychiatry, the labels 'paranoia' and 'paranoid delusion' have been at times amongst the most hotly debated and controversial terms.[17] This is because, in a psychiatric setting, the analysis of the relevant behavioural symptoms is embedded in a larger clinical context involving higher-level diagnostic categories. In its hey-day in the later nineteenth century, 'paranoia' was taken to subsume a wide range of mental disorders which are now otherwise differentiated, and as a consequence paranoia was vastly over-diagnosed. In the twentieth century the pendulum swung the other way, with paranoia falling into disfavour as a diagnostic term, in competition with categories such as schizophrenia. This evolving reanalysis can be followed in the various editions of the diagnostic manual of the American Psychiatric Association. In early editions, paranoia was excluded as a separate diagnostic category, but the fourth (2000) and subsequent editions saw the treatment of paranoid delusion as a configuration which could be considered separately and independently from schizophrenia.[18]

For present purposes, we wish here to distinguish between *diagnostic categories*, which belong properly in the clinical and psychiatric domain, and *behavioural symptoms*, for which adequate descriptions can be given in strictly linguistic

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[16]Reber & Reber define the term 'delusional (paranoid) disorder' as follows: 'An umbrella term for the various forms of paranoid disorder characterised primarily by one or more persistent, non-bizarre delusions with a paranoid flavor. Apart from the delusions and their ramifications, the individual's behaviour is not abnormal in any pronounced fashion. The term is used only when there is no evidence of any other mental disorder' (2001:184–5); cf. Gregory (2004:688–689). For discussion, see Andreasen (1979), Garety & Hemsley (1994), Kendler (1995) and Munro (1998, 2000). Sims (1991) provides a useful collection of papers from an interdisciplinary symposium on the topic.

[17]See the comprehensive surveys by Lewis (1970) and by Dowbiggin (2001), and the brief overview in Gelder et al. (2001:385–388).

[18]American Psychiatric Association (2000:323–328; section 291.1); cf. the definition of 'delusional disorder' by the World Health Organization (1993:70; section F22.0). For discussion, see First & Tasman (2004).

terms.[19]   Since historical distance aids this perspective, we start out with a de-
scription of pragmatic overshoot which predates many of the controversies just
mentioned.   In the seventeenth-century, the term 'melancholy' served as a gen-
eral cover-term for mental disorders of a wide variety of sorts. In Robert Burton's
Anatomy of Melancholy (first published in 1621) we find the following character-
isation of paranoid delusion, which those who have had contact with such cases
will instantly recognise. In a section on 'symptoms in the minde' Burton says:

> ' If they speak in jest, he takes it in good earnest. If they be not
> saluted, invited, consulted with, called to counsel, &c. or that any
> respect, small complement, or ceremony be omitted, they think them-
> selves neglected and contemned; for a time that tortures them. If two
> talk together, discourse, whisper, jest, or tell a tale in general, he thinks
> presently they mean him, applyes all to himself, *de se putat omni dici*.
> Or if they talk with him, he is ready to misconstrue every word they
> speak, and interpret it to the worst.[20] '

Two aspects of this description are worthy of highlighting. Firstly, the symp-
toms typically involve a misreading of the type of speech act which an utterance
represents, such as mistaking a joke as a serious comment. Secondly, when such
an individual hears others talking, he (or she) assumes that what they are saying
applies to himself – he thinks everyone is talking about him. In psychiatric terms,
Burton's 'melancholic individuals' typically have a (false) perception of being per-
secuted. In purely communicative terms, however, the mechanism involved reveals
itself as a misconstrual of deictic or topic relevance. The two parts of Burton's
characterisation can thus be linked in pragmatic terms.

A cluster of delusional symptoms strikingly similar to those described by Bur-
ton were analysed in detail by Jean Etienne Dominique Esquirol in the early nine-
teenth century, under the diagnostic label of 'intellectual monomania'.   This is
clearly cognate with the sort of topic-misconstrual identified by Burton, and is seen
by Esquirol as 'driving' other misconstruals and misunderstandings. Monomania
is described as follows:

> '[T]he intellectual disorder is confined to a single object, or a limited
> number of objects. The patients seize upon a false principle, which
> they pursue without deviating from logical reasonings, and from which
> they deduce legitimate consequences, which modify their affections,
> and the acts of their will. Aside from this partial delirium, they think,
> reason and act like other men. (Esquirol 1965 [1845[1]]:320) '

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[19]On the distinction between symptomatic versus diagnostic labels from a clinical point of view,
see Gelder et al. (2001:381): 'If we recognise a symptom as paranoid, this is not making a diagnosis,
but is a preliminary to doing so.'

[20]See Part 1, Sect. 3, Memb. 1., Subs. 2, '*Symptoms of the Mind*', quoted here from the slightly
expanded version in the 1676 edition. Burton's account does not appear to have been noted in the
clinical literature on the history of delusional disorders, but see Jackson (1986) on the place of his
work in the history of ideas about melancholia and depression.

What is distinctive in Esquirol's account is his emphasis on how surprisingly rational the mechanisms are that appear to malfunctioning and consequently how *partial* this type of mania is: 'Partial delirium is a phenomenon so remarkable, that the more we observe it, the more we are astonished, that a man who feels, reasons and acts like the rest of the world, should feel, reason and act no more like other men, upon a single point' (Esquirol, 1965 [1845[1]]:321). Monomania as a diagnostic category was subsequently dismantled by other nineteenth-century French psychiatrists (Dowbiggin 1991).

In Germany during this period, 'paranoia' came to replace the traditional term 'Verrücktheit' ('madness') as a cover-term for a wide variety of psychoses.[21] While in the nineteen century paranoia had been over-diagnosed, in the twentieth century it came to be under-diagnosed. The category was almost entirely given up by British psychiatrists (Lewis 1970:10), although, paradoxically, the term 'paranoia' passed from the lexicon of psychiatry into the everyday language, and was embraced by cultural and literary critics.[22] The primary reason for this decline was undoubtedly a reaction against the previous overuse of the term, and its entanglement in higher level discussions of psychiatric configurations. Freud's classic analysis of paranoia in connection with the case of Dr. Daniel Paul Schreber (Freud 1925 [1911[1]]) is a paradigm example where the term to be extrapolated is firmly embedded in a larger matrix of concepts.[23]

The purpose of this historical approach has been to track a configuration of symptoms which is robustly identifiable across changing psychiatric theories, even though submerged in much of the twentieth-century literature. We would like to suggest that paranoid delusion, and more specifically non-bizarre paranoid delusion,[24] can be usefully characterised in terms of linguistic pragmatics, and in this framework emerges as a converse of configurations such as Asperger syndrome. As noted above, where those with Asperger syndrome simply fail to pick up conversational implicatures and the like, those with paranoid delusion do not stop the search for intended meaning when they reach the locally optimal interpretation of an utterance: they continue to pursue an ulterior intention and meaning. There

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[21]In the sixth edition of his widely-used textbook of psychiatry, Emil Kraepelin defined paranoia as: 'a chronic progressive psychosis [...] characterised by the gradual development of a stable progressive system of delusions, without marked mental deterioration, clouding of consciousness or involvement of the coherence of thought.' (cited in Dowbiggin 2000:44). Cf. Kraepelin: lecture XV 'Paranoia, or progressive systematical insanity' (1968 [1904]:140–150).

[22]On paranoia as a cultural phenomenon characteristic of postmodernist malaise see Farrell (1996) and Trotter (2001).

[23]The case would amply reward a nuanced analysis from the perspective of Relevance Theory. It might also be noted, although tangential to our immediate purposes, that Freud's analysis (1991 [1904[1]]), of the linguistic 'slip' or parapraxis, which by definition expresses more than the speaker consciously intends to convey, raises intriguing questions about 'intended meaning' and 'mind-reading' within current pragmatic theory (Cram, forthcoming). The distinction between what is 'shown' versus what is 'communicated' by an utterance (Wharton 2003) might provide a useful framework here.

[24]I.e. those involving situations that occur in real life, as distinct from fantastical ones, a criterion which distinguishes *paranoia* from *paraphrenia*.

is, however, a major problem for those academically concerned with the topic. As Dowbiggin has pointed out: 'there is little "market" for paranoia, since classically paranoid people rarely seek psychiatric help in the first place' (Dowbiggin 2000:66). Paranoid people perceive themselves to be sane, and indeed a salient characteristic of their behaviour, as Esquirol and others have emphasised, is it is strikingly rational, one might say unexceptionably so. A consequential problem for the non-clinical academic is that gathering and reporting evidence is fraught with ethical difficulties.

A central area for further investigation lies in the complex of deixis, reference, and associated questions of category identity, concerning which anecdotal evidence must here suffice.[25] Our observations concern an individual who is convinced that he is under surveillance, and that those watching him are driving past his house at regular intervals during the day. He also, of his own accord, volunteers the information that to avoid raising his suspicions, those watching him regularly change the colour and make of the car, and also make regular changes of personnel. These changes do not fool him, since, as he cogently argues, that is what they would do, wouldn't they? This position raises philosophical questions about 'wrong' belief systems and their falsifiability.[26] But for the theoretical linguist, what it immediately brings to mind is Ferdinand de Saussure's analogy between the linguistic sign and the 8.45 Geneva-to-Paris express, which retains its identity despite comprehensive changes to its rolling stock, personnel and passengers (Saussure 1983:107). Saussure's point is that the identity of the linguistic sign is a matter of 'form' rather than 'substance', but the analogy equally well illustrates the pragmatic principles operating in the identification and tracking of referents. The cognitive mechanisms involved in the identification of the multiple cars supposedly observing the paranoid subject is 'non-bizarre' in precisely the sense that the pragmatic principles are no different from those which underpin deixis and reference in everyday situations, such as identifying the 8.45 Geneva-to-Paris express.[27]

In current pragmatic terms, our broad hypothesis is as follows. In cases where individuals with non-bizarre paranoid delusion are tracking referents, they are following a strategy parallel to the comprehension procedure posited by Relevance Theory:

Relevance-theoretic comprehension procedure

(a) Follow a path of least effort in computing cognitive effect. Consider interpretations (disambiguations, contextual assumptions,

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[25]For a clinical definition of 'delusion of reference', see the entry in Reber & Reber (2001): 'a delusional conviction that ordinary events, objects, or behaviours of others have an unusual or peculiar meaning specifically for oneself'.

[26]For philosophical discussion of paranoid delusions as 'wrong beliefs', see Berrios (1991), Berrios & Porter (1995), Stone & Young (1997), Bynum et al. (2004), Gillet (2004).

[27]From a pragmatic point of view, the paranoid mis-identification just illustrated is the converse of the mis-identification involved in Capgras syndrome, where an individual is convinced that their family members have been replaced by replicas. On Capgras syndrome, see Ellis (1994, 1998).

implicatures, etc.) in order of accessibility.

(b) Stop when your expectation of relevance is satisfied.

(Wilson 2005:1140)

In exceptional cases, an individual overshoots at stage (b), or applies the strategy recursively, a situation for which we propose the cover term 'praeter-relevance'. This is exemplified by the range of behaviours identified by Burton under 'symptoms in the minde', those described by Esquirol under 'monomania' and those subsumed by the current psychiatric category of 'delusion of reference', defined as 'a delusional conviction that ordinary events, objects, or behaviours of others have an unusual or peculiar meaning specifically for oneself' (Reber & Reber 2001). It is of central importance for pragmatics that these cases cannot be characterised purely in terms of an individual's self-preoccupation.[28] In our paradigm case, where a deluded individual is entertaining the proposition 'They are watching me', the preoccupation with first-person relevance has a consequential effect on reference-tracking with the third-person pronoun 'they'.

4   Conclusion

In a recent publication, the following plea was made for linguists to look to evidence from aphasia in the course of their theoretical investigations of the distinction between conceptual and procedural processing:[29]

> 'There is [...] scope for more tangible, empirical evidence to support the distinction [between conceptual and procedural meaning], if not the status of individual expressions. Such evidence may be forthcoming from the study of aphasias, processing and acquisition, and is most likely to be procured by methods employed by cognitive science, such as various scanning techniques. For, if the distinction between conceptual and procedural meaning exists, one would expect it to have implications for the way in which processing is done. For instance, it seems possible that, in aphasias, expressions with procedural meaning pattern with grammatical features, rather than with conceptual expressions, so that people with non-fluent aphasias might retain the use of conceptual but not procedural expressions. (Iten 2005:74) '

In this paper we have proposed that cases of praeter-relevance, as just defined, are a specific area where evidence concerning the nature of procedural meaning can

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[28]There is however evidence that aspects of schizophrenia may be characterised in terms of failure of first-person deixis, Crow (2000, 2004) and Stamenov (2003).

[29]Cf. Langdon et al. (2002:79). 'Few studies have directly investigated the co-occurrence of theory-of-mind deficits and pragmatic deficits, or explored in any depth the patterns of relationships between poor mind-reading and poor pragmatics with the same groups of individuals.'

be gathered. In the longer run, we suggest that such evidence might usefully complement previous insights derived from the investigation of autism and Asperger syndrome.

We do not however anticipate that this evidence will, in itself, provide a simple account of procedural meaning. Although we assume that pragmatic 'mind reading', is a domain-specific modular system rather than a central, reflective one, we also assume that it is not a unitary process, but may be broken down into a set of specialised sub-modular abilities (Wilson 2005:1136). Evidence from elsewhere indicates that there are several orders of mind-reading abilities, such as the ability to recognise 'faux pas' (Baron-Cohen et al. 1999) and to distinguish lies from jokes (Winner et al. 1998), with which cases of praeter-relevance have a clear affinity.[30] It may be that a better understanding of procedural meaning will emerge from a combination of the two analogues outlined in this paper: praeter-relevance on the one hand, and the avoidance of spaghetti code on the other.[31]

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[30]Other evidence relevant to procedural meaning derives from the discussion of 'pragmatic intrusion', cf. Huang, forthcoming, chapter 7.

[31]For an exploration of this avenue, see Hedley (forthcoming) and Hedley (in preparation).

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