

Case Agreement in Ancient Greek: implications for a theory of covert elements

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1. Introduction

Case agreement in Ancient Greek¹ has attracted a small but varied set of treatments in the generative tradition (Andrews 1971, Lecarme 1978, Quicoli 1982). In this literature the problems were framed and solved in transformational frameworks. In the present paper we wish to consider the data from the point of view of the problems they pose for a theory of case assignment and phonologically empty elements in a modern, declarative framework – Word Grammar (WG)(Hudson 1990). We present an analysis of empty elements which exploits a feature unique to WG, the separation of existence propositions from propositions dealing with other properties; and we contrast it with earlier WG analyses in which these ‘empty’ elements are simply absent and with Chomskyan analyses in terms of PRO which is present but covert – a subtle but important difference. The proposed analysis is similar in some respects to the one proposed by Pollard and Sag (1994) for HPSG, though they are rather different in spirit.

2. The data

We confine our attention to infinitival constructions. The infinitive in Ancient Greek is not inflected for person, number or case and hence, when predicate adjectives and predicate nominals appear as complements of infinitives, it is necessary to account for the case of these elements. One purpose of this discussion is to show that traditional grammars are right to explain the case of predicates in terms of agreement with the subject, but this analysis works most naturally if we also assume some kind of ‘null’ subject for some infinitives. The examples that support the null subject have accusative case, and are discussed in 2.1; there are well-known exceptions which are traditionally described in terms of ‘attraction’ and which are discussed in 2.2.

2.1 Accusative subjects

Traditional grammars of Greek state that the subject of an infinitive takes the accusative case. Examples are usually given of the accusative plus infinitive construction as in the following:

- (1) ekéleuon autoùs poreúesthai
they-ordered them(acc) to-proceed
‘they ordered that they should proceed’ (Smyth 1956: 260, X. A. 4.2.1)
- (2) phe:sì toùs ándras apeltheîn
s/he-says the(acc) men(acc) to-go-away
‘s/he says that the men went away’ (Goodwin 1930: 196)

A partial syntactic analysis of (2) is shown in Figure 1. In this analysis the infinitive is a dependent (object) of the main verb, and it has a dependent (subject) which bears accusative case. We assume a standard analysis in which the definite determiner is a head with respect to a ‘determiner phrase’.

¹ By Ancient Greek we mean the Greek of early epic poetry (‘Homeric Greek’) down to Attic prose of the 5th and 4th centuries B.C.E.

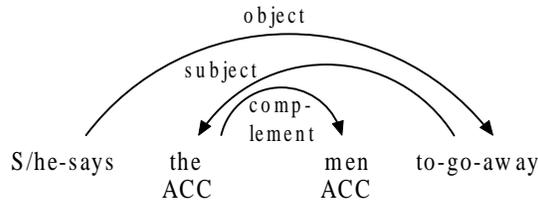


Figure 1

Since the subject is accusative, elements (predicate nouns and adjectives) which agree with it are accusative (in contrast with the nominative case found when the subject is nominative) :

- (3) a Kléarkhos phugàs ê:n
 Clearchus(nom) exile(nom) was (contrast *phugada*, 'exile(acc)')
 'Clearchus was an exile.' (X. A. 1.1.9)
- b nomízo: gàr humâ:s emoì ênai kaì patrída kaì philous
 I-think for you(acc) me(dat) to-be and fatherland(acc) and friends(acc)
 'for I think you are to me both fatherland and friends' (X. A. 1.3.6)

The agreement of a predicative with the subject can be conveniently diagrammed as in Figure 2. (In words, whatever a verb's subject and predicate may be, their case must be the same.)

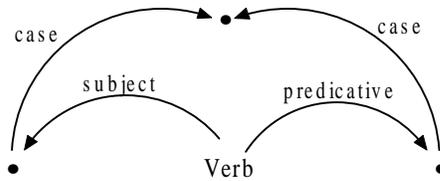


Figure 2

However, note that the predicative may be accusative even when the accusative subject is itself absent:

- (4) philánthro:pon ênai deî
 humane(acc) to-be must
 '(one) must be humane' (I. 2.15)
- (5) oud' ára po:s ê:n en pántess' érgoisi daé:mona phô:ta genésthai
 not then in-any-way was in all works skilled(acc) man(acc) to-become
 '(one) could not then in any way become a man skilled in all works' (H. II. 23.670-71)

This can also be true even when there is a coreferential element in the higher clause:

- (6) exarkései soi túrannon genésthai
 it-will-suffice you(dat) king(acc) to-become
 'it will be enough for you to become king' (LSJ, P. Alc. 2.141.a)

- (10) hoi Aigúptioi enómizon heo:utoùs pró:tous genésthai
 the(nom) Egyptians(nom) they-thought themselves (acc) first(acc) to-be
 pánto:n anthró:po:n
 all(gen) human-beings(gen)
 ‘the Egyptians used to think they were the first of all human beings’ (Kühner & Gerth 1955: 31, Hdt. 2.2)
- (11) tô:n d’ állo:n emé phe:mi tolù propherésteron ênai
 of-those others me(acc) I-say by-far better(acc) to-be
 ‘but of those others I say I am better by far’ (H. Od. 8.221)
- (Other examples for Homeric Greek in Il. 7.198, 13.269, 20.361 (Chantraine 1953: 312).)

The emphasis need not be strong, as the following example, with unstressed clitic pronoun, shows:

- (12) kaí té mé phe:mi mákhe: Tró:essi aré:gein
 and in-fact me (acc) s/he-says battle(dat) Trojans(dat) to-help
 ‘and she says that I help the Trojans in battle’ (H. Il. 1.521)

When the infinitive is used in exclamations with an overt subject, the latter appears in the accusative:

- (13) emè tatheîn táde
me(acc) to-suffer this
 ‘That I should suffer this!’ (A. Eum. 837)

These examples with overt accusative subjects strongly support the traditional rule that infinitives have accusative subjects, so the question is how to allow this generalisation to extend to infinitives which appear to have no subject at all in order to explain the accusative cases found on predicatives in infinitival clauses.

2.2 Non-accusative subjects

Greek provides a number of interesting alternatives to the possibilities given in 2.1. These are traditionally discussed under two headings, although the process is the same in both cases:

Sehr viele der Verben, die den Infinitive zu sich nehmen, haben daneben noch ein persönliches Objekt bei sich, welches in dem Kasus steht, den das Verb erfordert... Wenn zu dem Infinitive adjektivische oder substantivische Prädikatsbestimmungen treten, so stehen dieselben entweder vermittelt einer Attraktion mit dem persönlichen Objekte in gleichem Kasus oder mit Vernachlässigung der Attraktion im Akkusative (Kühner & Gerth 1955: 24)²

Wenn aber das Subjekt des regierenden Verbs zugleich auch das Subjekt des Infinitivs ist, so wird das Subjekt des Infinitivs... weggelassen, und wenn adjektivische oder substantivische Prädikatsbestimmungen bei dem Infinitive stehen, so werden diese vermittelt der Attraktion in den Nominative gesetzt (Kühner & Gerth 1955: 29)³

² Very many of the verbs which take the infinitive also take a personal object which stands in the case that the verb requires ... If the infinitive also has an adjectival or nominal predicate, this stands in the same case as the personal object by (an) attraction, or in the absence of attraction, in the accusative.

³ However if the subject of the governing verb is at the same time the subject of the infinitive, the

In short, the predicative of an infinitive may have a case which is ‘attracted’ to that of a nominal in the higher clause, whether its object or its subject. Examples:

- (14) emoì dé ke kárdion eíe: seû aphamartouíse: khthóna dúmenai
me(dat) but would better it-be you(gen) losing(dat) earth(acc) to-go (beneath)
 ‘but for me it would be better losing you to die’ (H. Il. 6.410-11)
- (15) dokéo: he:mî:n Aigine:téo:n déesthai tòn theòn khrê:sai
 I-think us(dat) Aeginetans(gen) to-beg the(acc) god(acc) to-advise
timo:re:té:ro:n genéstha
helpers(gen) to-become
 ‘I think the god has advised us to beg the Aeginetans to become (our) helpers’
 (Hdt. 5.80)

Examples of attraction show that some infinitives do not have accusative subjects, but they do not undermine the generalisation that many do. The analysis of attraction is tangential to our present concern, but is easily accomplished via ‘structure-sharing’⁴, where the higher nominal doubles up as subject of the infinitival clause – for example, that in (15) the genitive noun ‘Aeginetans’ is not only the complement of the higher verb ‘beg’ but also subject of the lower infinitive. The proposed structure for this remarkably complicated sentence is shown in Figure 5. This analysis easily explains why the lower nominal predicate ‘helpers’ has the same case as this shared nominal, but it does not help with examples where even the higher nominal is merely implicit, as in (16).

(We give an explanation for examples of this type in Section 6.)

- (16) ethélo: dé toi é:pios eínai
 I-wish but you(dat) kind(nom) to-be
 ‘but I wish to be kind to you’ (H. Il. 8.40)

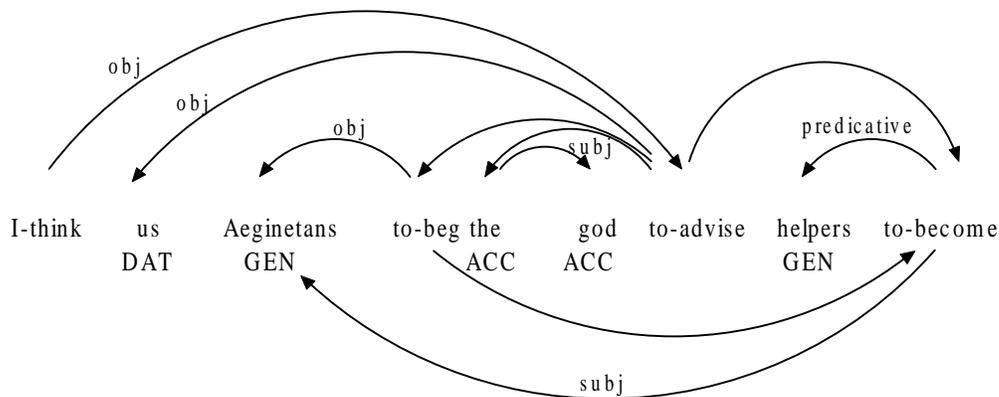


Figure 5

According to Chantraine (1953: 313) the relative frequency of attraction increased from

subject of the infinitive is omitted, and if adjectival or nominal predicates accompany the infinitive, these are put in the nominative by attraction.

⁴ This felicitous term is taken from the work of Pollard and Sag (1994), but the analysis was worked out in full detail for English infinitives (and other constructions) in Hudson (1990: 235-239).

Homer forward into Attic authors and in the Attic period it appears to have been obligatory in cases like (16), i.e. there are no examples like (8) in Attic Greek. This may have been the reason traditional grammars discuss attraction under two headings, one for nominative cases and the other for oblique cases.

3. The analysis of case agreement

First, note that morphological case, unlike gender or number, is a purely morpho-syntactic property, so it is available to words and not to their meanings. One consequence is that it is independent of reference.

(17) I saw *him* yesterday while *he* was on *his* way to the beach.

In (17) the three pronouns share a common set of semantic features (gender and number) and have a common referent, but occur respectively in the objective, subjective and possessive cases (to use the terms of traditional grammar). So far as we know, semantic co-reference between a nominal and a pronoun never triggers case-agreement in the latter, though it often requires agreement for number and gender. A further consequence is that the only possible ‘target’ for case agreement is a word (or other syntactic element); this rules out a semantic account of case agreement, however attractive such an account might be for number and gender.

Thus, faced with examples such as (18=6), where an infinitive has an accusative predicative but no overt subject, we cannot explain the predicative’s case merely by postulating a subject argument in the semantic structure without a supporting syntactic subject.

(18) *exarkései soi túrannon genésthai*
it-will-suffice you(dat) king(acc) to-become
‘it will be enough for you to become king’ (LSJ, P. Alc. 2.141.a)

The argument X in the semantic structure ‘X becoming a king’ cannot by itself carry accusative case; there must also be some kind of accusative subject nominal in the syntactic structure. Nor does a control analysis help, because the controlling nominal is the pronoun *óíé*, ‘to you’, which is dative; as expected, its case has nothing to do with that of coreferential nominals.

The analysis seems to show that a syntactic subject must be present in order to account for the accusative case seen on the predicate nominal. We accept this conclusion, though somewhat reluctantly because it conflicts with the stress on concreteness which we consider an important principle of Word Grammar. We are sceptical about the proliferation of empty nodes in Chomskyan theories, and have always felt that the evidence for such nodes rested heavily on theory-internal assumptions which we did not share. In contrast, the evidence from case agreement strikes us as very persuasive, so we now believe that syntactic structure may contain some ‘null’ elements which are not audible or visible, such as a case-bearing subject in Ancient Greek infinitival clauses. (For a fuller statement of this argument and conclusion, see Hudson, forthcoming.)

In the rest of this paper we explore the notion ‘null element’ within the theoretical framework of Word Grammar. What exactly does it mean to say that an element is ‘null’ in a cognitive theory of language which maximizes the similarities between language and other kinds of cognition? Having introduced the relevant ideas we shall contrast our view of null elements with the more familiar ideas about elements such as PRO and *pro*, as well as with other proposals from the WG and HPSG traditions.

4. Fact and fiction in cognition and in language

One of the rather obvious facts about everyday knowledge is that we know things about entities which we know not to exist. For example, we know that Father Christmas brings presents, wears a red coat and has a beard; but we also know that he doesn't exist. How can we know the characteristics of a non-existent object? The answer must be that 'existence' is somehow separable from other kinds of characteristic. However there is a serious danger of an internal contradiction because it is also clear that the concept of Father Christmas does exist, complete with the links to beards, red coats and presents, even for those of us who know he does not exist. How can this contradiction be avoided?

One possible answer follows from a basic assumption of Word Grammar: that tokens and types are distinct concepts, each with a separate representation in the mind (Hudson 1984:24, 1990:31-2). Tokens exist in the realm of ongoing experience, while types exist in permanent knowledge; in other words, very roughly speaking tokens are represented in working memory and types (mainly) in long-term memory. It makes no difference whether the types are individuals (such as Father Christmas or Tony Blair) or general categories (e.g. Person or British Prime Minister), because in either case the characteristics of the token need not exactly match those of the type. For example, if Tony Blair is wearing a false moustache, we notice the discrepancy between the token (this particular bit of our experience) and the type (our memory of Tony Blair's normal appearance); and similarly we can notice discrepancies between a very tall person and the height expected of a typical person. In both cases, this is possible only because we have distinct representations for the token and the type : 'Tony Blair now' versus 'Tony Blair'.

Similarly for language we must distinguish tokens and types by assigning them distinct names (or distinct nodes in a network analysis). This may seem obvious, but it is not normal practice in linguistics; for example, if the input word is *cat*, we give it the same label as the stored word-type. In Word Grammar the distinction is made clear by the notation which uses 'word *n*' for the word token and CAT (or whatever) for the stored word type; the connection between the two is established by an 'isa' link which classifies the token as an example of the type. Once again one of the benefits of this distinction is to allow the analysis to accommodate mismatches between the tokens and types – e.g. we (both as linguists and as language-users) can recognise that *yellow* is a mis-spelt version of *yellow*; so word 5 (say) is spelt *yellow*, *yellow* is spelt *yellow*, but word 5 is an example of *yellow*. Normal practice is to classify the input by saying simply that it **is** the word *yellow*, but this ignores the mis-spelling. The type-token distinction can be made in WG diagrams, as in Figure 6. The tokens are shown as 'w1' (for 'word 1') and so on, and are linked to their respective types by 'isa' links. The main point of the example is the possibility of distinguishing the characteristics of token 'w5' from that of its type *yellow*.

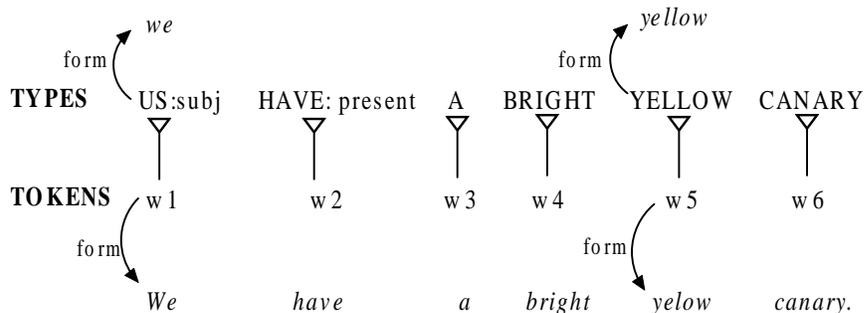


Figure 6

Suppose, then, that we distinguish types from tokens. Suppose, further, that experience defines ‘reality’ for us, so that everything we experience comes, so to speak, with the tag ‘real’ – or, in attribute-value terminology, ‘real?:yes’⁵. This attribute provides the foundation for our theory of reality in cognition. Wherever the distinction between fact and fiction is relevant, it can be made by the value for ‘real?’, which in turn tells us whether or not to expect the concept concerned to have tokens in our experience. For Tony Blair the value is ‘yes’, but for Father Christmas it is ‘no’, so if we think we have just seen a token of Tony Blair, we believe it; but a token of Father Christmas requires reclassification (e.g. as someone masquerading as Father Christmas). In short, ‘real?: yes’ unifies with experience, and ‘real?: no’ does not. As we have already suggested, this contrast applies not only to what we have already experienced but also to our expectations. It is important because it allows us to suppress normal expectations such as the default set of body-parts; so if we know that someone has lost a leg we can flag this leg in our long-term memory as ‘real?:no’, and this will prevent us from looking for a token of it in future encounters.

When applied to language, this same system allows us to distinguish ‘real’ units, which do have tokens, from ‘unreal’ ones, which do not, and in particular to modify default expectations. In the case of infinitives, what distinguishes those with overt subjects from those without is simply the value for ‘real?’ attributed to the expected subject word. To simplify, suppose that no infinitive ever has an overt subject. This can be expressed by showing that the word which is the infinitive’s subject has the attribute ‘real?:no’, which prevents it from having an overt subject but still requires it to have a subject – a virtual subject with virtual properties but no existence. Apart from reality, this is an ordinary subject – a particular noun, with the usual range of semantic, syntactic and morphological properties that can be derived (by inheritance) from the grammar. And crucially, it has a **case** which may trigger case agreement in a predicate.

The relevant part of the grammar is sketched in Figure 7. According to this diagram,

- " every verb has a subject, which by default is real,
- " an infinitive is a sub-type of (‘isa’) verb (the ‘is a’ or ‘isa’ relation is shown in WG by a small triangle resting on the super-category),
- " but exceptionally an infinitive has a subject which is not real,
- " so a token (‘word 3’) of Infinitive also has an unreal subject,
- " so, exceptionally, no token of this subject is expected – it remains merely virtual,
- " but this subject must be a noun, with all the usual characteristics of nouns.

In short, if a word token is an infinitive, its subject will be an unreal noun – a noun (or pronoun) which is normal in every respect except that it has no token.

⁵ Although not relevant to the linguistic analysis, note that a full grammar of a culture would need to allow for instances of ‘fake’ tokens. Thus at Christmas time, thousands of tokens of Father Christmas may be found all over the world, but none of them is the real Father Christmas, all are actors.

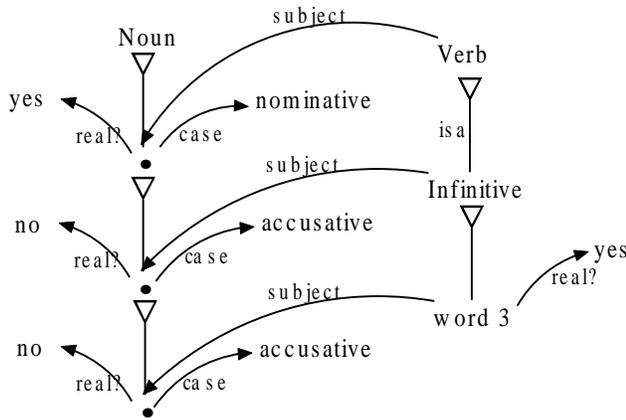


Figure 7

The proposed analysis of unexpressed accusative subjects generates structures like the one shown in Figure 8, which is an expansion of the one in Figure 4 for example (8). The main change to the structure is that the infinitive has a subject which is an example of the Ancient Greek accusative pronoun meaning ‘them’, but which is also unreal so we do not expect a token of it in the sentence. For clarity we distinguish tokens (‘w’ for ‘word’) from types, so that the unreal subject has no corresponding token. Note that a parser will encounter only the tokens, not the types (see Section 6. for further discussion of this point).

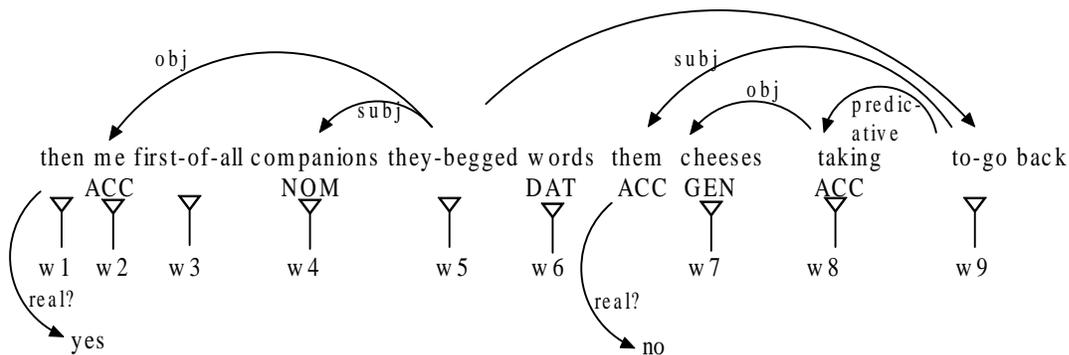


Figure 8

To summarise, then, we are proposing an attribute ‘real?’ which controls the way in which we map stored concepts to items of experience, as types to tokens. Any item of experience has the value ‘yes’ for this attribute, so it will only match stored concepts which have the same value. Thus if we know that infinitives have subjects whose value for ‘real?’ is ‘no’, we cannot analyse an otherwise suitable nominal as the token of an infinitive’s subject; and conversely an infinitive which has no token for its subject is well-formed. Thus the crucial consequence of this analysis is that an infinitive can have a subject for which there is no token – a virtual subject.

5. Extensions to other parts of grammar

Since the proposed system applies equally to our knowledge of Father Christmas and to the subjects of Greek infinitives, it would not be surprising if it turned out to be relevant in other parts

of grammar as well. The following list suggests a number of other areas where ‘understood’ elements can be handled in the same way.

" Null subjects of **tensed verbs** in languages which allow them (so-called ‘pro-drop languages’). Whereas English requires tensed verbs to have an overt (‘real?: yes’) subject, pro-drop languages allow it to be virtual. This is helpful in Ancient Greek, where predicatives have nominative case in tensed clauses even when the subject is virtual, and similarly a virtual subject is as likely as an overt one to ‘attract’ the predicative of a lower clause to its nominative case. A relevant example is (19=16), which we noted above as an outstanding problem for a ‘structure-sharing’ analysis of attraction. If we assume that the main verb *ethélo:*, ‘I wish’, has a nominative (but unreal) pronoun as its subject, the nominative on the lower predicative is as expected because this unreal pronoun is also the subject of the lower clause.

- (19) *ethélo: dé toi é:pios eînai*
 I-wish but you(dat) kind(nom) to-be
 ‘but I wish to be kind to you’ (H. Il. 8.40)

The subject-verb agreement on the verb is easy to explain if there is always a subject, real or unreal. Without this assumption, however, a rule of agreement does not extend easily to examples where there is no overt higher subject.

" Less common than ‘subject pro-drop’ is ‘**object pro-drop**’ as in (20):

- (20) *ou deî toîs paidotrîbais enkalêîn oud’ ekbállein ek tô:n póleo:n*
 not necessary the(dat) trainers(dat) to-accuse nor to-banish from the(gen) cities(gen)
 ‘it is not necessary to accuse the trainers nor to banish **them** from the cities’ (P.G. 460 d.)

This phenomenon, very common in Greek, is traditionally analysed under the rubric of ‘object-sharing’ and has no agreed modern analysis. Treating the ‘omitted’ object as virtual provides a natural and simple account. Note that the traditional shared object analysis would incorrectly associate dative case with the object of *ekbállo:* (normally accusative in this context).

" Subjects of **imperatives** in languages where they are usually absent, such as English. The identity of the unreal subject is very clear: it must be the pronoun *you* for second-person imperatives, and *we* for first-person plural ones. This is clear not only from the meaning but also from the choice of pronoun in the tag question:

- (21) Hurry up, will you?
 (22) Let’s go now, shall we?

Moreover, where a language offers a choice between intimate and distant second-person pronouns (such as the French pair *tu* and *vous*), the same choice applies to imperatives even though there is no overt pronoun (e.g. *Viens!* or *Venez!* for ‘Come!’). Without virtual pronouns as subject it is hard to extend the rule for choosing pronouns so that it applies to the choice of imperative forms as well; but with unreal pronouns the choice of pronoun automatically triggers the correct agreement on the verb.

" Complements of certain **definite pronouns** in English. The argument here rests on the assumption that ‘pluralia tantum’ such as *trousers* and *scales* are singular in meaning but plural in syntax; the assumption has been challenged (Wierzbicka 1988) but we still find it especially plausible for examples such as *scales* (plural) contrasting with *balance* (singular). The relevant datum is that the choice between *this* and *these* matches the syntactic number when the complement noun is overt (so *this balance* but *these scales*), but the same choice is made even when there is no overt complement:

(23) I need some scales to weigh myself on, but these (*this) are broken.

If pluralia tantum really are singular in meaning, we cannot explain this choice in terms of meaning, and the most attractive explanation is that the choice is forced in the same way as in the overt case, by the presence of an unreal example of the noun *scales* (or *trousers* or whatever). We might also consider extending this explanation to another curious fact about the demonstrative pronouns, which is that the singular form can only refer to a thing.

(24) Do you take this !(woman) to be your lawfully wedded wife?

The explanation would be that only one unreal noun is possible in the singular: the noun *thing*. If these analyses are correct, then they show that the unreal word may be a specific lexical noun rather than a general-purpose pronoun as in the earlier examples.

" Complements of certain **verbs** such as auxiliaries in English. This covers the territory of so-called 'VP deletion' but also other kinds of **anaphoric ellipsis**:

(25) I don't know whether I'm going to finish my thesis this year, but I may.

(26) I may finish my thesis this year, but I don't know for sure.

If the complement of *may* is allowed to be unreal, then *may* in (25) actually has a complement verb, whose properties are (more or less) copied from its antecedent (namely, *I finish my thesis this year*); and similarly *know* in (26) has an object which would have been *whether I'll finish my thesis this year* if it had been real. This analysis combines the flexibility of a purely semantic analysis with the ability of a syntactic analysis to accommodate syntactic detail such as extraction out of an elided complement:

(27) OK, you didn't enjoy that book, but here's one which you will.

If *will* has no syntactic complement at all, the extraction of *which* in (27) is very hard to explain; but if its complement is an unreal *enjoy*, the rest of the syntactic structure can be exactly as for *here's one which you will enjoy*⁶.

In all these examples the omitted element is redundant and easy to recover, so the option of leaving it unsaid obviously helps both the speaker and the hearer. The familiar functional pressure to minimize effort thus explains why the choice between 'real' and 'unreal' exists in the grammar. On the other hand, it does not explain why languages allow it in different places – e.g. why some languages allow tensed verbs to have a null subject while others do not. This variation must be due to different ways of resolving the conflict between this functional pressure and others which push in the opposite direction, such as the pressure to make syntactic relations reliably identifiable (whether by word order as in English or by inflectional morphology as in Greek).

6. Comparison with PRO and *pro*

The analysis that we are proposing is different from the more familiar ones which invoke null pronouns such as PRO and *pro*, and we believe that the differences are important.

" PRO and *pro* are special pronouns which combine the peculiarity of always being covert with the equally exceptional property of covering all persons, numbers and genders. The fact that they are exceptional in two such major respects should arouse suspicion. In contrast, our unreal pronouns are the ordinary pronouns – *he*, *me*, *us*, and so on – which just happen to be unreal. Even if we count this as an exceptional feature it is their only exceptional feature, in contrast with the double exceptionality of PRO and *pro*. Moreover, since PRO is by definition

⁶ We owe this point to And Rosta.

unpronounceable, recourse must be had to an otherwise unneeded principle⁷ to account for the overt accusative subjects in (9-13) assuming that the environments in which these occur are environments for PRO and not for *pro*. Our account does not suffer from this defect.

- " Our unreal words need not be pronouns, unlike PRO and *pro*. As explained in the previous section, this allows us to extend the same explanation to other kinds of unexpressed words, such as virtual common nouns acting as complement of pronoun/determiners like *this*, or virtual complements of verbs such as auxiliary verbs. In other words, our proposal subsumes null subjects under a much broader analysis which covers ellipsis in general.
- " Our unreal words are identified by the feature 'real?: no', which applies outside language (e.g. to Father Christmas) as well as inside. In contrast, the difference between PRO or *pro* and other words is specific to language, involving (presumably) the absence of a phonological entry. We assume that an explanation which involves machinery that is available independently of language is preferable to one which involves special machinery.
- " In a language like Greek in which subject and object do not have fixed positions, virtual subjects and objects need and have no position in sentence structure. This is important when modelling a human or machine parser, since it limits the work that the parser has to do: a virtual dependent has no position so no search is needed. In contrast, PRO and *pro* do have a position in sentence structure, and any position which is available for subjects or objects, is also available for them. In a language with free order for clause elements, such as Greek, this raises serious problems because (of course) the parser can assume PRO or *pro* everywhere: these invisible elements could be anywhere, so they must be everywhere and multiple but vacuous syntactic ambiguity proliferates.
- " In the standard analysis with PRO and *pro* the difference between these two is important because both abstract 'Case' and surface case are supposed to be impossible for PRO but obligatory for *pro*; this contrast is also claimed to correlate with the contrast between subjects of non-finite and finite verbs. More recently, PRO has been claimed to have a special 'null' case (Chomsky and Lasnik 1993). The empirical basis for these claims was undermined long ago (e.g. Sigurðsson 1991), and our analysis does not recognise the distinction between PRO and *pro*. Unreal pronouns all take case (or lack it) just like real ones in the language concerned.

These differences between our proposal and the PRO/*pro* system are significant, and in each case our proposal seems better.

7. Comparison with other PRO-free analyses

In this section we compare our proposal with two other approaches to null elements neither of which invokes a 'covert' element such as PRO. The first approach is in the WYSIWYG spirit of earlier versions of Word Grammar, where it was assumed that null elements were simply absent. But this assumption was only workable because of the possibility of structure-sharing. In this analysis, the missing subject is specified as (i.e. supplied by) the subject of the higher verb (see Hudson (1990: 235ff) for details). For Greek, as we indicated in Section 2., this approach is adequate for the cases traditionally described under the rubric of 'attraction', but it fails for the default situation, where the subject of the infinitive (and other elements dependent on the lower

⁷ Cf. the use of Exceptional Case Marking to account for the presence of *him* in (i).

(i) They believed *him* to be a hero.

verb) display accusative case. In this context, the only possible analysis is simply to stipulate, for the case where there is no infinitival subject, that predicates of infinitives are accusatives. But this approach fails to be explanatory: why should these elements bear accusative case rather than the general default nominative?

Moreover, this no-null-element, stipulative analysis suffers from an even graver defect: The relation 'subject' is a collecting point for a large number of different patterns in semantics and morphology as well as syntax (Keenan 1976). A verb's subject is the nominal that has the following properties (among others):

- " its referent is the 'external argument' of the verb as defined by the latter's lexical entry – for instance, with RUN/TREKHO: it is the runner, with FALL/PIPTO: it is the faller, with LIKE/PHILEO: it is the liker, and so on;
- " it typically stands before the verb;
- " it is the typical antecedent of a reflexive object of the same verb;
- " the verb agrees with it;
- " it is obligatory if the verb is tensed;
- " it is also the verb's object if the verb is passive;
- " its case (in Greek) is typically nominative.

As soon as some nominal is defined as the verb's subject, it immediately inherits all these characteristics en bloc. But in the absence of a subject there is nothing to bring them all together. For example, if *himself* is the object of *hurt* it is tied anaphorically to the hurter via the 'subject' link, but if there is no subject this link disappears. And yet the fact is that the anaphoric relations are exactly the same regardless of whether or not there is an overt subject; for example, the 'understood' subject of *hurt* in *Don't hurt yourself!* binds *yourself* in exactly the same way as the overt one in *You may hurt yourself*.

The analysis that we are proposing solves these problems by moving towards the standard view that every verb does indeed have a subject, whether or not this is overt. Similar problems face the earlier WG approach in other areas of grammar, and can be solved in the same way. In section 5 we outlined a range of phenomena that seem to call for analysis in terms of unreal words, and which WG analyses have treated in terms of dependents that are simply absent.

Another attempt to handle null subjects without invoking PRO is proposed by Pollard and Sag (1994:123-45) in the framework of HPSG. As with the early WG analysis just described, this proposal applies only where syntactic structure-sharing is not possible. They propose a structure for 'Equi' verbs such as the following for *try* (ibid: 135):

CAT | SUBCAT <NP₁, VP[*inf*, SUBCAT <NP₁>]

The infinitive's subject is the 'NP' in its 'SUBCAT' (valency) list, which would normally be 'cancelled' (satisfied) by unification with an NP outside the VP; for example, in *They worked hard* the verb needs a subject, which is provided by *they*. (In WG terms, a word's valency requirements are normally provided by its valents.) However, the lexical entry for *try* overrides this normal requirement on its complement verb: the latter, like any other verb, normally requires a subject NP, but when it combines with *try* this requirement is suspended. However, although it need not be satisfied, this valency requirement is still defined by the NP on the infinitive's valency list. This means that although the subject NP is not overt, it is part of the sentence's structure and is in other respects a normal NP, with ordinary NP properties; for example, the subscript index shows that it has the referent as the subject of *try* itself.

More directly relevant to our argument, it can carry case just like any other NP (Hennis

1989) and be the target of predicative case agreement, so Ancient Greek case-agreement would be no problem. Where there is attraction, the analysis can invoke syntactic structure-sharing, but otherwise the infinitive's subject can carry a default accusative case.

This approach is clearly very similar to ours. In both theories,

- " the infinitive's subject is an ordinary noun rather than a special pronominal (PRO or *pro*),
- " the subject's status (overt or covert) is handled by a separate mechanism from its other properties,
- " the subject is present in the verb's inherited valency even when it is not an overt dependent of the verb.

However there are also significant differences between the two proposals. So far as we can see, the HPSG machinery for distinguishing overt and covert valents does not appear to generalise beyond language; and indeed, many advocates of HPSG might argue that it should not do so. In contrast, we showed in Section 4 that our proposal does; it can explain the ‘non-occurrence’ of Father Christmas in just the same way as that of the subject of an infinitive. Whether or not the proposals differ in terms of specifically linguistic analyses remains to be seen.

8. Conclusions

The most important conclusion is that where there is strong empirical evidence for null elements, they can easily be included even in a ‘surfacist’ grammar such as WG by exploiting the difference between types and tokens, where we have introduced the feature ‘real?’ as a guide to possible mismatches between the two. This (or something like it) is generally available in cognition for distinguishing fact and fiction, so it comes ‘for free’, and it is preferable to inventing special linguistic inaudibilia such as PRO or *pro*.

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