

Gerunds without phrase structure¹

Richard Hudson

Department of Phonetics and Linguistics,

UCL,

Gower Street,

London WC1E 6BT,

UK

dick@ling.ucl.ac.uk

Abstract

English gerunds such as (*We were talking about*) *John having a sabbatical* combine the internal characteristics of a clause with the external characteristics of a noun phrase. Previous analyses have tried to recognise the mixed character of gerunds by assigning them two separate nodes, one verbal and the other nominal. However dependency analyses such as Word Grammar allow only one node per word, so they do not allow analyses of this kind. Two-node analyses are strong evidence against dependency analysis so it is important to be sure that they are needed. The present paper presents an analysis similar to the one recently proposed by Malouf in which the verbal and nominal classifications are combined on a **single** node which inherits both verbal and nominal characteristics; but unlike Malouf's analysis it does not assume phrase structure. Like his, it exploits the logic of multiple default inheritance which allows a single node to inherit from two supercategories - in this case from both 'verb' and 'noun'. As Malouf points out, multiple inheritance works because English grammar is organised in such a way that the characteristics of these categories are orthogonal. In short, a gerund is both a verb and a noun, as in traditional analyses. Simple stipulations are needed to allow for 'possessive' subjects (e.g. *about John's having a sabbatical*) and a number of very specific constructions peculiar to gerunds: *no* in prohibitions or existentials (e.g. *No playing loud music! There's no mistaking that voice*), and a very few constructions which demand a gerund rather than a noun phrase (e.g. *It's no use ..., They prevented us from ...*).

1. The challenge of English gerunds

One of the most troublesome areas of English grammar is illustrated in (1), which contains a gerund², the word *having*:

(1) We were talking about John having a sabbatical.

The trouble with words like *having* in this example is that they are half-verb and half-noun, which makes them a serious challenge for any theory of grammatical structure. The facts are well known and uncontroversial, but there is a great deal of disagreement about precisely, or even approximately, how to accommodate gerunds. The history of modern linguistics is littered with attempts to do this (Malouf 1998; 2000). Meanwhile, and more or less independently of this debate about gerunds in present-day English, there has been a great deal of discussion of how they developed since Old English (which had no gerunds)³. We shall see below that the historical development is important in evaluating any theory of modern gerunds, because the same theory must also be able to accommodate the range of intermediate forms that are found in earlier stages of English..

We can easily summarise the main facts, as illustrated by *having* in the above example. It must be a verb, in fact an example of the ordinary verb HAVE,⁴ because it has a bare subject and a bare direct object and it can be modified by *not* or an adverb:

- (2) a. We were talking about John not having a sabbatical.
b. We were talking about John soon having a sabbatical.

These are characteristics which not only distinguish verbs from nouns but also distinguish them, at least in combination, from other word classes. On the other hand, it must also be a noun because the phrase that it heads is used as the object of a preposition (*about*), and could be used in any other position where plain noun phrases are possible:

- (3) a. John having a sabbatical upset Bill.

- b. Did John having a sabbatical upset Bill?
- c. They discussed John having a sabbatical.
- d. John not having a sabbatical and Mary's failure to get study-leave meant that we weren't short-staffed after all.

The word *having* must be a noun if these positions are indeed reserved for noun phrases and if noun phrases must be headed by nouns.

In addition to these main facts, however, there are three others which complicate the picture. The first is the well-known fact that the gerund's subject may be a 'possessive':

- (4) We were talking about John's / his having a sabbatical.

What is not always recognised is that this pattern is not a straightforward alternative to the bare subject. According to Quirk et al., the possessive is preferred in some syntactic contexts (when the gerund itself is in subject position and its subject is a personal pronoun) and dispreferred in others (Quirk et al. 1985: 1064, 1194); thus *my* is preferred to *me* in example (5a) below, whereas *his* and *your* in the other examples are described as 'awkward or stilted' in comparison with *him* and *you*:

- (5) a. My / me forgetting her name was embarrassing.
 b. I dislike him / his driving my car.
 b. We look forward to you / your becoming our neighbour.

Similarly, Biber and colleagues refer to a prescriptive tradition in favour of the possessive form (Biber et al. 1999:750). On the other hand, in American English possessives are (apparently) much more normal, and bare subjects may even be rejected (suggesting a somewhat more archaic grammar, as we shall see below). If this is true, it may explain why discussions of gerunds by American linguists have tended to take the possessive subject as the normal pattern (as witness the name 'POSS-ING' which was widely used for gerund clauses in the 1970s).

The second fact has been much less widely acknowledged, but it deserves to be taken seriously. Even in present-day English we find some patterns in which a gerund is used with an ordinary determiner, especially *no* or *any* (Quirk et al. 1985:1066; Jorgensen 1981). This happens in two constructions. One construction consists of *no* and a gerund clause used as a main-clause prohibition:

- (6) a. No playing loud music!
b. No eating sweets in lectures!

The other construction is a clause whose subject is *there*, whose verb is a form of BE, and whose delayed subject is *no* or *any* followed by a gerund clause:⁵

- (7) a. There's no mistaking that voice.
b. There was no lighting fireworks that day.
c. There isn't any telling what they will do.
d. There must be no standing beyond the yellow line.
e. There was no turning the other cheek.
f. There's no pleasing some people.
g. There's no denying it.

It is true that these constructions are restricted in terms of what is possible outside the gerund clause; for example, in both patterns the negative is mandatory. However there is also no denying that they are fully productive as far as the gerund clause is concerned, so they cannot simply be listed as archaic relics of an earlier stage of the language (comparable with *come what may* or *if you please*). They have the classic characteristics of idiosyncratic but productive constructions - non-canonical syntax and semantics combined with productivity (Goldberg 1995; Kay and Fillmore 1999). A complete account of present-day gerunds cannot ignore them.

A third detail which should be born in mind is the existence of constructions in which only a gerund phrase, and no other kind of noun phrase, may be used (Malouf 1998:34, quoting Quirk et al. 1985: 1231). On the one hand we have constructions where the gerund phrase is extraposed (examples from Quirk et al.):

- (8) a. It's / There's no use telling him anything.
b. There's no point telling him anything.
c. It's scarcely worth(while) you / your going home.
d. It's pointless buying so much food.

In none of these examples is it possible to replace the gerund phrase by an ordinary noun phrase:

- (9) a. *It's no use a big fuss.
b. *There's no point anything else.
c. *It's scarcely worthwhile a lot of work.
d. *It's pointless purchase of food.

On the other we have at least one verb, PREVENT, which allows only a gerund phrase after its complement preposition.

- (10) They prevented us from finishing it / *its completion.

In short, these are all cases where some construction selects specifically for gerund phrases, so it is important that these should be distinguishable from other noun phrases.

These facts about possessive subjects, *no/any* and gerund selection are important because they confuse the simple view of the relationship between the nominal and verbal characteristics of gerunds. If we think of a gerund in terms of the phrase that it heads, the following generalisation is almost true:

- (11) A phrase headed by a gerund is:

- a. an ordinary clause as far as its internal structure is concerned, but
- b. an ordinary noun phrase (or DP) in terms of its external distribution.

Thus the gerund's nominal properties are all properties that it contracts as a dependent while its verbal ones are those that it has *qua* head. This description comes very close to being true, but it is falsified by examples like *his driving my car* and *no mistaking that voice*, both of which look as though they start with a determiner - part of the internal structure of noun phrases, not clauses. Similarly, the description has trouble with constructions like *prevent from*, which show that the external distribution of a gerund phrase is not totally identical with that of ordinary noun phrases.

On the other hand it would be wrong to take these exceptions too seriously. After all, it is almost true that gerund phrases are verbal inside but nominal outside, so we must not abandon this generalisation just because of the exceptions just noted. What is needed, therefore, is an analysis which solves two problems:

- (12)
- a. How to reconcile the nominal and verbal features found in straightforward examples, where verbal features control internal structure and nominal features control external distribution.
 - b. How to reconcile
 1. the fact that possessive subjects and *no/any* are determiners with the fact that they can introduce a gerund phrase, and
 2. the fact that *PREVENT from* does not allow noun phrases with the fact that it does allow gerund phrases.

Problem A will turn out not to be a problem at all, thanks to the way that English is organised.

I shall argue for the simplest possible analysis, in which gerunds themselves are indeed both verbs and nouns; and I shall show that the characteristics of verbs and nouns never conflict,

because nominal features always control external distribution but verbal features never do, whereas the reverse is true of internal structure. We shall also see that it is crucial to assign gerunds to specific sub-classes of both noun and verb in order to get the desired results. Given the right classification, nothing more needs to be said about straightforward gerunds.

Problem B is the problem of how to accommodate exceptional cases, and since by definition exceptions must be stipulated, we must look for a solution which stipulates these; but the simpler the stipulations are, the better.

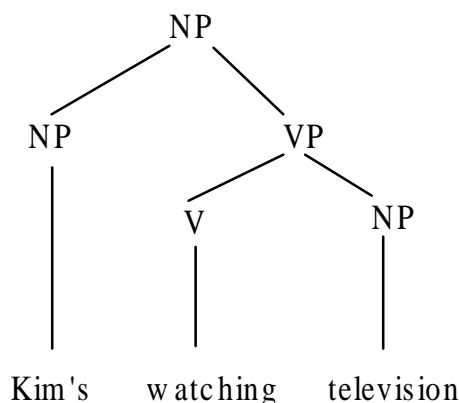
2. The theoretical resources needed to analyse gerunds

One of the great attractions of English gerunds for theoretical grammar is that the facts are both clear and challenging, so they serve as a good test-bed for grammatical theories. What kind of theoretical ‘machinery’ does their mixture of noun and verb characteristics call for? Most previous analyses have taken it for granted that no node in a sentence structure can be classified as both a noun and a verb⁶ - an assumption encouraged by the widely accepted analysis of word classes in terms of the features N and V. Since nouns and verbs carry opposite values for both these features it is logically impossible for ‘verb’ and ‘noun’ to combine; and the combination [+N, +V] is normally assumed to define the class of adjectives. As Malouf points out (1998:90), this is contrary to the Western grammatical tradition which has always recognised ‘mixed’ categories such as participles (so called because they ‘participate’ in the characteristics of both verbs and adjectives). The analysis which I shall offer below is very much more traditional in this respect than any other recent one except Malouf’s.

If one node cannot carry two conflicting classifications, the obvious solution is to assume two separate nodes, one for the nominal classification and the other for the verbal one. Moreover, the natural way to show that the nominal classification controls external

distribution while the verbal classification controls internal structure is to make the verbal node subordinate to the nominal node: a verb phrase inside a noun phrase. This has the further attraction of providing a position for a possessive subject, in the 'determiner' position within the higher noun phrase. Most theoretically motivated analyses assume some kind of 'two-node' analysis in which the grammar generates a sentence structure with two nodes for the gerund, one of which can be classified as nominal and the other as verbal. In his survey of the various analyses that have been offered within the generative tradition, Malouf observes (1998: 87) that they all assign gerund phrases some variation of the structure shown in Figure 1, where VP is contained within NP:

(13)



Is this much machinery really needed? The question is crucial for theories in which multiple nodes are not available. If a theory simply does not permit two-node analyses, then either it is falsified by gerunds, or two-node analyses are not necessary. The analysis to be developed below assumes the theory of Word Grammar⁷ (WG). The most relevant part of WG theory is that phrase structure plays no part in sentence structure or in the grammar, because the structure is analysed entirely in terms of binary dependency links between single words. For example, instead of recognising clauses, noun phrases and verb phrases we recognise just verbs and nouns and their various dependents, which are also single words, each equipped with its own range of dependents. Of course these dependencies imply phrases each consisting of a word plus all the words that depend on it; but all the properties that they have can be inferred from the words and their dependencies, so the phrases are redundant. In the interests of parsimony, therefore, WG excludes phrases in principle from the descriptive apparatus.

This exclusion becomes critical in the analysis of gerunds because it excludes, as a matter of principle, most of the analyses that have been suggested to date:⁸

- (14) a. The NP is exocentric and consists of a VP (Chomsky 1970; Jackendoff 1977; Hudson 1976).
- b. The NP's head is *-ing* and a transformation lowers the nominal *-ing* onto the verb

(Baker 1985).

c. An abstract category which is classified either as D or N and selects either IP or VP is combined with a rule which affixes this null suffix to a verb that already has the *-ing* suffix (Abney 1987; Yoon 1996).

d. A weakened Head Feature Convention allows the mother phrase and its head to have different values for N and V (Pullum 1991).

e. The NP and VP nodes have ‘dual’ lexical categories <X|Y>, where X and Y determine external and internal properties respectively (Lapointe 1993).

f. One word projects (as head) to two different phrasal nodes - to an NP node and to a VP node within the NP - with the higher node unordered with respect to the lower one (Wescoat 1994).

g. A single c-structure N (the gerund) maps to an N and a V position in f-structure (Bresnan 1997).

h. Lexical rules convert a VP into an NP (Kaiser 1997; 1999).

This survey (which is based in part on Malouf’s) is interesting as evidence not only for the ingenuity of linguists but also for the weakness of current theories. Malouf also finds more or less serious empirical problems in all the proposed analyses, but regardless of their merits they all presuppose the two-node approach to analysis.

The aim of this paper is to show that gerunds can be accounted for extremely easily without assuming two nodes. All we need to assume is that the gerund itself is a single word which is simultaneously both a noun and a verb. So long as we distinguish gerunds from other kinds of nouns and verbs (as explained below), all the general facts will follow naturally and without any further assumptions. The exceptional facts (e.g. the possibility of possessive subjects) will then be very easy to stipulate. If such a simple analysis is possible with a single-

node analysis, the extra theoretical apparatus provided by phrase structure is not just redundant, but may be getting in the way of a simpler analysis.

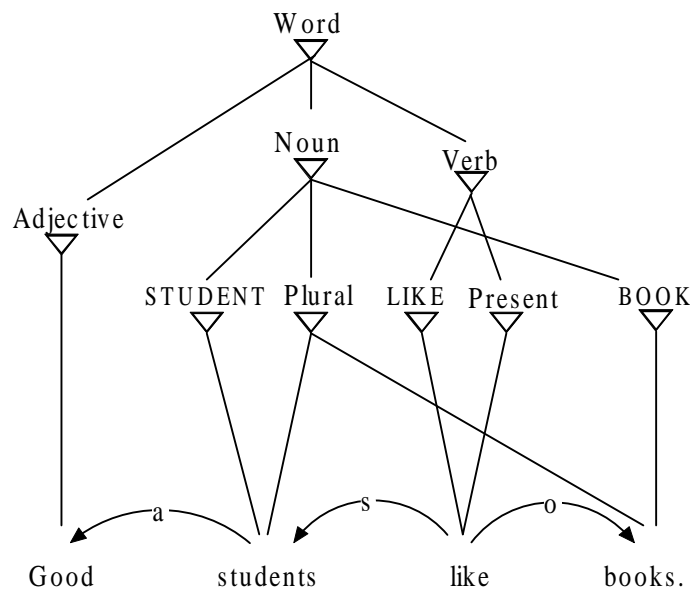
3. Theoretical assumptions

The purpose of this section is to lay out the rather meagre set of analytical tools which WG makes available and which we shall assume in the following analysis:

- (15)
- a. one node in the syntactic analysis per word, regardless of morphological structure;
 - b. a set of word classes which, like individual words, are represented as single atomic nodes (e.g. Noun) rather than as features (e.g. [+N]);
 - c. a network of 'isa' relationships showing classification relationships among words and word classes;
 - d. syntactic dependency links between words;
 - e. the logic of multiple default inheritance.

The easiest way to illustrate this apparatus is to present a very simple sentence structure in relation to the grammar that generates it. Diagram (16) shows a simplified structure for *Good students like books*.

(16)



This diagram needs some explanation:

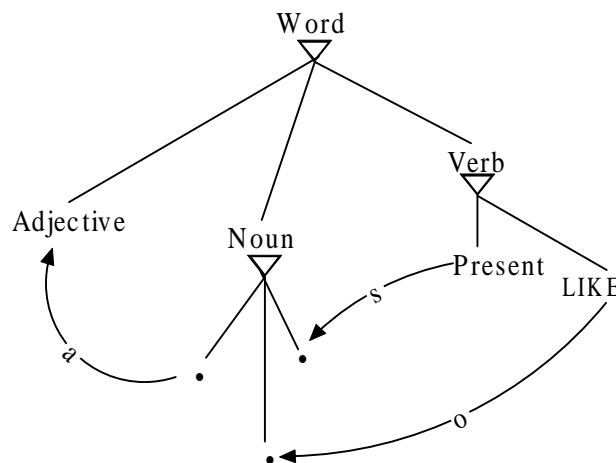
- (17) a. Each word is assigned just one node - one node for *good*, one for *students*, and so on. The morphological structure of *students* and *books* would be shown in a complete analysis, but by means of a separate morphological analysis.
- b. Each word class is represented as a single atomic node (e.g. Noun); these word classes are 'types' - 'the typical noun' - rather than sets, and have the same logical status as the supercategory Word, as the individual lexemes such as STUDENT, as the inflectional categories such as Plural, and as the word tokens such as *students*.
- c. The lines linked to a small triangle show 'isa' relationships - STUDENT isa Noun, Noun isa Word, and so on; the triangle's base rests on the supercategory and its apex points towards the subcategories.
- d. The arrows show syntactic dependency links between words, and the letters imposed on the arrows classify these dependencies: 's' for Subject, 'o' for Object and 'a' for Adjunct.

The example shows how easily dependency structures may be generated. The dependency

approach to syntax is basic to several theories of grammar other than WG.⁹

The logic of multiple default inheritance applies to the grammar so that any subcategory automatically inherits the characteristics of its supercategories unless these are overridden by more specific characteristics. In Diagram (16), the effects of inheritance can be seen in the dependencies between the word tokens, but the figure does not try to show the sources from which these dependencies are inherited in the grammar. These are shown in Diagram (18), where (to simplify) LIKE and Present respectively have an object and a subject, both of which isa Noun, and Adjective has a parent (a word on which it depends) which also isa Noun (a detail which will be revised below). This little grammar shows how one word may inherit from both a lexeme and an inflectional category, which requires the full power of multiple default inheritance as provided for not only in WG but also in a variety of other theories including Head-driven Phrase Structure Grammar,¹⁰ Cognitive Grammar,¹¹ Construction Grammar¹² and Network Morphology.¹³

(18)



4. Noun classes and noun phrases

If gerunds are nouns, their analysis has to mesh with a more general analysis of nouns and noun phrases. Traditionally there are two main sub-classes of Noun: Common noun and

Proper noun. These head phrases which have the same distribution and somewhat similar internal structures, though there are enough differences in the internal structures to justify a distinction. For example, the rules for combining determiners with common and proper nouns are rather different, and adjectives are rather hard to use as modifiers of proper nouns.

However, since noun phrases are defined by their distribution, they must also include phrases headed by pronouns, and so pronouns must also be nouns (Huddleston 1988:85, Hudson 1990:268, Pollard and Sag 1994:249). We thus recognise (at least) three sub-classes of Noun:

- Common noun: *boys, people, mud*
- Proper noun: *Sam, Wednesday, London*
- Pronoun: *them, what, someone, his*

All these words can be used as the head of a phrase with the same range of possible functions - as subject, object, complement and so on. In a dependency analysis, the distribution of the whole phrase is (and must be) that of its head, so a noun phrase is simply a noun plus any dependents that it may have. The phrase itself however has no theoretical status since it is totally redundant given the word classes and dependencies. A phrase-structure analysis expresses the same insight but in a rather more complicated way, because it distinguishes the phrase node from the head node. The main point is that in either kind of analysis the underlined examples below are all nouns, and it is this classification that explains why they all have the same overall distributional possibilities.

- (19) a. I heard boys.
b. I heard Sam.
c. I heard them.

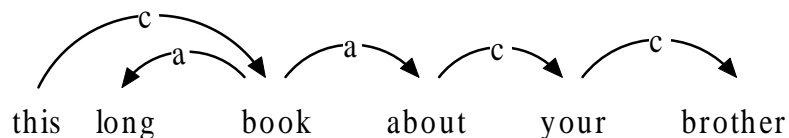
How do determiners fit into this picture? This question is important for gerunds

because (as we saw in section 1), they can combine with certain determiners, most obviously possessives. The fact is that there are good reasons for taking a determiner as the head of its phrase; e.g. in *this book*, the head must be *this* rather than *book*, because *book* is optional but the determiner is not:

- (20) a. I have read this book.
 b. I have read this.
 c. *I have read book.

The evidence for the head-hood of the determiner explains the popularity of the DP analysis (Abney 1987). WG also treats the determiner as head in a determiner-noun pair (Hudson 1981; 1984; 2000), so this is the structure that we shall assume for gerunds too. Diagram (21) shows the dependency structure for a representative noun phrase. (The letter 'c' stands for 'complement' and 'a' for 'adjunct'.)

(21)



If a determiner is the head of its phrase, how can we show the similarity of distribution between this phrase and one headed by a noun? If the former is a DP and the latter an NP, they belong to different basic classes in spite of their similarities. The solution adopted in transformational analyses is to treat them all as DPs, with a zero determiner in those that seem to lack one, but the zero determiner raises a number of problems which have not yet been resolved (see Hudson 2000b). In contrast, WG offers a much simpler analysis in which they are all NPs. The only controversial elements in this analysis are two assumptions, namely that pronouns are nouns (as already suggested), and that determiners are pronouns.

The similarities between determiners and pronouns are well known (Greenbaum 1996:163), and indeed it is commonly assumed that pronouns are determiners (Postal 1966). WG accepts this relationship but reverses it by treating determiners as ‘transitive’ pronouns. For example, the ‘pronoun’ THIS and the ‘determiner’ THIS are different uses of one and the same word, one with and one without a complement noun, exactly comparable to the two uses of EAT with and without an object. Under this analysis, therefore, the word-class Determiner disappears, since the possibility of a complement noun is handled by means of valency/subcategorization, not via the apparatus of word classes.

To summarise the WG treatment of noun phrases so far:

- (22)
- a. There are different sub-classes of Noun including Common, Proper and Pronoun.
 - b. Where determiners are present, they are the head of the phrase and the common noun is their complement.
 - c. Determiners are pronouns that have a complement common noun.

This analysis succeeds in unifying all the following examples by treating them all as headed by a noun; this avoids the need to invoke either a phrasal category (whether ‘noun phrase’ or DP) or the fiction of a zero determiner:

- (23)
- a. I read Shakespeare [Proper noun].
 - b. I read books [Common noun].
 - c. I read those [Pronoun] books.
 - d. I read those / them [Pronoun].

In each case the head of the phrase is underlined and classified, to show that it is a subtype of noun. This classification of the head allows all four patterns to be subsumed under a single generalisation about the distribution of nouns. For example, if we allow the object of a verb such as READ to be a noun, we thereby allow any phrase whose head is a noun.

We have emphasised so far the similarities among the different sub-classes of Noun, but what about their differences, and especially their syntactic differences? A common noun such as *books* clearly heads noun phrases with very different structures from those headed by, say, the pronoun *me*. These differences will play a crucial role in the argument of the next section so we shall survey them here and offer a WG analysis. The crucial question is what structural patterns, if any, are available to all noun phrases regardless of head-type. Since the internal structure of a noun phrase consists of the head noun plus its dependents, the question can be reworded as what kinds of dependents are possible for all kinds of head noun. I shall suggest that in fact there are **no** such dependents.

The case can be made easily with *me*, which does not seem to allow any dependents at all unless we include dependents that are in fact irrelevant. Let us consider some possible counter-examples:

(24) Poor me! I've got to work over the weekend.

A few adjectives (including *poor*) can combine with personal pronouns or proper nouns (compare *Poor John!*), but the result is not a dependent-head combination as in (25):

(25) I found a poor little cat lying in the road.

It is not obvious how examples like (24) should be analysed, but they are clearly not noun phrases because they cannot be used as such.

(26) *They've given poor me too much work.

The ungrammaticality of (26) suggests that the head of *Poor me!* is not the pronoun but the adjective - in other words, it is a clause rather than a noun phrase.

Another candidate worth considering contains a restrictive relative clause:

(27) I who stand before you can vouch for it.

Such examples are possible, but extremely limited in terms of both style and syntax. They are

inconceivable in everyday conversation, in clear contrast with ordinary common-noun + restrictive relative clause combinations. Moreover they are even worse in object position, where *me* would normally replace *I*:

(28) ???You must believe me who stands/stand before you.

My judgement is that this example is ungrammatical, and remains unacceptable however we manipulate the context. Similarly Quirk et al. (1985:352) note that although restrictive relative clauses can modify *he* and *she* in highly formal style, they are absolutely impossible for *they* and *it*.

The next candidate combines the pronoun with a name:

(29) I John Smith do take thee, Mary Brown, to be my lawfully wedded wife.

The stylistic restrictions are obvious, but again *me John Smith* seems even worse.

(30) ???To me John Smith that appears unjust.

Here too the possibility of modifying *me* turns out to be vanishingly small.

Two much more plausible candidates remain, but these turn out to be irrelevant to the comparison with common nouns. The first is an 'emphatic' reflexive pronoun:

(31) I myself rather like it.

This is stylistically unrestricted with *I*, and although it is harder to match with *me*, this does seem to be possible, especially in subject position:

(32) For me myself to enjoy the food I cook is unusual.

Emphatic reflexive pronouns can modify other kinds of noun as well:

- (33) a. John himself is quite mild.
b. The picture itself isn't too bad.
c. Hard work itself doesn't worry me.

However they may even be able to modify non-nouns:

(34) To work hard itself doesn't worry me.

This being so it is hardly surprising that they combine fairly easily with a gerund:

(35) Working hard itself doesn't worry me.

Lastly we must consider non-restrictive relative clauses. These seem to combine quite easily with *me*:

(36) She lost her temper with me, who really didn't deserve it.

More generally, non-restrictive relative clauses can modify virtually any other kind of noun, so we might conclude that they, at least, are available for any kind of noun phrase, regardless of its head type. This may well be true, but non-restrictive relative clauses can in fact modify virtually any kind of word, including adjectives, prepositions and verbs (i.e. in phrase-structure terms, they can modify APs, PPs and clauses):

(37) a. He was really naughty, which he never used to be when he was little.

b. He was behind the coal-shed, which is his favourite play-spot.

c. He wasn't at all naughty, which surprised us.

Not surprisingly, therefore, they can also modify gerunds:

(38) Working hard, which never did anyone any harm, is part of the job.

In short, the only modifiers that are possible with *me* are emphatic reflexives and non-restrictive relative clauses, which are possible with a wide range of words which goes beyond nouns.

In contrast with *me*, a common noun such as *books* allows a wide range of both pre-modifiers and post-modifiers: adjectives, nouns, prepositions and clauses:

(39) big dusty boring library books about linguistics which I have to return tomorrow.

None of these modifiers is possible with *me*, so we have at least two nouns, *books* and *me*, whose modifiers show virtually no overlap (apart from the two much more general types of

modifier mentioned above). There are of course many other kinds of noun, and in particular many different subclasses of pronoun (including the determiners), each of which allows a distinct range of modifiers. It would be pointless however to pursue these differences further, now that we have established the main point: different kinds of head noun allow different modifiers, and no modifiers are common to all nouns.

It could be objected that these differences are simply the result of semantic and pragmatic differences. After all, since *me* uniquely and unambiguously refers to the speaker, there seems to be little point in modifying it, so why might we ever want to add, say, a relative clause or an adjective? In contrast, *book* identifies a general category which it is useful to be able to make more precise by means of modifiers, so it is hardly surprising that modifiers are possible. It is true that meaning ultimately explains a lot of syntax, but the relation between syntax and meaning is no simpler in noun phrases than in other areas of grammar. There are a number of reasons for believing that at least some of these differences are in fact syntactic.

For example, modifiers can be descriptive, as in famous examples such as *the industrious Chinese*, where *industrious* applies to all Chinese and not just to a subset. This being so, we might expect descriptive modifiers to be possible with any nouns, including those that have unique referents; and indeed we find that some are possible with proper names:

(40) Poor John got fired yesterday.

With personal pronouns they would be just as easy to interpret, but as we have seen they are not possible, so the explanation must be a specific syntactic restriction.

A second reason for interpreting differences as syntactic rather than purely semantic is that the range of possible modifiers has varied over time. For example, at one time restrictive relative clauses were possible with *they* or even *me*:

(41) a. All they that take the sword shall perish with the sword. (King James Version;

Matthew 26:52)

- b. ... but to attack me who am really so innocent — and who never say an ill natured thing of anybody (1777 Sheridan, *School for scandal* IV.iii 411.29, in Denison 1999)

This is no longer possible in Modern English, where *those* has replaced *they* in this construction. Similarly, it was once easier than nowadays for a relative *which* to have a complement noun of its own:

- (42) Lady Lufton ... had sent up a note addressed to Miss Lucy Robarts, which note was in Fanny's hands when Lucy stepped out of the pony-carriage. (1860-1 Trollope, *Framley* 35.335, in Denison 1999)

Such variation clearly involves a change of syntax without any change of semantics, so it cannot be explained semantically.

It should also be pointed out that at least some variation in the range of possible dependents cannot be semantically motivated because synonymous dependents alternate syntactically. For example, as dependents the synonyms *other* and *else* are in complementary distribution. The default *other* is replaced by *else* just in case it modifies an indefinite pronoun such as *who* or *someone*; moreover the alternation also involves a change of word order, giving *who else* or *someone else* in place of the expected **other who* or **other someone*. The compound pronouns such as *someone* also illustrate another (apparently) arbitrary syntactic restriction compared with common nouns. Although they can be modified by an adjective, this adjective must follow the pronoun: *someone difficult*; cannot be iterated in the way that most modifiers can, so we cannot match *a tall strong person* by **someone tall strong*; and cannot be another noun. Thus although we can say *travel things* or *meeting place* we do not find **something travel* or **somewhere meeting*.

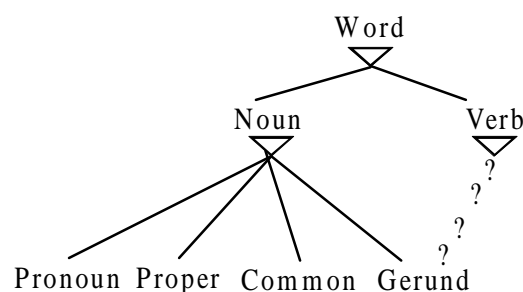
In short, the syntactic part of the grammar allows different types of head noun to take different types of dependent, so the phrases that they head have different possible structures. Moreover there do not seem to be any dependents which are possible for all nouns and only for nouns.

5. Gerunds as nouns

The proposed analysis takes gerunds as examples of both nouns and verbs, so the present section will consider the consequences of analysing them as nouns, leaving the verb half of the analysis till the next section. The crucial point for the present section is the subclassification of nouns discussed in the previous section. This will be the basis for explaining why gerund phrases are nominal externally but not internally. This part of the analysis is virtually the same as the one in Malouf (1998:154), except that it is expressed in terms of word-word dependencies rather than in terms of phrase structure.

If gerunds are nouns, how do they fit into the three-way contrast among proper, common and pronoun? The obvious answer is that though they are nouns, they do not belong to any of these three sub-classes of noun, so we must add ‘Gerund’ as a fourth sub-class. This gives the hierarchy shown in Diagram (43), where the line of question marks stands for a relationship that will be made more precise in the next section:

(43)



This classification immediately explains why a gerund heads a phrase whose distribution is that of a noun phrase: its distribution is like that of a noun because it is a noun. However it also allows gerunds to be distinguished from other kinds of noun in those contexts where other kinds of noun are not allowed. In section 1 we noticed two such contexts. One was where the gerund phrase is extraposed in examples like the following (repeated from (8,9)), where a gerund is used in a context where other kinds of noun phrase are not allowed:

- (44) a. It's / There's no use *telling him anything* / *a big fuss.
b. There's no point *telling him anything* / *anything else.
c. It's scarcely worthwhile *you / your going home* / *a lot of work.
d. It's pointless *buying so much food* / *purchase of food.

The other was after at least one verb, PREVENT, which only allows a gerund phrase after its complement preposition:

- (45) They prevented us from *finishing it* / *its completion.

The possibility of distinguishing gerunds from other kinds of noun allows us to prevent over-generation in these areas by permitting only gerunds in these contexts. (The details of the rules concerned are irrelevant, the main point being that they can apply to 'Gerund' rather than more generally to 'Noun'.) The analysis seems to give us just the right combination of specificity and generality in defining the contexts in which gerunds may act as dependents.

However, the noun classification also introduces a new problem: if gerunds are nouns, why do gerund phrases not have the internal structure of noun phrases? As we know, the fact is that gerund phrases have the internal structure of clauses, as witness all the evidence for their being verbs: their use with direct objects and predicative complements, with non-possessive subjects, with adverbs rather than adjectives, and with *not*, plus the fact that a

gerund may itself be an auxiliary verb. The gerund phrase (italicized) in the following sentence illustrates all these well-known facts:

(46) I object to *him not yet having been given an appointment*.

This gerund phrase clearly has nothing at all in common with ordinary noun phrases such as *the idea of chocolate* or *his irrational anxiety*.

However, this problem disappears as soon as we notice that there is **nothing** which has ‘the internal structure of a noun phrase’. As we saw in the previous section, the only thing that all noun-headed phrases have in common is their external distribution - the fact that they can all be used freely as subject, object, complement of a preposition and so on. Beyond this, the phrase’s structure depends on whether its head is a pronoun (i.e. pronoun/determiner), a common noun or a proper noun.

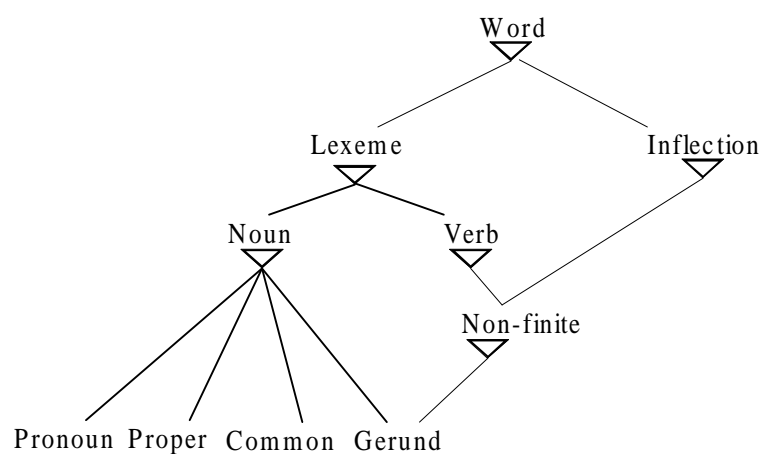
This being so, the grammar of nouns (as such) says nothing at all about their dependents, so there are no dependent-facts to be inherited by gerunds. This is why this section started by saying that the sub-classification of nouns is the key to the analysis. If nouns had all been of one type, all taking the same range of dependents, these facts would have been stored at the level of ‘noun’ and would therefore have been inherited by gerunds. Given the logic of multiple default inheritance, the result would have been a clash with the structures inherited from ‘verb’, a clash which could have been solved only by stipulating a winner. As it is, however, the classification of gerunds as nouns is almost entirely ‘free’ as far as the phrase’s internal structure is concerned, because there is no need for special rules or apparatus to resolve conflicts between nominal and verbal features. The exception is the very limited possibility of a determiner (possessive subjects and *no/any*), which will be discussed in sections 8 and 9.

The outcome of this section, therefore, is that the classification of gerunds as nouns has important consequences for how they are themselves used as dependents, but none at all for their own dependents - in other words, gerund phrases have the external distribution of noun phrases, but not their internal structure. In the next section we shall see how the converse is true of their classification as verbs.

6. Gerunds as verbs

As nouns, gerunds contrast with common nouns, proper nouns and pronouns, all of which are word-classes - i.e. classes of lexemes. The same is not true of their relationship to verbs, where gerunds differ from other verbs in their inflections. Any verb which can be non-finite (i.e. any verb other than a modal and a handful of full verbs such as BEWARE) can be a gerund, but gerunds are distinguished by their inflectional suffix *-ing*. In WG, 'Inflection' and 'Lexeme' are sub-categories of 'Word', so an inflected lexeme inherits from both an inflection and a lexeme (Creider and Hudson 1999). Diagram (47) completes Diagram (43) in which the link from 'gerund' to 'verb' was left unspecified.

(47)



At the same time, of course, a gerund is an instance of whatever lexeme provides its stem - *having* is an instance of HAVE, *walking* is an instance of WALK, and so on - which means that gerunds are basically verbs being used as nouns, rather than nouns being used as verbs. It is the verb lexeme that determines its meaning and its possible dependents as well as its stem. The fact that the verb lexeme is a verb has implications for the kinds of modifier that are possible - in particular, a verb may be modified by an adverb but not by an adjective, which is why the same is true of gerunds. All the noun classification contributes is the possibility of being used as a dependent where a noun is required. The explanation, then, for why gerund phrases have the internal structure of clauses is that they are clauses (i.e. phrases headed by a verb).

This part of the analysis is somewhat different from Malouf (1998), where gerunds are not verbs at all, but a sub-class of 'relational', a category which includes adjectives as well as verbs. It is true that, as he observes, adjectives are similar to verbs in allowing adverbs as modifiers (e.g. *sufficiently thick*), but the same is true of prepositions (e.g. *exactly above the house*). The correct generalisation seems to be that adverbs may modify any kind of word **except** nouns. Modifying adverbs therefore do not in themselves justify Malouf's category of relationals. Moreover, there are at least two characteristics that distinguish both gerunds and verbs from adjectives. One is that when an adjective is modified by an adverb, the adverb has to come first, whereas most adverbs can stand either before or after a verb or a gerund:

- (48) a. It is sufficiently thick.
b. *It is thick sufficiently.
- (49) a. Often making mistakes is normal.
b. Making mistakes often is normal.

The other difference between gerunds and adjectives is that although a few adjectives combine with *not*, as in *not insignificant* or *not many*, the possibilities are extremely limited and the best generalisation is that adjectives typically do not combine with non-contrastive *not*:

- (50) a. *a not angry man.
b. *He seems not angry.

This use of *not* is distinct from contrastive *not ... but*, which combines freely with most word classes:

- (51) a. He seems not angry but worried;
b. He built not a house but a mansion.

Free combination with non-contrastive *not* is possible only for two word-classes: non-finite verbs and gerunds:

- (52) a. He tends to not do anything.
b. Not doing anything is unacceptable.

The evidence therefore points to a classification in which gerunds are grouped with verbs to the exclusion of adjectives - in other words, they are verbs rather than 'relationals'. This simple conclusion is confirmed, of course, by the fact that they are formed morphologically in exactly the same way as present participles; since they are inflected verbs then a fortiori they are verbs. In contrast, Malouf's analysis involves a rule to change the lexical class of a verb into that for a gerund - either a lexical rule which takes a verb and turns it into a gerund (ibid:90) or an inflectional class which overrides the 'verb' classification (ibid:163). No such rule is needed in the present analysis because gerunds are simply verbs.

But if gerunds really are verbs, why don't their phrases have the external distribution of a verb phrase? This is similar to the question in the previous section about why gerund phrases do not have the internal structure of noun phrases, and the answer is also similar: because

there is **nothing** that has the external distribution of a verb phrase. The fact is that there are no rules (or principles) which permit some position to be occupied by 'a verb phrase'; every rule that allows a verb phrase also requires the head verb to have some particular inflection - tensed, participle, infinitive or whatever. In dependency terminology, a verb's inflection is always limited by its status (independent or dependent). For example, a verb must be finite if it is independent (i.e. the root of the whole sentence), it must be an infinitive if it is the complement of *will*, and so on. Each inflection is available for a different range of syntactic positions, and each such position is limited to a specific range of inflections. Consequently, none of these positions will be available to gerunds unless gerunds are specifically named as possible; and (most important of all), no distributional facts at all are available for inheritance from the general category Verb.

The conclusion to which the last two sections have led us is that the grammar of gerunds is very simple indeed. They are inflected by the addition of the same *-ing* suffix as present participles, but they are not present participles: they constitute a unique inflectional class, 'Gerund'. This word class is both 'Noun' (where it contrasts with 'Proper', 'Common' and 'Pronoun') and 'Non-finite' (which is a sub-class of 'verb'). Having said this, all the main facts about gerunds follow automatically, without any stipulations or special provisions at all: seen as heads, they are ordinary non-finite verbs, but seen as dependents they are ordinary nouns.

This simplicity is possible because of one very general difference between verbs and nouns. What all verbs have in common is their valency - the range of dependents that they permit - and not their functions as dependents, which vary according to the verb's inflectional class. In contrast, what all nouns have in common is their range of possible functions as dependents - the possibility of being used as subjects, objects, and so on - and not their

valency, which varies according to the noun's sub-class (as a common noun, a proper noun or a pronoun). Put simply, verbs are predicates and nouns are arguments. Because of this difference, the general characteristics of nouns and verbs are in fact orthogonal, so they can both be inherited without conflict.

7. The debris of history: possessives and *no/any*

The simplicity of gerunds in present-day English lies at the end of many centuries of gradual evolution whose beginnings in Old English were entirely different. In Old English there were no gerunds, but there were nominalisations ('verbal nouns') comparable to modern nouns like *nominalisation*, *arrival* and *reading*, as in (53):

(53) Fast reading of linguistics articles is difficult.

In Old English the regular verbal noun ended in either *-ing* or *-ung*. The following example is from Denison (1993:387):

(54) ac gyrstandæg ic wæs on huntunge
but yesterday I was at hunting
'But yesterday I was hunting'

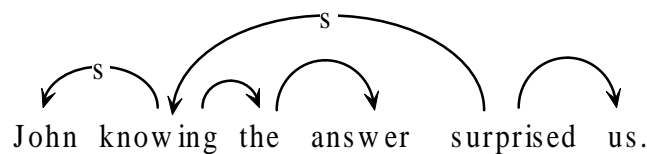
We shall consider the rise of gerunds in section 10, but the aim of the present section is to correct the impression of perfection and simplicity which the previous two sections may have left. Gerunds developed out of a purely nominal pattern, and this history is still visible in the peculiarities of modern gerunds which were described in section 1.

The most obviously nominal relic is the possibility of 'possessive'¹⁴ subjects, as in *John's knowing the answer*. As was mentioned in section 1, this strikes British speakers as rather forced and formal, though it seems to be more acceptable to Americans. In Britain the bare 'accusative' subject is more normal, as in (55a) below, and the only possibility in (55b):

- (55) a. John knowing the answer surprised us.
 b. Our visit was spoilt by there being no-one at home

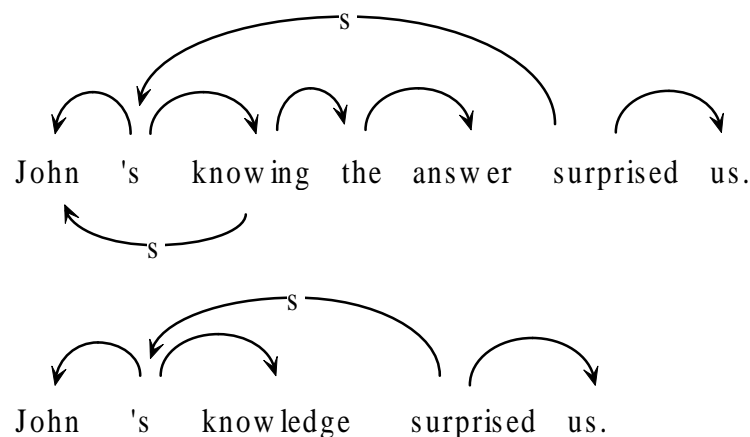
This bare subject is the form to be expected given the rules so far, if we assume that non-finite verbs allow the subject to be overt. The dependency structure for this example is as shown in Diagram (56). The choice of 'non-subject' pronoun forms (*him knowing the answer*, not **he knowing the answer*) is as expected, since 'subject' forms are used only with tensed verbs.

(56)



Where the gerund's subject is possessive it is less clear what the structure is. On the one hand, it could be argued that the structure is the same as when a possessive is used as a determiner in a noun phrase - i.e. with the possessive as head. This has the advantage of revealing the similarity between these gerunds and ordinary noun phrases, and gives structures like that in Diagram (57), where the possessive is the head of the whole noun phrase *John's knowing the answer* or *John's knowledge*. As mentioned in note 14, I assume that 's is a clitic rather than an inflection, and more specifically I assume that it is a determiner and therefore a pronoun. For convenience I shall call it POSS, so *John's* is syntactically two words, *John* and POSS, and (following Rosta 1997) I also assume that possessive pronouns are syntactically complex so that *my* is syntactically *me* + POSS and so on.

(57)



It can be seen that the structure for the gerund also shows a direct 'subject' link to the 'possessor' noun, *John*, in addition to its link to POSS. This extra link gives *John* a 'structure sharing' analysis of the kind which is widely used not only in WG (Hudson 1990:117), but also in HPSG (Pollard and Sag 1994:2). Thus this analysis relates the possessive subject both to ordinary determiners and also to ordinary subjects using theoretical machinery which is already in use for other constructions.

On the other hand, Malouf points out (1998:51, following Abney 1987:245) that ellipsis of the gerund is not possible, although it is possible with a common noun:

- (58) a. *John's passing the exam was surprising, and Bill's [] was even more so.
b. John's success in the exam was surprising, and Bill's [] was even more so.

One way to explain this would be to reject the analysis outlined above, and to assume instead that the possessive is merely the gerund's subject, with just the same structural status as the bare subject in Diagram (56). This would certainly predict that the possessive cannot occur without the gerund, but it would also throw out the baby with the bathwater by losing the comparison with ordinary noun phrases. Moreover we shall see below that the same ban on ellipsis applies to the other gerund-taking determiner, *no*, which could not realistically be taken

as the gerund's subject - see examples (62, 63). In any case it would be very hard to explain the presence of POSS if the possessor is merely the subject; this would require an extra stipulation, and the structure would be totally unmotivated. In contrast, the structure suggested in Diagram (57) motivates POSS in relation to its use in ordinary noun phrases.

On balance, then, the structure in Diagram (57) seems preferable to one in which the possessive is merely the gerund's subject. The preferred analysis requires two stipulations: first, that the other dependent of POSS (e.g. *John* in *John's*) doubles up as the gerund's subject - a very common syntactic pattern, similar to the one found with auxiliary verbs; and second, that when the complement is a gerund it is obligatory. Such arbitrary variations in optionality are common (Hudson et al. 1996); for example, the complement of *every* is obligatory whereas that of *each* is optional, and *try* does allow its infinitival complement to be elided whereas *attempt* does not.

Informally, the rules for ordinary possessives are as follows:

- (59)
- a. A pronoun's complement is a common noun.
 - b. A pronoun's complement is optional.
 - c. POSS is a pronoun and has a complement.

These rules allow ordinary POSS and allow its (optional) complement to be elided as in (58b):

John's success was ... Bill's was What we can call "POSS_{gerund}" is a special case which combines three extra features:

- (60)
- a. POSS_{gerund} isa POSS.
 - b. The complement of POSS_{gerund} isa gerund.
 - c. The pre-dependent of POSS_{gerund} is the subject of its complement.
 - d. The complement of POSS_{gerund} is obligatory.

None of these rules is typologically unusual or complex.

In diachronic terms, it is easy to see how possessive subjects formed a necessary stage in the development of modern gerunds from ordinary nominalisations, whose 'subjects' must be possessives rather than bare noun phrases. It is in this sense that I describe possessive subjects as 'the debris of history'.¹⁵ Another item of debris is the determiner *no/any* which we discussed in section 1, using examples that included the following:

- (61) a. No playing loud music!
b. There's no mistaking that voice.
c. There isn't any telling what they will do.

These can be analysed along the same lines as the gerunds with possessive subjects. The determiner can be treated in the usual way, as the head of its phrase, but its gerund complement is unusual in being obligatory (i.e. not subject to ellipsis). This can be seen from the following examples, where the gerund is contrasted with a common noun:

- (62) a. A: No noise, please!
B: What, none at all?
b. A: No being noisy, please!
B: *What, none at all?
- (63) a. A: There's no possibility of mistaking that voice!
B: No, none at all!
b. A: There's no mistaking that voice!
B: *No, none at all!

In this construction there does not appear to be any alternative to a stipulation about optionality.

The semantics of these constructions is challenging, but not relevant here. The syntax is reasonably straightforward, since the pronouns *no* and *any* exceptionally allow an obligatory

gerund as complement. The only uncertainty concerns the impossibility of a subject for the gerund:

- (64) a. No *(any boys) playing football here, please, but girls can play if they want.
b. There's no (*a linguist) accounting for this sentence.

Informally speaking, overt subjects seem to conflict with the subject specifications that are already imposed by these constructions - for example, *No smoking!* applies specifically to 'you'. For the time being however we must settle for a stipulation about the gerund's subject, but there are ample precedents for such construction-based stipulations - see for example the analysis of *just because X does not mean that Y* in Holmes and Hudson (2003).

Once again it is obvious why these uses of *no/any* with a gerund exist in current English, given the origin of gerunds in ordinary common nouns which are also possible, with similar meanings, after *no/any*:

- (65) a. No noise, please!
b. There's no doubt about his intentions.
c. There isn't any way of telling his intentions.

But however understandable their origins may be, the fact remains that these patterns, like the possessive subjects, are exceptional and special uses of gerunds which cannot be explained as simply as was possible with ordinary gerunds.

It could be objected that this analysis of the 'debris of history' fails to explain why these particular patterns survived but others did not. In particular, why do we still combine gerunds with a handful of determiners (POSS, *no*, *any*), but not with adjectives? If we can say *my watching TV regularly*, why can't we say **my regular watching TV*? An easy answer suggests itself: the survivors are all single lexical items - just three specific determiners. In each case gerunds were mentioned in a stipulation about the determiner's complement - a very ordinary

instance of valency detail. In contrast, if modifying adjectives had survived, the exception would have involved a whole word class rather than a single lexical item. The exceptional rule would have allowed any adjective as a pre-adjunct of any gerund. As we shall see below, English did pass through a phase where this was possible, but we can see the modern system as a major simplification.

8. The route from Old English

It is important to evaluate any analysis of current English in relation to a much broader context. Does it explain the origins of current English in earlier forms of English?

The diachronic question arises because the development has been very gradual, so that slightly different grammars have had to coexist over long periods. This means that it should be possible to trace a route back from current English to a much older stage via a series of grammars with only minimal differences between adjacent stages. Unfortunately the early history of gerunds is very complex, unclear and hotly disputed - not least because the suffixes used for nominalisations (*-ing* and *-ung* in Old English) merged in Middle English with those of the participle (formerly *-ende*), to give the Modern English situation where the difference between *-ing* and *-in'* is grammatically irrelevant (both are ambiguous between participle and gerund) but socially important (Denison 1993:387, Malouf 1998:116, Labov 1989). An analysis of current English must therefore generalise, with only minor changes, to the intermediate grammars that are known to have existed in the past. The following discussion rests heavily on data from Wurff (Wurff 1993; 1997), and as in his more recent account (1997), I shall show that the changes involved a gradual evolution of fine details rather than a major reorganisation of the grammar; however Wurff assumes a structural analysis which is quite different from the one proposed here.¹⁶

The relatively 'pure' system of current English stands at the end of a long period of gradual evolution (which Wurff dates as starting in the 11th century), during which gerunds shed their nominal 'internal' characteristics - i.e. the characteristics expected within a noun phrase. As we have seen, even today they still have two such characteristics - possessive subjects and occurrence after *no/any* - but until as recently as the end of the 19th century they could also occur with *the* and with adjectives. In the following examples from Wurff (1993), I have italicized the relevant words:

- (66) a. Between rheumatism and *constant* handling the rod and gun ... (1853)
- b. *The* managing an argument handsomely being so nice a Point, ... (1711)
- c. *The* writing the verbs at length on this slate, will be a very useful exercise (1829)
- d. *the due* placing them adapts the rhyme to it. (1684)

Malouf (1998:75) quotes similar examples:

- (67) a. *the untrew*e forgyng and contryvyng certayne testamentys and last wyll [15th century]
- b. my *wicked* leaving my father's house [17th century]
- c. *the* being weighted down by the stale and dismal oppression of the remembrance [19th century]

Denison (pc) quotes other examples which are worth repeating because of their relatively recent dates:

- (68) a. *The* copying them has been and still is my occupation; ... and I am trying to get the printing done also while I am finishing the copying. (1873)

- b. At least I can't fix on any tangible object or aim in life which seems so desirable as *the* having got it finally over - and *the* remaining in perpetuo without desire or aim or consciousness whatsoever. (1890)
- c. The days had been very full: the psychiatrist, the obstacle courses, *the* throwing herself from the hold of a slowly chugging plane (1998).¹⁷

Conversely, during this long period of evolution nominalizations sometimes had a verbal characteristic, modification by adverbs, which Malouf claims to be generally impossible (1998:121). Again the examples are from Wurff (1993):

- (69) a. The *quickly* doing of it, is the grace. (1610)
- b. he finds that bearing of it *patiently* is the best way. (1664)
- c. the shutting of the gates *regularly* at ten o'clock ... (1818)

Indeed, Wurff (1997) even gives an example where an adverb is used with a derived nominalization:

- (70) but on an examination more *strictly* by the justices of the peace, and at the Lord Mayor's request, it was found there were twenty more. (1722)

The question, then, is what these examples tell us about the grammar.

One important fact is that 'mixed' gerunds of the kinds illustrated here were not at all common. In a collection of 400 clear gerunds or nominalizations from the 18th and 19th centuries that Wurff studied (1997), only 8% showed mixed characteristics by the most generous definition of this category. All the rest were either consistently verbal (82%) or consistently nominal (11%). These figures suggest that the mixed patterns may have been archaic and perhaps even impossible for most writers.

Another observation is that only two areas of grammar are involved: the use of *the*, and the choice between adverbs and adjectives. The first is easily accommodated as yet

another determiner which allows a gerund complement, in addition to possessives and *no/any*; in other words, the range of determiners which allow such complements has gradually reduced over time. This is hardly surprising given the origins of gerunds.

The change in the use of adverbs and adjectives also led to a simplification of the grammar, as suggested above, but it seems that there was a period when the choice was less rigidly determined than in current English. Example (70) above shows that adverbs could at least sometimes modify ordinary nouns in 18th century English, and according to Wurff (1997), adverbs such as *telkens*, ‘continually’, can modify nominalizations in modern Dutch (reflecting a general flexibility in the choice between adjective and adverb compared with English):

- (71) a. door het telkens breken van je beloften
by the continually breaking of your promises
‘Because of the continual breaking of your promises’
- b. het telkens geven van geld aan hem
the continually giving of money to him
‘The continual giving of money to him’

It is worth pointing out that there is at least some flexibility even in current standard English; some adverbs may modify some nouns, and the choice between adverb and adjective is optional in some verb-modifier collocations (Swan 1995:16-9).

- (72) a. The weather *recently* in London has been appalling.
b. I held it *tight/tightly*.
c. You guessed *wrong/wrongly*.

However the fact remains that the examples quoted earlier, in which adverbs modified nouns and adjectives modified gerunds, would all be rejected in present-day English.

What has changed is clearly that both adverbs and adjectives are more tightly restricted now than they were in earlier periods. On the one hand, adverbs are (in general) not allowed to modify nouns, and on the other adjectives are (in general) only allowed to modify common nouns (and compound pronouns like *someone*). Without more facts it is hard to know exactly what the restrictions in earlier periods were, but one possibility is that adjectives could modify all nouns, including gerunds, while the restriction on adverbs was semantic rather than syntactic (e.g. *quickly* can modify any word which refers to an event that has a speed). Whatever the facts and the correct analysis, it seems clear that the relevant changes in the grammar can be accounted for by changes to the rules for adjectives and adverbs, and without any change to the analysis of gerunds.

10. Conclusion

The main conclusion is that English gerunds are indeed just what the traditional grammarians said: single words which are both verbs and nouns. Once this has been said, nothing more is needed in order to generate ordinary gerunds, though special provisions are needed for possessive subjects and *no/any*. In particular there is no need to assume separate verbal and nominal nodes in order to prevent verbal and nominal characteristics from conflicting, because English is organised in such a way that these characteristics are always orthogonal: nominal features are exclusively concerned with relations external to the gerund phrase, and verbal features with its internal patterns.

It is also worth pointing out that this analysis has important consequences for syntactic theory that go beyond the treatment of gerunds. The analysis supports the following general conclusions. First, phrase structure may be less important than it is often considered to be. Even gerunds, which seem at first sight to call out for multiple phrasal nodes, can be analysed

very satisfactorily in terms of dependency structures with no more than one node per word.

Second, word-class features (e.g. [+N]) may be less satisfactory for classification than atomic word-class names (e.g. Noun); in particular, it would be wrong to use [+N,+V] for adjectives because a feature analysis would need this combination for gerunds. Both of these conclusions are compatible with Word Grammar, so the success of the analysis can be taken as evidence for the relevant parts of WG theory.

Endnotes

1. The ideas in this paper were first presented in a paper to the Linguistics Association of Great Britain conference in April 1999; it is based on a semi-published paper which presents the same analysis but which focuses on the role of default inheritance rather than of dependency analysis (Hudson 2000c). It incorporates a number of suggestions made by participants at the LAGB conference, and has benefited greatly from comments and bibliographical suggestions by two anonymous readers, Chet Creider, David Denison and Rob Malouf.
2. Terminology varies from author to author. What I am calling simply ‘gerunds’ are often called ‘verbal gerunds’, in contrast with ‘nominal gerunds’ which I shall call nominalizations. Some authors (e.g. Bresnan 2001:287) use an adjective ‘gerundive’ (e.g. ‘gerundive VP’) for patterns that involve verbal gerunds. The term ‘gerund’ is used quite differently in Romance linguistics, where it refers to verb forms which I would call ‘present participles’. The term derives from Latin, where the form *gerundum* was in fact the gerund of the verb *gerere*, ‘to do’, so my usage is in line with that of traditional Latin grammars (Griffin 1991:82).
3. The following is an incomplete and no doubt unrepresentative sample: Rusteberg 1874; Poutsma 1923; Langenhove 1925; Wik 1973; Tajima 1985; Donner 1986; Jack 1988; Houston 1989; Wurff 1993; Fanego 1996a, b; Wurff 1997. Denison gives a convenient summary (Denison 1993 :403-4).
4. I follow the widespread convention of using small capital letters for lexemes which subsume more than one word-form; thus HAVE includes *has*, *had*, and *having* as well as the basic form *have*.
5. Examples (7f) and (7g) were provided by David Denison and the Collins Cobuild English Dictionary; the remaining examples are from Quirk et al. (1985:1066).

6. Apart from Malouf's analysis, I know of only two in which the similarities to both clauses and noun phrases are shown on a single node: Hudson 1976:37-43 and Wurff 1993.
7. The following are the main publications which explain and apply Word Grammar: Creider 1999; Creider and Hudson 1999; Fraser and Hudson 1992; Gisborne 1996; 2001; Hiranuma 1999; Holmes and Hudson forthcoming; Hudson 1984; 1990; 1995a; 1997a, b; 1998; 1999; 2000b, c, d, e; 2001; Hudson and Holmes 2000; Mann 2000; Rosta 1997; Spinillo 2000. The WG web site contains more information: www.phon.ucl.ac.uk/home/dick/wg.htm.
8. A two-node analysis would be possible in WG if we treated the *-ing* suffix as a separate word - i.e. as a clitic. If the verb-base depends on the *ing*, and the latter is classified as a noun, most of the facts are handled. This is in fact the analysis promoted in Hudson (1990:316-326), but it is very hard to justify as there is no independent evidence that *ing* is a clitic rather than a suffix.
9. Various different formal versions of dependency theory have been developed by Heringer 1993; Hudson 1990; Kunze 1975; Mel'cuk 1988; Weber 1997. Most of them are simply called 'dependency grammar', but Mel'cuk's is the Meaning-Text Model.
10. Important references for HPSG include Pollard and Sag 1994; Sag 1997; Paolillo 2000; Wintner 2000
11. Important references for Cognitive Grammar include Enger and Nessel 1999; Kemmer and Israel 1994; Langacker 1990; Langacker 1998; Langacker 2000
12. Important references for Construction Grammar include Fillmore et al. 1988; Goldberg 1995; Kay and Fillmore 1999; Goldberg 1995
13. Important references for Network Morphology include Brown et al. 1996; Cahill and Gazdar 1999; Corbett and Fraser 1993; Fraser and Corbett 1997; Hippisley 1998
14. The term 'possessive' may be inappropriate semantically, but at least it is better than the

term 'genitive', which implies that the 's is an inflected case. This is clearly wrong, as most linguists have accepted for some decades now. The most promising analysis takes the 's as a clitic (Hudson 1995b).

15. As Malouf has pointed out to me, it is unfair to possessive subjects to lump them together with the much more marginal *no* and *any* as the 'debris of history'. However if my analysis is correct, they really are a relic from an earlier stage of the language where they made better sense than they do now.

16. Wurff assumes an abstract phrase-structure analysis similar to the one in Yoon 1996, in which a zero nominalizing node combines with a present participle. This decision produces structures which are admitted to be "rather complicated, with a bottom-up succession of nominalization, verbalization and nominalization" (1997:187).

17. Sebastian Faulks, 1998. *Charlotte Gray* [Vintage, 1999] p.111.