

1

Remarks on gerunds

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This paper defends the traditional view that gerunds and participles straddle word classes, and that the hybrid character of these elements reflects categorial neutrality. However, neutrality is confined to lexical entries and resolved in the syntagmatic structures that they describe. The proposal is illustrated by analyses of English gerunds and Welsh verbal nouns. The resulting analyses suggest a somewhat unexpected rapprochement between the Lexicalist Hypothesis of Chomsky (1970) and ~~the lexicalist orientation of~~ contemporary constraint-based approaches.

1.1 Introduction

Although word classes are usually regarded as discrete, two types of categorial hybrid recur with such regularity that they are often recognized as separate parts of speech in traditional grammars. They are the **gerund** or ‘verbal noun’, and the **participle** or ‘verbal adjective’.¹ These categories also play a prominent role in theoretical accounts, though they tend to receive sharply divergent analyses. Gerunds, or the ‘gerundive nominals’ that they head, are widely regarded as canonical examples of ‘mixed categories’. Analyses of gerundive nominals thus aim to combine nominal and verbal properties in a single representation in such a way as to minimize the deviation from endocentric patterns. The categorial indeterminacy of participles, on the other hand, is typically resolved through the use of rules that mediate between unambiguously verbal and adjectival elements. The main points of disagreement within this literature concern, e.g., whether there are parallel rules deriving

¹In some traditions, the term ‘gerund’ is also used to refer to nonfinite forms with an adverbial function.

‘verbal passives’ and ‘adjectival passives’, as suggested in the transformational accounts of Wasow (1977) and Levin and Rappaport (1986), or whether the forms that occur in ‘adjectival passives’ should be derived by conversion from passive participles, as in the lexicalist analysis of Bresnan (1982, 2001).

This paper defends the traditional view that least some cases of gerunds and participles genuinely neutralize the categorial opposition between nouns and verbs, or between verbs and adjectives. On this view, gerunds may contrast with adjectives but are unspecified for the features that distinguish nouns from verbs. Participles may similarly contrast with nouns, but are unspecified for the features that distinguish verbs from adjectives. An underspecified analysis of gerunds accounts for the fact that they can head verbal constituents within a gerundive nominal and also be ‘used as nouns’ in derived nominals. The same underspecification permits English gerunds to function as present participles in progressive constructions and as attributive adjectives in noun phrases.

1.2 Categorial neutrality as lexical underspecification

Categorial underspecification provides one means of modelling the traditional notion of an ‘*X* used as *Y*’. A gerund can be ‘used as’ a noun in a derived nominal and ‘used as’ a verb in a gerundive nominal because it neutralizes the contrast between nouns and verbs. A participle may likewise function as a verb in a periphrastic verbal construction, or as an attributive adjective in a noun phrase. There are obvious theoretical antecedents for both of these analyses: van Riemsdijk (1983) proposes an underspecified treatment of participles, while Malouf (2000) classifies gerunds as intermediate between nouns and verbs. Yet the traditional perspective advocated here is best regarded as a ~~highly~~ qualified version of the extreme lexicalist position in Chomsky (1970, 21–22):

We can enter *refuse* in the lexicon as an item with certain fixed selectional and strict subcategorization features, which is free with respect to the categorial features [noun] and [verb]. Fairly idiosyncratic morphological rules will determine the phonological form of *refuse*, *destroy*, etc., **when these items appear in the noun position.**

Let us propose, then, as a tentative hypothesis, that a great many items appear in the lexicon with fixed selectional and strict subcategorization features, but with a choice as to the features associated with the lexical categories noun, verb, adjective. The lexical entry may specify that semantic features are in part dependent on the choice of one or another of these categorial features (emphasis added, JPB).

Chomsky (1970) is here proposing a radically underspecified lexicon, in which **lexemes** may be categorially indeterminate.² In his example, the lexeme REFUSE is represented by a single entry, and spelled out as the verb *refuse* or the noun *refusal*, depending on syntagmatic context. Yet it is not entirely clear what benefit a single entry confers in this case. Given that *refuse* is a verb and *refusal* is a deverbal noun, associating these forms with common entry does not capture any genuine neutrality, but simply represents the properties that are constant within the derivational paradigm of REFUSE.

The proposal that lexical elements may be ‘free with respect to the categorial features [noun] and [verb]’ is, however, directly applicable to the nominal constructions that are the main focus of Chomsky (1970). Forms in *-ing* provide the most plausible case of contextually-resolved neutrality. For example, the form *signing* functions as a verb in the progressive VP in (1a), as a noun in the derived nominal in (1c), and as the head of a verbal phrase within the gerundive nominal in (1b).

- (1) a. They are reluctantly signing the treaty. (PROGRESSIVE VP)
 b. Their reluctantly signing the treaty. (GERUNDIVE NOMINAL)
 c. The reluctant signing of the treaty. (DERIVED NOMINAL)

A neutral entry for *signing* will contain ‘selectional and strict subcategorization features’ that identify it as transitive, and perhaps category features that mark it as non-adjectival. However, the strict subcategorization features will not specify the category of the object, and the category properties will be unspecified for the features that distinguish nouns from verbs. The underspecified category and subcategorization properties of *signing* will then be resolved in the syntagmatic contexts in (1).

1.2.1 Contextual resolution

Chomsky (1970) does not specify exactly what he means by ‘the noun position’ or precisely how neutral entries are resolved in such positions. It is nevertheless clear that disambiguating contexts are to be defined with reference to structures, and not in terms of other entries, which may themselves have underspecified subcategorization demands. One obvious candidate is category-specific X-bar expansions, of the sort given in Chomsky (1970, 53). For example, the head-complement schema in (2a) can be instantiated by the nominal expansion in (2b) and by the verbal expansion in (2c).

- (2) a. $X' \rightarrow X Y''$
 b. $N' \rightarrow N PP$

²See Matthews (1991) for discussion of the term ‘lexeme’, which corresponds to a ‘lexical item’ in Anderson (1992).

c. $V' \rightarrow V NP$

The rules in (2b) and (2c) sanction head-complement subtrees in which the mother preserves the features of the V' or N' on the lefthand side, and the daughters preserve the features of the elements in the righthand side. These rules thus express a default correlation between category and complementation that distinguishes nouns from verbs in general, and ‘nominal uses of gerunds’ from ‘verbal uses of gerunds’ in particular.³ Hence the N and V nodes admitted by the rules in (2b) and (2c) provide categorially determinate positions that will resolve the neutrality of a gerund entry. For example, the neutrality of the entry for *signing* is resolved to V in (3a) and (3b), and to N in (3c).⁴

- (3) a. They are reluctantly [V' [V signing] the treaty]
(PROGRESSIVE VP)
- b. Their reluctantly [V' [V signing] the treaty]
(GERUNDIVE NOMINAL)
- c. The reluctant [N' [N signing] of the treaty]
(DERIVED NOMINAL)

From the standpoint of contemporary approaches such as LFG (Kaplan and Bresnan (1982)) or HPSG (Pollard and Sag (1994)), the contextual resolution of feature neutrality in (3) conforms to a familiar pattern. In the general case, lexical entries will provide partial **descriptions** of more highly specified **structures**. On this view, a gerund (or participle) is not ultimately a type of **category**, but rather a type of **entry**, one that is unspecified for features that distinguish lexical word classes.

1.2.2 Categories and classes

A distinction between discrete categories and the partial descriptions specified by entries or rules is entirely compatible with X-bar approaches. Although componential analyses in terms of the features [N] and [V] are often taken to ‘define’ traditional parts of speech, these analyses can also be construed as describing a system of discrete categories. To make this point clearer, it will be useful to review the X-bar features, introduced in Chomsky (1970), and elaborated in Chomsky (1981, 48):

Specifically, let us assume a variant [of X-bar theory JPB] based on two categories of traditional grammar: substantive ([+ N]), including nouns and adjectives, and predicate ([+ V]), including verbs and adjectives. Let us refer to

³Though rule (2b) departs from the analysis in Chomsky (1970, 53), which introduces prepositions transformationally.

⁴In the transformational model assumed by Chomsky (1970), a gerund can likewise be inserted into structures admitted by (2b) and (2c) because it satisfies the ‘nondistinctness’ condition on lexical insertion ((Chomsky, 1965, 83)).

REMARKS ON GERUNDS / 5

substantives and predicates as the “lexical categories”. So we have a system based on the features $[\pm N]$, $[\pm V]$, where $[+N, -V]$ is noun, $[-N, +V]$ is verb, $[+N, +V]$ is adjective, and $[-N, -V]$ is preposition, ...

The four categories described by the features $[N]$ and $[V]$ are summarized in (4a). The partial analysis $[N+]$ describes the class of ‘substantives’ (i.e., nouns and adjectives), while $[V+]$ describes the class of ‘predicates’ (i.e., verbs and adjectives). The analysis $[N-]$ describes the class of verbs and prepositions, which Chomsky (1981, 49) terms ‘Case assigners’, and $[V-]$ describes the ‘argumental’ class of nouns and prepositions. All told, the X-bar features determine four complete analyses, which describe the categories in (4a), and four partial analyses, which describe the classes in (4b).

(4) Standard X-bar categories and natural classes

a.

CATEGORY	N	V
N(oun)	+	-
V(erb)	-	+
A(djective)	+	+
P(reposition)	-	-

b.

CLASS	CATEGORIES	N	V
substantive	N, A	+	
predicate	V, A		+
‘Case-assigner’	V, P	-	
‘argumental’	N, P		-

Yet there is no way to characterize gerunds in this system. Participial entries can be specified as $[V+]$. However, since nouns and verbs have no features in common, a partially specified gerund entry simply cannot be defined. An analogous problem is noted by Jackendoff (1977, 30), who remarks that ‘there are many rules which generalize across supercategories of N and V, and this is not expected in a feature system like [4a]’. This problem derives ultimately from the fact that Chomsky (1970) defines a system of four categories in terms of two basic categories, whereas, in fact, most part of speech systems have three open-class categories: nouns, verbs and adjectives.⁵ Chomsky (1981, 48) acknowledges the heterogeneous nature of (5a) in characterizing only ‘the first three’ categories in (5a) as ‘being lexical categories’. Describing prepositions in terms of ‘lexical’ features just serves to fill the category space defined by $[N]$ and $[V]$, much as the ‘second genitive’ and ‘second locative’ bring the total of Russian cases up to the 8 defined by the three binary

⁵It may be plausible to regard these three categories as reflecting a canonical realization of semantic notions corresponding to objects, actions and properties, as Croft (1991), Malouf (2000) and Spencer (this volume) suggest.

features in Jakobson (1936).

The deficiencies of standard X-bar analyses are easily overcome, as there is no reason — apart from some crude notion of feature minimization — why the lexical features [N] and [V], but not [A], should have been carried over from Chomsky (1965). Restoring a distinctive feature corresponding to each open-class category, as in (5), immediately permits a description of gerunds. In the revised analyses in (5b), [N+] describes nouns, [V+] applies to verbs and [VA+] picks out adjectives. On the assumption that categories are discrete, no description will contain more than one positively specified feature. Hence an analysis with a single positive feature describes a determinate category, while an analysis with a single negative feature describes a class of categories. The analyses in (5b) identify the classes defined by [N], [V] and [A]. Participial entries are specified as [N–] and describe verbs and adjectives, [V–] substantive entries describe nouns and adjectives, and [A–] gerundive entries describe nouns and verbs. There is, moreover, no need to coerce any closed-class category into this system.

(5) Revised X-bar categories and classes

a.

CATEGORY	N	V	A
N	+	–	–
V	–	+	–
A	–	–	+

b.

CLASS	CATEGORIES	N	V	A
participle	V, A	–		
substantive	N, A		–	
gerund	N, V			–

Two points should be stressed in connection with the analyses in (5). The first is that nothing of consequence hinges on the use of binary-valued X-bar features. These features are familiar and mnemonic, but they merely serve to express the fact that a system with the three basic categories in (5a) naturally determines the three classes in (5b). A set-based description language will, for example, determine precisely the same classes. For each of the open-class categories noun, verb, and adjective, a set-based language will contain a fully determinate description: {N}, corresponding to [N+], {V}, corresponding to [V+], and {A}, corresponding to [A+]. There will again be three partially specified descriptions: a participial description {V, A}, corresponding to [N–], a substantive description {N, A}, corresponding to [V–], and a gerundive description {N, V}, corresponding to [A–]. There will also be a maximally general description, {N, V, A}, which corresponds to a fully underspecified X-bar analysis [], and describes any category. Feature-based and set-based

descriptions converge because there are only three non-trivial classes that can be defined over three discrete categories.

The second point that should be emphasized is that the notions ‘gerund’ and ‘participle’ (as well as ‘substantive’) correspond to recurrent types of underspecified entries. These entries may describe more than one type of category, but in any particular syntagmatic context, they describe a fully determinate category. In short, indeterminacy is here a property of descriptions, not categories. This perspective thus differs from accounts that recognize ‘squishy’ categories (Ross (1972)), as well as from approaches that treat gerunds or participles as genuine categorial hybrids (Malouf (2000)). The present account exploits the fact that a description-based approach can confine the ‘squishiness’ of gerunds or participles to underspecified entries, and state any generalizations that span categories in terms of the features [N], [V], and [A], without reifying any of these features as an abstract type.

The following sections now present more detailed analyses of gerunds that illustrate this approach.

1.3 Gerunds in English revisited

The historical orientation of traditional descriptions is reflected in their tendency to treat gerunds as a unified category that is merely homophonous with present participles. Jespersen (1933, 320) describes the gerund as ‘a hybrid between . . . two word classes’ but characterizes the relation between gerunds and present participles as one of ‘formal identity’. Curme (1935, 215) likewise notes that the gerund may have ‘the full force of a verb, but at the same time . . . the function of a noun’, while remarking that ‘[t]he present participle now has the same form as the gerund’ ((Curme, 1935, 214)).

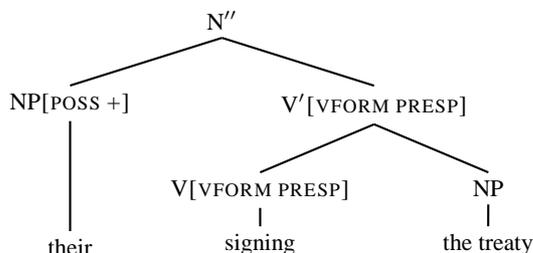
1.3.1 Principled exocentricity

The tradition of formal analysis represented by Lees (1960) and Jackendoff (1977) likewise recognizes a single gerundive form or exponent, which is dissociated from verbal participles. A general objection to this type of analysis is that it fails to capture the fact that ‘there is no verb in English whose present participle and gerund are distinct’ ((Huddleston, 1984, 83)). Pullum (1991) and Blevins (1994) address this issue by defining gerundive nominals as noun phrases headed by present participles. The rule that Pullum (1991, 779) proposes is repeated in (6a), and restated somewhat more concisely in (6b):

- (6) Exocentric X-bar rules (Pullum (1991))
- a. $N[\text{BAR } 2] \rightarrow (N[\text{BAR } 2, \text{POSS } +]) H[\text{VFORM } \text{PRES}P]$
 - b. $N'' \rightarrow (NP[\text{POSS } +]) H'[\text{VFORM } \text{PRES}P]$

Pullum's analysis exploits the fact that the feature matching between a phrase and its head daughter is regulated by a default constraint in GPSG. Hence the head term 'H' may remain unspecified for category features in a phrase structure rule, and the node that it admits will, in the general case, share the category features of its mother.⁶ However, the rules in (6) introduce the specification [VFORM:PRESP], which disrupts the default mother-daughter matching. Since the feature [VFORM] is only compatible with verbal categories (as a consequence of a non-default constraint in GPSG), it overrides the default category matching between the N'' mother and its V' head daughter in (7). Since [VFORM] is, moreover, designated as a **head** feature, which is shared between mothers and head daughters, it is inherited by the V daughter in (7) and determines the selection of a present participle.

- (7) Categorially exocentric gerundive nominals (Pullum (1991), Blevins (1994))



Pullum (1991, 763) provides a sustained argument for the descriptive claim that 'English nominal gerund phrases are noun phrases with verb-phrase heads'. Yet as with previous heterocategorical accounts, the strategy that Pullum uses to admit this structure is open to a number of objections. In contrast to the account of Schachter (1976), the rules in (6) avoid directly stipulating a phrase-internal change in category. However, these rules introduce a feature that indirectly forces the change, which comes to much the same thing. As Lapointe (1993) points out, a rule format that allows rules like (6) permits unconstrained and unattested violations of endocentricity, and also fails to distinguish recurrent patterns like (7) in any way. Moreover, this analysis provides a unified treatment of present participles and the heads of gerundive nominals, but at the cost of wholly dissociating the heads of gerundive nominals from the heads of derived nominals in *-ing*. A related objection is that the analysis cannot relate the two nominal dimensions of gerunds, namely that they may 'function as nouns' within derived nominals, and also head verb phrases embedded within gerundive nominals.

⁶See Gazdar et al. (1985) for discussion of the default status of the 'Head Feature Convention' in GPSG.

1.3.2 A unified account of derived and gerundive nominals

These objections suggest the need to reconsider the role of underspecification and feature constraints in Pullum's analysis. Stipulated features can be prevented from inducing surreptitious violations of endocentricity if it is the 'mother' term on the lefthand side — rather than the 'head' term H — that is underspecified in an X-bar rule ~~must be compatible with those specified on the lefthand side 'mother' term~~. The constraint in (8) will then reinstate a default endocentric pattern within phrases.

- (8) The mother node described by an X-bar rule must satisfy the **head** features on the **head** term H.

The constraint in (8) does not bar heterocategorial projections outright. Rather, the constraint proscribes overt category conflicts between mother and head daughter terms and prevents the use of features like [VFORM] to induce category change by stealth. Category change remains possible within a single phrase. Yet the change must be sanctioned by a rule that introduces a categorially underspecified head daughter, ~~which~~ **and** thus describes a node that is categorially distinct from its mother.

A pair of rules that describe heterocategorial gerundive nominals are given in (9).⁷

- (9) Revised gerundive rules
- a. $X''[N+] \rightarrow (NP[POSS+]) H'[A-]$
 - b. $X''[N+] \rightarrow (NP[POSS+]) H'[A-, IFORM GER]$

As in GPSG, these rules are interpreted as partial descriptions of a local subtree. The rule in (9a) describes a subtree consisting of an N'' mother, a possessive noun phrase daughter, and a non-adjectival head daughter. On the assumption that categories are discrete, the head daughter must either be an N' or a V' . The first 'solution' describes derived nominals, and the second describes gerundive nominals. Although the category of the N'' mother differs from that of its V' daughter in the gerundive nominal, the N'' mother nevertheless satisfies the [A-] feature on H in (9a).

The rule in (9b) just adds a category-neutral 'inflectional form' ([IFORM]) feature that selects a gerund or 'ing form' ((Huddleston, 1984, 83)). Any distributional restrictions on category-specific attributes like [VFORM] and [AFORM] in GPSG can be imposed just as well on the **values** of [IFORM].⁸ A value like PRET(ERITE) will thus be restricted to verbs, and SUPER(LATIVE)

⁷The concise mothers in (9) exploits the fact that the positive feature [N+] implies the negative features [V-] and [A-].

⁸Since attributes like [VFORM] and [AFORM] never cooccur, it is unclear why GPSG ~~did~~ does not adopt a single form feature.

to adjectives. However, values like GER(UND) or PART(ICIPLE) will function, in effect, as category-neutral form indices.⁹

The head-complement rules in (10), corresponding to (2b) and (2c) above, now illustrate how (8) determines an endocentric pattern by default. The rule in (10a) describes a subtree headed by N, and (10b) describes a subtree headed by V. Given (8), the mother sanctioned by (10a) must satisfy [N +], and thus can only be N', while the mother sanctioned by (10b) can only be V'.

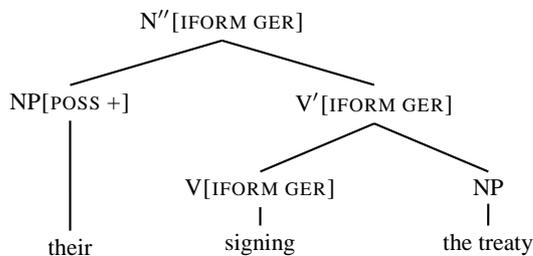
(10) Endocentric head-complement rules

a. $X' \rightarrow H[N +] PP$

b. $X' \rightarrow H[V +] NP$

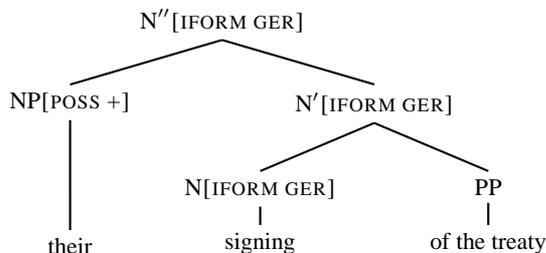
The gerundive rule in (9b) and the verb-complement rule in (10b) thus sanction the tree in (11).

(11) Gerundive nominal headed by gerund resolved to V



The rule in (9b) and the noun-complement rule in (10a) likewise sanction the tree in (12).

(12) Derived nominal headed by gerund resolved to N



The trees in (11) and (12) illustrate the syntagmatic resolution of categorial neutrality. The entry for *signing* describes a noun in (12) when the gerund occurs in what Chomsky (1970, 22) refers to as a 'noun position' and describes a verb in (11) when it occurs in a 'verb position'. The categorially

⁹See Stump (2001), especially chapter 6 and references cited therein, for a detailed treatment of form indices.

determinate rules in (10) allow the entry for *signing* to remain unspecified for [N] and [V] (or whatever features are taken to distinguish nouns from verbs). In addition, a gerund entry will neutralize any variation in argument structure that is conditioned by differences in category. The entry for *signing* will thus identify the gerund as transitive, without specifying the syntactic category or even the surface grammatical functions of the arguments that it selects. Many contemporary approaches describe the abstract argument structure of a predicate in terms of a list of thematic roles that are ‘projected’ or ‘mapped’ onto syntactic argument structure. The argument structure of *signing* can be described by ‘*sign* $\langle x, y \rangle$ ’, in which ‘*sign*’ is a predicator and ‘ $\langle x, y \rangle$ ’ a pair of thematic roles. The entry for *signing* might then specify just the form index and argument structure in (13).

(13) *signing*: [IFORM GER, *sign* $\langle x, y \rangle$]

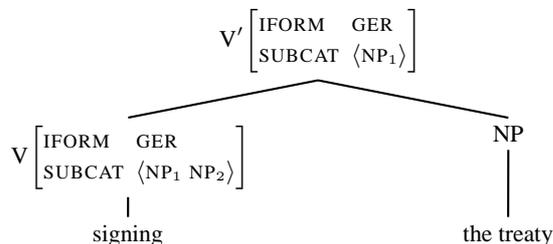
The thematic arguments of a predicate will have characteristic realizations in particular categories. The arguments of a verb are prototypically realized as noun phrases. This pattern is represented in (14a) by cross-referencing the thematic roles x and y to valence terms that express the strict SUBCAT(EGORIZATION) demands of a predicate, as in HPSG. On the other hand, the highest argument of a noun tends to be realized as a determiner, while other arguments are canonically realized by prepositional phrases. The default pattern for nouns is represented in (14b). Within lexicalist approaches, constraints that establish mappings like these in (14) are usually regarded as part of a lexical entry. However since these constraints apply ultimately to structures, they can also be considered as general, entry-neutral, defaults that apply to noun and verb preterminals.

(14) Default realizations of verbal and nominal argument structure

- a. $V \left[\begin{array}{l} \text{SUBCAT} \quad \langle NP_1 \ NP_2 \rangle \\ \textit{predicator} \quad \langle x_1, y_2 \rangle \end{array} \right]$
- b. $N \left[\begin{array}{l} \text{SUBCAT} \quad \langle DET_1 \ PP_2 \rangle \\ \textit{predicator} \quad \langle x_1, y_2 \rangle \end{array} \right]$

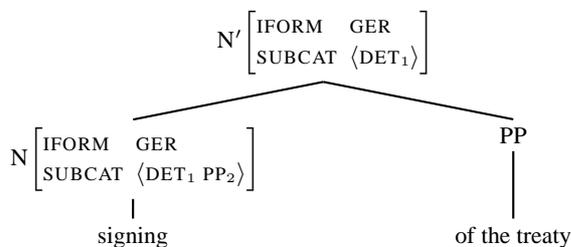
Applied to the preterminal V in (11), the default in (14a) determines the verbal valence pattern in (15). The argument structure ‘*sign* $\langle x, y \rangle$ ’ is suppressed in (15), since it does not directly control syntactic subcategorization, and it can in any event be reconstructed from the indices in (15). As in simple versions of HPSG, the second term NP_2 identifies the complement demands of *signing*. Also following HPSG practice, NP_2 is ‘cancelled’ from the subcategorization demands of the V’ mother, once it is matched against the NP complement in (15), though nothing hinges on this convention.

(15)



Applying the noun default in (14b) to the preterminal N in (12) determines the distinctive nominal valence pattern in (16). As in (15), the second term, here PP₂, is matched against the syntactic complement. The first term, DET₁ is likewise inherited by the N' mother.

(16)



In short, the neutrality of the gerund entry in (13) can be resolved through the interaction of two disambiguating devices: the categorially determinate rules in (10), and the default constraints in (14). It is difficult to frame this analysis in a wholly theory-neutral way, as there is no generally accepted *lingua franca* for expressing syntactic valence. It should, nevertheless, be reasonably clear that one can swap in other assumptions about the representation or regulation of valence demands.

Moreover, the contextual resolution of valence demands — by whatever formal means — suggests a useful refinement of the rules in (9). As Malouf (2000) discusses at some length, the rule in (9a) cannot be extended in any straightforward way to accommodate ‘ACC-ing’ gerundive nominals like *them signing the treaty* or *Max signing the treaty* in which the NPs *them* and *Max* are unmarked, rather than possessive. Blevins (1994) attempts to extend the account in Pullum (1991) by allowing structures to be sanctioned by multiple phrase structure rules, though contextual resolution of valence demands provides a much simpler alternative. Given that the V' in the gerundive nominal in (15) selects an NP, the rule for gerundive nominals can be generalized by dropping the [POSS] specification. The generalized rule in (17a) will now

admit both ‘POSS-ing’ and ‘ACC-ing’ gerundive nominals.¹⁰

(17) Final gerundive and NP rules

- a. $X''[N +] \rightarrow (NP) H'[A -, IFORM GER]$
- b. $X'' \rightarrow (Det) H'[N +]$

Since the N' in (16) selects a determiner, the rule in (17a) will only admit derived nominals with a possessive determiner, as only possessives are cross-classified as NPs and determiners. Derived nominals containing other types of determiners will be sanctioned by the basic NP rule in (17b).

1.4 Extensions and Implications

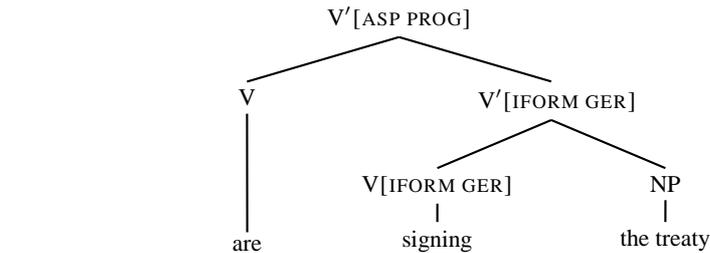
The analyses in section 1.3.2 offer solutions to a number of objections that have been raised in connection with the analysis in Pullum (1991). The constraint in (8) bars the use of categorially-restricted features to induce category change. The generalized rule in (17a) admits a wider range of gerundive nominals than the original rule in (6a). Moreover, contextual resolution of underspecified entries in (13) provides a unified account of the gerunds that head gerundive and derived nominals.

The present section identifies further implications of the approach outlined above, briefly summarizes some alternatives, and closes with a discussion of general issues raised by mixed categories.

1.4.1 Present participles

The recognition of an underspecified gerundive entry preserves the key insight of Huddleston (1984) and Pullum (1991), namely that gerunds and present participles have converged in Modern English, and not merely homophonous. This convergence is clearly reflected in the analysis of the progressive VP in (18), which contains the same V' subconstituent as the gerundive nominal in (11).

(18) Progressive phrase headed by gerund resolved to V



¹⁰Gerundive nominals may not combine with the pronouns *he*, *she*, *they*, *we* or *I*. However these forms are dedicated subject pronouns in Modern English ((Hockett, 1947, 241)) which must, for all intents and purposes, occur as the sole subject of a finite verb. Hence these forms pattern with subject clitics in Romance rather than with nominative NPs.

There are, of course, familiar differences between gerundive and progressive constructions. One significant difference concerns the fact that stative verbs like KNOW may readily occur in gerundives like (19a) but are much less acceptable in the corresponding progressive in (19b).

- (19) a. Their [_{V'} [_V knowing] the answer] came as a surprise.
 b. *They are [_{V'} [_V knowing] the answer].

However, as Lee (2003) argues at some length, this restriction does not imply a difference between gerunds and present participles, but rather reflects a contrast between gerundive nominal and progressive constructions. That is, progressivity is a construction-level property of progressive verb phrases, not a lexical property of the 'ing forms' that these verb phrases contain.

1.4.2 Adjectival gerunds in English

As Quirk et al. (1985, 413) remark, '[t]here are many adjectives that have the same suffixes as participles in *-ing*'. For example, the gerund *barking* that occurs in the progressive phrase in (20a) can also 'function as an attributive adjective' in the noun phrase in (20b).

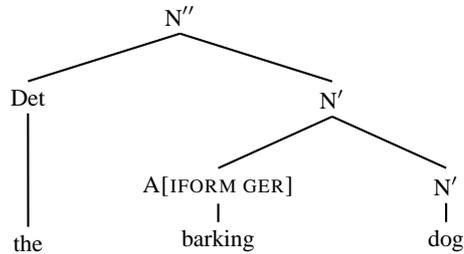
- (20) a. The dog is [_{V'} [_V barking]].
 b. [_{N''} the [_{N'} [_A barking] dog]]

The alternation between the predicative and attributive use of *barking* in (20) is characteristic of participles in general. Hence the participation of gerunds reflects the fact that they subsume present participles in English. The category and valence demands of an adjectival gerund can again be resolved contextually through the interaction of X-bar rules and argument-structure mapping constraints in (21). The entry for *barks* will contain the information in (21a). The standard X-bar rule in (21b) defines a prenominal 'adjective position' within an N' projection. The constraints in (21c) likewise specify the canonical realization of the argument structure of an adjective.

- (21) Contextual resolution of adjectival argument structure
- a. *barking*: [IFORM GER, **bark** $\langle x, y \rangle$]
 - b. $X' \rightarrow A H' [N +]$
 - c. $A \left[\begin{array}{l} \text{SUBCAT} \quad \langle N_1 \rangle \\ \textbf{predicator} \quad \langle x_1 \rangle \end{array} \right]$

Recall that adjectives are prevented from heading gerundive nominals by the [A -] features introduced by the rule (17a), not by any categorial properties of the gerundive entry in (13). The fact that the entry in (21a) is also unspecified for category allows it to be resolved to an adjective in (22).

(22) Noun phrase modified by gerund resolved to A



1.4.3 Gerunds in Welsh

The collapse of gerunds and present participles is an exceptional and, as Curme (1935, 214) sees it, ‘unfortunate’ development in English. It is not even the case that all verbal nouns can be regarded as neutral between nouns and verbs. However, neutral entries suggest a means of reconciling often intractable debates about the categorial status of verbal nouns that have taken on a manifestly verbal character. The Welsh verbal noun provides a clear case in point. Traditional grammars, which are again mindful of the origins of these elements, predominantly describe them as a type of noun:

The verbal noun is not strictly an infinitive; it governs the genitive, not the accusative, case. It may be used, like an abstract noun, with the article or an adj., as the subject or obj. of a verb or the obj. of a preposition; but it is sufficiently distinct from an ordinary abstract noun by reason of certain constructions in which it cannot be replaced by the latter ((Morris Jones, 1955, 317)).

The verbal noun (VN) is the basic dictionary form of the verb. Grammatically it is in every respect a noun ... and can function as one —for this reason it is possible to use the VN with the definite article, as well as with descriptive or possessive adjectives ... Generally when the VN functions as a noun it corresponds to the *-ing* form of the verb in English, although ... sometimes the plain English verb without *-ing* can be more appropriate ((King, 2003, 131)).

One group of accounts, which includes Willis (1988) and Fife (1986, 1990), takes the traditional view, and argues that the form and distribution of verbal nouns identify them, synchronically, as nouns. An opposing tradition, which includes Awbery (1976), Jones and Thomas (1977), Borsley (1984, 1987, 1993) and Sproat (1985), treats verbal nouns as nonfinite verbs. Verbal nouns exhibit dialect and register variation in Modern Welsh, and there is some disagreement about the facts. Nevertheless, the basic patterns from Literary Welsh that figure in this debate are summarized below.

As in English, possessive pronouns in Welsh are pronominal. These pronouns induce ‘soft’ mutation on a following noun, as illustrated by the alternation between the isolation form *ci* in (23a) and the mutated form *gi* in (23b). A possessive may optionally be resumed by a postnominal pronoun, as

in (23a), but the postnominal pronoun cannot stand alone, as (23b) shows.

(23) Possessive pronouns

- a. ei gi (ef)
his dog him
- b. *ci (ef)
his dog him
'his dog' ((Awbery, 1976, 16))

Pronominal arguments of finite verbs are realized by full pronouns, as illustrated in (24).

(24) Gwelodd y dyn ef.

- saw the man him
- 'The man saw him.' ((Awbery, 1976, 15))

The pronominal arguments of a verbal nouns pattern, in form and distribution, with common nouns, not with finite verbs. As in (23), the pronominal possessive is required in the periphrastic verbal noun construction in (25), and the full pronoun is optional, conveying emphasis when present.

(25) Possessive exponents in verbal nouns

- a. Mae'r dyn wedi ei weld (ef).
is+the man after his see.VN him
- b. *Mae'r dyn wedi weld ef.
is+the man after see.VN him
'The man saw him.' ((Awbery, 1976, 15))

The distribution and interpretation of these pronominal elements shows considerable variation in Colloquial Welsh, as discussed in Sproat (1985), Fife (1986) and Borsley (1993). However, the patterns in (23)–(25) suffice to sketch out the competing viewpoints. Traditional accounts interpret the parallels between (23) and (25) as clear evidence that verbal nouns are nouns. The predominantly generative alternatives argue that these parallels are misleading, on the grounds that pronominal elements function synchronically as 'agreement' exponents, not as pronominal arguments.

The external distribution of verbal noun constructions provides the other main issue that traditional and generative accounts construe as support for their respective positions. Like English gerundive nominals, verbal noun constructions in Welsh may occur as subjects, objects and prepositional objects. This distribution clearly differs from that of finite verb phrases and many types of nonfinite verb phrases. Moreover, as mentioned by Morris Jones (1955, 317) and King (2003, 131) in the passages that begin this section, verbal nouns can cooccur with articles and adjectives, as in (26a).

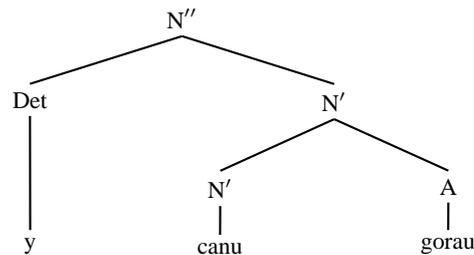
(26) Derived nominals and modal constructions

- a. y canu gorau
 the sing.VN best
 ‘the best singing’ ((King, 2003, 131))
- b. Dylai Rhiannon ganu yn hyfryd.
 ought Rhiannon sing.VN in pleasant
 ‘Rhiannon ought to sing pleasantly.’ ((Borsley, 1993, 46))

Proponents of a verbal analysis argue that these distributional patterns are again inconclusive. Prepositions with verbal noun complements take on a clear aspectual interpretation, and at least one, YN ‘in’, fails to trigger mutation when it functions as a progressive marker ((Awbery, 1976, 17)). The pattern (26a) leads Borsley (1993, 36) to suggest ‘that while VN’s are sometimes nouns, they are generally verbs, as theoretical work has assumed’. In support of the claim that verbal nouns are ‘generally verbs’, Borsley (1993) describes a range of raising and control environments in which a verbal noun performs the function that a nonfinite verb does in the corresponding English constructions. The example repeated in (26b) contains a modal verb, along with an adverbial modifier.

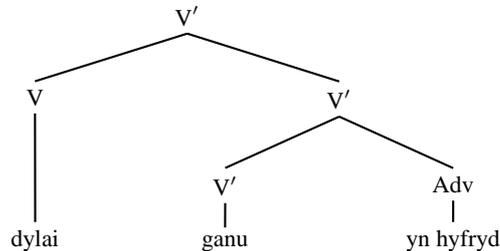
As with gerunds, an underspecified entry for verbal nouns offers a means of reconciling the idea that verbal nouns are ‘sometimes nouns’ but ‘generally verbs’ with the observation that the ‘closest English equivalent’ to the verbal noun ‘is the gerund rather than the infinitive’ ((Willis, 1988, 202)). When a verbal noun like *ganu* ‘sing’ occurs in the ‘noun position’ in (27), it is resolved to a noun.

(27) Verbal noun resolved to N in a noun phrase



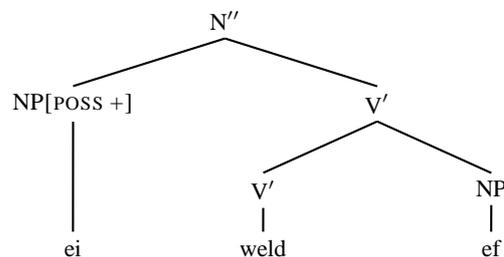
When the same verbal noun occurs in the ‘verb position’ in (28), it is resolved to a verb.

(28) Verbal noun resolved to V in a verb phrase



The form *canu* in (27) again reflects the soft mutation induced by *yn*. The analysis in (28) assumes that Welsh clauses contain verb phrases and that the subject is discontinuous sister of the V' (along the lines proposed in Blevins (1990)), but the verbal status of the lower V' is independent of these structural assumptions. When a verbal noun occurs in a periphrastic progressive construction like (25a), it exhibits the same structure as the English gerundive nominal in (11). The verbal noun in (29) is resolved to a verb in the lower V' , where it may combine with a full pronoun or adverbial modifier. This verbal subconstituent is again embedded within a phrase that shows the form and distribution of a noun phrase. Just as possessives in English can function as determiners in common noun phrases and as subjects in gerundive nominals, their pronominal counterparts in Welsh can, if desired, be regarded as possessors in common noun phrases and as ‘agreement markers’ in gerundives.

(29) Verbal noun resolved to V in a gerundive nominal

**1.4.4 Recent alternatives**

The use of underspecified gerund entries in the present account captures the same basic intuition that underlies the ‘dual category’ analysis of Lapointe (1993), as well as the ‘head sharing’ accounts of Wescoat (1994) and Bresnan (1997). In each of these approaches, the head of a categorial hybrid fulfills multiple functions within a single phrase. Perhaps the main distinguishing feature of these approaches is that they all ‘overspecify’ a head by assigning it to two discrete categories simultaneously. In the account developed here, the indeterminacy of gerund entries is resolved at the preterminal level, so

that phrases may be heterocategorial, but no element within them may be.

The analysis in Malouf (2000) expresses a rather different underlying intuition about gerunds, and mixed categories in general. On this approach, gerunds are not solely nouns, and are not verbs at all. Instead, gerunds represent a special kind of hybrid category that inherits some of the same properties as nouns and verbs within a categorial type hierarchy. Malouf (2000, 65) suggests that gerunds are subtypes of two more general types: a ‘noun’ type which also includes proper and common subtypes, and a ‘relational’ type which also includes verbs and adjectives. Although proper and common nouns are traditionally regarded as members of a common category, the recognition of a ‘relational’ type essentially reflects the tendency within HPSG accounts to posit an abstract type whenever subtypes share properties. To a large degree these types serve merely to expedite property inheritance, as there are no expressions of type ‘relational’ and, indeed, abstract types of this sort are barred from occurring in structures by the requirement that structures must be ‘type-resolved’ in HPSG.¹¹

The central difference between the present analysis and these various alternatives follows from the fact that underspecified gerund entries permit a unified treatment of gerundive and derived nominals. In English, the same underspecified entry may subsume present participles and adjectival gerunds.

1.4.5 General conclusions

The generality of the present account could, of course, be regarded as a weakness. It might be objected that the use of underspecified entries and rules is in some respects even less constrained than the analysis of Pullum (1991), as there are no evident restrictions on the underspecification of head terms. It might also be objected, following Bresnan (1997), that underspecification cannot provide a fully general account of mixed categories, and, in particular, does not apply to verbal nouns with properties that mark them unambiguously as members of a determinate word class.

These objections amount to the observation that the present account does not outline a theory of mixed categories, nor even present a general framework for the description of such categories. There are, to be sure, striking generalizations in this domain. A great many languages contain — or can be reconstructed as having once contained — verbal noun constructions of one sort or another. Other types of categorial hybrids seem much less common, and some possible combinations may even be unattested altogether. It is often thought that grammar formalisms should reflect these patterns, for example, by classifying an NP headed by a verbal subconstituent as less ‘marked’ than a VP headed by a nominal subconstituent. But is it really appropriate for a

¹¹See Pollard and Sag (1994) and references cited therein for some discussion of this requirement.

grammar formalism to incorporate information about the relative frequency of different types of categorial hybrids in the world's languages? Does a set of rules or constraints that distinguishes gerundives as less 'marked' than other possible hybrids help in any way to explain why these tend to recur cross-linguistically?

The origins of gerundive constructions are in many cases well-understood and even well-documented. Deverbal nouns provide one very common source. These nouns often retain recognizably verbal stems and residually verbal characteristics that reinforce their connection to the verbal system. Over time, verbal properties may come to predominate; case inflections are lost on the verbal noun itself and the government of dependents begins to pattern more closely with finite verbs than with common nouns. When only an outer nominal shell remains, the result is a gerundive construction; when even the outermost projection is no longer consistently nominal, the construction is usually classified as an 'infinitive'. This process raises a host of intriguing questions. Why does categorial reanalysis tend to operate from the inside out, if, in fact, it does? Or even, why is it that nonfinite verbs appear so often to be of more recent origin than nouns or finite verbs? A theory with something to say about these sorts of questions would certainly be worth having. But one that merely catalogues attested variation in categorial hybrids and designates common patterns as unmarked is purely taxonomic.

In a related vein, it is perhaps also worth asking why violations of phrasal endocentricity are regarded as so deeply problematic. A system without any such violations is more consistent and can therefore be described somewhat more economically. But what reason is there to believe that this notion of economy is in any way relevant to the acquisition or use of language? Surely learners can come to recognize that a language contains a nominal construction headed by a verbal subconstituent, and speakers can produce and interpret this construction appropriately. And why should such a pattern, once established in a language, not remain stable, at least for some extended period of time?

In short, the account outlined above is not meant to provide a general analysis of mixed categories. This account does not extend directly to deverbal nouns, like *masdars* in Georgian, which govern genitive objects and decline like nouns ((Hewitt, 1995, 423–4)). Nor is it meant to apply to the more consistently verbal infinitives found in many languages. However, underspecified gerund entries do permit a unified treatment of some related constructions in English and Welsh, and categorially exocentric phrases describe the distinctive properties of gerundive nominals in both languages.

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