

## Unifying *-ing* without “participles”

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We argue for a novel analysis of English *-ing* forms, unifying progressive, adjectival, and nominal uses. Our central proposal is that *-ing* spells out a single formal feature [ $\Psi$ ], which systematically composes with predicates of eventualities, closing off the event argument of its complement. This unification captures the shared morphological properties of *-ing* forms (mysterious on traditional accounts assuming several-way homophony), including the Double-*ing* Filter of Ross (1972).

**Two Puzzles:** The generative literature identifies at least two puzzles posed by *-ing*. **First**, it occurs in a wide range of contexts, both “derivational” and “inflectional”: in the verbal progressive (1), on “participial” modifiers to nouns (2), and on a notorious variety of deverbal “gerundive” forms (3).

- (1) *Progressive*: The children were **reading**.
- (2) a. *Simple participle*: The **reading** children were quiet.  
b. *Phrasal participle*: The children **reading books** were quiet.
- (3) a. *“ing-of” gerund*: [ The reading of books ] is rewarding.  
b. *“Poss-ing” gerund*: [ My having read books ] is impressive.  
c. *“Acc-ing” gerund*: [ Me having read books ] is entertaining.

Despite this variety of contexts, *-ing* exhibits striking morphological uniformity across the forms in (1)–(3). All English verbs have *-ing* forms, no *-ing* form is morphologically irregular, and only a handful of nominal and adjectival *-ing* forms have unpredictable meanings. This shared property favours a unified analysis of *-ing*—but constructing such an analysis is challenged by the **second** puzzle: lexical category. *-Ing* creates nominal (3a), (3c), adjectival (2a), and verbal (1), (2b) forms. It also creates “gerundives” (3b), which have both nominal and verbal properties (genitive subjects, but also aspectual auxiliaries and accusative objects). On lexicalist approaches to morphosyntax these are some kind of “mixed” category (Sadock 1985, 1991; Malouf 2000; Spencer 2005).

We adopt a lexical-realizational approach to morphology, specifically Distributed Morphology (DM: Halle and Marantz, 1993; Harley and Noyer, 1999). In DM “mixed” categories are not a challenge: categorial attributes are not inherent properties of lexical items like *reading*, but are instead emergent properties of functional structure. The apparently disjunctive distribution of *-ing* is a problem for DM, however. Faced with such regularity of form independent of syntactic commonality, inferential-realizational models can propose that morphological forms be arbitrarily linked to syntactic contexts (see Aronoff’s (1994) *morphomes*)—the morphological regularities in (3) are the “present participle”. However, such a move undermines the main insight of lexical-realizational morphology: if theories like DM are on the right track, any putative morpheme ought to have discoverable, non-disjunctive syntactic exponenda.

**Proposal:** Taking up this challenge, we argue that in (1)–(3), *-ing* always realizes a formal feature [ $\Psi$ ]. The distribution of this feature is semantic rather than syntactic: it composes with a range of syntactic categories, but crucially only those corresponding to predicates of eventualities. [ $\Psi$ ] is consistently realized as *-ing*, and consistently interpreted as binding the open event argument of its sister constituent. Differences among various *-ing* forms arise from differences in the structure above or below [ $\Psi$ ], or from other semantically interpretable features on the head bearing [ $\Psi$ ].

Theoretical analyses of *-ing* have focused on the “gerundive” forms in (3), a common idea being that at least some gerunds encode a defective  $\text{Infl}^0$  (Horn 1975, Stowell 1981, a.o.): like *to*-infinitives, *Acc-ing* and *Poss-ing* permit auxiliary *have*, but not tense or modals. More broadly, it is notable that **all** *-ing* forms head verbal projections of various sizes, but always smaller than TP: *ing-of* composes with a bare verb (category-defining  $vP$ ); *Prog-ING* with  $\text{VoiceP}$ ; *Participles* with  $\text{VoiceP}$  or  $\text{PerfP}$  (which hosts perfect *have*). These projections span the argument-structural and temporal domains of the clause, and do not obviously share any syntactic properties. Semantically, though, they all arguably express **predicates of eventualities**. Neo-Davidsonian event semantics assumes that projections within  $\text{VoiceP}$  are event descriptions (e.g. Parsons 1990; Kratzer 1993); while aspect is sometimes treated as purely temporal, Bach (1986); De Swart (1998), a.o. instead frame temporal semantics in terms of event modification. So

while the distribution of *-ing* seems inconsistent from a purely syntactic perspective, from a semantic perspective it can be unified.

If *-ing* realizes a single formal feature, it must have not only a unified distribution, but also a consistent **interpretation**. We propose that [ $\Psi$ ] existentially binds the eventuality argument of its complement, allowing the event to be referred to (in gerunds), related to another event (in the progressive), or used to describe an individual or event (in participles). Tense and modality independently saturate or bind the predicate of events introduced by lower projections, and so cannot compose with a head bearing [ $\Psi$ ].

The differences among *-ing* forms arise from the contexts in which [ $\Psi$ ] occurs. *Acc-ing* is the simplest case: it has the distribution not of a nominal but of a non-finite clause, allowing extraposition as in (4a). This arises from the presence of [ $\Psi$ ] in the position that would otherwise be occupied by non-finite *to*. The subject appears with default accusative case.

(4) a. It was pleasant [ PRO<sub>arb</sub> seeing you ]      b. [ Him agreeing to leave ] was surprising.

*Poss-ing* differs minimally from *Acc-ing*, most obviously in the genitive case of the subject and the related impossibility of extraction (Ross, 1967). While several authors have argued on this basis that *Poss-ing* (in contrast to *Acc-ing*) is not clausal (Horn, 1975; Abney, 1987), the availability of perfect *have* with *Poss-ing* undermines this approach. We propose instead that *Poss-ing* arises from a DP layer above the head bearing [ $\Psi$ ]: the subject raises to Spec-DP, receiving genitive case but, like genitive possessors, frozen from further extraction. By contrast, *ing-of* arises from a smaller structure than *Acc-ing*, with [ $\Psi$ ] on a nominalizing head  $n^0$  taking a vP complement.

The progressive is unique among all instances of *-ing* in its characteristic aspectual interpretation. This is a challenge for lexicalist approaches, where heads or morphemes are the units of semantic interpretation, but not for DM, where **features** are morphologically realized and semantically interpreted. Gerunds and progressive aspect need not have the same **overall** semantics, so long as they share a **component** of meaning. Indeed, in event-based temporal semantics, progressive aspect saturates the event argument of VoiceP—this is the semantics of [ $\Psi$ ]. What differentiates progressives from gerunds is that aspect also relates the event argument of VoiceP to a new situation (the Topic Situation). We attribute this component of meaning to a feature co-occurring with [ $\Psi$ ] on Asp, labelled [PROG] for convenience.

As noted above, this analysis offers insight into a known morphological curiosity of *-ing* forms, the so-called Double-*ing* Filter, which bans (some) instances of *-ing* on two successive verbs. While some recent proposals have suggested that this filter reflects a kind of morphosyntactic OCP effect (Nevins, 2012), we argue instead that what matters is whether the two [ $\Psi$ ]-heads are structurally adjacent (illicit) or separated by an intervening head (licit). In the former case (but not the latter), the higher instance of [ $\Psi$ ] may be morphosyntactically licit, but cannot be semantically interpreted, as there would be no open event argument for it to bind (that having been done by the lower instance of [ $\Psi$ ]).

**Implications:** Beyond offering a novel solution to known puzzles concerning the distribution of *-ing*, not only in gerunds but in participles and the progressive as well, our proposal has significant relevance to current debates in morphological theory. DM has long rejected the idea of morphemes (i.e. patterns and phenomena specific to the domain of morphology). As DM, now well into its third decade, develops into a mature model of grammar, we expect accounts such as this to show that apparently morphomic patterns have simple morphosyntactic accounts. Similarly, as semantic models of event structure continue to develop by further articulating the verbal spine, we predict that we should find morphemes such as *-ing* whose only role is to express features that characterize this putative syntactic structure.

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