

# Constraining argument structure in nominalizations: The case of English *-er*

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The article contributes to the typology of structural factors constraining argument realization in nominalizations, focussing on English *-er*-nominals. It first reappraises the conclusions of earlier studies on when *-er*-nominals can express arguments. Derivations disallowing argument linking are treated as semantically and structurally parallel to nominal compounds, and their argument-structural behaviour is attributed to a generalization that base-generated complex heads prohibit realization of arguments of the nonhead outside the complex head, with principled exceptions. In argument-realizing *-er*-nominals, some speakers allow the full range of argument structures permitted by head movement analyses, while less liberal idiolects require a (lexicalist-inspired but syntactically implemented) analysis where *-er* is an Agent-realizing affix that selects  $V^\circ$ , forcing arguments of V to merge above affixation as arguments of nouns, which is only possible for PP and *of*-insertion arguments.

## 1 Introduction

A central problem concerning the interfaces between syntax, semantics and morphology is that category-changing processes reduce the possibilities for realization of arguments to varying degrees, as seen in (1)-(3).

- (1) a. *She was the tuner of the guitar.*  
b. *The {guitar tuner/tuner (\*of guitars)} is in the drawer.*  
c. <sup>(\*)</sup>*the discoverers that the world is round*  
d. *\*a maker of linguists happy; <sup>(\*)</sup>a hammerer of metal flat*
- (2) a. *the breaking of his leg*  
b. *the break (\*of his leg)*
- (3) *an amputee <sup>(\*)</sup>of a leg)*

Non-lexicalist studies standardly assume that nominalizations like (1a) which inherit verbal arguments involve head movement (e.g. Alexiadou/Schäfer (2010), Baker/Vinokurova (2009), Borer (2013), Bowers (2011), Harley (2008)). Such approaches share two assumptions: (i) the nominalizing affix is a syntactic head which selects a phrasal projection containing V and its arguments (VP in (4a)), and (ii) V undergoes head movement to the nominalizer to form a derived nominal such as *washing*, *washer*.

- (4) a.  $[NP -ing/-er [VP wash [DP/PP of hands]]]$   
b.  $[NP [N^\circ [V^\circ wash] -ing/-er] [DP/PP of hands]]$

Lexicalist studies standardly capture argument inheritance phenomena using structures like (4b), (e.g. Ackema/Neeleman (2004:23, 27), Grimshaw (1990:71)). The affix attaches directly to V. V's argument is realized after nominalization, as an argument of N. Thus V's argument selection features are not realized immediately, but are transferred (or 'percolate') to the head selecting V. If we allow such long-distance argument realization, we face difficult questions about how to constrain it, so it should not be the default hypothesis. However, one argument made here is that derivations like (4b) must exist. It is shown for instance that head movement approaches cannot explain the negative judgments in (1c,d), while they are predicted if CP/AP argument merges after nominalization.

Another perennial quandary concerns nominalizations which block arguments of their bases, such as (1b), (2b) and (3). After describing problems with existing accounts of the constraint in (1b), I will argue that the *of*-phrases are excluded for the same reasons as those in compounds like *cleaning cloth (\*of records)* or *scrubwoman (\*of floors)*. The relevant generalization is that base-generated complex heads disallow the projection of arguments of their nonheads outside the complex head. I outline a theory which seeks to explain this generalization and (apparent and genuine) exceptions to it.

We proceed as follows. Section 2 describes the differences between argument-inheriting and non-argument-inheriting *-er*-nominals, and notes problems in existing approaches. Section 3 discusses nominalizations like (1b) disallowing argument linking with *of*-phrases. Section 4 treats argument-inheriting *-er*-nominals, noting that they eschew AP and clausal arguments in some idiolects but not others (section 4.1) and presenting an analysis where the arguments tolerated in the less liberal varieties are merged *above* affixation as arguments of *nouns* (section 4.2).

## 2 Two types of *-er*-nouns: *-er*<sup>Ev</sup> vs. *-er*<sup>nonEv</sup>

### 2.1 Correlations between eventiveness and argument realization

Studies of event nominalizations frequently assume that argument-inheriting nominalizations refer to *events* in ways that non-argument-supporting nominalizations do not (e.g. Grimshaw 1990, Borer 2013). Similarly, several studies (e.g. Alexiadou/Schäfer 2006, Rappaport/Levin 1992, van Hout/Roeper 1998) distinguish between an eventive, argument-inheriting use of *-er*, here called *-er*<sup>Ev</sup>, and a non-eventive affix *-er*<sup>nonEv</sup> which disallows argument realization (unless compound nonheads are arguments). One symptom of eventiveness is compatibility with event-modifying expressions like *frequent*, *constant*, *habitual*. (5) suggests that these are possible with *of*-arguments but not compounds (with qualifications discussed shortly; the judgments hold if *lifesaver* means ‘lifeguard’ and *can opener* means ‘can opening device’).

- (5) a. frequent {savers of lives/openers of cans}  
b. (\*frequent) {lifesavers/can openers}

Another eventiveness effect is an *event entailment*: *of*-insertion-*-er*-nominals entail the occurrence of an event described by the base of *-er*, while other *-er*-nouns do not (again with exceptions discussed below). A *washer of clothes* must have washed clothes while a device called a *clothes washer* need not have. Analogous remarks hold for (6).<sup>1</sup>

- (6) a. saver of lives, fighter of fires, opener of cans [event entailments]  
b. lifesaver, fire fighter, can opener [no event entailments]

A previously unobserved complication is that eventiveness effects are not exclusively found with *of*-nominals. The compound and bare *-er*-nominals in (7)a,b) have event entailments (or state entailments with *lover*, *admirer*), and those in (7)c,d) allow eventive modifiers.

- (7) a. cow worshiper, draft dodger, child molester, prize winner, wine lover/drinker  
b. discoverer, smoker, lover, admirer  
c. frequent {dope smokers/card players/teeth cleaners}  
d. frequent {flyers/drinkers/overworkers}

Thus far we can generalize that *-er-of*-nominals *must* have eventive interpretations while other *-er*-nouns *can* do so. To clarify this further, we must discuss the interpretation of *-er*<sup>nonEv</sup>-nouns. Partly following Levin/Rappaport (1988), I assume that many have **functional**

<sup>1</sup> I know of two apparent problems for the event entailment criterion for *-er*<sup>Ev</sup>-nominals. Firstly, *qualified teachers/instructors of physics* need never have actually taught, in my judgment. Here the *of*-phrases are, I suggest, not realisers of arguments of nominalized V, but genitives licensed in the same way as those found with semantically similar synchronically underived nominals like *professor/tutor of physics*. Secondly, the *-er*-nominals in (i) and (ii) only entail *possible* events, which might appear to make them similar to *-er*<sup>Ev</sup>-nominals like *firefighter*. However, (i)/(ii) have conditional interpretations (e.g. (i) means ‘if anyone drinks the wine they will sleep eternally’). The conditional operator obscures the basically event-entailing nature of the *-er*-nominals. Hence the possible future event interpretation gives way to an event-entailing one in non-conditional contexts like *the drinker of the wine fell asleep*. Furthermore, the existence of referents for the *-er*-nominals in (i)/(ii) depends on the occurrence of the drinking/finding events. Compare this with (iii), where no conditional reading is available and the *-er*<sup>nonEv</sup>-nominal can have a referent who has never fought a fire.

- (i) The drinker of the wine will fall into an eternal sleep. (Olsen 1992:23)  
(ii) The finder of this wallet should ring 123-45678.  
(iii) The fire fighter will get sick.

interpretations: they name entities whose (possibly unrealized) intrinsic or designated purpose or function is to participate in the event named by the affixed V. This subsumes artefacts designed for particular uses (*printer, lawnmower*) and humans in professional or temporary functions (*teacher, minutes taker*). By contrast, Alexiadou/Schäfer (2010) propose that *-er<sup>nonEv</sup>*-nouns have **dispositional** interpretations: their referents have properties predisposing them for participation in particular events. Section 2.3 argues that this interpretation is not correct for all *-er<sup>nonEv</sup>*-nouns and is not very productive, but it is clearly needed in some of cases, say *heartbreakers* ‘people with potential to break hearts’.

We can now explain the inconsistent degrees to which non-*of*-insertion *-er*-nominals tolerate eventive behavior. Standard judgments like (5)b) and (6)b) hold of the functional readings of *lifesaver, firefighter, can opener*, which are salient, entrenched uses of these nouns. Looking beyond the uses of the nouns as names for professions/instruments, we find eventive uses. Thus, internet attestations of *frequent lifesavers* evoke not the functional interpretation ‘lifeguard’, but an eventive one (‘people/things which have (metaphorically) saved lives’). By contrast, nominals like *cow worshiper, smoker* and others in (7) lack salient functional readings which could preempt the eventive ones, since actions like cow-worshipping or smoking are not normally seen as *functions* of people.<sup>2</sup>

We now address more thoroughly the argument-structural properties of the two classes of *-er*-nominals. *-er<sup>nonEv</sup>*-nouns seem oblivious to the argument structures of their bases. They disallow *of*-phrases realizing arguments of V. Their referents are not confined to particular thematic roles and sometimes flout V’s selection restrictions, witness the informal taxonomy in (8) (partly inspired by Ryder 1999). *-er<sup>nonEv</sup>* would be sensitive to argument structure if we accept L&R’s (1072) claim that instrument *-er*-nominals must be potential subjects of their corresponding verbs, but this is incorrect, cf. *\*This poker pokes fires well*, and likewise for *guitar tuner, letter opener, scraper* and *stirrer* ‘stirring spoon’. L&R’s argument that formations like (8)c) correspond to subjects of middles (*roaster* vs. *the chicken roasts well*) will not work for cases like *keeper* ‘thing to be kept’ (cf. *\*Jewelry keeps easily*) and for (8)d) (*\*This swimsuit swims (in) well*). Finally, *-er* realizes no argument of V in (8)e). I thus assume that *-er<sup>nonEv</sup>* does not realize an argument of V, even in cases like (8)b,c) where the nominals happen to correspond sortally to clausal arguments of V. (See Barker 1998 for analogous claims about the affix *-ee*.) V’s argument structure could only be said to be relevant to *-er<sup>nonEv</sup>*-nominals if nonheads of compounds like *can opener, lifesaver* are true argument realizers, a controversial issue discussed in section 3.3.<sup>3</sup>

- (8)
- a. INSTRUMENT: *paint scraper, stapler, lens cleaner, polish remover*
  - b. AGENT: *teacher (with no work experience), tax collector, law enforcer*
  - c. PATIENT/THEME: *locker* ‘lockable cupboard’, *reader* ‘type of book’, *fixer-upper* ‘house to be fixed up’
  - d. LOCATION: *kneeler* ‘thing to kneel on’, *scribbler, jotter, bathers* ‘swimsuit’
  - e. INDIRECT CAUSER (no argument of V): *foot tapper/headbanger* ‘song apt to cause people to tap feet/bang heads’, *nail biter* ‘situation apt to cause nervous nail-biting’, *steam-letter-offer* ‘pastime allowing one to let off steam’, *page-turner* ‘book apt to induce compulsive page-turning’

<sup>2</sup> I see no comparable pragmatic reason why *smoker* could not have a dispositional reading describing someone who has never smoked but has an addictive personality predisposed to smoking. However, *smoker* cannot have this interpretation (short of coercive contexts like *potential/born smoker*) because, as noted in section 2.3, the dispositional reading of *-er<sup>nonEv</sup>* is much less productive than the functional one.

<sup>3</sup> I leave open whether the data in (8) allow a unified semantic characterization, say one in which all *-er<sup>nonEv</sup>*-nouns denote entities associated with events of the kind named by the base verb. See Booij (1986), Ryder (1999), Rainer (2013) and their references regarding attempts to unify the different uses of *-er* and similar affixes in other languages.

By contrast,  $-er^{Ev}$ -nouns are sensitive to the affixed verb's argument structure. Firstly, they allow realization of the base verb's internal arguments. Arguments corresponding to V's direct object appear as *of*-phrases (6a) and arguably as compound nonheads (7). Arguments of other categories are also realizable (*frequent contributors to books*), though subject to constraints seen in section 4. Secondly,  $-er^{Ev}$ -nominals always correspond to external arguments of the base verbs, not only Agents but for instance inanimate Causers (9a), non-agentive Recipients/Possessors (9b), non-agentive Experiencers (9c). I use **Initiator** as a superordinate term for these various types of participants. Like e.g. *Actor* in Role and Reference Grammar, the term is named after the core cases of arguments realized as external arguments. In line with theories using generalized semantic roles (van Valin 1999), especially Dowty (1991) and Naess (2006), I assume that less prototypical Initiators like the possessors or experiencers in (9b,c) qualify for the same grammatical realization as Agents because they share with them certain properties like sentience or control.<sup>4</sup>

- (9) a. adultery is a wrecker of families; politicized religion is a frequent causer of wars; pain is a saver of lives; it is a thriller of the mind; carpet is an accumulator of dust  
 b. frequent receivers of prizes; owners of shares  
 c. habitual admirers/despisers of non-conformists  
 d. \*dier, \*collapser, \*faller, \*long-laster, \*disappearer, \*enterer  
 e. frequent {early riser/churchgoer/latecomer/late arriver/travelers to Spain}

Since  $-er^{Ev}$  realizes external Initiator arguments, it should be incompatible with unaccusative verb uses, but judgments like (9d,e) (cf. L&R 1075, 1081) only partly confirm this, and some context-free judgments like (d) are disconfirmed by internet searches. I suggest that speakers who allow these construe the participants as Initiators (as Agents, or as Internal Causers in attestations like *early dier*) and are treating the base verbs as unergative. I cannot explore this hypothesis here. If it is rejected we must posit a distinct (possibly only semi-productive) use of  $-er^{Ev}$  which can be studied separately from the uses of *-er* described here.

A summary of the discussion of the two readings of *-er* is given in (10).

- (10) a.  $-er^{Ev}$ -nouns are eventive (as diagnosed by event entailments and modifiers like *frequent*).  $-er^{nonEv}$ -nouns have dispositional or functional readings.  
 b. *Of*-arguments are compatible with  $-er^{Ev}$  but not  $-er^{nonEv}$ . Other *-er*-nominals (including compounds and argumentless nominals) can have either eventive or noneventive interpretations.  
 c.  $-er^{Ev}$ -nouns are sensitive to the argument structure of their base verbs. They allow realization of internal arguments of V as *of*-phrases or other arguments. Their referents correspond to V's external (Initiator) argument in clauses.  
 d.  $-er^{nonEv}$ -nouns are insensitive to V's argument structure. They disallow realization of V's internal arguments (unless compound nonheads are arguments). Their referents need not correspond to arguments of the base verb and have no affinity with any particular thematic role.

## 2.2 Rejected accounts of the different types of *-er*-nominals

We now describe problems with existing and imaginable accounts for the unavailability of *of*-insertion with  $-er^{nonEv}$ -nouns.

Consider firstly explanations based on the observation that idiomatic interpretations are significantly more frequent with  $-er^{nonEv}$  (*plunger, bouncer, pacemaker, undertaker, lifesaver*

<sup>4</sup> Borer (2013) argues that eventive *-er*-nominals do not involve genuine argument realization. Her account can explain the Initiator interpretation of eventive *-er*-nouns, but leaves unclear why *of*-insertion arguments correspond closely to V's direct objects.

‘lifeguard’, *destroyer* ‘military ship’) than with  $-er^{Ev}$ -nouns<sup>5</sup>, and the contrast *photógrapher* (\**of insects*) vs. *phótophrapher of insects* (Randall 1988:133) shows that  $-er^{nonEv}$  is more prone to formal idiosyncrasy. One can imagine an argument that there is a heavy demand for *conventional* names for instruments and professions, meaning that the  $-er^{nonEv}$ -nouns that name them will be memorized, and memorization cares little about semantic and formal regularity but favours short expressions like compounds over longer *of*-nominals. However, idiomaticity-based accounts will not give us enough mileage, as many  $-er^{nonEv}$ -nominals are fully compositional (as L&R note), and compositional  $-er^{nonEv}$ -neologisms show the usual argument-structural constraints: *I made a {chess piece cleaner/\*cleaner of chess pieces} but haven’t tested it yet.*

I see little hope for accounts based on a *semantic* incompatibility between *of*-phrases and the non-event-entailing semantics of  $-er^{nonEv}$ -nouns. For instance, Alexiadou/Schäfer (2010: 22-24; A&S) claim that *of*-phrases are confined to episodic (event-entailing) contexts because, allegedly, *of*-phrases must have quantized readings which are incompatible with the dispositional-generic interpretation they propose for  $-er^{nonEv}$ -nouns. However, there are many  $-er^{Ev}$ -nominals like *a frequent reader of novels/poetry* with non-quantized (bare plural, mass) readings, and (11)a) shows that *of*-phrases need not be event-entailing. A draft of A&S proposed that *specifically* interpreted *of*-phrases would force event-entailing readings incompatible with the dispositional-generic interpretation proposed for  $-er^{nonEv}$ -nouns. However, the underlined material in (11)b-c) is interpreted specifically but compatible with a non-eventive dispositional/functional interpretation.

- (11) a. Overlegislation includes the banning of very specific hypothetical actions, say the waking of unicorns at midnight or the smoking of weed on pink bicycles.  
 b. He made an Osama bin Laden detector, but it was never used.  
 c. I made a special long-handled hook for opening that particular window up there, but nobody used it.  
 d. I made an opener {for/\*of} that window up there, but nobody used it.

(11)d) gives further evidence that the obligatory eventiveness of  $-er$ -*of*-nominals is not forced by the semantics of *of*’s complement. Though bad in an *of*-phrase, the DP is good in a *for*-adjunct (which does not realize an argument of the nominalized V, cf. the analogous interpretation of *a handle for the window*). The correct generalization seems rather to be that when  $-er^{nonEv}$  merges with V, V’s arguments can no longer be realized (for structural reasons explored in section 3). Arguments can only be realized if they combine with V before the affix does, which is impossible with *of*-phrases but possible with compound nonheads like that in *window opener* (if they are arguments). Any attempt at adding participants after affixation will have to use non-argument-structure-sensitive devices such as *for*-phrases or compound nonheads (if they are not arguments).

A final argument against a purely semantic account of the ban on *of*-phrases in  $-er^{nonEv}$ -nominals is its language-specific nature. Rainer (2013) notes that Spanish allows *contador de visitas* ‘counter of visits (i.e. device for counting visitors to websites)’. One might reply that the *de*-phrase is part of a compound(-like) structure and thus not comparable to English *of*-phrases. However, this is implausible for the internet-attested French examples in (12). Here *du* is a suppletive spellout for *de* and the article *le*, and the *de*-phrases contain too much material to be plausible compounds. Note incidentally that (12)d) is translated as *Canadian Retirement Income Calculator* on the corresponding English page, while *\*calculator of Canadian retirement income* is bad on the relevant nonevent reading.

<sup>5</sup> An example of the latter is *frequent lifesaver* in an event-entailing hyperbolic sense ‘thing/person that has metaphorically saved someone’s life, i.e. got them out of significant difficulties’. Irrelevant here are  $-er^{Ev}$ -nouns based on idioms (*frequent hackle raisers* ‘people who have frequently raised hackles, i.e. annoyed people’).

- (12) a. une **calculatrice** **du** nombre de calories par jour dont un homme  
 a calculator of.the number of calories per day of.which a man  
 ou une femme a besoin de manger...  
 or a woman has need to eat
- b. **compteur** **du** nombre de visiteurs d'un site web  
 counter of.the number of visitors of a website
- c. **purificateur** **du** système de l'injection de Diesel et de l'essence  
 purifier of.the system of the injection of diesel and of the petrol
- d. **calculatrice** **du** revenu de retraite canadienne  
 calculator of.the revenu of retirement Canadian

Borer's (2003) account of non-argument-realizing zero nominals like *a break* (\**of his leg*) invokes the claim that they are nominalizations of category-neutral roots, not of verbs. Whatever its merits for zero nominals, the account is inapplicable to  $-er^{nonEv}$ -nouns, since, as A&S note, these tolerate bases with clearly verbal affixes like *-ize* and *-en*, cf. (13).

(13) organizer, vaporizer, tranquilizer, equalizer, sweetener, moistener, sharpener  
 Van Hout/Roeper (1998) capture eventiveness effects by claiming that  $-er^{Ev}$  selects TP, enabling the binding of V's event variable by T. By contrast,  $-er^{nonEv}$  selects only VP, which forces V's object to incorporate since the functional projection licensing *of*-phrases is missing. The claim that  $-er^{Ev}$ -nominals attach as high as TP wrongly predicts them to license material normally found in clauses, say adverbs (\**player of chess carefully*). We could rectify this by attaching  $-er^{Ev}$  to a smaller phrasal projection, but in section 4 I argue that even this courts overgeneration problems. Attaching  $-er^{nonEv}$  to VP wrongly predicts PP complements with  $-er^{nonEv}$ -nouns: *this machine is a (glass) filler* (\**with water*). This problem is solved if we attach  $-er^{nonEv}$  to a smaller constituent, V, provided we can ensure that the nominalization does not inherit V's argument structure. Section 3 advances such an approach.

### 2.3 More on the interpretation of $-er^{nonev}$

Though not crucial for my purposes, it is desirable to provide further details on the interpretation of  $-er^{nonev}$ -nouns. This section shows that they may have either functional or (more marginally) dispositional interpretations, and that a unified description is empirically problematic. Consider the taxonomy in (14).

- (14) a. **Humans in professional or similar functions:** (*maths*) *teacher, firefighter, dogcatcher, peacekeeper*
- b. **Humans in temporary designated functions:** *minutes taker, present giver*
- c. **Intrinsic-function entities:** entities (often artifacts) construed as having the purpose of participating in the verbal event: *printer, toaster, penholder, pointer, scraper; kneeler, locker*
- d. **Incidental-function entities** (entities *designated* for uses they were not *designed* for): *I found a stone that looked like a good {cutter/can crusher}*.

Alexiadou/Schäfer (2010) suggest that  $-er^{nonEv}$ -nominals have *dispositional* interpretations, their referents being inherently predisposed to participation in the verbal event. This interpretation is independently needed for middles: *the book reads well* signals its predisposition for good reading. Extending the parallel, note that adjectives like *good* improve the acceptability of the examples like (14)d), much as adverbs do in middles. The dispositional interpretation is plausible in (14)d) but, I will argue, less plausible in (a-c).

Instruments like (14)c) can straightforwardly be described in terms of functional interpretations, since e.g. *printers* are made to fulfil the function of printing. Reinterpreting *printers* dispositionally ('devices predisposed to printing') is a roundabout way of capturing the expression's meaning which would be justified only if the dispositional reading were applicable to all other  $-er^{nonEv}$ -nouns. That this condition is not met is seen, firstly, from animate nominals like (14)a,b). The non-event-entailing uses of e.g. (*band*)*leader* or *law*

*enforcer* indicate that their referents have particular designated *functions* and say nothing about their aptitude (disposition) for these tasks. Dispositional readings can be imposed on such expressions by certain modifiers: *born/potential leaders* are predisposed to leadership without necessarily having exercised leadership functions. However this does not hold of *gifted/talented leaders*, who must have had leadership roles. It thus appears that the functional interpretation is preferable to the dispositional one in describing (14)a,b).

Some other *-er*-nouns have clearly non-functional, dispositional interpretations, but these are subject to lexicalisation and constrained productivity. *Widow makers* as defined in (15)a) are predisposed to making widows, but this is not their function. Nevertheless this clearly dispositional interpretation does not generalize: a *widow maker* hanging over a children's playground cannot be called a (*child*) *killer*. Similarly, the referents of (15)b) have a possibly unrealized disposition for metaphorical heart-breaking/lady-killing, but parallel readings are unavailable for *seducer*, *man hurter*, *heart winner*.<sup>6</sup> (15)a-c) suggest that non-functional dispositional *-er*-nouns are either lexicalized or involve creative (metaphoric, jocular, hyperbolic or otherwise metalinguistic) language use. Finally, (15)d) (uttered by someone who had not seen evidence of torn pants) has a jocular tone, whose humor consists in the idea that an artefact has the express *function* of tearing pants, which would be unexpected if the dispositional reading were freely available.

- (15) a. *widow maker* 'branch that is dangerously liable to fall (forestry term)'  
 b. *heartbreaker*, *lady killer*  
 c. *That guitar riff is a {bone cruncher/baby killer/brain-melter}.*  
 d. *pants shredder* 'slippery slide which might tear children's pants'

Thus, a unified description of *-er*<sup>nonEv</sup>-nominals (say one which claims that they refer to entities which are deontically or epistemically *expected* to participate in the verbal event) would face overgeneration problems since some *-er*<sup>nonEv</sup>-nominals only have functional readings while a smaller set only allow dispositional readings. In section 3.1 we will see that the two readings have a comparable distribution in compounds.

### 3 Blocking of arguments with *-er*<sup>nonEv</sup>

This section argues that constraints on argument-realization in *-er*<sup>nonEv</sup>-nominals reduce to similar problems seen with compounds: A device called a (*guitar*) *tuner* cannot be called a *tuner of guitars* for the same reasons that we can have (*guitar*) *tuning device* but not *\*tuning device of guitars*. Section 3.1 sets the scene for this argument by showing that *-er*<sup>nonEv</sup>-nominals and compounds are grammatically alike in the relevant respects. Section 3.2 offers a theory of why morphological nonheads in compounds and *-er*<sup>nonEv</sup>-nominals cannot realize (phrasal) arguments while some other morphological structures can. Section 3.3 shows that compounds like *guitar tuner* do not contradict this theory.

#### 3.1 The compound-like interpretation of *-er*<sup>nonEv</sup>-nominals

Preliminary demonstrations of the interpretational parallels between *-er*<sup>nonEv</sup>-nominals and compounds are given in (16)-(17). Here the primed *-er*-nominals have readings which are (near-)synonymous with the compounds on their left. Though such paraphrases are not always possible<sup>7</sup>, (16)-(17) and many analogous cases suggest that functional interpretations are well-established in compounds as well as *-er*<sup>nonEv</sup>-nominals.

<sup>6</sup> Dispositional readings are only possible here if we coerce them into existence by modifiers, cf. *She was a born seducer, but never seduced anyone*, or (ironically:) *That branch over the sandpit is a wonderful child killer*.

<sup>7</sup> Often for irrelevant reasons: *toasting appliance* suggests an unusual toasting device by implicature, there being no reason to bypass the short, entrenched term *toaster* for normal toasting devices. For similar reasons we do not expect *baking/teaching man* in lieu of *baker/teacher*, except perhaps in contexts like those which yield(ed) classifier doublings like *fisherman*, *baker man*, *preacher dude*.

- |      |                          |                    |
|------|--------------------------|--------------------|
| (16) | a. washing machine       | a'. washer         |
|      | b. wiping cloth          | b'. wiper          |
|      | c. kneeling cushion      | c'. kneeler        |
|      | d. reading book          | d'. reader         |
|      | e. cleaning lady         | d'. cleaner        |
|      | f. dressing cabinet      | e'. dresser        |
| (17) | a. record cleaning cloth | a'. record cleaner |
|      | b. window cleaning fluid | b'. window cleaner |
|      | c. wire stripping tool   | c'. wire stripper  |
|      | d. pool cleaning device  | d'. pool cleaner   |

The compounds parallel  $-er^{nonEv}$ -nominals in disallowing eventive behavior like *frequent*-modification and prior event entailments, and in disallowing *of*-complements, cf. (18)-(20) (where *washer*, *kneeler* and *record cleaner* are to be interpreted parallel to the compounds on their left).

- |      |   |   |
|------|---|---|
| (18) | a. *frequent washing machine                | b'. *frequent washer                          |
|      | b. *frequent record cleaning cloth          | b'. *frequent record cleaner                  |
|      | c. *frequent kneeling cushion               | c' *frequent kneeler                          |
| (19) | a. previously unused washing machines       | a'. previously unused washers                 |
|      | b. previously unused record cleaning cloths | b'. previously unused record cleaners         |
|      | c. previously unused kneeling cushions      | c'. previously unused kneelers                |
| (20) | a. washing machine (*of clothes)            | a'. washer (*of clothes)                      |
|      | b. cleaning cloth (*of records)             | b'. cleaner (*of records)                     |
|      | c. kneeling cushion (*of/by worshippers)    | c'. kneeler (*of/by worshippers) <sup>8</sup> |

While  $-er^{nonEv}$  differs from compound heads in being a bound morpheme and its very broad semantics (which corresponds to *entity* but additionally allows animate and mass interpretations, cf. *teacher*, *fabric softener*), I see no reason to assume that these differences are argument-structurally relevant.

A challenge to comparison of  $-er^{nonEv}$ -nominals and compounds is that  $-er$  attaches to verbs while English [<sub>N</sub> VN] compounding (*washcloth*, *drawbridge*, *pushcart*, *scrubwoman*, <sup>%</sup>*scrub-brush*) is far less productive than the [<sub>N</sub> [<sub>N</sub> Ving]N] compounding seen in (16)/(17), where  $-ing$  nominalizes V to allow it to undergo productive [<sub>N</sub> NN] compounding. This suggests that  $-er$ -nominals are not generated by the same processes that generate nominal compounds. Rather, I assume (as I believe any theory must) that  $-er$  has a selection restriction stipulating that it can attach to verbs<sup>9</sup>. If speakers wish to create a structure interpreted similarly to an  $-er^{nonEv}$ -nominal, but with a regular noun as head, they must firstly nominalise V to allow it to undergo productive NN compounding. In the resulting [<sub>N</sub> [<sub>N</sub> Ving]N] structures,  $-ing$  appears to be semantically vacuous, witness the fact that many of them have exact translations with German [<sub>N</sub> VN] compounds like *Waschmaschine* 'wash<sub>V</sub>-machine', *Schuhputztuch* 'shoe-clean<sub>V</sub>-cloth' (see Gast 2008).

Compounds mirror the generalization in section 2.3 that functional interpretations of  $-er^{nonEv}$ -nouns are more productive than dispositional ones. Compounds allowing non-functional dispositional readings seem rare. Examples are *collision course* 'trajectory predisposed to cause collision', *cutgrass* 'type of grass predisposed for cutting' and *humming bird* (relevant if the stress diagnoses this as a NN compound and not an AN structure like

<sup>8</sup> In the {*kneeling cushion/kneeler*} of *Mary* the *of*-phrase is a possessor, not an agent of *kneel*, since the expression says nothing about whether she might kneel on it.

<sup>9</sup> *Er-* does not attach to categorial-neutral roots, recall (13). Denominal formations like *falconer*, *executioner* are also well-represented (Ryder 1999), but I doubt the empirical feasibility of unifying denominal and deverbal  $-er$ , for instance because new formations like *DMer* 'Distributed Morphology practitioner', *roofer* 'ball that hits the roof' have a colloquial flavour missing with deverbal formations.



*praying mantis*). By contrast, many compounds like those in (16)-(17), have clear functional interpretations. A neologism like *plate breaking machine* is forced to have a pragmatically implausible functional interpretation ‘machine made for plate breaking’, even when used in irony or jest of a faulty dishwasher liable to break plates. This is unexpected if compounds freely allow dispositional interpretations.<sup>10</sup>

### 3.2 The Morphological Nonhead Constraint

The discussion in section 3.1 of similarities between  $-er^{\text{nonEv}}$ -nouns and compounds was a first step towards the main task of this section, which is to reduce the ban on *of*-arguments with  $-er^{\text{nonEv}}$ -nouns (*\*computerized washer of clothes*) to factors blocking *of*-arguments with compounds (*\*washing machine of clothes*). I suggest that both are an instance of the descriptive generalization in (21) (a descendent of claims about compounds by e.g. Di Sciullo/Williams (1987:30), Ackema/Neeleman 2004:26).

**(21) Morphological Nonhead Constraint (MNC):** In a base-generated complex head  $[_Y^\circ XY]$ , X’s arguments cannot be realized outside  $[_Y^\circ XY]$  in the default case.

Here “base-generated complex head” is any complex head formed by direct merger and not by head movement. It makes sense to exclude head movement derivations in (21) since such derivations are normally meant to allow argument realization rather than blocking it: a head combines with an argument, then moves to a higher head to form a complex head, cf. (4)a).

I will explain (21) with reference to the base-generated complex head structures in (22), which are standard in lexicalist work (say Ackema/Neeleman 2004, Lieber 2004) and which I assume here (though taking no stand on whether they are generated presyntactically or in syntax). By assumption  $-er^{\text{nonEv}}$  in (22)a) and the variant of *-ing* in (22)b) select  $V^\circ$  constituents. These selection restrictions are violated if the nonheads merge with phrasal arguments:  $*[_{VP} \text{ wash the clothes}]-er/-machine$ . Phrasal arguments could be realized if the mechanism sometimes called ‘percolation’ allowed them to be merged at a distance from the heads selecting them (recall the discussion of (4)b)). However, (21) states that such mechanisms are not posited by speakers, at least as a general option<sup>11</sup>. The latter qualification is needed because section 3.2.2 argues that  $-er^{\text{Ev}}$ -nominals like *reader of the book* override the default in (21), for principled reasons.

- (22) a.  $[_{N^\circ} \quad [_{V^\circ} \text{ wash}] \quad [_{N^\circ} -er^{\text{nonEv}}]] \quad (*\text{of clothes})$   
 b.  $[_{N^\circ} \quad [_{N^\circ} [_{V^\circ} \text{ wash}]\text{ing}] \quad [_{N^\circ} \text{ machine}]] \quad (*\text{of clothes})$

(21) holds of arguments other than *of*-phrases, for instance PP complements (*\*reliance problem on drugs*). (21) also limits the possible analyses for compounds like *lawnmower*. If these have the structure  $[_N \quad [_N \text{ lawn}][_N \text{ mower}]]$ , then (21) forces us to deny that *lawn* is grammatically represented as an argument of *mow*. By contrast (21) does not forbid nonheads from realizing arguments *inside* complex heads in structures like  $[_N \quad [_V \text{ lawn-mow}]-er]$ . Section 3.3 shows that the predictions (21) makes regarding compounds are correct.

More is said on why (21) holds in section 3.2.3, but I must firstly discuss its empirical reliability in the face of apparent and real exceptions.

<sup>10</sup> The functional interpretation of many compounds is supported by their allowing *for*-paraphrases expressing the function of the head noun (*cup breaking machine* = *machine for breaking cups*, *kneeling cushion* = *cushion for kneeling on*, and similarly with most examples in (16)-(17)). *For*-relations have been identified as an important possible interpretation of compounds (Spalding/Gagné 2011), and are expressed overtly in French compounds like *machine à laver* (‘machine for washing, washing machine’).

<sup>11</sup> This is just as well since unconstrained long-distance realization of arguments of nonheads would, like a syntax without locality constraints, cause intolerable ambiguities. Interpreting (i) and (ii) would involve deciding whether the *of*-phrase belongs to the head or the nonhead, and the difficulties multiply in recursive structures like (iii).

(i) *head movement of complex verbs* (\*‘movement of heads of complex verbs’)  
 (ii) *the friendliness of Ann* (\*‘quality of being a friend of Ann’)  
 (iii) *the impeachment proposal response drafting committee of the ministers*

### 3.2.1 Nominal compounds apparently violating the MNC

In contrast to what is seen in many cases like *\*cleaning lady of offices*, *\*stripping tool of wire*, *\*drag chain of/by back vowels*, the internet attestations in (23) feature optional *of*-phrases which might be analysed as arguments of nonheads. (See Fabricius-Hansen (1993) on related German data).

- (23) a. %the name choice of my child (“choice of my child’s name”)  
 b. %the destruction plans of Dresden (“plans of the destruction of Dresden”)  
 c. %location hypotheses of Atlantis  
 d. %a word in first sister position of the verb (Roeper/Siegel 1978:208)  
 e. i. the daughter languages of Latin  
 ii. the ancestor language of nearly all European languages  
 iii. the ancestral language of a good many of today's languages.

The MNC in (21) could be maintained if speakers accepting (23)a-d) form the compounds by head movement, which is standardly taken to allow complement stranding: [<sub>NP</sub> *name choice* [<sub>NP</sub> *t<sub>name</sub> of my child*]]. However, deriving the adjective-noun string in (23)e iii) by head movement would be dubious, e.g. since the *of*-phrase is not a plausible argument of *ancestral*: *\*Latin is ancestral of Catalan*.

I suggest that the *of*-phrases in (23) are not realizers of arguments of nonheads but possessive genitives licensed by the relational semantics of the compounds. Thus, in (23)e) *daughter/ancestor/ancestral languages* are relational in that they entail the existence of other languages, parallel to the similarly interpreted simplex relational nouns *ancestor/descendent (of Latin)*. Like other relational expressions, the related entities can be introduced by other possessive expressions such as *have (Latin has several daughter languages)*, a flexibility not witnessed when *of* is a realizer of an inherited argument (*the destruction of Carthage* vs. *\*Carthage had an awful destruction*).

Relational interpretations for the compounds in (23)a-d) are harder to establish, accounting for their more marginal status. (23)d) seems better than (a-c), understandably since the *of*-phrase is plausibly a possessor, witness *verbs have only one first sister position*. (23)a) works best when *choice* has a result interpretation, making *name choice* exchangeable with the relational noun *name* (*‘Marmaduke’ was an unfortunate name (choice)*). (23)b,c) are more marginal than the others, correlating with the greater difficulty in finding contexts independently confirming that the compounds can have possessors. However, such contexts do exist: *The Allies had planned the destruction of several German cities, but until 1944 Dresden had no destruction plans*.

It thus seems plausible to treat *of*-phrases occurring with compounds as genitives licensed by the compounds’ relational semantics. If there were a mechanism which allowed arguments of compound nonheads to be realized compound-externally, one wonders why it is unavailable in cases like *scrub brush (\*of floors)*, *filling pump (\*with water)*, *cleaning cloth (\*of records)* and most other nominal compounds.

### 3.2.2 Genuine MNC violations: Argument-structure-sensitive affixes

Section 4.2 will argue that some *-er<sup>Ev</sup>*-nominals have lexicalist-style derivations like (24), where the complex head is created by base generation, not head movement, and an argument of V is realized outside the complex head. On the standard assumption that V is not the head of the nominal, this derivation is a genuine exception to the MNC in (21).

- (24) [<sub>NP</sub> [<sub>N°</sub> [<sub>V°</sub> *read*]-*er<sup>Ev</sup>*] *of novels...*]

Which property does *-er<sup>Ev</sup>* (but not *-er<sup>nonEv</sup>*) have which allows MNC-violating argument inheritance? Ackema/Neeleman (2004:27) stipulate that *-er* has an optional argument which is identified with V’s internal argument. Presumably *-er<sup>nonEv</sup>* would lack this optional argument. However, ideally the possibility of inheritance should follow from a property of *-er<sup>Ev</sup>* other than its observed compatibility with *of*-phrases. I propose that this property is that *-er<sup>Ev</sup>*

and other inheritance-licensing affixes are argument-realizers or otherwise *sensitive to argument-structural features of their bases*. The argument-structure-sensitivity of  $-er^{Ev}$  manifests itself in the observation in section 2.1 that  $-er^{Ev}$ -nominals always correspond to Initiators of their base verbs. If one assumes (temporarily at least) that Initiators are arguments of V, and if  $-er^{Ev}$  realizes an Initiator argument (e.g. Ackema/Neeleman 2004:27), then  $-er^{Ev}$  could only attach to a V whose argument structure is *active*, i.e. has not been suppressed in some way. Since V's argument structure is active, then any other arguments of V must also be realized. Since the relevant variant of  $-er^{Ev}$  selects  $V^o$ , DP arguments cannot be realized inside  $[N^o Ver^{Ev}]$ , but can be realized outside it using the *of*-insertion mechanism available in English DPs.<sup>12</sup>

It is actually debatable whether the derivations just described are true instances of the kind of inheritance of arguments of nonheads banned by the MNC, as  $-er^{Ev}$ -nominals exhibit a sort of *ambiguous headship*. Clearly  $-er$  is the category-determining head and the semantic head (the nominals' referents are entities, not events). However, normally an expression which combines with its argument will be head of the resulting constituent, and  $-er^{Ev}$  realizes an argument of V, making V the argument-structural head of the nominal. While many details of this relativized headship (cf. Di Sciullo/Williams 1987:26) remain to be worked out<sup>13</sup>, this perspective makes it less surprising that  $-er^{Ev}$ -nominals exhibit a kind of complex predicate behavior in which a morphological nonhead is allowed to bequeath an argument to the complex head.

The factors allowing argument inheritance with  $-er^{Ev}$  are absent with  $-er^{nonEv}$ . The latter does not realize an argument of V (witness its insensitivity to V's argument structure, seen in the discussion above (8) in section 2.1). Consequently, V is in no sense the argument-structural head of  $[N^o V-er^{nonEv}]$ , and  $-er^{nonEv}$  is compatible with a V with an inactive argument structure.

Another possible domain of application of my analysis of  $-er^{Ev}$  would be adjectival passives, if any of them have a base-generated complex head structure like (25). Adjectival passives always predicate over arguments corresponding to V's direct object, so V's argument structure is active. Even on the common view that Initiators are not realized in adjectival passives, adjectival passive is still sensitive to Initiators since part of its job is to suppress them (Levin/Rappaport 1986) or equivalently to act as a defective Voice head (McIntyre 2013). McIntyre (2013) argues in detail that adjectival passive is specifically an Initiator-suppressing operation distinct from the less productive operation yielding unaccusative-based particles (*the departed/escaped/\*gone/\*fled people*).

(25)  $[A^o un-[A^o [V^o train]-ed]] people$

### 3.2.3 Summary and further discussion of the MNC

Thus far in section 3.2, I have argued for the MNC in (26) ((26) revises (21) to include findings in section 3.2.2). The MNC entails that there is no generally available mechanism of percolation which allows arguments of nonheads to become arguments of the complex head, or otherwise be realized at a distance from the item selecting them. The italicized portion of

<sup>12</sup> If one accepts (as I do, though not crucially here) that Initiators in clauses are introduced by heads like Voice and not by V (e.g. Kratzer 1996), then  $-er^{Ev}$  in (24) would be a nominal Voice head whose referent is an Initiator (cf. Baker & Vinokurova 2009:520, 532; Bowers 2011:1200). My account entails that Voice is sensitive to an argument-structural feature on V, call it  $[+Initiator]$ . This claim has a precedent in Bowers (2011:1195). It is also eminently reasonable. Voice does not *add* an Initiator interpretation to V's meaning, as is particularly clear with verbs like *read*, *massage*, *discuss* which cannot be conceptualized and defined without reference to Agents (which are therefore obligatory with such verbs, e.g. Levin & Rappaport Hovav 1995:102). Voice is thus unlike optional devices (whether lexical rules, applicative heads or silent prepositions) which add arguments not present in V's basic meaning, say beneficiaries (*burn me a cd*) or locations (*work the bars*). Thus, the role of Voice is comparable to the role of *to* in *give books to children*: both are devices which enable the syntactic realization of arguments of V, guaranteeing their thematic interpretation (respectively as Initiators and Recipients).

<sup>13</sup> Notably with regard to syntax. See Hudson (2004) for arguments for ambiguous headship in NPs/DPs.

(26) was argued in section 3.2.2 to be a principled exception in that merger of affixes which are sensitive to argument-structural features of their bases, including the Agent-realizing affix  $-er^{Ev}$ , requires these features to be active, which means that any other arguments of the base must also be realized.  $-er^{nonEv}$  is not argument-structure-sensitive, so it is beyond the remit of the italicized condition in (26).

**(26) Morphological Nonhead Constraint (MNC) (revised):** In a base-generated complex head  $[Y^\circ XY]$ , X's arguments cannot be realized outside  $[Y^\circ XY]$ , *unless Y realizes an argument of X or is otherwise sensitive to X's argument structure*.

We now inquire more closely into the nature of the MNC and the reasons for its existence. A necessary condition for MNC effects is an environment where an  $X^\circ$  element is selected as a morphological nonhead by a (non-argument-structure-sensitive) affix or a compounding rule. This greatly curtails the options for realizing the nonhead's arguments. Let us illustrate this with the  $-er^{nonEv}$ -nominal *poker* (*\*of fires*) (*\*by adults*). The base verb *poke* has two obligatory arguments in clauses (*I poked the fire*/*\*The fire poked*/*\*I poked*). These arguments must normally be housed in phrasal projections, say VoiceP (or S in some theories). However, such projections are larger than the  $V^\circ$  selected by  $-er^{nonEv}$ , witness *\*a children-poke-fires-er* 'thing for children to poke fires with'. Moreover, by (26) speakers do not consider long-distance realization of *poke*'s arguments outside *poker* to be an option. There is thus no way to realize phrasal arguments of V in *poker*<sup>nonEv</sup>. (26) is in principle compatible with *incorporated* arguments in structures like  $[_N [_V \textit{fire pok}]\textit{-er}]$ , but here the status of *fire* as an argument of *poke* is debatable (sect. 3.3).

An under-asked question is why the non-realization of obligatory arguments of V in nominals like *poker*<sup>nonEv</sup> does not yield ungrammaticality. One might have expected  $-er^{nonEv}$  to be compatible only with verbs lacking obligatory internal arguments, but this is incorrect in view of the  $-er^{nonEv}$ -uses of *overseer*, *destroyer*, *moisturiser*, among others.<sup>14</sup> In fact, one might have expected  $-er^{nonEv}$  to be incompatible with verbs with *any* obligatory arguments, including Initiators, but this expectation also goes unfulfilled since obligatory Initiator arguments remain unrealized in instrument or location nominals like *poker*, *kneeler*, *scraper* and, as argued in section 2.1, even in  $-er^{nonEv}$ -nominals which happen to correspond sortally to V's Initiator (*teacher*). This problem is not fully solved if we treat Agents with *poke*, *kneel*, *scrape* as arguments of Voice rather than V, and assume that  $-er^{nonEv}$  cannot select Voice projections. This begs the question as to why the Agent-licensing Voice head is obligatory in clauses but not  $-er$ -nominals. Analogous questions remain unanswered in theories in which Patients/Themes as well as Initiators are introduced by functional heads (Borer 2003, 2013; Bowers 2011).

These considerations lead me to suggest that adding non-argument-structure-sensitive  $V^\circ$ -selecting affixes like  $-er^{nonEv}$  is a *coercive* act which involves disregarding the argument structure of the nonhead V. This coercion could take the form of an operation (call it SUPPRESS) which deactivates the argument-structural features of the nonhead. Landau's (2009) Saturation operator is a precedent for this in another domain. Like Landau, I assume that the operation deactivates *all* argument-structural features of the head targeted, rather than eliminating specific arguments (as occurs in many lexical rules, say the external-argument-suppressing adjectival passive rule in Levin/Rappaport 1986). SUPPRESS as used here is a last resort which is called upon to prevent a nonhead from projecting structure which would violate the morphological selection restrictions of the affix selecting it. In clauses these triggering conditions are absent, so we are not in danger of generating sentences like *\*[TP There died]*.

<sup>14</sup> Alternatively, if compounding can satisfy arguments, we might have expected the incorporated Ns in *fire poker*, *skin moisturizer* to be obligatory, contra fact.

### 3.3 Synthetic compounds: the analysis of *record cleaner*

Section 3.2.3 proposed that when  $-er^{nonEv}$  is attached, V's argument selection features are cancelled by the SUPPRESS operation, making further argument realization impossible. This analysis would be refuted if the nonheads of synthetic compounds like *record cleaner*, *lifesaver* are grammatically represented as realizing arguments of the affixed verbs and are merged after  $-er^{nonEv}$  as in (27)a). I will show that this kind of argument structure percolation is unnecessary and problematic.

- (27) a.  $[N^{\circ} \text{ record } [N^{\circ} \text{ cleaner}]]$   
 b.  $[N^{\circ} [V^{\circ} \text{ record clean}] -er]]$

My proposal in section 3.2 can be maintained if compound nonheads combine with V before  $-er^{nonEv}$  does (and before SUPPRESS applies), as is possible in the structure in (27)b). This compounding-before-affixation approach has its proponents (e.g. Ackema/Neeleman 2004:56-66; Borer 2013; Harley 2008) but is rejected by others (e.g. Lieber 2004:48f) since it posits NV-constituents which often cannot appear independently (*\*I record-cleaned*). This does not refute (27)b) since there are less controversial morphological constituents which cannot appear independently, e.g. in *half-hearted* (*\*hearted*, *\*half-heart*) or *subject-verb agreement* (*\*subject-verb*).

Moreover, building on arguments in Borer (2013) and Ackema/Neeleman (2004), we can support (27)b) using data like (28)/(29). Here we find idiomatic interpretations which occur in compounds of the form  $[N \text{ NVer}]$  as well as  $[N \text{ NVing}]$  and/or  $[A \text{ NVing}]$ , although there are no corresponding overtly usable  $[V \text{ VN}]$  forms or VPs. Unless the existence of these idiomatic interpretations with both  $-er$  and  $-ing$  is coincidental (which is unlikely since all the nominals (30) appear in similar paradigms), we must posit  $[V \text{ VN}]$  forms like *self-seek<sub>V</sub>* 'be selfish' which are *bound*, i.e. lack corresponding overt noun-incorporation verbs like (28)b). Thus, for these compounds the structure in (27)b) is preferable, and I see no reason why it should not be equally applicable to compositional compounds like *record cleaner*.

- (28) a. self-seeker / self-seeking<sub>N/A</sub> 'egotist/selfishness/selfish'  
 b. *\*they self-seek*  
 c. *\*they seek themselves* / *\*the seeking of oneself*
- (29) a. crystal gazer/gazing ('fortune teller/telling') (Borer 2013)  
 b. *\*to crystal-gaze*  
 c. *#to gaze at crystals* / *#this gazing at crystals* (non-idiomatic)
- (30) world-beater, gender-bender, market maker, house-warmer, blood-letter, bookmaker ('betting agent'), pen-pusher ('bureaucrat'), tree-hugger ('hippie'), housebreaker ('burglar'), watchmaker ('watch repairer')

That  $[N^{\circ} [V^{\circ} \text{ record clean}] -er]]$  exists does not entail that  $[N^{\circ} \text{ record } [N^{\circ} \text{ cleaner}]]$  cannot exist. The latter resembles *record brush* in that both instantiate productive NN compounding with analogous interpretations ('brush/cleaner for records'). This interpretation of  $[N^{\circ} \text{ record } [N^{\circ} \text{ cleaner}]]$  does not treat *record* as an inherited argument of *clean* and is thus compatible with my proposal in section 3.2. This proposal is only incompatible with the structure  $[N^{\circ} \text{ record } [N^{\circ} \text{ cleaner}]]$  if *record* is grammatically represented as an argument of *clean*.

While I know no way of showing directly that there are no  $[N[V -er]]$  compounds where N is interpreted as an argument of V, evidence that this position is reasonable can be drawn from (31). Here the exclusion of *of*-phrases obeys the generalization that (most) English zero nominalizations disallow realization of V's arguments (Borer 2003, Grimshaw 1990). However, compound nonheads defy this constraint, suggesting either that they are not represented as arguments of V, or that they merge before zero nominalization renders V's

argument structure inactive. If compound nonheads were arguments of V that merge after nominalization, we would wrongly expect argument realization by *of*-phrases.<sup>15</sup>

- (31) a. a typologically rare kind of {topic drop/\*drop of topics}  
 b. this {heartbreak/\*break of my heart/bloodshed/\*shed of his blood/stock split/\*split of a \$900 stock/witchhunt/\*hunt of alleged witches/haircut/\*cut of his hair}  
 c. His {<sup>%</sup>drug pushes/\*pushes of nefarious drugs} got him arrested.  
 d. those {dummy-spits/\*spits of the dummy} (*spit the dummy* ‘throw a tantrum’)

Though I must leave a fuller discussion of compounding for another occasion, I hope to have shown that we need not adopt an analysis [N[V-*er*]] in which N realizes an argument of V, and that we can legitimately assume either the structure [[NV]-*er*]] or that N in [N[V-*er*]] does not realize an argument of V, which are both compatible with the position in section 3.2.

## 4 *-er*<sup>Ev</sup>-nominals

This section describes the grammar of *-er*<sup>Ev</sup>-nominals, arguing that some of them have lexicalist-style derivations where *-er*<sup>Ev</sup> selects V<sup>o</sup> and arguments are realized outside the complex N. This claim contrasts with most non-lexicalist work, which describes argument inheritance in terms of head movement. (32) illustrates variants of this approach to *-er*<sup>Ev</sup>-nominals, for perspicuity ignoring head movement of the verb/root *read* to *-er* and simplifying some approaches in the literature. In (32)a), *-er* is a type of Voice/*v* head which expresses a property of an Initiator (cf. Baker/Vinokurova 2009:520, 532). The inherited DP argument is licensed inside VP, with *of* inserted for Case reasons by some mechanism. In the variant in (32)b), *-er* selects a VoiceP with an unpronounced Initiator which I label as *x*. *-er* binds this argument (cf. Alexiadou/Schäfer 2010:14f). Further variation between head movement accounts concerns the treatment of *of*-insertion. (32)c) differs from (32)a,b) in that *of*-arguments are licensed as specifiers of a functional category (cf. van Hout/Roeper). *-er* selects different projections in different approaches. Apart from VP or VoiceP, these include projections of category-neutral roots (Harley 2008) and TP (van Hout/Roeper).

- (32) a. [NP *-er* [VP *read* [DP/PP (*of*) *the book*]]]  
 b. [NP *-er* [VoiceP X [V<sup>o</sup> Voice ... [VP *read* [DP/PP (*of*) *the book*]]]]]  
 c. [XP X [YP [DP/PP (*of*) *the book*] Y [NP *-er* [VP *read* *t*<sub>the book</sub>]]]]]

All head movement approaches assume a VP or other projection containing internal arguments of V. I will argue that this overgenerates for some English idiolects. The relevant data are introduced now.

### 4.1 Speaker variation on argument realizability with *-er*<sup>Ev</sup>-nominals

The judgments in (33) echo Grimshaw’s (1990:101f) rejection of *-er*-nominals with clausal complements. However, web attestations like (34) show that some speakers allow clausal complements for *-er*-nouns. Five of eight native speakers I surveyed accepted structures like (34).<sup>16, 17</sup>

<sup>15</sup> This argument is partly inspired by Ackema/Neeleman (2004:56) and Borer (2013:ch.12), but they invoke the debatable judgment that *of*-nominals like *breaker/breaking of the ice* lack the idiomatic interpretation of compounds like *icebreaker/icebreaking*.

<sup>16</sup> I myself reject all clausal complements in (33) and (34), except with *believer* with deontic (believed-in) propositions, cf. my judgments in (i) and (ii). Possibly the CP in (i) is embedded under an unpronounced *in*, making (i) an instance of PP inheritance, which *-er*<sup>Ev</sup> tolerates more readily.

(i) <sup>?</sup>*believers that discipline is good* (= *believers in discipline*)

(ii) <sup>\*</sup>*believers that Oswald shot Kennedy* (= *believers in the lone assassin theory*)

<sup>17</sup> A study of judgments of eight consultants says nothing about the relative commonness of the two types of judgments and about their geographical and sociolinguistic distribution. However, this modest sampling suffices for my purposes. I aim only to establish that both types of judgments exist and to propose a grammar for *-er*<sup>Ev</sup> in idiolects of the less permissive type.

- (33) a. \*the discoverer [<sub>CP</sub> that the world is round]  
 b. LIKE (a): observer, doubter, denier, pretender, revealer, preacher, thinker, proclaimer, complainer, boaster  
 c. \*a pretender/aspirer/tryer/hoper to change the system  
 d. \*an instructor/advisor of people to obey orders  
 e. \*the causer/orderer of these people to be killed
- (34) a. (\*)a firm believer that knowledge is power  
 b. (\*)the first discoverer that sound can be transmitted by an electrical current  
 c. (\*)a proponent that people should be compelled to ID themselves

Head movement approaches like (32) do not predict judgments like (33), since they posit phrasal projections which should be able to house clausal complements.

AP resultative and depictive predicates were rejected by four of eight informants (three of whom also rejected clausal complements with *-er*-nominals):

- (35) a. (\*)She is a habitual {painter of walls white/hammerer of metal flat}.  
 b. (\*)The English are habitual drinkers of beer warm.

AP predicates with causative light verbs like (36)a) were rejected by seven of eight consultants. However, I concede that head movement approaches may be able to handle this by reducing it to whatever causes the ban on *of*-insertion with arguments not thematically licensed by V in contexts like (36)b,c).

- (36) a. \*Ignorant purism is a {maker sick of linguists/maker of linguists sick}.  
 b. \*the making {sick of linguists/of linguists sick}  
 c. \*the considering/consideration of John honest

Double object constructions and predicative DP constructions are universally rejected in *-er*-nominals (37), but again I will concede their unacceptability may be due to factors not intrinsically incompatible with head movement analyses, including a possible ban on multiple *of*-insertion (Borer 2013), the ban on *of*-insertion with ECM structures in (37)b), or the incompatibility of *-er* with silent morphemes sometimes posited in double object constructions (applicative heads, silent prepositions).

- (37) a. \*a giver (of) children (of) presents; \*a baker (of) people (of) cakes  
 b. \*a caller (of) people (of) names; \*the caller of John (of) a moron

Adverbs are excluded from agentive nominals in all varieties, cf. (38)<sup>18</sup>. Baker/Vinokurova (2009) argue that this generalization holds crosslinguistically, and their explanation for it is compatible with head movement approaches. They argue that adverbs cannot merge below *-er* since by assumption adverbs never merge below Agent-introducing heads. They cannot merge above *-er* since it nominalizes the structure, disqualifying it from adverbial modification. (Event nominalizers are not intrinsically constrained in this way, and indeed some of them clearly operate over larger verbal projections: *his not having read the book carefully enough*.) An imaginable alternative account would be that there is a crosslinguistic ban on attaching agentive affixes (or participant-naming affixes) to constituents larger than V°, but it is hard to see why this should hold. I will therefore accept the Baker-Vinokurova account.

- (38) builders (of houses) (\*skilfully/\*well), \*a worder of contracts carefully

DP arguments, realized as *of*-insertion arguments, are accepted by all speakers with *-er*<sup>Ev</sup>, cf. e.g. (9)a-c).

PP arguments in *-er*<sup>Ev</sup>-nominals are accepted by all speakers in many, but not all, cases. (39) gives internet-attested examples which I find perfect despite being a restrictive speaker. Four

<sup>18</sup> One finds exceptions like (i), at least in business English. However, such adverbs are irrelevant since they can modify simplex nouns, cf. the attestation in (ii). These adverbs perhaps modify implicit participles, as is clear in the imaginable article titles *Adverbs crosslinguistically* and *Adverbs viewed crosslinguistically*.

(i) %providers {globally/internationally/worldwide} of quality goods

(ii) %its nomination for “Best Private Bank Internationally for Innovative Products and Services”

informants I consulted accepted (39)c,d). By contrast, examples like (40)a,b) are at best strongly degraded to me and my informants (despite internet attestations of (40)b)). Randall (1988:134f) provides further unacceptable examples of inherited PPs, including (40)c,d).<sup>19</sup>

- (39) a. believers in evolution, contributors to books, spongers off the state, sufferers from gout, a railer against religion  
 b. the largest importer of goods into the US, a giver of gifts to poor children, a driver of trucks to Zambia, protectors of people from harm  
 c. separators of the wheat from the chaff  
 d. a legendary drinker of people under the table.
- (40) a. \*a beater of people to death, \*the breaker of the vase to bits  
 b. (\*)lookers at pictures, (\*)talkers about inflation  
 c. \*A nurse is more than just a hander of scalpels to surgeons.  
 d. \*The volunteer office needs a paster of stamps onto envelopes.

I cannot fully explain the contrast between (39) and (40); the contrast between resultatives like (39)d) and (40)a) seems particularly puzzling. Some PPs might be more acceptable because they are independently usable with underived nominals (*believer/faith in science, traveller/passenger to Spain, a giver/present to children*) but this will not work in cases like (39)c,d). Analyzing the acceptable PPs as modifiers rather than inherited arguments is implausible with idiosyncratically selected prepositions (*believers in evolution*) and obligatory PPs (*railers against religion* vs. *they constantly rail \*(against religion)*).

My conclusion from these observations is that PP arguments can be inherited in  $-er^{Ev}$ -nominals in all idiolects, but subject to constraints which remain to be identified. Whatever the nature of these constraints, they are not expected in head movement approaches, which posit (extended) verbal projections which allow enough space to accommodate PPs. Such constraints are less surprising in theories where inherited PP arguments merge after nominalization, since factors like incompatibility with nouns or constraints on argument percolation could interfere with argument linking.

My conclusion from this section is that an English speaker may have either of the following variants of  $-er^{Ev}$ :

$-er^{Ev.liberal}$  is compatible with arguments of all categories (e.g. PPs, DPs, CPs, APs), except those excluded for independent reasons compatible with head movement and except for certain PPs. I will not analyze  $-er^{Ev.liberal}$  further here.

$-er^{Ev.restr(ictive)}$  allows PPs and *of*-insertion phrases, but not other arguments like APs and clausal complements. The next section describes its grammatical properties.<sup>20</sup>

## 4.2 The grammar of $-er^{Ev.restr}$ -nominals

I now present an analysis of  $-er^{Ev.restr}$  which explains its constrained argument realization possibilities.

A) The selection restrictions of  $-er^{Ev.restr}$  permit it to merge with  $V^o$  but not a phrasal projection. This has precedents in lexicalist analyses (e.g. Ackema/Neeleman 2004:25). It could also be stated in theories lacking a presyntactic word-generating component. The

<sup>19</sup> Randall's claim that  $-er$ -nominals allow maximally one inherited argument seems overstated in view of (39)b-d), and some data like *\*a putter of books on shelves* might be excluded by whatever factors exclude *of*-insertion with arguments which are not thematic arguments of V, cf. (36).

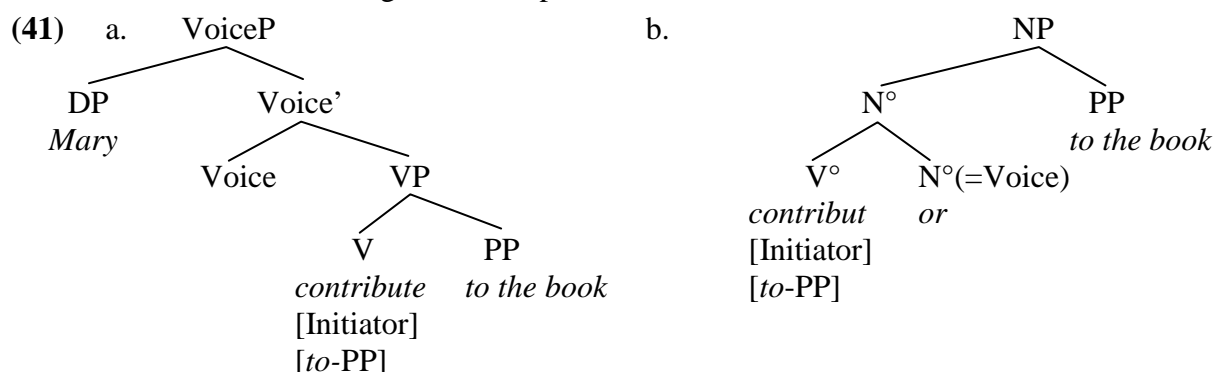
<sup>20</sup> The liberal/restrictive distinction does not entail "two grammars of English" (as a reviewer put it), but merely two grammars of one affix,  $-er^{Ev}$ . My own idiolect has  $-er^{Ev.restr}$  but treats event nominals more liberally than some other speakers do, judging by its full acceptance of adverbs in *\*the washing of hands thoroughly* and others in Fu et al. (2001). Open questions include whether any speakers display the reverse pattern ( $-er^{Ev.liberal}$  but  $-ing^{Ev.restr}$ ), whether there are any implicational generalizations about restrictiveness, and, more generally, what factors lead language learners to postulate liberal or restrictive variants of nominalizers.



insistence on  $V^\circ$  nonheads is simply stipulated in  $-er$ 's selection restrictions, but such stipulations are necessary in any theory.

**B)**  $-er^{Ev}$  (in both variants  $-er^{Ev.restr}$  and  $-er^{Ev.liberal}$ ) realizes an Initiator argument (recall sections 2.1 and 3.2.2), which I will express by treating it as a nominal Voice head which names an Initiator of the event described by V. Being a Voice head,  $-er^{Ev}$  is licensed by an argument-structural [Initiator] feature on V (recall note 12). Hence it cannot merge with V unless V's argument selection features are active (section 3.2.2), so arguments corresponding to V's internal arguments in clauses are obligatory in  $-er^{Ev.restr}$ -nominals.

**C)** The structure  $[N^\circ V^\circ -er^{Ev.restr}]$  forced by the selection restrictions of  $-er^{Ev.restr}$  could accommodate arguments of V if they merge with V in a base-generated complex head configuration  $[N^\circ [V^\circ XV] -er^{Ev.restr}]$ , which is arguably instantiated in *(frequent) wine drinkers*. However, phrasal arguments cannot be part of a complex  $V^\circ$  and must thus be realized *outside*  $[N^\circ V^\circ -er^{Ev.restr}]$ , as is standard in lexicalist accounts of nominalization (e.g. Grimshaw 1990:71, Ackema/Neeleman 2004:23, 27). (41) compares a clausal derivation with an  $-er^{Ev.restr}$ -nominalization. Nothing prevents merger of the PP below Voice in (a), while in (b) it merges above Voice since the Voice exponent selects  $V^\circ$ , resulting in a 'squeezing-out' or 'externalization' of the PP argument to a position outside  $N^\circ$ .



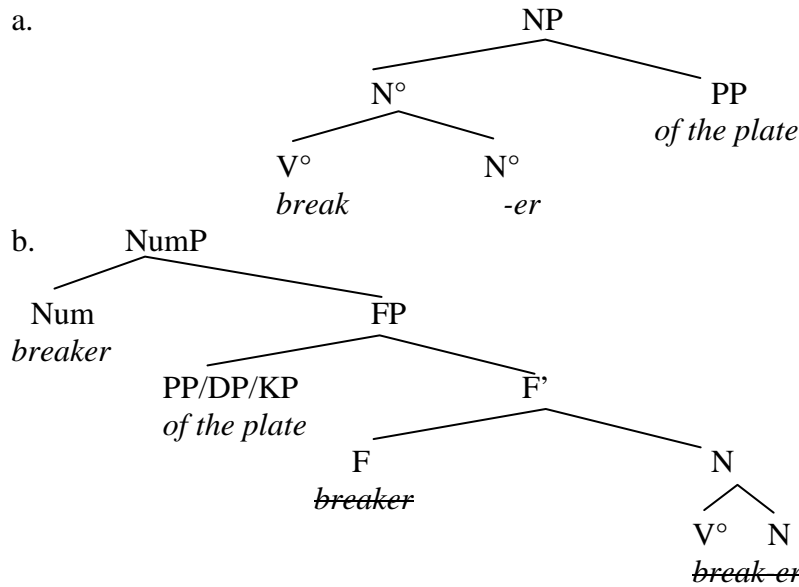
Note that if indeed head movement overgenerates for  $-er^{Ev.restr}$  and derivations like (41)b) and others below are needed, then Baker's (1988) Uniformity of Theta Assignment Hypothesis is counterexemplified, since certain arguments can merge as V-sisters in clauses but not in  $-er^{Ev}$ -nominals. My analysis also contradicts hierarchical linking theories, since one would have to assume, incongruously, that Agents are more prominent than other arguments in clauses but less prominent in certain nominalizations.

**D)** Whether arguments of V can be realized outside  $[N^\circ V -er^{Ev.restr}]$  depends on their ability to integrate into a nominal (extended) projection as *arguments of nouns*. I now argue that this is possible for PPs and DPs, but not CPs and AP complements.

**D1)** DP arguments realized using *of*-insertion are introduced above  $-er^{Ev.restr}$ . Either the *of*-phrase merges directly with N, as in (42)a), or as specifier of a functional projection, as in (42)b) (where N must move to a still higher functional head, say Number). Either way, *of*-phrases are independently available as a way of realizing DP arguments of underived nouns, cf. *enemies of John, authors of books*.<sup>21,22</sup>

<sup>21</sup> *Pace* a reviewer, there is substantial evidence for treating *of*-phrases in nominalizations as inherited arguments and not as adjuncts. The adjunct analysis cannot explain for instance (i) Grimshaw's (1990:98) observation that modifiers but not arguments allow copula predication (*\*the destruction/destroyer was of Carthage* vs. *the ring was of gold*), (ii) the fact that *of*-phrases systematically correspond to direct arguments of the nominalized verb and (iii) the fact that  $-er^{nonEv}$ -nouns allow *for*-modifiers but not *of*-phrases (*wiper for/\*of windows*). These are among the reasons why *of*-phrases are standardly treated as arguments in both syntactic theories (e.g.

(42) a.



**D2)** The incompatibility of AP arguments with  $-er^{Ev.restr}$  seen in (35)a)/(36) (%hammerer of metal flat) is explained by the assumption that inherited arguments in  $-er$ -nominals are realized above  $-er$  and thus as arguments of nouns, and the fact that APs are not possible arguments of nouns, cf. (43)a). The desired interpretations are only possible using non-intersective adjectival modification, (43)b). That depictive adjectives are bad with  $-er^{Ev.restr}$  (%drinkers of tea hot) follows if depictives cannot be part of the  $V^\circ$  input to affixation.

- (43) a. \*his/the {demeanour/air/appearance/belief/look} sick  
 b. his sick demeanour; good lookers; careful worders of documents

**D3)** That PP arguments like (39) are compatible with  $-er^{Ev.restr}$  is unsurprising given that PPs are the commonest type of argument/modifier in underived nominals (faith in someone, concern for something). PPs like (40) are unacceptable to most speakers but, as noted, these cases more surprising in a head movement approach than the one espoused here.

**D4)** Grimshaw (1990:97ff) argued that DP-internal CPs/TPs like those in (44) are not arguments but (appositive) modifiers. Evidence for this includes that they are never obligatory and that they can be stranded by copulas, a property not found with genuine arguments, cf. (45). Whatever the explanation for the fact that CPs/TPs receive the appositive modifier interpretation if merged with N, it is clear that this interpretation is nonsensical if they merge with entity-denoting nouns like  $-er$ -nominals. Indeed, my intuitions as a  $-er^{Ev.restr}$ -speaker are that \*the discoverers that the world is round is as semantically deviant as \*the people that the world is round, and that both bizarrely presuppose that these individuals ‘are’ propositions.<sup>23</sup>

- (44) a. the rumour that I am a crypto-lexicalist  
 b. LIKEWISE: hypothesis, point, view, idea criticism, belief, proposal, claim...  
 c. the decision to leave

Alexiadou/Schäfer 2010, Borer 2013, van Hout/Roeper 1998) and lexicalist ones (Ackema/Neeleman 2004, Grimshaw 1990).

<sup>22</sup> Whether prenominal genitives can realize inherited arguments in  $-er$ -nouns is unclear. Claiming that they are always possessors explains (i)-(ii) but not (iii). See also Rappaport/Levin (1992:139).

- (i) the car’s owner/driver [cars without owners/drivers]  
 (ii) \*the bottle’s drinker/opener [\*bottles without drinkers/openers]  
 (iii) the city’s destroyers/conquerors [\*cities without destroyers/conquerors]

<sup>23</sup> One informant accepted CP arguments in  $-er$ -nouns but rejected AP structures like (35). These judgments are less surprising than the reverse judgments, since simplex nouns disallow any kind of AP complement (\*the demeanour sad) but do allow CP satellites like (44). Possibly this informant treats the CPs in (44) as true arguments of nouns, contra the view adopted in the main text.

- d. \*a prophet/proponent/advocate that changes must occur
- (45) a. The {belief/conclusion/hypothesis/idea} was that I am a crypto-lexicalist.
- b. Their decision was {to leave/that they should leave}.
- c. The arrangement/plan was for them to leave.
- d. \*The destruction/destroyer was of Carthage.

I have argued that  $-er^{Ev.restr}$  requires a lexicalist-style derivation where arguments of V merge *after* nominalization. I suspect that some head movement proponents will consider this a retrograde step, but the onus is on them to show that the overgeneration problems facing their accounts can be solved. If my discussion inspires successful responses to this challenge, or at least draws attention to data that have been forgotten since Grimshaw (1990), it will have been worthwhile.

## 5 Conclusions

I have sought to document the existence of two nominalization operations which restrict argument realization: (i) selection of morphological nonheads by non-argument-structure-sensitive affixes like  $-er^{nonEv}$ , which renders (phrasal) arguments of nonheads unrealizable (section 3) and (ii) selection of morphological nonheads by argument-structure-sensitive affixes like  $-er^{Ev}$ , which forces phrasal arguments to be realized above affixation as arguments of nouns, which excludes AP and clausal arguments (section 4). Both analyses are inspired by certain lexicalist assumptions, and section 4 shows that the non-lexicalist tendency to use head movement to explain all argument inheritance phenomena courts serious overgeneration problems. However, neither analysis requires nominalization to occur in a presyntactic ‘lexical’ component, or excludes syntactic head movement derivations for nominalizations allowing unconstrained argument inheritance.

My attempt to discuss English  $-er$  in adequate detail forced me to leave several matters for future work, including which other affixes should be analyzed in the same way as  $-er^{nonEv}$  and  $-er^{Ev}$ , and whether there are category-changing processes showing constrained argument realization possibilities that require different analyses.

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