English compounds with *ing*-form heads

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1. Introduction

This paper arose from an interest in compounds whose right-hand element, typically the head in English compounds, is a form which would traditionally be labelled "participle", i.e. either the present participle or *ing*-form as in *student reading*, or a passive participle or *ed*-form as in *student led* (seminar). All English verbs have *ing*-forms and *ed*-forms, so these are often considered part of the verbal paradigm (Bauer, Lieber & Plag 2013: 62). Both forms are part of constructions which can also be seen to be part of the verbal paradigm (progressive and perfect). But both also have a range of other functions, so in some contexts labels like "noun" (for *ing*-forms) or "adjective" (for both *ing* and *ed* forms) might be more appropriate to their use (see also Huddleston and Pullum 2002: 78-83). This makes "participle" a problematic term and so in most cases where no claim is made about syntactic categories the labels *ing*-form or *ed*-form will be preferred. What follows is devoted entirely to compounds whose second element is an *ing*-form, and so the discussion will touch upon the range of functions that can be performed by an *ing*-form when compounded with another element. Compounds with an *ing*-form as a second element have been called synthetic, since they have, alongside other forms, a deverbal second element (see Lieber 1983 and 2004, for example). Some of these X-V*ing* compounds are also argumental, i.e. the left-hand element X (usually a N(oun)) is an argument of the verb from which the *ing*-form (i.e. V*ing*) is derived.

This paper assumes that it is possible and advantageous to model compounds as constructions, i.e. form-meaning pairings, as in Booij (2010) and Hilpert (2015). Another assumption made here as in Hilpert (2015) is that constructions enter into relationships with each other, e.g. the *ing*-form or the *ed*-form-headed compound constructions can inherit some properties from the *ing*-form or the *ed*-form themselves.

Two more specific questions will be explored here: What are the possible types of compound constructions headed by an *ing*-form? What are the relationships between these types and how can such relationships account for the possibility/impossibility of constructions?

The next section summarises some observations about compounds headed by an *ing*-form from the research literature relevant to the current study, which is presented in section 3.

2. Some properties of compounds headed by an *ing*-form

The initial observation that prompted this research was that compounds with an *ed*-form element or an *ing*-form element seem to be possible with a wider range of elements as a left-hand element than suggested in much of the literature. The research was subsequently restricted to compounds with an *ing*-form as a right-hand element (henceforth often referred to with the shorthand X-V*ing*). Given this interest and starting point, the data for this investigation was gathered from corpus searches, in most cases the BNC, but also COCA. Searches aimed to explore what can precede or follow an *ing*-form and so the search strings were along the lines of *-*ing or *-*ing _NN*. As in the approach employed by Hilpert (2015), a hyphen was included in the searches as a way of limiting the results to compounded forms. This of course meant that results were partial. However, as the aim was simply to find

what patterns were attested, without attention to frequency and distribution, no compensatory mechanism for this was sought. The data returned by the searches was investigated manually, looking for instantiated patterns. The research reported here is similar to an extent to the research reported in Lieber (2016). The results of that study will be directly relevant and will be summarised next.

As mentioned above already, *ing*-forms are generally recognised to have three functions: nominal use, adjectival use and verbal use. The same three functions have been discerned in compounds headed by *ing*-forms, see for instance below (all examples from the BNC). Further discussion and examples can be found in Lieber (1983).

(1) So, no doubt as a result of some **string-pulling** from Bletchley, Harold's local recruiting office was instructed by the War Office to recruit him into the Intelligence Corps. (BNC)

(2) . . . The journey through the lava forest ends at the town, a **fish-smelling** old port, and in need of a coat of paint, yet vibrant and friendly.

(3) The male will not tolerate any disturbance from his prospective mate while he is **nest-building**.

What restrictions there are on the left-hand element in a X-V*ing* compound has been scrutinised in earlier studies, e.g. Roeper and Siegel (1978), Lieber (1983), Lieber (2016), and references therein. Various constraints have been put forward, summarised succinctly in Lieber (2016: 517). Amongst those relevant to X-V*ing* nominalisations with event interpretation she lists the prohibition of the left-hand element being a subject of the event underlying the V*ing* nominalisation, the tendency for the left-hand element in a compound to be the "closest sister" of the verbal base (citing Selkirk 1982), and the condition that all internal arguments of the verb should be satisfied within the compound, as well as the impossibility of event properties with synthetic compounds (citing Borer 2013, see original for further details).

Lieber (2016) tests these restrictions against corpus data and concludes that the possibilities are more varied than previously observed. She gives the following examples showing that the N in an N-V*ing* compound can be interpreted not only as the object of V, but also as the subject of V (the examples below are adapted from Lieber (2016: 529-530); see original for full examples and sources):

(4) Grapheme-phoneme correspondence is used during **braille reading by beginning readers**, less-skilled readers, and skilled readers when the text is relatively difficult.

(5) It has been reported that both announced and unannounced quizzes increase attendance (...), increase **student reading of assigned material** (. . .) and increase studying in between exams (. . .)

As the above show, the left-hand element in an X-V*ing* compound can have both object and subject reading. Not only is the range of the first element in a compound wider than previously attested, but as (Lieber 2016: 529-530) points out, arguments of the underlying event can be expressed both within the compound and in its external syntax.

The availability of the arguments of the underlying verb to the *ing*-nominals is taken as evidence that the nominal has inherited the argument structure of the verb, and so Lieber

(2016: 520) points out that complex event readings are available to N-V*ing* compounds and gives the following examples:

(6) The significance of positive, competent **role modelling by teachers** to assist students in forming desired practices is both known and accepted.

(7) **Soil Eating by Animals** to Correct Mineral Deficiencies

The lack of restrictions on the argumental configurations of X-V*ing* compounds is accounted for by Lieber (2016) via the assumption that the *ing*-nominalisation inherits the argument structure of the base verb:

$$\text{read}_i \quad \leftrightarrow \quad [E_i(SUBJ,OBJ)]$$

$$\Downarrow$$

$$\text{reading}_i \quad \leftrightarrow \quad [E_i(SUBJ,OBJ)]$$

Assuming this argument structure for the *ing*-nominalisation, Lieber's (2016) analysis then runs as follows (adapted): The N non-head in an N-V*ing* nominal compound is co-indexed to the highest available argument by default, or otherwise to the semantically compatible argument in V*ing*'s argument structure:

(8) a. $\text{student}_j\text{-reading}_i \leftrightarrow [E_i(SUBJ_j,OBJ)]$
b. $\text{braille}_j\text{-reading}_i \leftrightarrow [E_i(SUBJ,OBJ_j)]$

The left-hand element in the compounds above links to the subject in (8a) because this is the preferred option, but to the object in (8b) because linking to the subject is semantically odd (braille can't be the agent of a reading event).

3. This study

The current study extends the focus on X-V*ing* compounds to look at those cases where the X-V*ing* compound is embedded before another noun, i.e. it looks at cases where we have X-V*ing* N. In many of these cases the X in X-V*ing* is also a noun, so we have a sequence of three elements with the middle being an *ing*-form. These are structures like the following:

(9) There is **PCB-burning capacity** in Sweden, Finland, Germany and France, of which only the last is, like Britain, prepared to import such waste. (BNC)

(10) ... So too were **fee-fixing agreements** covering securities dealing.

(11) Unfortunately, more and more schools are moving towards **decision-making structures** that will actually assist this diverted focus. (BNC)

As can be seen from these examples, the N in the embedded N-V*ing* sequence can be an object of the underlying event, even though the N-V*ing* sequence itself may resist eventive modification (i.e. we can't say **frequent decision-making structures*). The N underlying the N-V*ing* sequence can also be interpreted as the underlying subject, as in the examples below:

(12) Before the hypotheses could be tested, MANOVA was used to determine if a significant difference existed between the experimental and control groups in **student reading level** and level of metacognition. (COCA)

(13) The primary goals of an independent **student reading policy** are to improve literacy achievement among adolescents and cultivate a lifelong habit of reading a variety of genres (. . .) (COCA)

We can derive this behaviour by assuming that the construction inherits from two constructions simultaneously, or that two constructions are joined together. The first construction is the one we already encountered when discussing X-V*ing* compounds with eventive semantics. The other construction is the N_1N_2 compound construction, where N_1 is said to be in some semantic relation to N_2. Crucially, however, the N_2 is not an argument of the event underlying the compounded N-V*ing*. The noun in the N-V*ing* compound can be the subject of the underlying event, as sketched below:

$$\text{student}_j\text{-reading}_i \quad + \quad N_1\,N_2$$
$$[\text{E}i(\text{SUBJ}j,\text{OBJ})] \qquad [N_1 \text{ in some Relation to } N_2]$$

$$\Downarrow$$

$$[[\text{student}_i\text{-reading}_i]\ N_2\ ]$$
$$[\text{E}_i(\text{SUBJ}_j) \text{ in some relation to } N_2]$$

Alternatively, the noun in the N-V*ing* compound can be the object of the underlying event:

$$\text{braille}_j\text{-reading}_i \quad + \quad N_1N_2$$
$$[\text{E}_i(\text{SUBJ},\text{OBJ}_j)] \qquad [N_1 \text{ in some Relation to } N_2]$$

$$\Downarrow$$

$$[[\text{braille}_j\text{-reading}_i]\ N_2]$$
$$[\text{E}_i(\text{OBJ}_j) \text{ in some relation to } N_2]$$

However, we sometimes find cases where the rightmost N in the N-V*ing* N structure is also an argument of the underlying event. Such constructions are illustrated by the following examples:

(14) I have encountered **Arena-reading Young Conservatives** who get on The Smiths and Sex Pistols (. . .) (BNC)

(15) In **'harem'-forming societies** the non-reproductive male population may form a 'bachelor' section of the social unit (. . .) (BNC)

When we have such argumental N-V*ing* N sequences, where both the N preceding the V*ing* and the N to the right of V*ing* can be interpreted as arguments of the event underlying the deverbal *ing*-form, we can interpret the rightmost nouns as subject and the left-hand noun as object, but, it would seem, not the other way round. So we can say *book-reading student*, but we can't say **student-reading book*.

This would not be surprising if we think of the compound N-V*ing* as a modifier. According to Bauer, Lieber and Plag (2013: 310), when used as modifiers, V*ing* participles from transitive verbs tend to be "strongly subject-referencing", i.e. tend to be predicated of the subject of the underlying event, which licenses *reading student*, *swimming fish*, *annoying neighbour*. In other words, in such constructions we have a participle which inherits some event semantics from the underlying verb and is able to bind the underlying subject to the noun it modifies:

$$[V_i\text{-ing } N_j] \leftrightarrow [E_i(SUBJ_j)]$$

A compounded N-V*ing* construction can be embedded in such a construction, but only if the rightmost noun binds the underlying subject, leaving the leftmost noun to bind an underlying object where relevant. This is sketched below:

$$\text{braille}_j\text{-reading}_i \qquad + \qquad V_i\text{-ing } N_j$$
$$[E_i(SUBJ,OBJ_j)] \qquad\qquad [E_i(SUBJ_j)]$$

$$\Downarrow$$

$$[[\text{braille}_j\text{-reading}_i] \ N_k] \ [E_i(SUBJ_k,OBJ_j)]$$

The paper started with the observation that V-*ing* forms can be nominal, adjectival, or verbal and that the same is true of the compounded X-V*ing* forms. So far, however, we have encountered mostly N-V*ing* forms which can be nominal, or possibly adjectival, but we haven't seen any candidates for a verbal use of a N-V*ing* construction. This paper will have little to say about such constructions. However, some possible instances were found in the BNC or via Google searches:

(16) The male will not tolerate any disturbance from his prospective mate while he is **nest-building**. (BNC)

(17) I was **fire-watching** in the coal yard. (BNC)

(18) You are not **gun-running** or anything, are you?

(19) I was **track-running** and playing rugby, yet my father never received one sports report from school, he said. (BNC)

(20) My old woman is **house-hunting**, she'd like this.

The question, of course, arises whether we are dealing here with the progressive construction, or with a predicative use of an adjectival X-V*ing* construction.[1] What might weigh the scales towards a progressive interpretation at least in some of the examples above is, for example, the embedding of the N-V*ing* construction after a temporal *while* in (16), the modification for

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[1] Special thanks to the MMM11 audience for discussion of this point.

place in (17), and the coordination with a clear progressive in (19). At the same time the examples above do not permit modification by *very* or *too*, or a replacement of the verb *be* with a verb like *seem*, which would indicate adjectival status (see Huddleston and Pullum 2002). If a progressive interpretation turns out to be valid, then it would appear that in the progressive construction too the left-hand element in the compound can be an argument of the event underlying the verb (contra observations in Lieber 1983). Such candidates for progressive constructions with an argumental relationship between the left-hand element and the V*ing* form are not easy to find. This isn't surprising given the paucity of compounds headed by verbs in English generally (see Plag 2003, for example).

4. Conclusion

This paper looked at compounds with an *ing*-form head. If understood as constructions, the properties of such compounds can be modelled as falling out of a network of such constructions. As in previous research, constructions are assumed to inherit properties from each other. For example, inheritance by the participle of the eventive semantics of the verb and the verb's argument structure provides an explanation for the freedom in interpretation of N-V*ing* argumental nominal compounds. However, this paper also assumes that properties of constructions are additionally dependent on some relationship of embedding or conjoining. Such a merger of the N-V*ing* argumental construction with other constructions can help explain the different patterns of argument interpretation in N-V*ing* N sequences.

Acknowledgements

References

Bauer, L., Lieber, R., and Plag, I. (2013) *The Oxford Reference Guide to English Morphology*. Oxford: Oxford University Press.
Booij, G. (2010) *Construction Morphology*. Oxford: Oxford University Press.
Borer, H. (2013) *Taking Form*. Oxford : Oxford University Press.
Hilpert, M. (2015). From hand-carved to computer-based: Noun-participle compounding and the upward-strengthening hypothesis. *Cognitive Linguistics* 26(1): 1-36.
Huddleston, R. and Pullum, G. K. (2002) *The Cambridge Grammar of the English Language*. Cambridge: Cambridge University Press.
Lieber, R. (1983) Argument linking and compounds in English. *Linguistic Inquiry* 14(2): 251-285.
Lieber, R. (2004) *Morphology and lexical semantics*. Cambridge: Cambridge University Press.
Lieber, R. (2016) On the interplay of facts and theory: Revisiting synthetic compounds in English. In: D. Siddiqi & H. Harley (Eds.), *Morphological Metatheory*, Amsterdam/Philadelphia: John Benjamins Publishing Company, 513-536.
Roeper, T. & Siegel, M. E. A. (1978) A lexical transformation for verbal compounds. *Linguistic Inquiry* 9(2): 199-260.
Selkirk, E. (1982) *The syntax of words*. Cambridge, MA: MIT Press.