

Idiomaticity and Compositionality in Deverbal Compounds

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1. Introduction

Syntactic theories of word formation like Distributed Morphology (DM, Halle & Marantz 1993) aim to determine the syntactic domain that is prone to idiomatic interpretation and the syntactic level at which idiomaticity is not available anymore.

Word formation in Distributed Morphology (DM):

1. Language has atomic, non-decomposable, elements = roots.
2. Roots combine with the functional vocabulary and build larger elements.
3. Roots are category neutral. They are then categorized by combining with category defining functional heads (n, v, a).

Harley & Noyer (1999): ‘The study of conventional idioms has been an important source of evidence for locality restrictions on interpretation in DM; in particular, following the observations of Marantz (1984), the fact that external arguments are never included as part of the contextual conditioning of Roots in conventional idioms has led to the proposal where- by external arguments are projected by a separate head, not by any Root, and they thus are not mentioned by Encyclopedia entries for Roots as a possible interpretive conditioner.’

Marantz (1984, 1997): idioms exclude agents and are not possible above the syntactic level that introduces them: e.g. the idiom in (1a) does not allow an agent, even if the verb is agentive (1b):

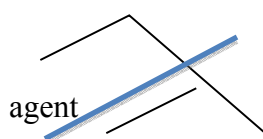
- (1) a. The shit hit the fan.
b. John hit the fan.

Assuming, following Kratzer (1996) and Alexiadou, Anagnostopoulou & Schäfer (2015), among others, that external arguments are introduced by Voice, we can establish the generalization in (2):

- (2) **The Voice Generalization** (Marantz 1997, Anagnostopoulou & Samioti 2014)
Above the layer of the Voice projection, which hosts prototypical external arguments, idiomatic interpretation is not available.

Corollary: If Voice is present in a structure, this receives a compositional interpretation.

- (3) boundary for domain of special meaning



head projecting agent

(Marantz 1997)

We bring further support for the generalization in (2) from the domain of deverbal NN compounds in English.

- Compounds, in general, display a wide range of variation between compositionality and idiomaticity: see (4).

- (4) a. white lie, blue blood, blue/dirty joke, life boat
c. dog's ear, pickpocket, redbreast, bluebell, red tape

- Deverbal NN compounds (DCs) are considered closest to compositionality, but they are still not fully compositional like Argument Supporting Nominals (ASNs, Borer 2013; cf. Rappaport & Levin 1992, Van Hout & Roeper 1998, Alexiadou & Schäfer 2010):

- (5) a. a saver of lives; mower of the lawn (ASN)
b. a lifesaver; a lawn mower (DC)

We look at deverbal compounds (DCs) whose non-head (left hand member) is interpreted as an internal or external argument of the deverbal head noun as in (6) by comparison to their corresponding ASNs in (7) (cf. Borer 2013).

- (6) a. bookselling, bookseller (internal)
b. house demolition (internal)
c. teacher recommendation (external)
d. teacher evaluation (internal)

- (7) a. the selling/seller of the **book**
b. the demolition of the **house** (by the army)
c. the recommendation of (the) students by the/a **teacher**
d. the evaluation of a/the **teacher** (by a student)

DCs (synthetic compounds) = the ground for long theoretical debates between lexicalist and syntactic models of word formation (e.g. Levi 1978, Roeper & Siegel 1978, Selkirk 1982, Lieber 1983, 2004, Ackema & Neeleman 2004, Harley 2009 and others).

We investigate them in a syntactic framework by comparison to ASNs and argue that DCs can realize internal (contra Borer 2013), but not external (syntactic) arguments. This leads to two types of DCs:

- i. argumental DCs with internal argument non-heads, which represent idiomatically interpreted syntactic structures that embed internal arguments
- ii. non-argumental DCs, which are actually 'root compounds' whose non-heads get to be interpreted as external arguments, without being syntactic external arguments.

We argue that this distinction follows from the generalization in (2). If external argument DCs existed, they would have to embed VoiceP (which hosts the external argument), but such structures can receive only a compositional interpretation as ASNs, they wouldn't be able to acquire an idiomatic/lexicalized meaning.

Outline:

§ 2. Idiomaticity and compositionality in deverbal compounds:

§ 2.1. DCs, ASNs and idiomaticity

§ 2.2. Internal argument DCs

§ 2.3. The lack of external argument DCs

§ 3. An analysis of DCs

2. Idiomaticity and compositionality in deverbal compounds

2.1. DCs, ASNs and idiomaticity

- **Presence/Absence of event implication**

Argument supporting nominalizations (ASNs) inherit the verb's event structure with internal and external arguments and a fully compositional meaning (see Grimshaw 1990, Siloni 1997, Alexiadou 2001, Borer 2013, for the general picture, and Alexiadou & Schäfer 2010 and Roy & Soare 2013 for *-er* nouns). They make reference to a concrete (past, present or future) event:

- (8) a. the/a washing/wiping of the/a windshield
b. the/a washer/wiper of the/a windshield
c. the training of the/a dog
d. the trainer of the/a dog

Deverbal compounds (DCs) do not make reference to an event, they acquire a specialized meaning, which is very clear especially with instrumental *-er* DCs:

- (9) a. **windshield washing/wiping** (as a service in a gas station)
b. **dog training** (school)
c. **dog trainer** (professional reading)
d. **windshield wiper** (component of a car that wipes the windshield)
e. **windshield washer** fluid/pump (liquid used in washing windshields)

Rappaport & Levin 1992, Van Hout & Roper 1998, Alexiadou & Schäfer 2010, Roy & Soare 2013: ASNs have an event implication, while compounds do not (see also (5) above): e.g., the meaning of a *windshield wiper* in (9d) is independent of a corresponding wiping event, but *a wiper of a windshield* is understood in direct relation to such an event.

- **Verbal idioms**

Only DCs can be built from verbal idioms as in (10) or can exist themselves as idioms in the absence of a corresponding verbal idiom or ASN, as illustrated in (11) (see Ackema & Neeleman 2004, McIntyre 2009, Borer 2013):

- (10)a. **Verbal idiom**
to catch the eye; to break the ice
b. **ASN**
*the catching/catcher of the eye;
*the breaking/breaker of (the) ice
c. **Deverbal compound**

eye-catching/eye-catcher;
ice-breaking/ice breaker

- (11)a. **Deverbal compound**
facelifting/facelifter; babysitting/babysitter
- b. **ASN**
#the lifting/lifter of (a) face;
*the sitting/sitter of (a) baby
- c. **Verbal idiom**
#to lift (a) face; *to sit (a) baby

- **Two lines of analysis for DCs**

Unlike ASNs—for which the presence of event structure with arguments is indisputable—, DCs have received contradictory treatments in the literature:

Grimshaw 1990: DCs with internal arguments have event structure just like ASNs (her 'complex event nominals'); non-heads that are interpreted as internal arguments are indeed internal arguments, just like in ASNs.

But Grimshaw does not apply the tests that identify ASNs for DCs, as most of these tests wouldn't apply.

Borer 2013: DCs are headed by result nominals and lack event structure and arguments.

We argue for a distinction between two types of DCs:

- I. internal argument DCs (e.g., *teacher evaluation*): their non-head is an internal argument and they involve some event structure;
- II. other DCs (e.g., *teacher recommendation*): do not realize any argument and pattern with non-derived NN compounds in receiving a root-(or word-/stem-)based analysis (e.g. *orchid nursery*, *expert opinion*; Borer 2013) => 'root'/primary compounds.

2.2 Internal Argument DCs

DCs whose non-heads are interpreted as internal arguments pattern closer to ASNs than Borer's (2013) analysis suggests, especially when it comes to **productivity** and **compositionality**.

- **Productivity**

First, deverbal compounds with an internal argument are just as productive as their corresponding ASNs, if a suitable context is provided and a slightly idiomatized meaning is intended:

- (12) a. John is scratching a tree
b. John's scratching of the tree (ASN)
c. John is doing some **tree scratching** (DC)
d. John seems to be a **tree scratcher** (DC)

Other possible examples: *flower watching/watcher*, *fork flipping/flipper* etc. It is in fact hard to find a verbal/ASN construction that doesn't already have an 'established' internal argument DC.

Compounds that express an external argument relation cannot be productively constructed, as noted by Grimshaw 1990 and most of the literature.

(13) **student reading*, **baby eating*, **boy running*

There are only a few established compounds like *teacher recommendation*, *court investigation* (see §2.2).

- **Compositionality**

Second, Borer (2013) argues that the deverbal noun head in DCs disallows *by*-phrases and aspectual adverbials as in (14a), consequently failing to display the event structure properties typical of ASNs in (14b). She concludes that DCs are headed by result nominals and cannot realize arguments.

- (14)a. **Deverbal compound**
the house demolition (***by the army**) (***in two hours**);
the facility maintenance (***by the management**) (***for two years**)
- b. **ASN**
the demolition of the house **by the army in 2 hours**;
the maintenance of the facility **by the management for 2 years**

Although we agree with the facts in (14), we do not take them to indicate that these compounds cannot realize any arguments, as Borer claims.

By-phrases are introduced by a Voice projection and aspectual adverbials by an Aspect projection (see e.g. Alexiadou, Anagnostopoulou & Schäfer 2015 for the former, and Alexiadou 1997, Cinque 1999 for the latter claim). The incompatibility of DCs with the two types of expressions indicates that they lack Voice and Aspect.

In a system like DM, which assumes that the realization of internal arguments is independent of external arguments and grammatical aspect, the absence of Voice and Aspect does not imply the absence of internal arguments (see section 3).

In Borer's system, where argument realization and aspect are tightly connected, the absence of external arguments and aspectual structure implies that all argument structure is excluded in DCs. This system leads to the conclusion that DCs must be headed by result nominals.

The empirical facts do not support Borer's conclusion. (15a) is a result nominal (RN) context given in Grimshaw (1990) for the result reading of *examination*. In this environment, the corresponding ASN realizing the internal argument is disallowed. As (15b) indicates, the internal argument DC corresponding to the ASN is also disallowed in this context.

- (15) a. The **examination** (*of the patient) was on the table. (RN)
b. *The **patient examination** was on the table. (DC)

Moreover, DCs like in (16c) and (16d) may receive a compositional reading that comes from the corresponding ASN/verb, but not the special non-compositional interpretation of the corresponding result nominals in (16a) and (16b).

- (16) a. Aristotle's **reading/interpretation** of the world (#for several decades)
 b. (linguistic) **transformation** on structure
 c. #this **world reading/interpretation**
 d. #the **structure transformation**

=> If DCs were headed by result nominals, as Borer (2013) claims, the facts in (15) and (16) would be unexpected and unaccounted for.

If we assume, however, that these DCs inherit the internal argument of their base verb, just like their corresponding ASNs, we can easily explain their similarity to ASNs in (15-16) and their productivity is also expected.

2.3 The Lack of External Argument DCs

Borer (2013) claims that compounds with *-ing* and *-er* suffixes exclude an external argument interpretation, which she explains via the special properties of these suffixes, namely, that their structure includes an external argument (Originator in her terms).

For Latinate suffixes, she gives a few examples as in (17a, b), which she treats as similar to non-deverbal compounds like in (17c, d), which also have an external argument reading.

- (17) a. teacher recommendation
 b. court investigation
 c. expert job
 d. court verdict

We agree with Borer's analysis of all these as root compounds, but we show that they have different properties from internal argument DCs.

- **Post-posed possessive modifiers**

First, according to Grimshaw 1990, post-posed possessive modifiers appear only with result nominals. Internal argument DCs reject such modifiers in (18b), while compounds with apparent external arguments allow them in (18c). Thus the latter resemble RNs and the former don't.

- (18)a. an examination (*of the patient) **of Bill's** (RN)
 b. *a teacher evaluation **of Bill's** (internal argument DC)
 c. a teacher recommendation **of Bill's** (root compound)

- **Additional internal/external 'argument'**

Second, to confirm that the internal argument in DCs is a true argument, while the external one is not, note that a second internal argument-like phrase is excluded, while a second external argument-like phrase is possible in (19):

- (19) a. *teacher evaluation **of Ms Smith**
 b. teacher recommendation **by Ms Smith**

In (19a), the *of*-phrase cannot introduce Ms Smith as the internal argument of *evaluation*, because *teacher* already does that. But in (19b), with a non-argumental compound, the *by*-phrase can introduce Ms Smith as a teacher, because *teacher* is not an argument. (Note that in (19b) the *by*-phrase is not a true external argument, it has the 'author' reading as in *a book by Chomsky*; see Fox & Grodzinsky 1998).

- **Lieber's (2004) external argument DCs**

Lieber 2004: (20a) is an external argument DC. These are available only with *-ee* derived nominals, which inherently satisfy the internal argument of the base verb: see (20) from Bobaljik (2003).

- (20) a. **city** employee (one who the city employs)
 b. **UN** evacuee (one who the UN evacuated)
 c. **US** bombardee (one who US bombarded)

Bobaljik (2003) argues, however, that such DCs do not realize true external arguments, they get an 'auspicious' reading, namely, 'employed/evacuated/bombarded under the auspices of/on behalf of the city/UN/US'. He provides two main arguments.

First, the non-head in these compounds is restricted to institutions, it excludes persons (see examples in (21), which can only be dvandva compounds).

- (21) **#boss/#manager** employee (one who the/a boss/manager employs)
#rescuer evacuee/bombardee (one who the/a rescuer(s) evacuated/bombarded)

Second, Bobaljik shows that the non-heads of these compounds cannot appear as *by*-phrases, which standardly introduce external arguments in ASNs, see (22).

- (22) a. *an employee **by the city**
 b. *an evacuee **by the UN**
 c. *a bombardee **by the US**

The non-head of internal argument DCs in (23) can appear as an *of*-phrase, which introduces internal arguments in ASNs.

- (23) a. evaluation **of (a) teacher(s)**
 b. demolition **of (a) house(s)**

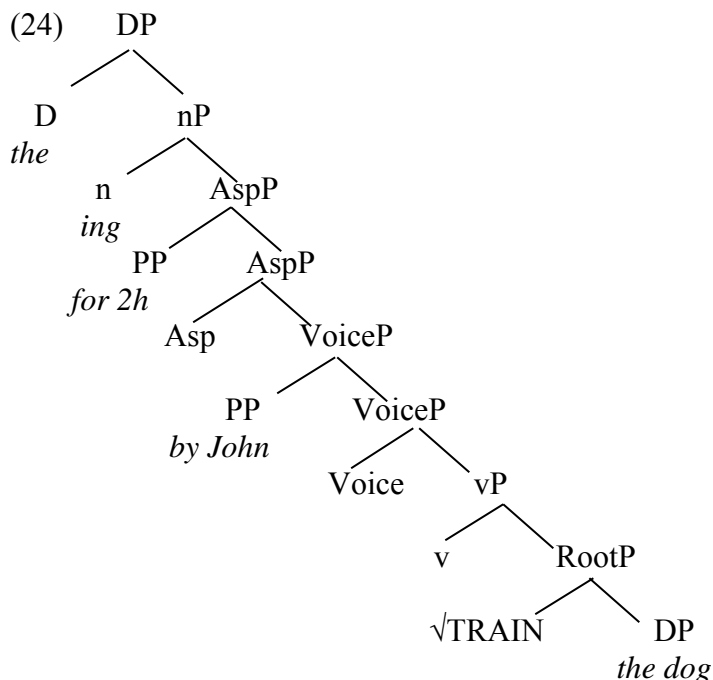
3. An analysis of deverbal compounds

Two types of DCS:

- argumental DCs, which realize only the internal argument, and
- non-argumental DCs, whose non-heads may receive an external argument reading.

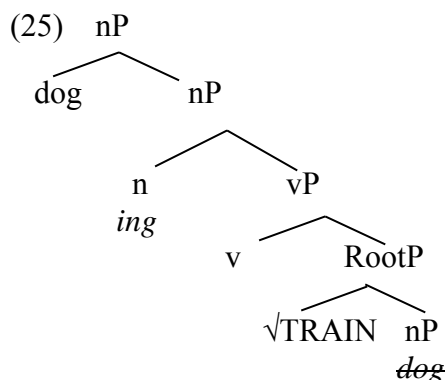
In DM, this difference is explained by the different status of internal and external arguments: while the former are introduced by the verb's root, the latter come with the functional structure in

which the root appears (usually VoiceP).¹ (24) is the structure for the ASN 'the training of the dog by John for 2 hours' (cf. Alexiadou et al 2011), which hosts an external argument under VoiceP and aspectual adverbials under AspP.



In (25) we have the structure for the argumental DC *dog training*, whose internal argument starts with the root like in (24), but moves to Spec, nP. The reason that the nP *dog* moves is its bare structure and implicit inability to receive case as a syntactic argument.

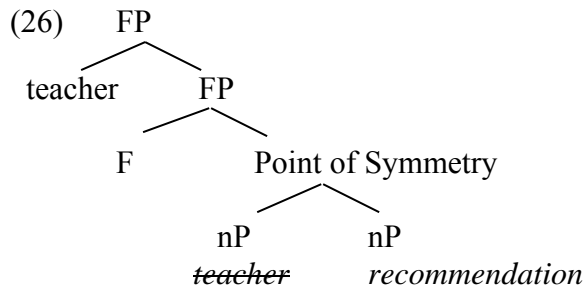
In ASNs, internal arguments are more complex (usually DPs) and receive genitive/PP case, presumably from AspectP (Alexiadou 2001).



Root compounds like *teacher recommendation* receive the structure in (26) following Delfitto et al 2011, where FP breaks the Point-of-Symmetry created by the two nPs.

¹ For simplicity, we take here internal arguments to be introduced by the root of a verb as in Harley (2009), although this most likely cannot be the case for all transitive verbs (see Alexiadou 2014 and references therein for discussion). Note, however, that if the internal argument is not introduced by the root itself, it will be right above the root and below the vP level, which means that our present observations and claims are not affected in any way.

Importantly, in (26) there is no argumental relation between the two nPs, and the external argument-like reading is triggered by the encyclopedic knowledge that a teacher usually issues a recommendation, as Delfitto et al. discuss for other compounds.



To return to argumental DCs, (25) retains the insights from Harley (2009) on the argumental status of the non-head, but also accounts for the categorized nP and vP status of *dog* and *train* (cf. Borer 2013, McIntyre 2015). The partly compositional meaning of these DCs (vs. root compounds in (26)) comes with the internal argument which originates with the root and identifies the verbal event introduced by v (cf. Rappaport Hovav & Levin 2001, Grimm & McNally 2009). The idiomatized reading is possible because there is no higher event structure, in particular, VoiceP, as in ASNs in (24).

- This analysis supports the view in Marantz (1997) and Anagnostopoulou & Samioti (2014) that idiomatic interpretation can be accommodated below Voice, but not above it.

In turn, this means that the categorizing levels v and n still allow some idiomatization of meaning, e.g. the professional reading of *dog trainer/training*, see also Punske & Stone (2014). These structures do not allow the special readings of result nominals, because the latter are formed as categorizations of roots by n, they do not contain a vP, and their meaning is negotiated between the root and n, they do not contain any compositional structure. Argumental DCs, however, involve a categorized vP with its internal argument and hence express a compositional relation between the two.

This is contra Arad (2005), who put forth the following hypothesis, see also Embick (2010):

- (27) Roots are assigned an interpretation in the context of the first category assigning head/phase head merged with them, which is then fixed throughout the derivation

The Voice generalization vs. the first categorizing head hypothesis differ as to the size of structure that functions as a domain for idiomatic interpretation.

i) first categorizing head hypothesis:

- (28) a. [vP [nP [Root_{tape}]]] *compositional*
 b. [vP/nP [Root_{hammer}]] *non-compositional*

ii) The Voice generalization: the only structure that is compositional is the one that includes Voice.

- (29) a. [DP [nP [VoiceP [vP [Root]]]]] *compositional, supports Argument Structure*
 b. [DP [nP [vP [Root]]]] *may be non-compositional*
 c. [DP [nP [Root]]] *may be non-compositional*

Arguments in favor of the above from the area of nominalizations have been provided in Alexiadou (2009) on the basis of Greek derived nominals:

We focus here on nouns that contain the nominalizer affix **-m-**. Several of these are three ways ambiguous between an ASN, a RN, and an idiomatic reading.

- (30)a. to **kolima** tu vazu diirkise 5 lepta *ASN*
 The glue-ing the-dress-gen took 5 minutes
 The glueing of the vase took 5 minutes
 b. to **kolima** den ine kalo *RN*
 the glueing is not good
 c. to **kolima** tu Jani me ti bala ine ipervoliko *idiom*
 the glueing the John with the ball is extreme
 John's obsession with soccer is extreme

1. Morphology: the morphological decomposition of these nominals suggests the presence of a verbal head within all of them.

- (31) [nominalizer [verbalizer [root]]]

Greek: *-iz-, -on-, -en -ev- -az-, -a:*

- (32) a. aspr-iz-o plut-iz-o b. pag-on-o ler-on-o
 whiten become rich freeze dirty
 c. sten-ev-o d. kol-a-o
 tighten glue

- (33) to aspr-is-m-a to pag-o-m-a to sten-e-m-a to kol-i-m-a
 the whitening the freezing the tightening the glueing

2. Productivity: Such formations are relatively productive; (34) is based on Samioti's (2015) list of idiomatic expressions with participial forms:

- | | <i>Noun</i> | <i>non-idiomatic</i> | <i>idiomatic</i> |
|---------|----------------|------------------------|-------------------------------|
| (34) a. | to kub-o-m-a | the buttoning | the reservation (withholding) |
| b. | to spa-sim-o | the breaking | the unerving? |
| c. | to fti-sim-o | the spitting | the ignoring |
| d. | to tsib-i-m-a | the stinging | the infatuation |
| e. | to kurd-is-m-a | the setting of a clock | the unnerving? |

- **Conclusion**: nominals with the nominalizer **-m-** contain a verbal layer (v).
- An idiomatic interpretation is not available when AS is present, see also Borer (2013):

- (35) to kuboma tu paltu kratise 3 lepta *ASN, not idiom; not RN*
 The buttoning the coat-gen took 3 minutes
 The buttoning of the coat took 3 minutes

We thus have support for the view that idiomatic meaning is available below Voice, see Anagnostopoulou & Samioti (2014) for the domain of participles.

4. Conclusions

We have argued against a treatment of all DCs as root compounds as advanced in Borer 2013. We distinguished between two classes of DCs:

- I. internal argument DCs: which inherit the lowest part of the event structure introduced by vP and with that also the internal argument (like in ASNs)
- II. other DCs, including those whose non-head are interpreted as external arguments, which receive a root-based analysis as in Delfitto et al. 2011

We have provided support for the DM take on idioms according to which idiomatic meaning is available below Voice in verbal syntactic structures (Marantz 1984, 1997, Alexiadou 2009, Anagnostopoulou & Samioti 2014).

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