

The relatedness of meaning in derivational patterns

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1. Introduction: The question of polysemy

The paradigm of deverbal derivations created by the suffix *-er* shown in (1) displays a variety of different meanings.

(1) Deverbal *-er* nominals

a. <i>signer</i>	AGENT (better: external argument) including:
<i>admirer</i>	EXPERIENCER
<i>owner</i>	POSSESSOR
<i>receiver</i>	GOAL
<i>contributor</i>	SOURCE
b. <i>scraper</i>	INSTRUMENT
c. <i>poster</i>	OBJECT
d. <i>diner</i>	LOCATION

These words appear to be related because they share a common element, the suffix *-er*, and because they derive categories intimately connected to their verbal base. For this reason the derivational pattern is often described as polysemous, cf. Plag (1998, 2003), Panther and Thornburg (2002), Booij and Lieber (2004), Lieber (2004, 2016), Luschützky and Rainer (2011, 2013), Rainer (2011, 2014), Rainer *et al.* (2014), Bauer *et al.* (2013), Kawalitz and Plag (2015), Plag *et al.* (2018), among others.

But are these words really polysemous? And if so, what exactly is polysemous? Is it the suffix itself? Or the resulting derivation? Does the suffix carry meaning? How exactly does the suffix interact with the meaning of its base? The goal of this article is to examine these questions more carefully and to assess the appropriateness of the oft-used label “polysemy” for the array of meanings in derivational paradigms like the one illustrated in (1). To this end, sections 2-3 examine the deverbal agent and instrument patterns within the paradigm of *-er* nominals and section 4 continues with its focus on the denominal *-er* formations. Attention is then shifted to the primary deverbal *-(at)ion* nominals in sections 5 and 6. Sections 7 and 8 contrast the secondary patterns with the regular event meaning variants of the paradigm. Section 9 summarizes the findings.

2. The derivational patterns of *-er*

There is general agreement that, of all the meanings represented by the examples in (1), the original agentive meaning is the most productive. In fact, the agentive pattern is so productive that all of the non-agentive formations in (1) can also be understood as agents in addition to the meanings instrument, object, and location. But it is important to see that when these words are understood as agents, they are completely regular in a way that the non-agentive meanings are

not. The agentive meanings are compositional formations that have incorporated the meaning of the underlying verb together with its unsaturated arguments. The arguments inherited from the verb can be realized as syntactic complements, as shown by the examples in (2). However, an *-er* formation that does not refer to an agent does not permit the realization of the verbal argument. For example, *scraper of the car window* in (2b) cannot be understood as an instrument. The object and location readings in (2c & d) disappear in the same way if a verbal argument is realized.

(2) **Agentive readings possible in all cases**

- | | |
|-------------------------------------|--------------------|
| a. <i>signer of the contract</i> | AGENT |
| <i>admirer of the dog</i> | |
| <i>owner of the house</i> | |
| <i>receiver of the award</i> | |
| b. <i>scraper of the car window</i> | AGENT /*INSTRUMENT |
| c. <i>poster of the notice</i> | AGENT /*OBJECT |
| d. <i>smoker of the cigar</i> | AGENT /*LOCATION |

If *scraper* can be construed as an agent but not as an instrument in (2b), then it cannot be polysemous: the same word cannot simultaneously allow and disallow the realization of an argument.

3. Instrumental vs. agentive suffix *-er*: A case of distinct meanings

For this reason I assume, as argued in more detail in Olsen (2019a, 2019b), that the instrumental suffix *-er* is distinct from the agentive suffix *-er*. These two meaning groups within the *-er* paradigm are not cases of polysemy, but cases of distinct meaning (i.e. homonymy) in the same way that *bank* has two distinct meanings – the river bank and the financial institution.

The instrumental suffix *-er* derives a set of nouns denoting concrete artifacts designed for a specific purpose. Its lexical semantic representation is given in (3): it combines with a predicate P of the category Verb (= [V]) deriving a noun (= [N]) that refers to an entity z that is an instrument with a purpose that is specified by the verbal predicate (= P(e')).

- (3) $-er_{instr}$
 $-er$ [N] $\lambda P \lambda z$ Gen e' [INSTR (z) & PURPOSE (e', z) & P (e')]
 [V]

Scraper is therefore an instrument with the purpose of scraping:

- (4) *scraper* [N] λz Gen e' [INSTR (z) & PURPOSE (e', z) & SCRAPE (e')]

The agentive suffix *-er*, on the other hand, does not denote an object directly, but is a function that combines with a verb and carries out a change in its argument structure (AS). This operation is formalized in (5) and illustrated in (6). If the event variable of the verb *scrape* in (6a) is bound generically in *scraper* (6b), the highest remaining argument that is active in the derived AS (= λx) correlates with the external argument x of the verb and becomes the referential argument of the derived noun. *Scraper* therefore refers to the individual x that carries out the action of scraping.

- (5) $-er_{agent}$
 $-er$ [N] $\lambda P \lambda \tilde{v}$ Gen e' [P (\tilde{v}) (e')]
 [V]

- (6) a. *to scrape* [V] $\lambda y \lambda x \lambda e$ [e: SCRAPE (x, y)]
 b. *scrap(e)+er* [N] $(\lambda y) \lambda x$ Gen e' [e': SCRAPE (x, y)]

Scrapper, derived in this manner, has inherited the internal argument *y* of the underlying verb. This argument is free to be realized syntactically in a phrase such as *scrapper of the car window*. *Scrapper* as an instrument, on the other hand, has only the referential argument *z* available in its AS, so it cannot support a syntactic complement. Hence, the instrument *scrapper* and agent *scrapper* are cases of distinct meanings; they are not polysemous.

If the event variable *e* of the underlying verb is bound generically, it is not active grammatically. Nevertheless, the position is still present in the semantic structure of *scrapper* that serves as the basis for our conceptual knowledge of the word. So let us ask: what type of event is implicit (as background information) in a nominal that refers to the agent of an event? Agentive *-er* nominals as seen in (7) can imply an occasional activity like *protester*, a habitual activity like *complainer* or a professional activity like *designer*. Often all types are possible in one word (cf. Rainer 2015: 1310).

(7) **Implicit activity types of agent nominals in *-er***

- a. occasional activity: *protester, voter, gawker*
 b. habitual activity: *complainer, gambler, smoker*
 c. profession: *designer, preacher, programmer*

The instrumental formations, on the other hand, refer to artifacts that are designed for a purpose. Whether a device like a scraper is used on a single occasion, on multiple occasions or never used at all is entirely insignificant to its existence as an instrument (cf. Rappaport Hovav & Levin 1992; Alexiadou & Schäfer 2010; Olsen 2019a, b). The only aspect of its meaning that is salient in its lexical semantic structure is its purpose. A person however can only be described as a scraper if (s)he has scraped or is scraping something. Whereas the meaning of *an occasional cigar smoker* is clear, **an occasional fish smoker* does not make sense as an instrument. Similarly, *a one-time voter* or *incessant complainer* are plausible descriptions of an agent, but **a one-time shredder* or **an incessant sprinkler* are not coherent instruments. In other words, the internal makeup of the verb's event structure is not available – even conceptually – in the instrumental meaning. The noun denotes an object and the underlying predicate serves merely to specify its purpose.

- (8) a. *an occasional cigar smoker*/**fish smoker*
 b. *a one-time voter*/**shredder*
 c. *an incessant complainer*/**sprinkler*

Note, moreover, that agentive and instrumental *-er* nominals do not pass Pustejovsky's co-predication test for inherent polysemy. According to Pustejovsky, certain (families of) nouns have unified ontologically different concepts in their meanings and are in this sense inherently polysemous. Such "dual aspect" nouns support simultaneous, but incompatible, predications over the different meanings. The conjoined predicates in (9a), for instance, pick out different aspects of the meaning of *book*, namely its information structure and the physical object. In (9b), the conjoined predicates modifying *lunch* refer to the meal itself and to the event of eating it. These are examples of dot-objects in Pustejovsky (1995), Jackendoff (2002) and Maienborn (2017) and conceptual shifts in Bierwisch (1983, 2015b).

(9) **Dual aspect polysemy**

- a. *Sue read the book and then returned it to the library.* [INFORMATION • PHYS OBJ]
 b. *Lunch was delicious and quick.* [MEAL • EVENT]

A homonymous word like *bank*, on the other hand, fails to allow the co-occurrence of incompatible predicates in (10a). Interestingly, the agent and instrument meanings of *lawn mower* and *sweeper* in (10b & c) follow the pattern of *bank*:

(10) **Homonymy**

- a. **The bank was muddy but cashed my check.*
 b. **The lawn mower was friendly but required diesel fuel.*
 c. **The sweeper was chewing gum and missing a handle.*

Further support for the conclusion that instrumental and agentive *-er* nominals are not polysemous comes from diachronic work on the history of the Romance and Germanic languages. In carefully documented work, Rainer (2011, 2015), Rainer *et al.* (2014: 21) and Lutschützky and Rainer (2013) argue that the assumed “polysemy” of the agent and instrument suffixes in Romance can actually be traced back to two independent Latin suffixes, namely agentive *-tor* and instrumental *-torium*. Müller (2011) documents the borrowing of denominal Latin *-ārius* and *-ārium* as agentive and instrumental suffixes into Old High German which, by Middle High German times, had become conflated into a single form *-er* as a result of formal leveling.

The development of the suffixes in Romance was more complicated, taking a different course in each of the Romance languages. Rainer (2005: 425; 2015: 1313) and Lutschützky and Rainer 2013: 1341-1345) first explain that Lat. suffix *-tor*, derived from the ending of past participles like *victor* < *vincere* ‘conquer’, was originally limited to an agentive meaning. However, agent nouns in Latin *-tor* could give rise to relational adjectives in *-torius* so that phrases such as *opus tectorium* ‘lit. work for covering; plaster’ or *opus fusorium* ‘lit. work for pouring; gutter’ were formed. If the head nouns were deleted – such ellipsis was prevalent in Romance –, the relational adjectives *tectorium* and *fusorium* then absorbed the meaning of the whole phrase resulting in nominalized elliptical forms. This allowed the suffix to become associated with instrumental meaning and function as the basis for the reanalysis of *-torium* as an instrumental suffix, distinct from the agentive suffix *-tor*.

The interplay involving ellipsis, reanalysis, borrowing, conflation and analogy that took place during the historical development of the Romance languages is meticulously documented for the standard languages and their primary dialects in Rainer (2011). Remnants of the original distinction between the agent and instrument patterns are still visible in the present-day languages as shown in (11), although a clear-cut distinction no longer exists due to confusion with borrowings from the dialects that conflated the two suffixes:

(11) Language	Agent /Instrument	
a. Spanish	<i>-dor /-dero</i>	<i>comprador</i> ‘buyer’; <i>exprimidero</i> ‘squeezer’
b. French	<i>-eur /-oir</i>	<i>chanteur</i> ‘singer’; <i>rasoir</i> ‘(electric) shaver’
c. Italian	<i>-tore /-toio</i>	<i>giocatore</i> ‘player’; <i>essicatoio</i> ‘dryer’
d. Portuguese	<i>-dor /-douro</i>	<i>lutador</i> ‘fighter’; <i>bebedouro</i> ‘drinking fountain’

The development of agentive and instrumental *-er* in English was more complex than in German. According to Marchand (1969) and Kastovsky (1971: 295), Old English *-er(e)* descended from Latin *-arius* and was almost entirely agentive. As a result of an in-depth study of first occurrences of instruments in *-er* in the OED, Lutschützky & Rainer (2013: 1351) and Rainer (2015: 1308) argue that instrumental *-er* became established in Middle English from about 1300 on and was a result of contact with Norman French, cf. ME *counter* from Old French *comptoir* ‘instrument for counting’ via Parisian *-oir* going back to Latin *-torium*. So the agentive *-er* and the instrumental *-er* of English descended from different patterns (denominal Latin *-arius* vs deverbal Latin *-torium*) and came into the language at different times (OE vs ME).

4. Further problems with the cursory label “polysemous”

The *-er* paradigm encompasses a third pattern that originated with a distinct suffix, namely the inhabitant nominals such as *Londoner*, *Dubliner* whose precursors were formed with Lat. *-uarii* that became Germ. *-warja* (cf. Fleischer & Barz 2012: 204-205; Erben 1983: 134 and Marchand 1969: 279). It is found in constructions like Old English *burg-ware* and *Lunden-warū* meaning ‘dwellers of a place’, cf. Modern English *burgher*, *Londoner*. Due to phonological attrition, the suffix *-warja* was eventually reduced to *-er* and assimilated formally to the *-er* pattern.

Nevertheless, there remain hints in the modern language of its distinct origin. The inhabitant suffix *-er* is constrained phonologically in that it does not accept a base ending in a vowel (Plag 2003), cf. **Philadelphiaer*, **San Franciscoer*, **Miamier*, **Denverer*. Other *-er* formations are not subject to such a restriction, cf. *denier*, *doer*, *rescuer*, *lingerer*.

What these facts demonstrate is that, in the course of the historical development of a language, formations on the basis of distinct suffixes can over time conflate formally with a productive pattern, resulting in what appears to be a homogeneous group of words, while in reality the resulting paradigm is actually comprised of semantically heterogeneous elements.

To account furthermore for denominal formations, a third suffix *-er* must be assumed with the semantic representation in (12) where *-er* combines with a nominal predicate Q to form a noun and denotes an entity x that stands in an unspecified relation R to a generic exemplar of its nominal base. For example, a *whaler* is an x that CATCHES whales, a *hatter* an x that MAKES hats.

(12) Denominal *-er*

$$-er \quad [N] \quad \lambda Q \lambda x \text{ Gen } y \quad [R(x, y) \ \& \ Q(y)] \\ [N]$$

It is now understandable how the originally distinct inhabitant suffix could easily be assimilated into the denominal *-er* pattern once its phonological form had weakened. The geographical noun *London* invites the inference that people live there, e.g. x RESIDES IN London. So, the interpretative process is similar to that of other denominal *-er* formations.

Efforts like those of Ryder (1999) or Panther and Thornburg (2002) to impose a unified treatment on all *-er* patterns and to consider all *-er* formations as deriving from a single source is futile. The *-er* suffix is ambiguous in at least three ways – it denotes the agent (or the external argument) of the underlying verb, cf. (5), it creates a set of nouns denoting instruments, cf. (3), and it derives a wide array of names for diverse objects that stand in an open relation to its nominal base as in (12). What we glean from these considerations is that the fact that several different meanings appear to share the same form does not alone justify the assumption that the individual patterns constitute a polysemous paradigm.

5. Event nominals in *-(at)ion*

Let us turn now to the paradigm of deverbal nominals derived by means of the suffix *-(at)ion* that display the array of meanings found in (13).¹

(13) Event nominals in *-(at)ion*

a. <i>pollution</i>	EVENT
b. <i>accumulation</i>	PROCESS
c. <i>depreciation</i>	RESULT STATE
d. <i>admiration</i>	STATE
e. <i>prosecution</i>	AGENT
f. <i>illustration</i>	MEANS
g. <i>acquisition</i>	OBJECT
h. <i>refrigeration</i>	LOCATION

The first four examples refer to an event, a process, a result state and a simple state. It will be claimed here that these are the transpositional formations of the *-(at)ion* paradigm. As discussed by Spencer (2010), Beard (1995), Lieber (2004, 2015), Kawalitz and Plag (2015) and others, a derivational process is transpositional if the semantic change incurred is limited to a change of category with the lexical semantics of the base left otherwise intact. In this regard, the suffix *-(at)ion* can be seen as a function that takes a verbal predicate as its argument and transfers the complete meaning of the verb together with its arguments to the derived noun, cf. Bierwisch (2015a, 2015b), Olsen (2015a).

$$(14) \quad \textit{-(at)ion} \quad [N] \quad \lambda P \lambda \tilde{v} \lambda e [P(\tilde{v})(e)] \\ [V]$$

Applied to the verb *pollute* in (14), *-(at)ion* derives the nominal *pollution*. The highest argument in the argument structure of the verb, its referential argument λe , becomes the referential argument of the noun. While the internal arguments of a verb are obligatory unless explicitly marked as optional, the non-referential arguments of a noun are always optional, cf. Bierwisch (1989, 2015a).

$$(15) \quad \begin{array}{ll} \textit{a. pollute} & [V] \quad \lambda y \lambda x \lambda e [e: \text{CAUSE}(\text{ACT}(x, y), \text{BECOME}(\text{POLLUTED}(y)))] \\ \textit{b. pollution} & [N] \quad (\lambda y)(\lambda x) \lambda e [e: \text{CAUSE}(\text{ACT}(x, y), \text{BECOME}(\text{POLLUTED}(y)))] \end{array}$$

Pollute is a telic verb. In Vendler's (1957) aspectual terminology it denotes an accomplishment made up of two subevents, an activity (or process) that leads to a change of state, cf. also Dowty (1979), Rothstein (2004). The nominalization *pollution* spans this range of readings as well, including in its reference the three situation types entailed by the accomplishment: in (16a) the whole telic event, in (16b) the activity phase of the event and in (16c) the state resulting from the event.

¹ This paradigm of meanings is actually found with a number of English suffixes: the so-called ATK suffixes (i.e. *-(at)ion* and *kin*), including *-al*, *-age*, *-ance*, *-ment*, *-ure*, of which *-(at)ion* is the most productive, (cf. Borer 2013, Bauer *et al.* 2013 and Lieber 2016).

(16) **Situation types in the reference of *pollution***

- a. *The pollution of the lake by the factory was prosecuted by the city.* Telic Event
 b. *The pollution of the lake by the factory continued unabated for years.* Process
 c. *The pollution of the lake (*by the factory) posed a danger to the community.* Result state

Note that the phrase *by the factory* that is possible in the event and process readings is not possible in the result state reading. An external argument can be expressed as an argument-adjunct in a *by* phrase if it is part of an event or activity (cf. Ehrich & Rapp 2000: 299). This is the case when *pollution* refers to the whole telic event or to the activity, but not when it refers to the result state alone.

6. The transpositional readings

In their discussion of derived nominals in German by means of the suffix *-ung*, Ehrich and Rapp (2000) reject the view of argument inheritance assumed here, cf. (14) and (15). Instead they argue that each type of derived nominal – telic event, process and result state – requires its own lexical semantic structure that is neither directly linked to the related verb nor to the other readings of the nominals, cf. Ehrich and Rapp (2000: 268 and in passim). But do separate representations of the nominal readings offer an adequate characterization of the semantics of the derived nominals? Are their telic event, process and result state meanings really distinct readings?

Recall the possible readings of *pollution* in (16) where it can refer to all three situation types. Applying Pustejovsky's co-predication test, we find that the conjoined predicates in the following sentences easily pick out these different aspects of its meaning. In (17a) the coordinated predications show that *pollution* refers to both the telic event as a whole and to the process. In (17b) it refers to both the event and to the result state and in (17c) to both the process and result state.

(17)

- a. *The pollution of the lake by the factory, reported by the press, is continuing unabated.* Event, Process
 b. *The pollution of the lake, reported by the press, poses a danger to the community.* Event, Result State
 c. *The pollution of the lake, that is continuing unabated, poses a danger to the community.* Process, Result State

The fact that the conjoined predications easily refer to the different aspects of the event suggests that the three readings of *pollution* are not distinct lexical semantic entries as suggested by Ehrich & Rapp's list of distinct lexical semantic entries in the lexicon.

In a discussion of the meaning of event nominals, Bierwisch (2015b: 1115) considers the possibility that the lexical semantic representation (i.e. semantic form or SF) of the suffix *-(at)ion* unifies a set of dot-objects in the reference of the nominal – i.e. the event, the process and the result state. This proposal would enable the different predicates expressed by the conjuncts in the sentences in (17) to pick out the relevant aspect of the nominal, just as in the case of the polysemous noun *book* in *Sue read the book and returned it to the library*. If Bierwisch's concept of SF is augmented along the lines proposed by Asher (2011), Maienborn (2017) and Bücking and Maienborn (2019) so that variables of SF are annotated according to their logical type, the nominal *pollution* could be construed semantically as in (18).

(18) *pollution*: $(\lambda y) (\lambda x) \lambda e_{\text{EVENT} \bullet \text{PROCESS} \bullet \text{RESULT STATE}} [e: \text{POLLUTE}(x, y)]$

Contra Ehrich & Rapp (2000) there would be no need to postulate a distinct lexical semantic representations for each reading. The variation in meaning displayed by *pollution* would be more accurately characterized as different integrated aspects of the event concept, i.e. an example of inherent polysemy along the lines of Pustejovsky (1995). Hence, the transpositional nature of these derivations is made clear.

Ehrich & Rapp (2000) are not alone in characterizing the different readings of the event nominals as distinct meanings. Lieber (2016: 102f.) also postulates two different representations for the event and result readings of the *-(at)ion* suffix, cf. the two schemas in (19). (Process readings are not considered.) The main difference between them is that the referential argument of the suffix (= [R]) in the result skeleton is absent from the event skeleton.

(19) a. Event skeleton for *-(at)ion*: [-material, α dynamic (<base>)]
 b. Result skeleton for *-(at)ion*: [α material, β dynamic ([R], <base>)]

Lieber assumes that a referential argument is not part of the semantics of an event nominal. This assumption is problematic because the event reading does indeed refer. In fact, it refers in the same way that the result reading does. In (20) the anaphoric pronoun *it* refers back to the nominal *pollution* in both its event and result state variants, i.e. the pollution event caused the scandal and the result state posed a danger to the community.

(20) *The pollution of the lake could no longer be kept from the public. It resulted in a scandal and posed a danger to the community.*

To return to Bierwisch's dot-object proposal in (18), he also considers an alternative solution – one that he actually prefers because it provides a better account for the referential flexibility of the derived nominals. This solution centers around the event variable *e* in the semantic form (SF) of *pollute* that is inherited by *pollution*, cf. (15). Such variables in an SF representation are abstract versions of their more complex conceptual counterparts. Bierwisch's Two-Level Theory of Semantics assumes two distinct levels of meaning: the semantic form (SF) of an expression is a condensed version of its more highly articulated conceptual meaning in that reflects only the grammatically relevant semantic properties of the lexical item. The elements present in SF of a linguistic expression abstract over their more complex conceptual meanings and will be fleshed out accordingly when the SF mapped onto a conceptual structure (CS), cf. Bierwisch (1983, 1989, 2007, 2011, 2015b) and Lang and Maienborn (2011).

The SF of the derived nominal in (21a) makes it clear that the verb *pollute* denotes a complex event that is made up of an activity that leads to a result state. These three options delimit the range of variability available for the conceptual interpretation of the *pollution* event.

(21) a. *pollute* $\lambda y \lambda x \lambda e_{\text{event}} [e: \text{CAUSE}(\text{ACT}(x, y), \text{BECOME}(\text{POLLUTED}(y)))]$
 b. *observe* $\lambda y \lambda x \lambda e_{\text{process}} [e: \text{OBSERVE}(x, y)]$
 c. *admire* $\lambda y \lambda x \lambda e_{\text{state}} [e: \text{ADMIRE}(x, y)]$

The nominals derived from activity and state verbs of (21b & c) will be limited to process and state readings, respectively, and will not display the shifts inherent to accomplishment verbs because they lack the necessary structure. Process and state nominals cannot refer to telic events, cf. (22a), nor can they denote states resulting from an event, cf. (22b). Furthermore, a state verb will not denote a process, as (22c) shows.

- (22) a. **The observation of the planet /admiration of his integrity happened a month ago.*
 b. **The observation of the planet /admiration of his integrity was available to all.*
 c. *the (*partial/*step-by-step) admiration of his integrity*

The event, process, result state and state readings simply reflect the transpositional meanings available to accomplishment, activity and state nominals derived from the respective verbs by means of the suffix *-(at)ion*.

7. Object readings

Bierwisch's first proposal for the meaning of the suffix *-(at)ion*, i.e. the dot-object option in (18), actually included one further entity in the set of dot-objects in addition to EVENT, PROCESS and RESULT STATE, namely the RESULT OBJECT. The condition of his original proposal is therefore more correctly captured by the set of dot objects in (23).

- (23) [EVENT • PROCESS • RESULT STATE • RESULT OBJECT]

The term "result object" refers to the object produced by the verbal action as opposed to the "result state", i.e. the state resulting from the action. A result object reading can only arise on the basis of a telic verb because activity and state verbs do not entail a culmination; hence, no object is created, cf. also Ehrich & Rapp (2000: 294).

Problems result, however, in placing the result object on a par with the event meaning variants as the solution in (23) suggests. First, the result object reading differs in its grammatical properties from the result state, process and telic event readings in that it prohibits the realization of the internal argument of the verb. The result object reading is, in other words, not a transpositional derivation; it entails a change in the meaning of the verbal base. The internal argument of the underlying verb is blocked and the reference is shifted from that of an event to an object of the event:

- (24) *The acquisition (*of the painting) was stolen from the museum.*

The event, process and result state readings of *acquisition*, on the other hand, all allow the realization of the verbal object, *the painting*:

- (25) a. *The acquisition of the painting by the museum was finally successful.* Telic Event
 b. *The acquisition of the painting by the museum involved difficult negotiations.* Process
 c. *The acquisition of the painting added a modern touch to the collection.* Result state

Furthermore, the co-predication test demonstrates that the result object reading is not on a par with the event readings semantically, even when the latter are not explicitly accompanied by an expression of the inherited object. The sentences in (26) are extremely odd.

- (26) a. **The acquisition was eventually successful, but subsequently stolen from the museum.*
 b. **The excavation, undertaken by a team of archeologists, can be viewed in the museum.*
 c. **The renovation was all in blue and carried out by a local firm.*

d. **The pollution, prosecuted by the city, was extracted from the water by a chemical filter.*

The telic event, process and result state variations in the reference of nominals like *pollution*, *acquisition* etc. do not represent different ontological categories but are sub-types of the category “eventualities” in the sense of Bach (1986). It therefore does not make sense to consider them dot-objects. In Pustejovsky’s sense, dot-objects denote ontologically different entities, cf. the dual aspects [physical object • information content] incorporated in the meaning of *book*. Still, the source of the result object meaning remains an enigma. How does it arise?

8. The source of the object reading

If the result object readings of *-(at)ion* formations are considered together with the agent (*prosecution*), means (*illustration*) and location readings (*refrigeration*), two facts stand out. First, these readings are by no means as productive as the event readings; in fact, each group is restricted to a limited number of formations. For this reason they are termed “secondary” readings in Lieber (2016) and other works reaching as far back as to Hermann Paul (1886). Second, the attested formations do not arise by means of a free combination of the suffix with a verb in the same way that the transpositional event readings do. Rather, the derived *-(at)ion* nominal itself serves as the basis for the shifted meaning. For example, *prosecution* differs from *prosecutor* in that the latter is based on the verb *prosecute* and denotes a person who prosecutes. The former, on the other hand, refers to a person (or more often: a group of people) involved in a given *prosecution*.

Previous analyses do not recognize this distinction between the transpositional meanings and the shifted meanings. Bierwisch (2015b: 1115) considered them on an equal level as dot-objects. Ehrich and Rapp (2000: 298) simply list the result object meaning as a fourth independent lexical representation in the lexicon. For Lieber (2016: 123-124) the result object and the result state readings result from the same underspecified skeleton. The only difference is that the result state reading is marked as an abstract noun, while the result object reading is marked as concrete. Finally, Plag *et al.* (2018) assume that the possible meanings of a derivational process are anchored in the potential of an affix to target certain variables in the frame-semantic representation (in the sense of Barsalou 1992) of the base. The derivation of the object meaning of *bedragglement* in (27), for example, directly targets the object of the activity sub-event of *bedraggle*, cf. Plag *et al.* (2018: 472-474).

(27) Result object: *I set down the scrap of a doll’s dress, a bedragglement of loose lace hem.*

The readings of *bedragglement* in (28) result when the activity and result state subevents are targeted.

(28) a. Activity: *Why do we ... take this constant bedragglement?*
 b. Result state: *... trying to excuse the bedragglement of the hair ...*

In each of the above frameworks, the non-transpositional meaning of the result object reading is derived from the underlying verb in the same manner as the reference to the event, activity or result state and, therefore, treated as an equal option to the transpositional derivations.

The object, agent, means and location readings are, however, clearly not derived from the verb in the same way as the event readings are. They are not deverbal at all, but the result of transferred (i.e. non-literal) meaning on the basis of the primary event reading of the deverbal

noun, cf. Bierwisch (1989, 2015b) and Olsen (2019a). The shift operation producing the transferred meaning targets the event variable of the regularly derived deverbal noun, binds it existentially and shifts its reference to that of an OBJECT.

(29) **Shift operation deriving the object use of *acquisition***

- a. $\lambda P \quad \lambda z \exists e' [\text{OBJECT}(e', z) \ \& \ P(e')]$
 $[\text{N}_F]$
- b. $\text{acquisition}_F: \lambda z \exists e' [\text{OBJECT}(e', z) \ \& \ \text{ACQUIRE}(e')]$

The predicative argument λP of the shift operation in (29a) is annotated with a feature “ N_F ” that picks out the (restricted) class of derived nouns that are subject to the shift. The derived deverbal event noun (e.g. *acquisition*) enters the formula as a one-place predicate $P(e')$ with any argument originally inherited by the deverbal noun being blocked. In (29b) *acquisition* has been substituted for the predicate variable P in the formula which shifts the reference from an existing *acquisition* event to the object of that event. Interchanging the predicate constant OBJECT with AGENT, MEANS or LOCATION will produce the other secondary readings.

The shift in (29) is a type of metonymy. The derived event nominal as the basis of the shift is a metonym standing for a conceptually prominent category associated with it. Another option that could be considered would be that these secondary meanings arise via a coerced meaning of the event noun as conceived in the framework of Asher (2011) and Bücking and Maienborn (2019). Either way, the outcome of the shift operation is not arbitrary, but restricted to categories conceptually associated with the base. It is interesting that the categories of the shifted meanings are those that have been documented from the earliest stages of the language on (cf. Paul 1886; Kastovsky 1985; Dalton-Puffer 1996 and Lloyd 2011) and are known to recur in the other deverbal event paradigms as well, cf. Bauer *et al.* (2013: 210-212). Herman Paul (1886) speaks of a universal tendency for action nouns to develop concrete secondary uses, cf. Rainer *et al.* (2014: 21). The results of a study of approximately 110 languages from various language families of the world by Luschützky and Rainer (2011: 327) also show that the extension in meaning of action nouns to also denote concrete objects, means, and locations of the action is a frequent cross-linguistically occurrence.

9. Summary

There is a tendency in the current linguistic discourse to employ the term “polysemy” in a casual sense to designate a presupposed relatedness among the diverse semantic patterns in a derivation paradigm. The individual patterns of the *-er* paradigm are not polysemous. The apparent unity of the paradigm is restricted to the superficial form of the suffix *-er*, which actually serves to obscure the semantic distinctness of (at least) the agent, instrument and denominal formations.

Interestingly, although the patterns found in the *-(at)ion* paradigm are generally treated in current literature as semantically distinct, the present study shows that the event, process, result state and simple state meanings of the derived nominals are directly related to the underlying verb. So the term “polysemous” does apply to them in a sense, although the nature of their relatedness can be pinned down more precisely as being “transpositional”, i.e. simply reflecting the meaning of the underlying verb in nominal form. They represent a conceptual flexibility inherent to the event reference of the verb that allows different aspects of the event to be focussed under different contextual conditions. The so-called secondary readings of object, agent, means and location, in contrast, are not transpositional. They represent cases of shifted

meaning that is formed on the basis of the primary eventive reading, not directly from the underlying verb.

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