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EVENTUALITIES IN NOMINALISATION SEMANTICS: THE CASE OF DENOMINAL *-MENT* FORMATIONS

1. INTRODUCTION

Many English nominalising suffixes, such as *-ation*, *-ee* or *-ment*, predominantly give rise to what we will call EVENTUALITY-RELATED readings in this paper. By this we mean that they typically denote either eventualities, including both events and states, or participants of eventualities. For example, *examination* typically refers to the eventuality denoted by its base verb *examine*, and a *trainee* is the PATIENT participant of the eventuality denoted by its base verb *train*. Eventuality-relatedness is thus a rather broad category that lumps together several more fine-grained classes found in the literature, such as participant, result, or eventive readings (see Lieber, “Nominalization” for an overview of the several diverging classification systems which are on the market for the semantic categorisation of nominalisations).

It has been observed that such eventuality-related readings arise systematically from base structures encoding eventualities (see e.g. Bauer et al. 213; Kawaletz). There also is an implicit consensus in the literature that suffixes producing such readings prefer verbal bases because of the strong tendency of verbs and eventuality

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semantics to go hand in hand (see e.g. Haspelmath; Szabó; Moltmann on the preferential concurrence of word classes and ontological categories). Unsurprisingly, then, previous studies of nominalisation semantics deal nearly exclusively with deverbal formations (see e.g. Grimshaw; Alexiadou, *Functional Structure*; Lieber, *English Nouns*; Plag et al.; for overview articles with the same bias, see Alexiadou, “Nominalizations”; Lieber, “Nominalization”).

However, such a narrow focus on the part of speech of a word-formation process’s bases is problematic. First, in English, the base of a word formation process is often unclear to begin with, as evidenced by the notoriously difficult problem of determining the directionality of conversion (see e.g. Balteiro; Bram; Plag, *Word-Formation*). Second, less ambiguous cases indicate that the majority of English word formation processes operate on more than one base category. Therefore, several authors suggest that it is the semantics of a word formation process that determines potential bases on account of semantic compatibility. Conversely, the word class of the typical base of a process in question should be understood as an epiphenomenon of this word class’s typical semantics (in particular Plag, “Syntactic Category Information”; see also Barker; Bauer et al.). Presumably, this also holds for nominalisations that produce eventuality-related readings on bases other than verbs. Some clearly denominal and de-adjectival examples are given in (1).

- (1) a. *ozonation, sedimentation*
 b. *biographee, debtee*
 c. *extinction, inchoation*

Both the denominal formations in (1a) and (1b) as well as the de-adjectival ones in (1c) are eventuality-related. They denote processes or results (*ozonation, sedimentation, extinction* and *inchoation*), or participants of some eventuality (*biographee* and *debtee*). The problem that arises from a semantic perspective concerns affix–base interaction. While the respective word-formation processes still output an expected semantic structure, such as (sub-)eventualities in the case of all *-ation* forms in (1), the respective bases oftentimes do not denote eventualities themselves, e.g. *ozone* and *sediment* above. Against the backdrop of the programmatic suggestions above, this paper puts some flesh on the bone in the form of a semantics-based account of affix-base interaction in denominal nouns.

Different approaches to nominalisation semantics would likely suggest different solutions to the problems posed by examples such as (1). In syntactic approaches, such as Alexiadou, *Functional Structure* or Borer, dedicated functional projections are responsible for (sub-)eventive or participant readings. In lexicalist morpheme-based approaches, such as the framework of Lieber’s (*Morphology*

and *English Nouns*), affixes come with a semantic representation of their own, e.g. with feature specifications such as +DYNAMIC to mark eventive semantics. In word-based approaches, in contrast, affixes are not linguistic signs on their own, and it is only (abstractions of) complex words that have meaning (as e.g. in Booij; Koenig). In this paper, we follow a form of word-based morphology that has recently been employed successfully in the analysis of the semantics of deverbal English *-ment* nominalisation. In this approach, the semantic contribution of the suffix is modelled as its potential to induce referential shifts on the semantics of its base (see Plag et al.; Kawaletz).

Reference shifting as a word-formation mechanism is highly dependent on the provision of suitable semantic structures by the base. Therefore, a semantic framework is needed in which meaning can be decomposed to fine-grained levels, and which allows for the precise characterisation of affix–base interaction. In particular, the problem at hand necessitates the identification of eventuality-related elements in the base nouns' semantics that can potentially be targeted by the word-formation process to create eventuality-related readings. Here, we will also follow the approach proposed by Plag et al. and Kawaletz, and formalise the phonological, syntactic and semantic properties of lexemes as attribute-value matrices (see e.g. Sag and Wasow; Sag) with a frame-semantic component (see Barsalou, *Cognitive Psychology* and "Frames"; Löbner, *Understanding Semantics*).

We will apply the approach to two representative test cases, *illusionment* and *devilment*. Both are clearly denominal *-ment* forms that exhibit eventuality-related semantics, but their respective base nouns are representative of two groups of bases with different semantic properties. First, *illusion* is analysed as a straightforwardly eventive psych-noun, and thus allows for a modelling that is analogous to existing approaches to deverbal *-ment* nominalisation. In contrast, *devil* is a person noun, and *devilment*'s eventuality-related reading seemingly does not allow for a similarly straightforward application of an existing approach. Following closer inspection, however, we argue for an analysis of such bases as attitudinal nouns that include inherent eventualities, irrespective of the fact that they do not denote eventualities. Making use of decomposition to deep levels, we thus show that a general semantics-based approach to *-ment* nominalisations works independently of the bases' word class specifications, while the locus of the respective eventualities, i.e. their location within the semantic structure of the base, can be predicted via the bases' semantic classes.

The paper is structured as follows. We first acquaint the reader with our methodology, including both our frame semantic approach to derivational semantics and an informal description of our data types and their bases in section 2. We then turn to the frame-semantic analysis of *illusionment* and *devilment* in section 3, and conclude our paper with a discussion and conclusion in section 4.

2. METHOD

2.1 MODELLING DERIVATIONAL SEMANTICS IN FRAMES

For the semantic modelling of nominal bases and their interaction with the word-formation process, we use lexical frames (Barsalou, *Cognitive Psychology* and “Frames”; Petersen; Löbner, *Understanding Semantics*). Frames serve to model the mental representation of concepts in the form of recursive attribute-value structures similar to those used in other frameworks (such as HPSG or Sign-Based Construction Grammar; see Pollard and Sag; Sag). In frames, the meaning of linguistic structures can be decomposed to very fine-grained levels. For the problem at hand, this enables the representation of possibly deeply embedded eventive elements in a base, which in turn can be accessed by a word-formation process. Recently, Plag et al. and Kawaletz have successfully modelled deverbal nominalisations with *-ment* by conceptualising the semantics of the suffix as its potential to induce referential shifts on the frame of its bases (see also Löbner, *Understanding Semantics*; Schulzek, “Metonymical Processes”; *German Nominal Word Formation*). Let us briefly introduce these authors’ conceptual and terminological toolkit by looking at the example of psych verb bases and their corresponding *-ment* derivatives.

Let us consider object-experiencer psych verbs such as *to enrage* or *to entice*. Semantically, such verbs are best analysed as denoting complex causative events that involve an experiencer’s change of a psychological state (see Kawaletz ch. 5; Levin; Temme). The verb *to enrage*, for example, refers to events in which some stimulus is involved in a sub-event that causes an experiencer to become furious, i.e. to attain a certain psychological state. Now, let us consider the *-ment* formation *enragement* and two of its possible meaning variants.¹ In (2a), the derivative refers to a change-of-state event, i.e. (the beginning of) the experiencer attaining the psychological state in question, while (2b) refers to this state itself.² Crucially, as shown by Kawaletz, the derivatives in (2) refer to sub-events inherent to the causative events denoted by their base.

- (2) a. In her own case, Miss Reuben said, the **enragement** began when a professor told her that it really wouldn’t matter if she finished her doctoral thesis. (Google MAG news.Google.com 1972)
- b. Once in the state of **enragement** she will be like a fury (Google BLOG tesof.com 2013)

¹ In fact, *enragement* is attested with further readings; see below.

² As has been frequently observed, the STATE reading is the most prevalent one for psych nouns (see e.g. Pesetzký; Fábregas et al.).

The frame in figure 1 illustrates the mechanism we assume for the derivation of *-ment* nominalisations on psych verb bases as an underspecified rule in the form of an attribute-value-matrix (AVM). The derivatives *enragement* and *enticement*, with their respective base verbs *enrage* and *entice*, would be possible instantiations of this rule.

In general, such a frame establishes relations between the input, i.e. the morphological base, and the output, i.e. the derived lexeme (see Bonami and Crysmann for an overview). In an AVM, attributes are given in small caps, the values that specify them are given in italics, and numbered boxes are used for (co-)indexation. As a whole, the frame in figure 1 describes a derived, underspecified lexeme with its attributes (first column), and introduces its base as one of these attributes (the embedded *lexeme*-matrix that specifies the attribute M-BASE). For both the derived lexeme and the base lexeme, the frame includes attributes regarding their phonology (PHON), syntactic category (CAT), semantics (SEM), and possible readings (REF).

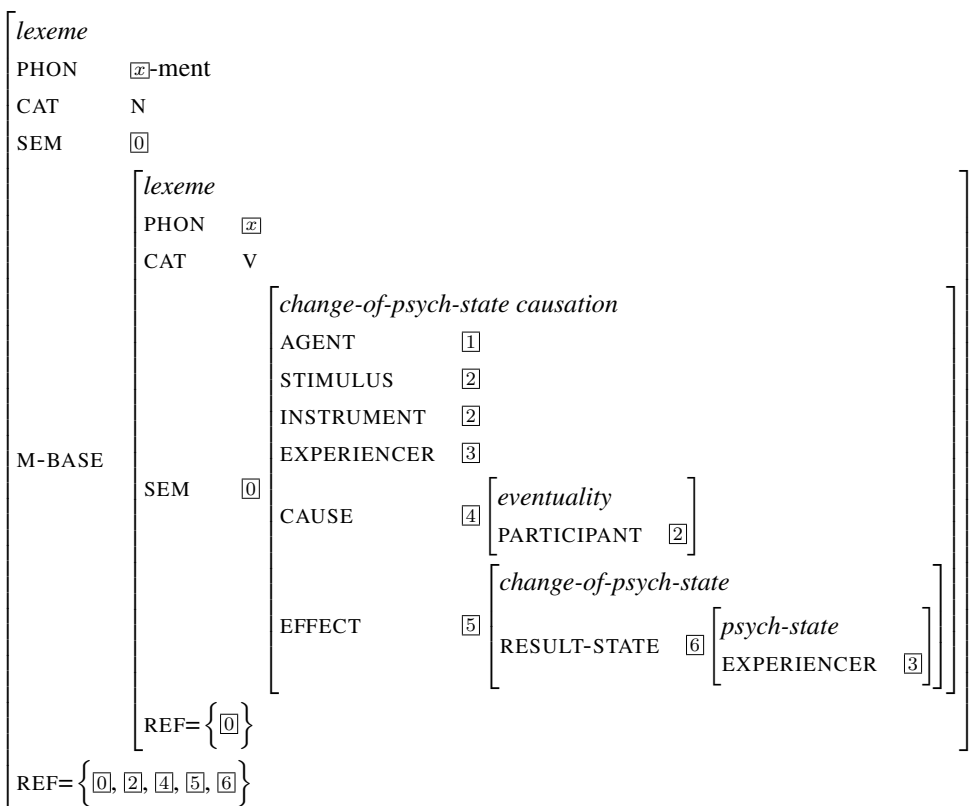


Figure 1. *-ment* on object experiencer psych verb bases (adapted from Kawaletz 154)

As described above, psych verbs denote *change-of-psych-state causation* events. In figure 1, a generalisation over such events is introduced as the value of the base's SEM-attribute. The complex causative event splits up into the two sub-events CAUSE and EFFECT, and comes with a number of typical (but not necessarily obligatory) participants, AGENT, STIMULUS, INSTRUMENT, and EXPERIENCER. Minimally, a psych-causation frame is event-structurally fixed and includes a causative sub-event and a second sub-event during which the EXPERIENCER attains a *psych-state*. The semantics of to *enrage* would, for example, type the RESULT-STATE [6] value as, roughly, a *furious-state*.

As indicated by the co-indexation of their respective semantics attributes (“SEM [0]”), the derived lexeme inherits the entire semantic structure of its base. In other words, the frame does not model the suffix as contributing its own lexical semantics. However, the two lexemes differ with regard to their possible frame referent(s): While the base verb can only denote the complex event (“REF = { [0] }”), the derivative is polysemous between different eventuality-related readings (“REF = { [0], [2], [4], [5], [6] }”). Besides making reference to the sub-eventualities *change-of-psych-state* [5] and *psych-state* [6] (see examples in (2), a derivative like *enragement* can also refer to the whole event [0], to the CAUSE [4], or to the event participant STIMULUS/INSTRUMENT [2] (see Kawaletz, ch. 5 for details).

To summarise, the lexeme frame in figure 1 illustrates the process of *-ment* nominalisation on object experiencer psych verb bases. This process can be modelled as possible referential shifts on the base semantics and can, mutatis mutandis, be extended to other deverbal nominalisations. Specifically, the suffix *-ment* has the potential to induce a range of referential shifts, where eventuality-related elements in the base verb frame serve as the target. As stated earlier, denominal formations pose a problem to the approach, which relies on decidedly eventive structures in the base. Before we show that extending the approach to denominal *-ment* formations is possible, let us introduce our data base in the next section.

2.2 DATA

The two derivatives we use as case studies — *illusionment* and *devilment* — are part of a larger data set of 30 types of denominal *-ment* derivatives. The data were gathered as follows: Using the query **ment*, we first searched for all *-ment* forms in both the *British National Corpus* (BNC) (Davies, *BNC*) and the *Corpus of Contemporary American English* (COCA) (Davies, *COCA*). We then manually extracted all denominal lexemes, which returned a preliminary data set of 20 types.³ Building on

³ We used the two corpora's web interfaces available at <https://www.english-corpora.org>. We used a frequency criterion for establishing which types were to be considered denominal: first, we consulted

the kinds of bases in these data (see below), we then non-systematically probed the Corpus of News on the Web (Davies, NOW) as well as Google by looking up specific *-ment* derivatives not attested in the BNC or COCA. As a result, we added another ten items, which were subject to the same method of establishing their bases' POS.

While deverbal *-ment* derivatives are very frequently attested (e.g. in COCA, *government* with 396,160 tokens, *development* with 168,383 or *treatment* with 100,627), denominal *-ment* derivatives are much more infrequent. In our data set, eleven are attested only once in the corpus in which we have identified them (i.e. BNC, COCA, or NOW), and nine are only attested in Google. The most frequent type in our data set is *battlement*, with 83 attestations in COCA.

We chose *illusionment* and *devilment* as test cases for several reasons. First, their bases (*illusion* and *devil*, respectively) can clearly be identified as nominal. Most other bases in the data set can be either a noun or a verb (e.g. *trapment*'s base *trap*_{V/N}), and the prevalence of verb-to-noun and noun-to-verb conversion in English (see Bauer et al. chs. 10–13) often renders the unambiguous identification of an item's part of speech difficult.

Second, many possibly nominal *-ment* bases exhibit quite idiosyncratic semantic properties, so that their analyses do not yield generalisable results (e.g. *basement* and *provisionment*). In contrast, the lexemes we use for the case studies are representative of the only two groups within the data set we were able to identify, each of which comes with semantically similar bases. Alongside *illusionment*, the first of these groups has categorically ambiguous psych expressions as base, such as *concern* and *allure*. The second group is based on attitudinal person nouns and includes, for example, *rascalment* and *bastardment* alongside *devilment*. Representative attestations for the two groups are provided in (3) and (4).

(3) Psych expressions as base

- a. So the question of how one recognizes coincidences and comes to use them as such can be linked with Winnicott's description of the process of **illusionment**. (COCA)
- b. And whilst things are in this state, those who seem to have any **concernment** therein are so engaged in mutual charging one another with being occasions thereof. (COCA)
- c. Many of the participants disclosed that sterilizations were attended with financial **allurement** or sometimes forcibly, even under the threat of police. (COCA)

the OED regarding the question of whether a given base form was attested as a noun. If so, we checked the relative frequencies of POS-tagged forms of this base in COCA. We only kept those types with less than 30% of tokens tagged as verbs.

- d. But no **angerment** over not Kurt russell [sic] in that? I don't know. That doesn't bother me. (COCA)
- e. I don't care how much **confusionment** it is, if I can't laugh and talk with you, and be friendly nice with you, I don't be around you no more.⁴

(4) **Attitudinal person nouns as base**

- a. While all this **devilment** was going on out at Tom Best's, my mother was praying for her boys to return to her. (COCA)
- b. When oul' Molly was a girl, Peig said, she was full of spirits and up to all the **rascalment** of the day.⁵
- c. I've always suspected that there's a gloating sense of enjoyment in all the lurid, violent **bastardment** that goes on...⁶
- d. Would be tempted to give it a go, if only just for **buggerment**, but unfortunately it was bought as a gift and we no longer have the receipt, so can't really prove the purchase. (iWeb)
- e. The wardens of the church pledged to "take care that no abuse or **imbecilment** be made of the books."⁷

Building on the formalisations of our case studies, we will argue for the homogeneity of these groups' respective semantic structures in the analysis sections 3.1 and 3.2 below. There we will show that all psych expressions that serve as base to *-ment* forms, as in the examples in (3), operate on change-of-psych-state-causation structures. In contrast, we will argue that all attitudinal person nouns attested as base to *-ment*, as in the examples in (4), allow for analyses as participants of activities.

The two groups of bases differ with respect to the ontological categories encoded by their respective bases. The data in (3) and (4) above corroborate the starting hypothesis of this paper that *-ment* formations are typically eventuality-related. For example, in the attestations in (3a) and (4a), both *illusionment* and *devilment* refer to some process, as indicated by the contextual cues *process of* and *was going on*, respectively. The derivatives' respective bases, however, differ with regard to eventivity. The psych noun *illusion* allows for eventive readings, as exemplified in (5), where it appears as the subject of the event-selecting predicate *occurs* (see e.g.

⁴ <https://www.latimes.com/archives/la-xpm-1999-aug-22-mn-21385-story.html>, accessed 10 July 2022.

⁵ McGill, Bernie. *The Butterfly Cabinet: A Novel*. Headline Review, 2010. Via Google Books.

⁶ <https://www.onetouchfootball.com/forum/one-touch-football/film-tv-and-radio/9534-best-argument-for-thelicence-fee-ever>, accessed 12 Nov. 2021.

⁷ <https://www.bostonglobe.com/arts/art/2019/10/02/boston-athenaeum-century-book-collection-makes-you-think-which-titles-matter-most-today/B9rXLlys9qkCmriOrRTcHK/story.html>, accessed 10 July 2022.

Vendler 141 ff. for event selecting predicates). The attitudinal noun *devil*, on the other hand, is odd in this position, as is illustrated in (6a). This is because *devil* is a purely entity-denoting noun that typically refers to a person as in (6b).

- (5) The **illusion** occurs because the visual system receives different stories from these two sources of information (COCA)
- (6) a. ??The **devil** occurred/happened/began.
b. This **devil** stole my purse! My bag! (COCA)

Having become acquainted with the general frame architecture we assume and the basic properties of the structures to be investigated, let us now turn to our two case studies in the next section.

3. ANALYSIS

3.1 CASE STUDY 1: *ILLUSIONMENT*

In our first case study, we look at the *-ment* derivative *illusionment* and its base *illusion*. In order to grasp the meaning of *illusionment*, let us have a look at the two attestations in (7). In (7a), *illusionment* is defined as an individual's complex mental state that consists of several illusions, i.e. false beliefs of reality. In contrast, *illusionment* in (7b) refers to a more complex eventuality, in which an individual creates such a false belief of reality. While we do not exclude the possibility of further related senses of the derivative, these two attestations exhaust the readings that we have been able to find.

- (7) a. ...a system of intertwined fundamental illusions that had always been lived within.... This way of being that one recognizes only retrospectively may be called **illusionment**...⁸
- b. Winnicott's emphasis of the importance of the baby's capacity for **illusionment** draws directly on Freud's description of the baby's ability magically to conjure up a phantasy or hallucination of the mother's breast before it eats it.⁹

As already indicated in section 2.2, *illusionment* denotes eventualities. More precisely, the two examples in (7) refer to different components of causative events that

⁸ Alfred Margulies. "Illusionment and Disillusionment: Foundational Illusions and the Loss of a World." *Journal of the American Psychoanalytic Association*, vol. 66, no. 2, 2018, p. 289.

⁹ Rosalind Minsky. *Psychoanalysis and Gender: An Introductory Reader*. 2nd ed., Routledge, 2014. Via Google Books.

affect psychological states: either the whole complex of a causative macro-event (see examples (7b) as well as (3a) above) or merely one element of such an event, namely its result state (see example (7a)). On the assumption sketched out for the reference shifting approach in section 2.1, we expect the base of the denominal psych noun *illusionment* to already provide the semantic components necessary to derive such readings. In the following, we argue that the base *illusion* and the derivative *illusionment* operate on the identical semantic structure, but differ in their referential potentials. To this end, let us first have a look at the semantics of the base.

As shown in the previous section, *illusion* is itself an eventive noun. The readings of *illusion* illustrated in (8) show that the lexeme's semantics is best understood against the backdrop of a change of a psych state causation event, analogous to the psych verb semantics sketched in section 2.1. In (8a), *illusion* denotes the result state of such a causation event, i.e. a false belief state. In contrast, in (8b) it denotes the STIMULUS (or INSTRUMENT) argument in a causation event of this kind, i.e. something that brings about (or is used for bringing about) the change of state. The nature of *illusion* as a pseudo-nominalisation explains the backgrounding of parts of the conceptual structure we assume.¹⁰ Thus, in (8a) the whole causative component as well as the arguments engaged in it are left implicit, while in (8b) the experiencer argument is not spelled out.

- (8) a. She wasn't ... under the **illusion** that marriage was a relationship characterised by endless bliss and romance. (COCA)
 b. I am surprised Jean hasn't tried to use an **illusion** to appear and sound how he used to. (iWeb)

Building on these considerations, the frame in figure 2 models *illusion* as a simplex lexeme with a semantic structure that is analogous to that for morphological bases of psych verb nominalisations as in figure 1 above. The lexeme frame in figure 2 includes specifications of *illusion*'s phonology (PHON), syntactic category (CAT), semantics (SEM), and referential potential (REF) in the form of attributes. We will focus on the latter two attributes in the following.

¹⁰ Although the lexeme appears to be a nominalisation itself, with the object-experiencer verb to *illude* (roughly meaning 'to trick, to deceive someone') as its potential base, it is more likely that the noun was loaned directly from French (see also the OED online entry (OED); OED references throughout this paper are taken from the website www.oed.com). As described in section 2, nominalisations based on psych verbs often do not refer to the whole causation event, but only to subparts of this event. Backgrounding here refers to the implied structure not directly referenced by a nominalisation.

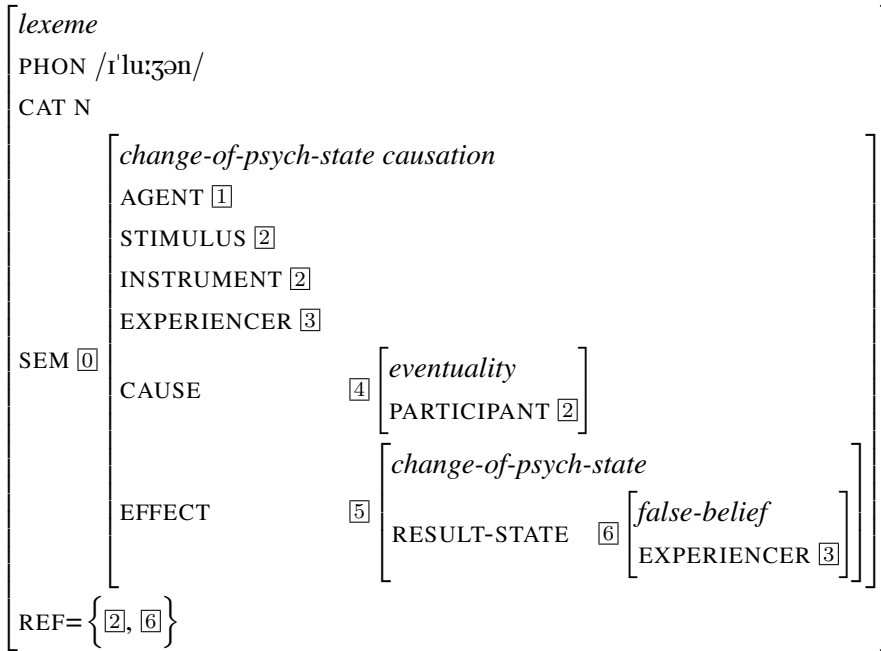


Figure 2. Representation of the semantic structure of the base *illusion*

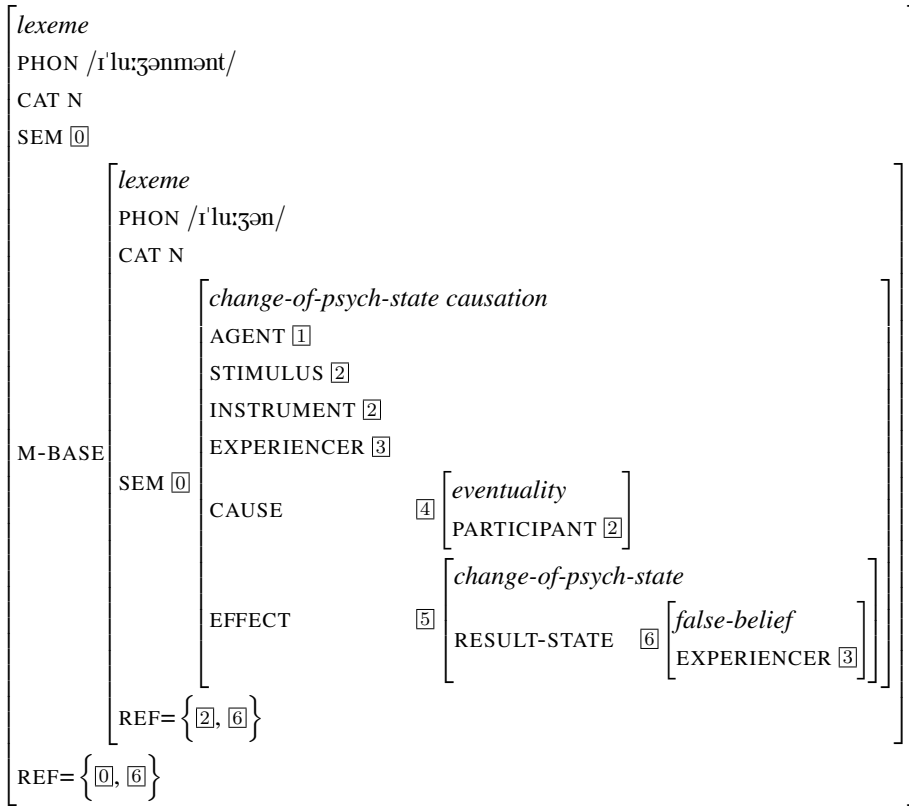
Figure 2 analyses the meaning of *illusion* as the potential to make reference to different nodes in the structure of a *change-of-psych-state causation* event (indexed with [0]). What sets the meaning of *illusion* apart from other subtypes of change-of-psych-state causation events is the specification of the RESULT-STATE (indexed [6]). Reflecting the core concept of an illusion (or of illuding someone), this state is typed *false-belief* and takes the EXPERIENCER-argument as participant (indexed [3]). In other words, an event of this kind will result in this argument holding a false belief of reality. The REF-attribute's value spells out the lexeme's referential potential. As illustrated by the examples in (8), *illusion* refers either to the event's RESULT-STATE (indexed [6]; see (8a)) or to its STIMULUS/INSTRUMENT-argument (indexed [2]; see example (8b)).

Let us now return to the *-ment*-derivative *illusionment*. As established in the informal discussion around the examples in (7), we find *illusionment* attested as either referring to a change-of- psych-state causation event or to the result state of such an event. The semantic representation of the frame we have just sketched out for the base *illusion* provides us with suitable elements that the referential shifts, induced by the nominalisation process with *-ment*, can access.

We will illustrate affix–base interaction by means of the lexeme frame in figure 3, which models *illusionment* as a complex lexeme with an attribute for its

morphological base (M-BASE). In figure 3, the M-BASE attribute is typed as the lexeme-frame for the noun *illusion* depicted in figure 2, and the fact that *illusionment* is a denominal noun can be read off from the respective CAT-attributes of derivative and base.

The frame in figure 3 captures our assumptions above (see section 2.1) that *-ment* has no lexical meaning of its own, and that eventuality-related readings of a derivative rely on the provision of compatible base structures. First, *illusionment* does not specify a separate semantic contribution but merely copies the base semantics. This is indicated by co-indexation as [0] of the base's and the derivative's respective SEM-attributes. Second, as shown in figure 2 above, the semantics introduced by the base provides the *change-of-psych-state causation* event that the attested readings of *illusionment* call for. Importantly, modelling the base-derivative pair *illusion-illusionment* as sharing the same semantic structure does not entail that the two lexemes are semantically identical. In the frame in figure 3, the differences in attested readings between the two forms are captured via the referential potentials as laid down in the values of their respective REF-attributes. First, base and derivative share the capacity to refer to the RESULT-STATE [6]. Second, however, the base *illusion* can denote the event's STIMULUS/INSTRUMENT [2], but not the complex causation event [0], while the derivative *illusionment* shows the reverse potential.

Figure 3. Representation of the lexeme *illusionment*

In summary, we suggest that *-ment* suffixation of the psych noun *illusion* works analogously to the approach advocated by Plag et al. and Kawaletz for the word formation process on psych verbs. We suggest that the reason for this circumstance is to be found in the ontological nature of psych nouns as eventuality-related structures. For the same reason, we also assume that the approach is applicable to derivatives such as *concernment* and *allurement* (see examples (3b) and (3c) above), irrespective of whether their bases are analysed as psych verbs or psych nouns. Importantly, the referential space in the frame in figure 3 (i.e. $\text{ref} = \{[0], [6]\}$) is based on the specific attestations that we found for *illusionment*. Following Kawaletz, we do not claim that *ment*-suffixation of a different denominal psych-expression will induce the same shifts (or that different psych-bases are attested with the exact same range of readings), but that the observed shifts will also operate on the respective base structure. For instance, *financial allurement* in example (3c) appears to be ambiguous between a transpositional reading (i.e. the whole psych-causation event) and

a STIMULUS/INSTRUMENT reading (i.e. the element that brings about the effect in the causation event). Based on our data, and given that we understand lexeme formation rules as abstractions over attestations (see Bonami and Crysmann; Kawaletz), the STIMULUS/INSTRUMENT reading is thus part of the semantics of the lexical entry for *allurement*, but not of that for *illusionment*.

3.2 CASE STUDY 2: DEVILMENT

Let us move on to the analysis of our second denominal *-ment* formation, *devilment*. As shown in section 2.2 above, *devilment* can denote events, while its base *devil* is an entity-denoting and non-eventive noun. The examples in (9) show that *devilment* can be found in at least two different readings. In (9a), it denotes an activity, as indicated by the predicate *goes on* and the predicative complement *what we call deceptive practices* (see also example (4a) above). The example in (9b), in contrast, is less clear, and *devilment* appears to denote a property or characteristic of the speaker rather than an activity.¹¹

- (9) a. ... the biggest **devilment** that goes on in these elections are what we call deceptive practices — people are going to get robocalls ... (COCA)
 b. She's of a mind it'll wash any **devilment** right out of me. (COCA)

Prima facie, the ontological discrepancies between base and derivative pose a problem for the reference shifting approach sketched in section 2.1 above, as this approach relies on eventive base structures to derive eventive derivatives. Now, how do we suggest the derivative's eventivity arises? In what follows, we argue that the base of *devilment* is *devil* as an attitudinal noun, that (a subclass of) attitudinal nouns systematically allow for analysing their denotata as participants of (habitual) activities, and that these activities are accessed by the referential shifts *-ment* triggers. To this end, a closer look at *devil* as the base of *devilment* is needed.

Neither of the two examples in (9) makes concrete reference to the Devil in the religious sense of God's adversary, and neither does any of the 44 *devilment* attestations in COCA. Rather, it is the (mostly) negatively evaluated behaviour of,

¹¹ These interpretations are backed up by lexicographic classifications: in WordNet (Princeton University), for example, *devilment* is ontologically classified as an activity, while the OED makes fairly concrete reference to both property and activity readings in one of the lexeme's senses it acknowledges ("Action performed by, or characteristic, of the Devil or a devil; evildoing, mischief; an instance of this."). The other senses described in the OED (roughly, objects created by a/the devil and spicy food, respectively) are not relevant to the discussion of *devilment* and no hit from the COCA search applies to them.

or characteristics associated with, the Devil that are metaphorically shifted to more general actors or bearers. Unsurprisingly, this shift already operates on the base *devil*. For example, the OED acknowledges both the senses of ‘wicked or cruel person’ and of “evil quality personified” (see also the attestation in (6b)). In these usages, *devil* functions as an attitudinal person noun. Let us look at some characteristics of attitudinal nouns and see to what extent *devil* exhibits the same characteristics.

Attitudinal nouns mostly denote people. Their lexical semantics is specialised, however, in that they profile the speaker’s stance toward single (or highly restricted sets of) behavioural or character traits of the entities they denote (see e.g. Schmid; Paradis; Morzycki). First, these traits tend to be gradable, and it is arguably for this reason that attitudinal nouns tend to be gradable as well. This is illustrated in (10a), which shows that all five listed nouns are compatible with the degree modifiers *total*, *real*, and *complete*. The attestation in (10b) illustrates that the attitudinal noun *devil* displays the same behaviour. Second, compatibility with the progressivised copula (i.e. *being a X*) as in (11a) and with command imperatives as in (12a) both show that attitudinal nouns allow for agentive contexts, a diagnostic that speaks in favour of events as part of their semantics (see Lakoff; Maienborn on these test environments). Again, we find analogous behaviour attested for *devil*. The attestation in (11b) illustrates the noun’s compatibility with a progressivised copula, while (12b) shows that it can feature as the head of the complement-NP in imperatives.

- (10) a. You are a total/real/complete genius/bastard/rascal/bugger/imbecile/etc.
 b. Well, it wasn’t always so nice either, for she was pretty tough at times too.
 A **real devil** she could be, the one I got for a wife. (COCA)
- (11) a. You are being a genius/bastard/rascal/bugger/imbecile/etc.
 b. Either way, he does seem to take delight in **being a devil**, as his various antics — dressing up like a cop; chopping off someone’s hair; strapping his dog to the car roof all too handily reveal. (COCA)
- (12) a. (Don’t) be a genius/bastard/rascal/bugger/imbecile/etc.
 b. **Be a devil** and stop being so staid... (BNC)

Building on these considerations, we suggest that the base for all *devilment* attestations in our data is the attitudinal noun *devil*. Given the outlined characteristics, any decompositional approach will have to account for the base lexeme’s gradability as well as for its eventive meaning components. Figure 4 illustrates the lexeme frame we assume for the attitudinal noun *devil*, including attributes for its phonological representation (PHON) and syntactic category (CAT). The value of the semantics

attribute (SEM) is depicted as a so-called multi-AVM and consists of two distinct yet connected frames with different source nodes, indexed with [0] and [1], respectively. The whole frame incorporates the ambiguity inherent to attitudinal person nouns via a logical connective between the two subframes. Thus, the frame indexed with [0] describes the (potentially *habitual*) *activities* a devil performs, while the *person*-frame indexed with [1] describes an entity as the bearer of a property, where PROF-PROP is short for PROFILED PROPERTY. The two distinct subframes are connected via an and-or relation ($\wedge\vee$), which reflects that speakers can refer to either of the two parts individually or to both at the same time. In other words, the particular strength, and the necessity, of the introduced $\wedge\vee$ -relation is found in its capacity to disentangle mere activities (possibly uncharacteristic of the ACTOR) from inherent properties, while it also allows for simultaneous reference.

Crucially, as argued above, attitudinal nouns such as *devil* neither denote activities nor properties as such, but are best analysed as ACTORS of certain kinds of activities,¹² or as entities that bear this property. Therefore, reference is not on the property [2] as such. In contrast, the referential node is indexed with [1] in both of the subframes in figure 4, and reference to this node is captured in the REFERENCE-attribute (REF). More precisely, a devil either is the ACTOR [1] in an *activity* [0] with a certain property [2], and/or is himself the bearer of said property.

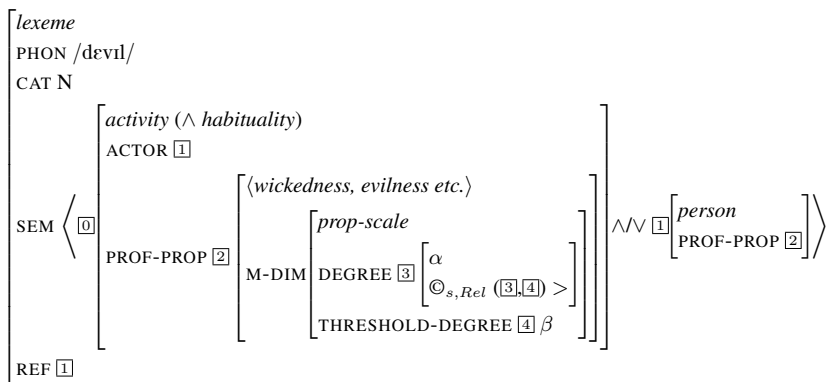


Figure 4. Representation of the attitudinal noun lexeme *devil*.

¹² Pace the suggestions of one reviewer, attitudinal nouns differ from more conventional role nouns such as *judge*, *president*, or *teacher* (see e.g. Anderson and Löbner; Zobel), in that they do not have particular types of activities as part of their semantics. Thus, while a judge is conceptually inextricably connected to judging-events in an institutionalised setting, the semantics of *devil* is not bound to a particular type of event in the same way. Conversely, role nouns typically do not encode the speaker's attitude toward a referent in the way attitudinal nouns do.

Let us now briefly take a walk through the way we account for the crucial insight that attitudinal nouns profile single or highly restricted sets of properties. Let us assume that what makes an entity a devil are relatively high degrees of wickedness, evilness, mischievousness etc. as displayed in the character or behaviour of said entity (as opposed to, say, high degrees of idiocy for an idiot, or intelligence for a genius). In figure 4, we model this as an attribute that instantiates a bundle of profiled properties (PROF-PROP, indexed with $\boxed{2}$), where the set $\langle \text{wickedness, evilness etc.} \rangle$ serves as a short cut for the property bundle for *devil*.¹³ The same profiled properties occur as properties of activities (frame $\boxed{0}$) or of objects (frame $\boxed{1}$). In order to account for their scalar nature, the properties take property scales (*prop-scale*) as measure dimensions (M-DIM) and map degrees on said scales. Following standard assumptions on scalarity (see e.g. Solt; Kennedy and McNally), degrees on an open property scale have to exceed some comparison degree for an entity to count as, say, evil or wicked. In our frame in figure 4, we therefore introduce a THRESHOLD-DEGREE attribute and build on a two-place ‘comparator’ attribute (see Löbner, “Frame Theory”). This comparator ($\textcircled{C}_{s,Rel}(\boxed{3}, \boxed{4}) >$) states that the value α of DEGREE exceeds the value β of THRESHOLD-DEGREE on the property scale they apply to.¹⁴

The analysis proposed here thus captures three key ingredients of attitudinal (person) nouns. First, it includes the systematic possibility to refer either to properties of person-entities or to properties of events. Second, these profiled properties (of both events and person-entities) are analysed as scalar attributes that include dedicated measure dimensions. Third, with respect to properties of events, the analysis shows that the meaning of such nouns can be captured in a straightforward manner by a PARTICIPANT-attribute of an event-semantic structure.

Let us now turn to the frame for the derivative *devilment* illustrated in figure 5. As in our analysis of *illusionment* above, we assume a structure of a complex lexeme with attributes for its phonology, syntactic category, semantics, morphological base, and referential space. Given that the lexeme *devil* serves as the base here, the

¹³ The way we depict sets of scalar properties is a short cut to what arguably calls for a more complex semantic representation. In a nutshell, what we model here as a set of wickedness, evilness etc. is a generalised *devilish*-property and its associated scale. If we wanted to fully keep apart the individual properties that are characteristic of a devil, we would have to include a set of individual properties and their associated scales, i.e. a set of wickedness and its associated scale, evilness and its associated scale, etc. As the way we model derivational semantics in this paper does not hinge on this choice, we stick to the more parsimonious frame representation here.

¹⁴ In the notation used here, “ \textcircled{C} ” stands for ‘comparator’, “Rel” for ‘relation’, and “s” for ‘sort’: thus, a comparator establishes a relation between elements of the same sort (such as colours, materials, heights, temperatures etc.). The values the comparators take as input are co-indexed here. In principle, ‘ $\textcircled{C}_{s,Rel}(\boxed{3}, \boxed{4}) >$ ’ could be repeated as an attribute of value. This would be redundant, however, as co-indexation within the comparators themselves declares which values are to be compared (see Löbner, “Frame Theory” for details).

M-BASE-attribute's value is the lexeme frame depicted in figure 4. The central question posed by a form such as *devilment*, i.e. a potentially eventive *-ment* form with a base that does not denote an event itself, concerns the locus of the derivative's eventive reading: what is the target of the referential shift induced by the word-formation process?

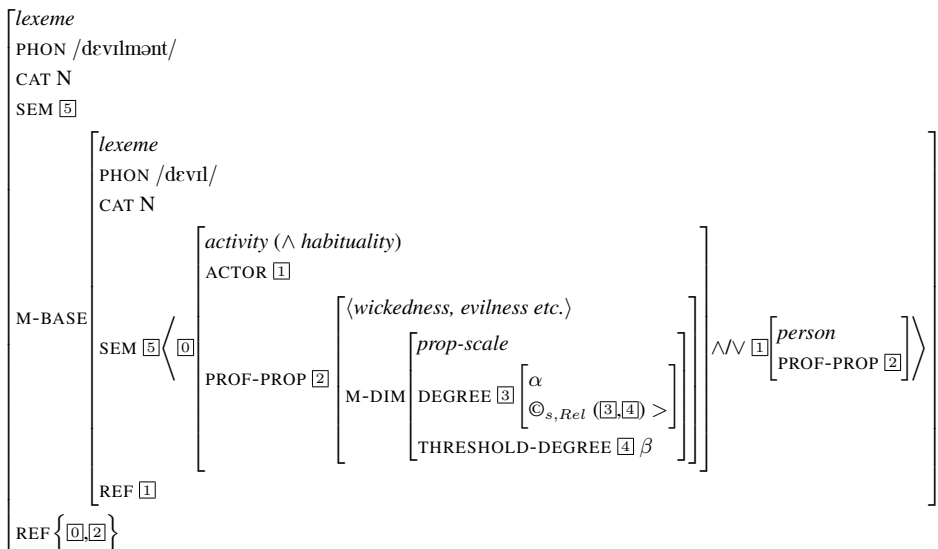


Figure 5. Representation of the lexeme *devilment*

Building on our analysis of the attitudinal base, the frame in figure 5 should be read as an extension of the reference shifting approach described above. The activity and property readings of *devilment* (see the examples in (9)) correspond to different nodes in the semantics of the base *devil*: first, the *activity* node indexed with [0] and, second, the node depicting the set of devil properties [2]. Both of these types are available for the word formation process with the suffix *-ment* and it is context that tells us whether *devilment* accesses [0] (i.e. the activity reading) or [2] (i.e. the property reading). The shifting potential is captured by the REFERENCE attribute (REF), whose value states that *devilment* can refer to the nodes indexed with [0] and [2].

The analysis defended here is similar to the proposed analyses of *-ment* on verbal and eventive nominal bases (i.e. section 3.1 and Kawaletz), as it makes use of referential shifts and relies on the base to provide eventive structures. Crucially, the feasibility of the referential shifting approach for *-ment* on attitudinal nouns is entirely reliant on the semantics of the base structure. We have shown in this section that decomposing *devil* warrants assumptions of eventive elements as inherent parts of the base structure. Again, the question arises of how far our analysis of

devilment is applicable to other *-ment* forms based on attitudinal person nouns. As shown by the examples in 10a, 11a, and 12a, nominal bases such as *bastard*, *rascal*, *bugger* or *imbecile* have the same agentive, scalar, and distributional properties as *devil*. In turn, the respective *-ment* forms (see examples 4b–e, respectively) also denote events, but differ from eventive readings of *devilment* with respect to their ascribed event properties. As far as we can tell, the relevant differences between different attitudinal nouns, as well as between the different derivatives they give rise to, are therefore not structural but boil down to type differences in the values of the respective PROF-PROP attributes.¹⁵

4. DISCUSSION AND CONCLUSION

This paper set out to model *-ment* nominalisations based on nouns. To this end, we apply to the denominal domain the reference shifting approach that Plag et al. (*Word Formation in English*) and Kawaletz use for deverbal *-ment*. In this approach, the semantic contribution of the word formation process is understood as the mere potential to shift reference to nodes provided by the semantics of the base. For this reason, however, it is also highly dependent on the semantic structures provided by the morphological base. We have reported on two case studies on the denominal derivatives *illusionment* and *devilment* that presented different vantage points for the modelling of nominalisation semantics. The base *illusion* has been shown to be a straightforwardly eventuality-related psych noun, whose meaning is best described as referencing nodes of a causative event. Generalisations over *illusionment* attestations show that derivative and base share this same underlying semantic structure (and partly even allow for referencing the same nodes). In contrast, the base of *devilment* is object-denoting. However, we have presented evidence that in all attestations this base is *devil* as an attitudinal person noun, and that such nouns allow for systematically analysing their denotata as ACTORS of (habitual) activities with lexeme-specific event properties. In consequence, this allowed us to model the activity reading of *devilment* as a referential shift to the activity node provided by the base.

Given the eventive nature of the derivatives in question, a potential pitfall for the approach we are pursuing in this paper lies in the possibly post hoc assignment of eventive structures to the base in order to make reference shifting work. This

¹⁵ That is, the speaker does not ascribe the devil-bundle of properties to the denoted activities, but e.g. rascal- or bastard-properties. Note that we have not found any clear readings of *rascalment*, *bastardment* or *imbecilment* as denoting properties of objects. This circumstance is probably down to their infrequency however, rather than to structural differences between the respective derivatives. In contrast, the *buggerment* example in 4d seems to suggest an object-property reading.

holds in particular for non-eventuality-denoting bases such as attitudinal person nouns. Importantly, we do not take the eventualities in either of the psych noun or the attitudinal noun bases as induced or coerced by the word formation process itself. On the contrary, we claim that there are reasons independent of *-ment* suffixation to assume eventuality structures as inherent to the base semantics, including in particular linguistic environments that select for eventualities or indicate agentivity. Moreover, we show that the decomposition of bases via frames is a highly fruitful approach in laying bare such structures.

The findings presented here are thus in line with analyses that take eventualities to be inherent in certain non-eventive nouns that feature as input to eventive structures, be they conceived of as dynamic meaning construals such as metonymical shifts (see Baeskow for a recent proposal) or as core features of lexical entries (as e.g. in the Qualia structure in Pustejovsky; see also the general remarks in Bauer et al. 233).

More generally, our findings support the views that caution against analysing an item's word class specification as primary regarding its potential to serve as base of a word formation process (see Barker; Plag, "Syntactic Category Information"). In line with "Syntactic Category Information", our analysis reveals that the semantic compatibility of *-ment* forms with their nominal bases relies on the peculiar semantic structures of the latter. The fact that *-ment* clearly prefers verbal over nominal bases can be explained by i) the semantic categories of *-ment* formations as eventuality-related (but see below), ii) their compatibility with verbs as the one syntactic category whose members prototypically denote eventualities, and iii) their compatibility with fewer nominal bases due to the lack of inherent event-semantic components in the case of many nouns (see Van Valin and LaPolla; Haspelmath; Szabó; Moltmann on the ontological preferences of word classes).

Irrespective of the base, Plag et al. (478ff.) show that assigning *-ment* a semantic representation is far from trivial, and in particular attempts at coming up with a unitary meaning that would capture the suffix's polysemy in a satisfactory way are doomed to fail. Instead, the authors suggest word-based reference shifting, as also described in the paper at hand, in combination with a network architecture in the spirit of inheritance hierarchies (as made use of by e.g. Bonami and Crysman; Koenig; Riehemann). In such hierarchies, lexeme formation rules split up into different semantic sub-patterns that are connected to the rules' phonological components via attestations of complex words. Although we do not model inheritance in this paper, our analyses validate the necessity of such an approach, as it is the semantics of different classes of base nouns that give rise to different readings of *-ment* derivatives. For example, unlike with attitudinal nouns as base, we do not find activity readings with psych nouns as base. Similarly, attested property readings

of *devilment* can be straightforwardly reconciled with the semantics of attitudinal nouns. Given the existence of such property readings, however, we will have to weaken the generalisation that all *-ment* derivatives either denote eventualities or their participant, at least on the assumption that properties and eventualities are distinct ontological categories (see e.g. Metzger et al.; Moltmann).

We leave it to future research to determine to what extent other nominal as well as adjectival bases of *-ment* allow for a treatment, and generalisations, that are similar to those defended here for psych and attitudinal nouns. The same holds for the degree to which reference shifting analyses are feasible for further morphological processes. Certainly, other nominalisation affixes with primarily eventuality-related output readings, such as *-age*, *-ance*, *-ation*, *-er* or *-ee*, are promising candidates, as may also be the products of noun-to-verb conversion.

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EVENTUALITIES IN NOMINALISATION SEMANTICS: THE CASE OF DENOMINAL *-MENT* FORMATIONS

Summary

Many English nominalising suffixes give rise to derivatives that usually denote either eventualities or participants of eventualities (e.g. *confirm* → *confirmation*; *train* → *trainee*). The implicit consensus in the literature is that their eventuality-related semantics derives from base structures encoding eventualities, and that pertinent suffixes prefer verbs as bases given the natural concurrence of verbs and eventualities. Unsurprisingly, then, previous studies of nominalisation semantics deal nearly exclusively with deverbal formations. However, we also find denominal nouns with the same suffixes and similar semantics (e.g. *sediment* → *sedimentation*; *debt* → *debtee*), which poses questions on how such readings arise and how they should be modelled.

In this paper, we report on eventuality-related denominal *-ment* formations. We employ a frame-semantic approach to derivation that models nominalisation semantics as the potential to induce referential shifts on base structures. We make use of corpus attestations and show that denominal forms, just like deverbal ones, allow for referential shifts, but that the location of the eventuality within the semantic structure of the base differs depending on the base noun. We focus on two classes of nominal base nouns with different properties, namely, eventuality-denoting psych nouns and person-denoting attitudinal nouns, and formally model one representative of each class. Employing frame-based deep decomposition, we show that the input to *-ment* nominalisations systematically encodes eventualities, irrespective of the base's part-of-speech, and therefore allows for extending the reference shifting approach to the denominal domain.

Keywords: English morphology; derivational semantics; frame semantics; eventualities; nominalisations.

NOMINALIZACJE Z *-MENT*: WYDARZENIA I BAZY NOMINALNE

Streszczenie

Wiele angielskich sufiksów tworzących rzeczowniki skutkuje tworzeniem derywatów, które mają denotację, albo tworzeniem podtypów orzekania, czy też nazw uczestników orzekania (np. *confirm* 'potwierdzić' → *confirmation* 'potwierdzenie'; *train* 'trenować' → *trainee* 'stażysta'). W literaturze przedmiotu istnieje niepisana zgoda, że związek takich derywatów z samym orzekaniem jest nieprzypadkowy, to jest, że wywodzi się on ze struktur bazowych kodujących orzekanie, a sufiksy wybierają czasowniki jako swoje bazy ze względu na naturalną zgodność czasowników i semantyki orzekania. Nie dziwi więc, że wcześniejsze badania semantyki nominalizacji zajmują się prawie wyłącznie słowotwórstwem form odczasownikowych. Jednakże nominalizacje nie bazują wyłącznie na jednej kategorii form. Na przykład znaleźć można rzeczownikowe bazy dla większości interesujących nas sufiksów (np. *sediment* 'osad' → *sedimentation* 'osadzanie się'; *debt* 'dług' → *debtee* 'dłużnik'). W związku z tym nasuwają się pytania, dlaczego znaczenia związane z orzekaniem pojawiają się w takich przypadkach i jaki model powinien być zaproponowany dla takich derywatów.

W naszym artykule zajmujemy się problemem odrzeczownikowych nominalizacji odnoszących się do orzekania i proponujemy zbadanie użycia sufiksu *-ment*. Wykorzystując do derywacji model semantyki ram (*frame semantics*), rozpoczynamy dyskusję, zarysowując najnowsze odkrycia dotyczące tego sufiksu. Następnie proponujemy model jego semantyki, bazujący na bardziej typowych strukturach baz werbalnych, jako przykładach zmiany referencji. Wreszcie optujemy za regułą tworzenia leksemu, która wymaga semantyki formy docelowej bazującej na orzekaniu. Polegając na naszej bazie

odrzeczownikowych formacji z *-ment*, pokazujemy, że siedlisko orzekania może być różne w zależności od bazy rzeczownikowej. Proponujemy formalne modele dwu derywatów o różnych właściwościach. Najpierw analizujemy bazę derywatu *illusionment* 'rozczarowanie' jako niekwestionowanego wydarzenia pozwalającego na modelowanie analogiczne, jak w przypadku dewerbalnych nominalizacji z *-ment*. Kontrast stanowi *devilmment* 'łobuzerstwo', oparte na rzeczowniku osobowym. W tym przypadku złożone znaczenie derywatu, oparte na znaczeniu orzekania, nie pozwala na proste przypisanie sobie elementów bazy i derywatu. Dlatego proponujemy oparte o ramy dogłębne rozczłonkowanie bazy i posilkujemy się regułą tworzenia leksemu z *-ment*, aby odtworzyć ukryte elementy orzekania. W ten sposób wykazujemy, że podejście przyjmujące zmianę referencji dla form odczasownikowych można zastosować w badaniu derywatów odrzeczownikowych.

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