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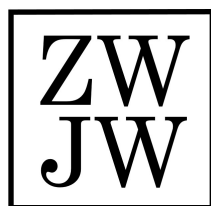
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Heike Baeskow

Nominalization as Gradual Reification of Events: -ion Nominals between Event and Non-Event Readings*

Abstract: The polysemy and the argument-taking behaviour of deverbal nouns have been discussed controversially for a long time. While proponents of lexicalist models assume that deverbal nouns inherit the argument structure of their base verbs, representatives of syntax-based models subsumed under the label ‘Neo-Construction Grammar’ argue that the event and non-event readings of nominalizations are structurally determined. Drawing on a concept from Cognitive Linguistics, a proposal to be made in this article is that the oscillation of deverbal nouns between event and non-event readings depends on the degree of ‘reification’ of the underlying events, which can be represented on a bi-directional scale. Prototypical event readings assume the central position on this scale. In these readings, deverbal nouns follow their verbal bases not only with respect to argument realization, but also with respect to the omissibility of complements. The syntactic activation of inherited arguments and the compatibility of deverbal nouns with temporal and aspectual modifiers decreases towards the (leftmost) SUBSTANCE pole and the (rightmost) OBJECT pole of the Scale of Reification. The analyses concentrate on deverbal nouns displaying the suffix *-ion*.

Keywords: nominalization, deverbal nouns, *-ion* derivatives, argument inheritance, polysemy, reification, sequential scanning vs. summary scanning, metonymy

1. Introduction

Nominalizations have been a controversially discussed field of interest since Chomsky’s (1970) ‘Remarks on nominalization’, which revealed significant contrasts in the behaviour of gerundive nominals (e.g. *John’s refusing the offer*) and derived nominals (e.g. *John’s refusal of the offer*). While gerundive nominals are formed productively, have meanings which are predictable from corresponding propositions (e.g. *John refused the offer*), and

* This study is part of the research project *Ein frame-basierter Ansatz zur Beschreibung impliziter Argumente* (‘A frame-based approach to implicit arguments’) kindly supported by the Deutsche Forschungsgemeinschaft (DFG) and headed by Gert Webelhuth, to whom I am very grateful for sharing his knowledge as to the use of the syntax-based Concretely Annotated English Gigaword corpus. I would also like to thank two anonymous reviewers for their helpful comments. Any remaining mistakes are my responsibility.

display the structure of sentences, derived nominals such as *refusal*, *construction*, *conversion*, or *residence* are formed less productively, tend to convey idiosyncratic readings, and display the internal structure of NPs. Given these contrasts, Chomsky argued against a transformationalist approach to word-formation and laid the foundation for the Lexicalist Hypothesis according to which gerundive nominals are formed syntactically, whereas derived nominals are products of the lexicon.

A highly influential work, which attempts to systematize the behaviour of nominalizations with respect to argument structure, is that of Grimshaw (1990). While authors such as Anderson (1983), Higginbotham (1983), or Dowty (1989) claimed that the syntactic realization of arguments is optional in the context of nouns, Grimshaw (1990: 45) argues that “[n]ouns can and do take obligatory arguments.” Significantly, she distinguishes between three classes of nominals, namely complex event nominals, simple event nominals, and result nominals. The following examples, which were taken from Alexiadou & Grimshaw (2008: 2), illustrate this classification.

- (1) a. The examination of the patients took a long time. (Complex)
- b. The examination took a long time. (Simple)
- c. The examination was on the table. (Result)

While complex event nominals – like verbs – have argument structures which have to be saturated, simple event nominals refer to events, too, but lack obligatory arguments. Result nominals denote the outcome of an event and behave syntactically like simplex nouns. Nevertheless, even result nominals imply the existence of *participants* (Grimshaw 1990: 54). Thus, for example, the examination on the table (cf. (1c)) is not entirely independent of the participants involved in the activity which led to the result.

Significantly, Grimshaw identifies a number of diagnostics that guide the classification of nominals¹. These comprise *of*-phrases as indicators of object relations, *by*-phrases as indicators of subject relations, the status of possessive phrases as either subjects, objects, or non-arguments, agent-oriented adjectives (e.g. *intentional*, *deliberate*, *careful*, *thorough*), temporal modifiers (e.g. *constant*, *frequent*), aspectual modifiers (e.g. *for/in two hours*), determiners (e.g. *They observed the/*an/*one/*that assignment of the problem*), and

¹ An overview of these criteria and related examples from Grimshaw (1990) is provided by Lieber (2016: 35).

purpose clauses (e.g. *The translation of the book (in order) to make it available to a wider readership*).

Despite valuable insights, Grimshaw's (1990) proposal is not without problems. In particular, her influential differentiation between argument-taking complex event nominals, apparently more flexible simple event nominals, and result nominals is blurred by the fact that nominals may belong to either class – a phenomenon which Grimshaw (1990: 47) attributes to a “fundamental and persistent ambiguity within the nominal system.” For example, the sentences in (1) and those in (2) and (3) taken from Alexiadou & Grimshaw (2008: 2) and Grimshaw (1990: 53), respectively, show that deverbal nouns headed by the suffixes *-(at)ion* and *-ment* are polysemous in that they may assume an event or referential reading, depending on the context.²

- (2) a. The frequent *payment* of your bills keeps your credit rating good.
 b. We demanded the *replacement* of the broken cups in no more than three days.
- (3) a. The *expression* of her feelings.
 b. The *expression* (on her face)

Grimshaw's (1990) findings and data were resumed, discussed and revised in a number of subsequent works, including Roeper (1993), Alexiadou (2001), Borer (2003, 2013, 2014), Newmeyer (2009), Lieber (2016), and Olsen (2019). For example, corpus analyses performed by Lieber (2016) reveal the full range of polysemy displayed by nominalizations and nominalizing suffixes. Moreover, they suggest that the realization of argument structure is not restricted to nominals with complex event readings, that event readings are also possible if arguments are omitted, and that converted as well as simplex nouns can contextually display eventive readings. Significantly, a neat classification of nominals is problematic not only for Grimshaw's (1990) ‘event model’, but also for ‘structural models’ like those proposed by Alexiadou (2001) or Borer (2003, 2013, 2014). As pointed out by Alexiadou & Grimshaw (2008), both frameworks make very similar observations as to the argument-taking behaviour of nominalizations, and both frameworks are eventually faced with the same questions.

² Throughout this article, nominalizations are represented in italics in the examples.

A fundamental difference between ‘event models’ and ‘structural models’ lies in the way deverbal nouns derive their argument structure. Advocates of structural models reject the view that these nouns inherit the argument structure of their verbal bases, as assumed for example by Olsen (1986, 2019, 2020), Randall (1988), Bierwisch (1990–1991, 2015), Baeskow (2002), or Jackendoff (2021). In structural models, which comprise Borer’s (e.g. 2003, 2013, 2014) exo-skeletal model and Distributed Morphology (e.g. Marantz 1997; Harley & Noyer 2000; Embick & Marantz 2008; Embick 2021), argument structure is exclusively determined by the syntactic configurations in which category-neutral roots are inserted. However, the latter models tend to overlook that the behaviour of deverbal nouns with respect to argument realization in their event readings is not independent of the base verbs’ predisposition to either realize or omit their arguments. An important correlation which Grimshaw (1990: 47, 49) herself only mentions in passing and which has been neglected in subsequent literature is that “[s]ome [nouns] are systematically like verbs in their argument-taking capacities” (1990: 47) and that the obligatoriness of argument realization has to be interpreted relative to the argument-selection behaviour of the base verbs. This correlation is relevant especially for non-subject arguments (i.e. for complements), which are optional for some verbs, but not for others. If deverbal nouns systematically reflected their base verbs’ behaviour with respect to argument realization and ‘null instantiation’ (in the sense of Fillmore’s Frame Semantics, e.g. Fillmore & Baker 2009: 328–329) in their event readings, this correlation would be a strong indicator of inheritance.

As far as nominalization is concerned, it is interesting to observe that derivatives which superficially look like Simple Event Nominals in the sense of Grimshaw (1990), i.e. like deverbal nouns lacking argument structure, often leave their complement locally unexpressed and create an anaphoric relation between this ‘definitely null-instantiated’ argument and a referent in the preceding discourse context.³ If the argument-selection behaviour of nominals is analysed independently of the larger discourse context, relations of co-reference, which may extend beyond the sentence boundary, are likely to go unnoticed. As a result, the nominalization appears to be more flexible although the

³ ‘Locally unexpressed’ is intended to mean that the complement of the deverbal noun is neither realized in the form of an *of*-PP (e.g. *the construction of the cathedral*) nor in the form of an Obj-poss NP (e.g. *the cathedral’s construction*).

inherited complement is actually realized in a non-canonical position. While the question of argument realization and omission mainly arises in the context of event readings, it is a well-known fact that “relics” of argument structure also surface in other contexts. For example, as pointed out by Olsen (2020: 72), the realization of the internal, but not of the external argument of the base verb is possible if the deverbal noun conveys a ‘Result State’ reading, e.g. *The pollution of the lake (*by the factory) posed a danger to the community*. Moreover, as far as referential readings are concerned, approaches which dispense with argument inheritance would have to explain how roles such as Agent (e.g. *administration*), Patient (e.g. *delegation*), or Result (e.g. *translation*) are identifiable for the respective referents because these roles have to be defined relative to some event denoted by the base verb.

The aim of this article is neither to review the rich body of literature on nominalization nor to evaluate opposing schools of thought. Instead, it will be proposed that the ambiguity of deverbal nouns between prototypical event readings (in which they closely follow their base verbs) and less central readings (including referential readings) is not due to “a fundamental and persistent ambiguity within the nominal system” (Grimshaw 1990: 47), but rooted in their status as ‘reified’ situations. From a cognitive point of view (e.g. Langacker 1987a, 1987b; Brinton 1995, Radden & Dirven 2007), verbs and their derived nominals refer to the same situations, but these situations are ‘reified’ and hence ‘thing-like’ in the case of deverbal nouns. According to Langacker (1987a) and Radden & Dirven (2007), there are two different modes of construing a complex scene, namely ‘sequential scanning’ and ‘summary scanning’. While the component states or phases of a situation are processed sequentially when referred to by a tensed verb, they are condensed into an atemporal abstract whole or gestalt in the course of the nominalization process. Nevertheless, the internal structure of reified situations can be reactivated by expressions encoding temporal relations (e.g. temporal modifiers like *take X time* or aspectual verbs such as *begin* or *stop*) to yield event readings.⁴ Proceeding from Radden & Dirven’s (2007) observation that events are reified as either objects or substances and hence coded as either count nouns or mass nouns, it will be argued that reification is a gradient phenomenon

⁴ The phrase *take x time* is intended to mean “to take a certain amount of time”, e.g. *The construction of the protein took eight months*. (‘eight months’ = *x time*).

which can be represented on a bidirectional scale. While the much-discussed complex event readings, which constitute the prototypical readings, occupy a medium position on the Scale of Reification, other, less central readings tend towards the SUBSTANCE pole or the OBJECT pole. Moreover, while deverbal nouns follow their base verbs with respect to argument realization (and omission) in their prototypical event readings, their verb-like behaviour – especially their disposition for temporal anchoring – decreases towards the SUBSTANCE and OBJECT pole, respectively. Thus, a contextual reactivation of the internal composition of the events denoted by the base verbs works best for those readings of the derivatives which are neither too abstract nor too concrete and hence occupy a medium position on the Scale of Reification.

The article is structured as follows. In section 2, the bidirectional scale which represents reification as a gradient process will be introduced, and it will be shown that the meanings of a deverbal noun can be distributed over different positions on this scale – depending on the context. Section 3 is concerned with event and non-event readings of *-ion* nominals. In Section 3.1, arguments in favour of argument inheritance are provided. Sections 3.1.1 and 3.1.2 present the results of two small-scale case studies which compare the behaviour of the inherently transitive verbs *examine* and *construct* and the corresponding nominalizations *examination* and *construction* in their event readings with respect to complement omission. In section 3.1.3, six additional verb-noun pairs, three of which do not allow for complement omission (*install/installation*, *implement/implementation*, *evaluate/evaluation*), while the other three do (*translate/translation*, *discuss/discussion*, *explore/exploration*), are discussed in a more general way. This discussion is intended to further support the claim that derived nominals behave like their base verbs with respect to argument realization and null instantiation in their prototypical event readings. Following Fillmore (1986) and subsequent work, four types of null instantiation will be distinguished, namely definite, indefinite, generic, and constructional, the latter of which is irrelevant for the purpose of this study. The contrastive analyses of the verbs and their derivatives will show that the derivatives follow their verbal bases with respect to the realization of the internal argument in their prototypical event readings and that derivatives which superficially look like Simple Event Nominals (Grimshaw 1990) may display Definite Null Instantiation. Thus, a referent for the locally unexpressed

complement is retrievable from the discourse context. Section 3.2 deals with the reification of events along the Scale of Reification towards the SUBSTANCE or the OBJECT pole and the correlating (in)compatibility of the nominalizations with event markers. The article ends with a summary and an outlook which attempts to integrate the findings on *-ion* derivatives into the overall picture of English nominalization (section 4).

In the current text, only a limited number of representative sentences or contexts is provided for reasons of space. Additional data are provided in three appendices. Appendix 1 displays a sample of sentences which show that referents for the complements of *examination* and *construction*, which are derived from strictly transitive verbs, must be retrievable from the discourse context if the complements are not specified in the form of the canonical *of*-PP or an Obj-poss phrase. The appendix also lists referential readings of the two nominalizations. Appendix 2 contains sentences which show that *installation*, *implementation*, and *evaluation* (like *examination* and *construction*) require the availability of a referent for a locally unexpressed complement, whereas *translation*, *discussion*, and *exploration*, which are derived from optionally transitive verbs, allow for Indefinite Null Instantiation. Appendix 3 provides samples of less central readings attested for deverbal *-ion* derivatives beyond those discussed in section 3.1, including a variety of referential readings. In less central readings, the realization of the inherited arguments only occurs sporadically or remains fragmentary.

Unless specified otherwise, the examples were taken from the Concretely Annotated English Gigaword (henceforth abbreviated as Gigaword), the English Web 2021 (enTenTen21) provided by Sketch Engine, and the *Oxford English Dictionary* (OED). The Gigaword corpus is annotated in the Penn Treebank style and contains 4.5 billion words from 10 million English newswire articles, from 1994 to 2010. A significant advantage of Gigaword is that it allows users to search for syntactic structures by means of the software tool Tgrep2. For example, the search string '-tw "S < (NP < (/N/ < /examination/)) !< (PP < (IN < /of/))"' yields sentences in which an *-ion* derivative occurs without a PP-complement. In a next step, the contexts in which these sentences occur have to be manually searched for the presence or absence of non-locally expressed complements. While corpus-based analyses have been performed for *-ment* suffixation (Kawaletz & Plag 2015), *-ing* nominalizations (Andreou & Lieber 2020, Lieber & Plag 2022), and deverbal conversion

nouns (e.g. Andreou & Lieber 2020, Iordăchioaia 2020, Iordăchioaia, Schweitzer, Svyryda & Buitrago Cabrera 2020), this study presents fine-grained analyses of *-ion* derivatives which are primarily based on a large, syntactically parsed corpus and which also take the (wider) discourse context into consideration. A further innovation is a systematic contrastive analysis of selected *-ion* nominalizations and their base verbs with respect to different types of null instantiation.

In view of the very high frequency of occurrence of *-ion* nominalizations in newswire articles and the polysemy of these derivatives, it is important to point out that the findings presented in this article are based on qualitative rather than quantitative corpus analyses. The data extracted for this article will also be made available on the Zenodo repository operated by CERN.

2. Nominalizations as Reified Situations

In Cognitive Linguistics (e.g. Langacker 1987a, 1987b; Radden & Dirven 2007), two modes of cognitive processing which serve to structure complex scenes have been identified, namely ‘sequential scanning’ and ‘summary scanning’.⁵ According to Radden & Dirven (2007: 346f), sequential scanning is a mode of viewing a situation in its successive phases, whereas summary scanning is a mode of viewing a situation in which all its phases are activated simultaneously, so that the situation is seen as timeless. While Langacker (1987a: 248) makes this difference in construal more tangible by comparing ‘sequential scanning’ with watching a motion picture and ‘summary scanning’ with viewing a photograph, Dewell (2015: 20) compares the latter mode, which he – following Talmy (2000: 70–72) – refers to as ‘synoptic construal’, with the bird-eye’s view. Since the focus of attention is directed from a distance at the setting as a whole and on what is going on in this setting, this perspective is more holistic than the sequential construal. Although in principle, both perspectival modes are available for structuring a complex scene, Langacker (1987a: 248f) and Radden & Dirven (2007: 79f) observe that nominalizations as atemporal ‘reifications’

⁵ In his excellent works on German prefix verbs, Dewell (2011, 2015) shows that verbs with separable prefixes (e.g. *durchregnen* “rain through”, *herumgehen* “go around”, *umrühren* “stir”) prompt a sequential construal, whereas verbs displaying inseparable prefixes (e.g. *bedachen* “roof”, *entkleiden* “undress”, *erröten* “blush”) prompt a synoptic construal, the latter of which corresponds with Langacker’s summary scanning.

of temporal situations prompt a summary construal. For example, while the component states or phases encoded by the verb *enter* are processed sequentially (i.e. in series), they are activated simultaneously in the construal of the scene denoted by the nominalization *entrance*. Thus, the same component states that underlie the verb and the nominalization are profiled collectively as a thing if they are activated by means of summary scanning. The following representation adapted from Langacker (1987b: 90) illustrates the two modes of construal. While the verb and its nominalization refer to the same situation and relations involved, the phases of the situation are processed serially only in (a), as indicated by the heavy-line portion of the time arrow. The schema in (b) represents the summary view of the situation for which temporal progression is irrelevant and which profiles the relations collectively, as indicated by the highlighted contour of the ellipse.

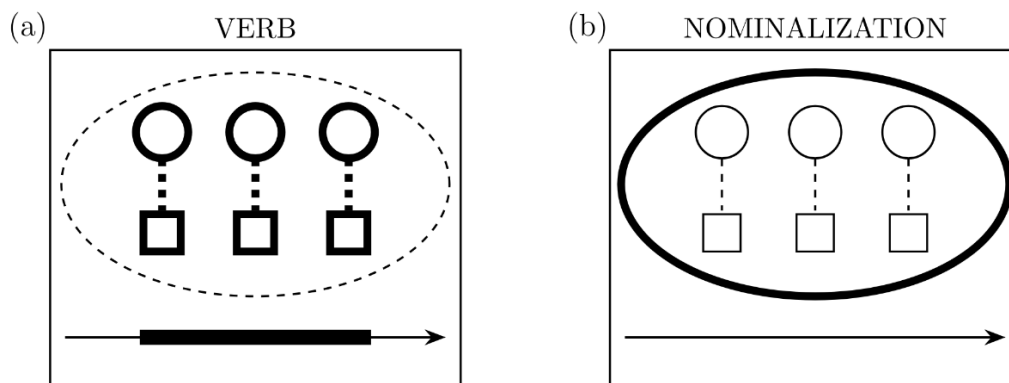


Fig. 1: Sequential scanning (a) and summary scanning (b)

The conceptual shift from situations to things, which is referred to as ‘reification’ (Langacker 1987b: 90; Brinton 1995: 29; Radden & Dirven 2007: 79–80), accounts for the interpretation of nominalizations as count or mass nouns and for their compatibility (or incompatibility) with determiners, adjectives, and quantifiers. However, since the internal structure of the reified situations denoted by nominalizations is not lost, but merely backgrounded (i.e. they may have a beginning, a duration, and an endpoint), the nominalizations allow for temporal or aspectual modification in their canonical event readings, as the following sentences show.

- (4) a. His *entrance* through the grand foyer took a full minute. (Langacker 1987a: 246f)
 b. Our *marriage* has lasted for sixty years. (Radden & Dirven 2007: 80)

- c. The *construction* of the building in the years 1464 to 1478 is due to the success of the Lübeck merchants. (enTenTen21)

Radden & Dirven (2007: 81–83), who are concerned with abstract nouns in general (including simplex nouns like *war*, *crime*, or *peace*), identify two routes of reification which are metaphorically described as ‘reification as object’ and ‘reification as substance’. While episodic situations or relations (e.g. *instruction*, *marriage*), which are bounded in time, internally heterogeneous, and possibly reoccurring, are reified as objects and coded as count nouns, steady situations or relations (e.g. *information*, *knowledge*), which are temporally unbounded and hence of indefinite duration, are reified as substances and coded as mass nouns. The underlying ontological metaphors which motivate these routes of reification are EPISODIC EVENTS ARE OBJECTS and STEADY EVENTS ARE SUBSTANCES, respectively. While the classification of simplex abstract nouns proposed by Radden & Dirven is not immediately relevant for the *-ion* derivatives discussed in the present article (but cf. section 4), an important point made by these authors is that there are abstract concepts which may be reified as either objects or substances (e.g. those denoted by *crime* or *war*). As far as concrete nouns are concerned, a similar ambiguity is observable. For example, according to Radden & Dirven (2007: 71–74), a noun like *beer*, which is a mass noun and typically denotes a substance, can be reinterpreted as an object (e.g. *Can I have another beer?*). Likewise, a noun like *car*, which typically denotes a concrete object, can be reinterpreted as a substance (*You will get a lot of car for your money*). Thus, *beer* and *car* have the status of hybrid nouns “along the object-substance continuum” (2007: 83).

Similar cases are discussed by Brinton (1995: 32), who uses the established terms “packaging” (or “bounding”) and “grinding” (or “debounding”) for the shift from mass to count and from count to mass, respectively. While Brinton, too, defines reification, which coincides with the morphological process of nominalization, as a cognitive process “in which a verbal situation is conceptualized as an object or mass” (1995: 29), she reveals that there is an intermediate stage. First, reconsider the noun *beer*, which typically constitutes a mass noun. If *beer* surfaces as a count noun, it conveys meanings like ‘serving of’, ‘kind(s) of’, or ‘portion of’ (e.g. *I would like another beer*). However, a sentence like *Please wipe up the beer on the counter* shows that there is something in between because the phrase *the*

beer on the counter denotes “a vague quantity of beer”. Although *beer* remains a mass noun, the amount of beer referred to is bounded to some degree, i.e. it is neither an unbounded mass nor a portion or specific type. Transferred to nominalization, this boundedness of “indeterminate limits” (Brinton 1995: 38, quoting Allen (1966: 205f)) also accounts for the phenomenon that nouns formed from activity verbs like *explore* or *pursuit* surface as mass nouns even if the activities appear to be temporally bounded, as shown in (5).

- (5) a. His exploring of the cave took place this morning (*and is still taking place).
 b. The police officer’s pursuit of the criminal went on for a long time (*and is still going on).

Although Brinton does not make reference to the two modes of construal introduced above, i.e. sequential and summary scanning, these examples show that the temporal structure of the reified events is still accessible and available for reactivation. At the same time, the blocking of further temporal modification (i.e. **and is still taking place* in (5a) and **and is still going on* in (5b)) shows that a full return to sequential scanning as prompted by the base verbs *explore* and *pursue* is avoided.

Given the fact that deverbal nouns may be reified as either more ‘thing-like’ or more ‘substance-like’, the proposal to be made here is that reification is a gradient phenomenon which as such can be represented on a bidirectional scale. This ‘Scale of Reification’ extends from prototypical event readings to ‘substance-like’ readings (left-hand side of the scale) and ‘object-like’ readings (right-hand side of the scale), as shown in Figure 2.

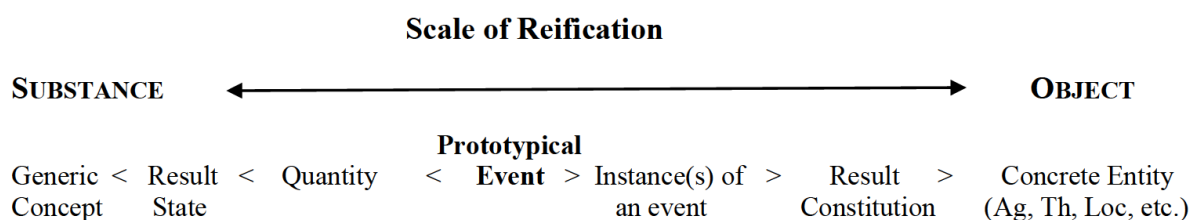


Fig. 2: Scale of Reification

While prototypical event readings occupy a medium position on the Scale of Reification, the other readings tend towards or coincide with the SUBSTANCE pole or the OBJECT pole. It is only in the prototypical event reading that deverbal nouns follow their base verbs with respect to the realization or omission of arguments – as anticipated by Grimshaw (1990).

Significantly, it should be pointed out that none of the two poles is more (or less) reified than the other one and that none of the poles is more ‘verb-like’ (or ‘noun-like’) than the other one. Instead, both the SUBSTANCE and the OBJECT pole are located in the nominal domain where they represent opposing conceptualizations of the nominalized events (i.e. the highest possible degree of abstraction vs. the highest possible degree of concreteness).⁶ Thus, the prototypical event reading of a deverbal noun, which – as compared to the sequential event reading directly encoded by the underlying verb – is reified to a moderate degree and hence accessible by summary scanning, is simultaneously in opposition with the highly abstract ‘Generic-Concept’ reading on the left and the ‘Concrete-Entity’ reading on the right. Note that this dual opposition would be missed if the potential readings of the *-ion* nominals were represented as a continuum from ‘verbiness’ to ‘nouniness’ on a unidirectional scale because such a scale would not capture the intermediate readings, which – due to their properties described in section 3.2 – either tend towards the SUBSTANCE pole or towards the OBJECT pole.

Since verbs and deverbal nouns realize their arguments in different ways, it is assumed here with Bierwisch (1990–1991, 2015), Olsen (2020), and Jackendoff (2021) that inheritance is semantically determined. As pointed out by Jackendoff (2021: 143), “[n]ouns that are morphologically related to verbs typically inherit the verb’s semantic argument structure, whether expressed syntactically or not. For instance, the *construction of a building* semantically implies both an entity doing the constructing and an entity being constructed; a *donation* is something that one entity is donating to another.” Moreover, although there may be “relics” of argument structure in the ‘substance-like’ and ‘object-like’ readings, the possibility of temporal anchoring decreases towards the SUBSTANCE and OBJECT pole. Examples of *-ion* nominalizations whose readings match the positions of the Scale of Reification (from left to right) are provided in (6). All the sentences were taken from Gigaword.

- (6) a. She studied *composition* at New York University, absorbed jazz and gospel into her style, later wrote an opera for the Munich Biennale and also worked as musical director for “The Wiz” on Broadway. (**Generic Concept**)

⁶ As mentioned above, the SUBSTANCE-OBJECT metaphor also applies to simple nouns like *car* or *beer* if they are reinterpreted as mass or count nouns, respectively, and in this case, there is no verbal information involved at all.

- b. But they said the prison term is not enough to undo the *financial devastation* he brought. (**'Result State'**)
- c. *All construction* stopped for six weeks, and before it resumed, the workers were sent to a 40-hour training program on handling hazardous materials. (**'Quantity'**)
- d. The *discussion* of the proposal occurred via computer, according to e-mail messages obtained by The Arizona Republic. (**'Prototypical Event'**)
- e. Repeated *examinations* did not confirm that. (**'Instances of an event'**)
- f. "To put it plainly, the *construction* was shoddy," Bentley said. (**'Result Constitution'**)
- g. A Polaroid photo is a unique, spontaneous *creation*, blurred lines and all. (**'Concrete Entity/Product'**)

The continuum proposed in Figure 2 is intended to systematize the behaviour of *-ion* nominals (as representatives of deverbal nouns) with respect to argument realization, quantification and aspect. If considered in isolation, sentences like those in (6) might convey the impression that nominalizations are largely independent of the semantics of their base verbs and hence formed syntactically. However, given the summary view, which renders the underlying events more 'thing-like' (or 'substance-like'), the extent to which the nominalizations follow or deviate from their verbal input is basically determined by their degree of reification, which renders them more or less compatible with event markers.

Significantly, there is no one-to-one relation between a deverbal noun and a position on the scale. Although there are tendencies (for example, deverbal nouns derived from activity or state verbs are less likely to display 'Result' readings than those derived from accomplishment verbs), the readings of a deverbal noun may be distributed over two or more positions of the Scale of Reification – depending on the context. This is exemplified for *construction* in (7).

- (7) a. He said he had distanced himself from decisions about the *construction* of the home by the university's foundation [...]. (**'Prototypical Event'**)
- b. The Massachusetts Port Authority said Thursday that it had suspended all *construction* at the airport. (**'Quantity'**)
- c. But the Empire State's *construction* was far denser. (**'Result Constitution'**)
- d. The new *construction* is close to the Olympic stadium, and the investors are betting that real estate prices will rise before the Games in 2012. (**'Concrete Entity'**)

Moreover, the accessibility of the internal temporal structure of the deverbal nouns and their inherited arguments decreases towards the SUBSTANCE and OBJECT pole of the scale, respectively. Thus, a contextual reactivation of these components works best for those readings of the derivatives which are neither too abstract nor too concrete and hence occupy a medium position on the Scale of Reification. As far as less central readings are concerned, other contextually salient facets can be highlighted, such as a quantity (7b), an entity's constitution (7c), or the product of the event denoted by the base verb (7d). In the following sections, the accessibility of the internal structure of the underlying events is discussed in more detail for event readings (section 3.1) and for readings that tend towards the SUBSTANCE pole and the OBJECT pole, respectively (section 3.2). Again, the focus is on deverbal nouns displaying *-ion* suffixation.

3. Deverbal *-ion* Derivatives between Event and Non-Event Readings

In section 1, it was pointed out that similarities between verbs and their derived nouns with respect to argument selection are indicators of argument inheritance. As mentioned but not further pursued by Grimshaw (1990: 49) and beyond, shared behaviour is reflected not only by the presence of arguments (especially non-subject arguments), but also by the verb's and the derived noun's predisposition to omit their complement. If the argument structure of deverbal nouns was determined syntactically and hence independently of their base verbs, as assumed for example by Borer (2014), the obligatoriness or optionality of argument realization would be arbitrary. Moreover, the statement “[c]omplements, if missing, certainly indicate an R-nominal” made by Borer (2013: 57, footnote 9) conceals that complements of deverbal nouns – like complements of transitive verbs – are often realized in non-canonical positions. Derivatives which superficially look like Simple Event Nominals, i.e. like deverbal nouns lacking argument structure, often display Definite Null Instantiation in the sense of Fillmore (1986). In this case, the internal argument inherited from the base verb is neither realized in the form of an *of*-PP nor as an Obj-poss phrase. Instead, it is implied as a null argument for which an antecedent must be retrievable from the preceding discourse context (e.g. *Kano was known as a REMOTE site and installation began in 1960*). If the argument-selection behaviour of nominals is analysed independently

of the wider discourse context, anaphoric relations of this kind, which may extend beyond the sentence boundary, are likely to go unnoticed. As a result, the nominalization appears to be more flexible than the verb from which it is derived although the inherited complement is actually realized in a non-canonical position. In the following section, exemplary *-ion* derivatives displaying event readings will be compared to their verbal bases with respect to complement omission.

3.1 Event Readings

As outlined in section 2, an effect of reification is that the event denoted by a verb is not processed as it unfolds in time, but viewed as an abstract, atemporal whole or gestalt. This mode of processing an event or complex scene is referred to as summary scanning in Cognitive Linguistics. Significantly, the participants and their relations to the event are merely backgrounded and available for contextual reactivation. Likewise, the internal temporal structure of the reified event remains accessible, as the following quotation from Radden & Dirven (2007: 79) shows.

The conceptual impact of reification is in giving relational concepts the kind of stable existence that we typically associate with things. [...] At the same time, however, reified things preserve some aspects of their relational, and often processual character: they may have a beginning, a duration and an end, which can be brought out by means of temporal expressions. Thus, we can speak of a marriage or friendship which began in 1955, lasted for fifty years, and ended in 2005, but we cannot speak of a friend, a wife or a tree that began in 1955 or lasted for fifty years.

Consider for example the verb *construct*, which is classifiable as an accomplishment verb because any situation it denotes has a certain duration and is directed towards an inherent or intended endpoint.⁷ While a sentence like *They constructed a protein that could act as a blueprint for its own replication* indicates that the activity denoted by the tensed verb *construct* is completed, a phrase like *the construction of a protein that could act as a blueprint for its own replication* ‘summarizes’ the same complex scene, with the result that the individual phases are backgrounded. In other words, we do not track the Agent as he or she acts upon the Patient and the Patient’s change of state relative to the Agent’s activity, but rather form an abstraction

⁷ Since the inherent or intended endpoint of the situation denoted by a telic verb is not necessarily reached, Depraetere (1995) stresses the necessity to differentiate between (a)telicity and temporal (un)boundedness. See also Andreou & Lieber (2020) on this point.

(or snapshot) of the scene for which the unfolding of the individual stages in time is irrelevant. Nevertheless, this summary or snapshot of the situation remains dynamic because the relations holding between participants as well as temporal relations are merely backgrounded and hence available for contextual reactivation, e.g. *The construction of the protein took eight months*. Elements which provide access to these components are for example temporal modifiers (e.g. *frequent*), aspectual modifiers (*take X time, in/for X time*), or agent-oriented adjectives such as *intentional*, which, like rationale clauses, signal an Agent's control of the event. In sum, these are the elements which have been identified as diagnostics of event readings in the literature (e.g. Grimshaw 1990, Mauner & Koenig & 2000, Lieber 2016, Borer 2013). As illustrated in Figure 2, prototypical event readings of deverbal nouns are most 'verb-like' and hence occupy a medium position on the Scale of Reification. Moreover, while 'relics' of the argument structure of the base verbs also surface in non-event readings (cf. section 3.2), nominals derived by means of the suffix *-ion* tend to follow their base verbs with respect to the realization of the inherited arguments in their event readings. Thus, the alleged flexibility of nominalizations with respect to argument structure seems to be systematic rather than arbitrary. As indicted in section 1, this postulate comprises not only the realization, but also the omissibility of arguments – especially of the complement.

As far as verbs are concerned, four types of argument omission or null instantiation have been distinguished in works dealing with implicit arguments (e.g. Fillmore 1986; Condoravdi & Gawron 1996; Lambrecht & Lemoine 2005; Ruppenhofer & Michaelis 2010; Boas 2017; Baeskow 2025a, 2025b), namely indefinite (INI), definite (DNI), generic (GNI), and constructional (CNI). Examples from Gigaword (8a, c), the OED (8b), and Ruppenhofer & Michaelis (2010) (8d) are provided below.

- (8) a. Butter seems to be cheaper in November than in December, when more people *bake*. (INI)
 b. That sofa-table in the window. When would you be able to *deliver*? (DNI)
 c. China *produces* and we *consume*. (GNI)
 d. Phil's Cherry Pie: *cool* ∅ briefly, then *eat* ∅ warm. (CNI)

Since the omitted argument of *bake* is conceptually implied (or existentially bound) in (8a), we are dealing here with Indefinite Null Instantiation (INI). The default interpretation of indefinitely null-instantiated arguments is guided by world knowledge as represented in

Frames (e.g. Fillmore & Baker 2009) and knowledge regarding the verb's selectional preferences (e.g. Rice 1988, Jackendoff 1990, Resnik 1993, Baeskow 2025a). As far as the verb *deliver* in (8b) is concerned, an appropriate interpretation of the null argument is possible only if an antecedent, i.e. a referent which binds this argument, is retrievable from the preceding context. Put differently, the implicit argument receives a definite interpretation if it refers to 'given' information. Example (8c) shows that contextually unexpressed arguments may also assume a generic interpretation. As pointed out by Goldberg (2001: 518), the activities referred to in generic contexts are often characteristic of the subject arguments. Constructional Null Instantiation (CNI) is at issue if the implicit argument is structurally licensed. Typical examples of CNI are passive sentences, or genre-based omissions discussed by Ruppenhofer & Michaelis (2010), which manifest themselves for example in instructional imperatives (cf. (8d)) or match reports (*Paramatti put the ball back into the box and Panadic headed \emptyset into the net*). According to Ruppenhofer et al. (2016: 30), null instantiation licensed by a construction is either definite or indefinite. In the following three subsections, *-ion* nominals derived from strictly and optionally transitive verbs are analysed with respect to null instantiation. Indefinite, Definite, and Generic Null Instantiation will be abbreviated as INI, DNI, and GNI, respectively.

3.1.1. *Examine* vs. *Examination*

Let us begin by looking at the verb *examine* and the much discussed deverbal noun *examination*. According to the OED, the verb *examine* is associated with a variety of meaning components which can be roughly assigned to the domains of law, medicine, and education. The definitions and quotations from the OED as well as contexts from Gigaword further show that this verb is inherently transitive. If it is used intransitively, it takes a prepositional phrase headed by *into* as a complement (cf. (9)). As shown in (10), this option is also available for *examination*.

- (9) a. We have had many opportunities of *examining into* the great and original merits of our countryman, Hogarth. (OED)
- b. To *examine into* the nature of real good. (OED)

- (10) a. The division has refused to reopen the Emlico case, but it is conducting an *examination into* EIC, a Massachusetts company that once was part of Emlico. (Gigaword)
- b. That could lead to months of *examination into* Clinton’s personal life [...]. (Gigaword)

While the prototypical transitive use of the verb and its derivative focuses on the object or entity being scrutinized, the preposition *into*, which conceptually encodes a path, emphasizes the investigative process and signals an in-depth examination of the matter under investigation. An aspectual effect is that the prepositional complement imposes a temporally unbounded reading onto the verb and its nominalization. It should be noted, however, that the preposition *into* does not necessarily force an event reading for the deverbal noun. In a sentence like *The 567-page examination into the worst domestic attack in American history recommended a major reorganization of the government’s approach to fighting terrorism* (Gigaword), the modifier *567-page* indicates that *examination* contextually assumes a referential reading, which coincides with the OBJECT pole of the Scale of Reification (cf. Figure 2).

In other contexts, *examine* and *examination* convey habitual or generic readings if they are used intransitively. The following examples illustrate these readings.

- (11) a. I *examine* for an hour upon my morning prelection. (OED)
- b. Because zero-base budgeting generates new ideas, managers spend more time *examining, discussing, and deciding*. (OED)
- (12) a. A general medical *examination* should take at least 30 minutes; (Gigaword)
- b. A laparoscopic *examination* is carried out by making a puncture wound in the abdominal wall and passing a straight scope into the abdominal cavity. (Gigaword)

If the reading “to set or conduct an examination; to act as an examiner” (OED) displayed in (11a) is activated, *examine* assumes a habitual interpretation. As pointed out by Lambrecht & Lemoine (2005: 24), habitual INI is not licensed lexically because there are no restrictions on the verbs that permit this kind of construal. Ruppenhofer et al. (2016: 29) make a similar statement for GNI as exemplified in (11b) and (12). According to these authors, “[v]erbs that usually require an argument to be present (or only allow it to be omitted under conditions of definiteness) can be used in a generic construction with indefinite null instantiation (e.g. *He*

takes and never gives back).⁸ Thus, sentences like those in (11) and (12) do not affect the inherent transitivity of *examine*.

This observation is supported by corpus data. A search performed for intransitive uses of *examine* in Gigaword only yielded eight sentences. In three of these sentences, *examine* displays a habitual reading (cf. (13a–c)), and two further sentences are instances of GNI (cf. (13d–e)). Example (11b) from the OED and example (13e) from Gigaword show that habitual or generic readings may be reinforced by a coordination of inherently transitive verbs which remain unspecific as to complementation.

- (13) a. “I’ll pull out the laptop, and when I’m on Michigan Avenue here in Chicago, put it on a garbage can or on the seat of a bus stop,” he said. “You’re live, and you can walk around, *examine*, image, zoom in and out. I do it all the time.”
- b. “The issue was raised by members of the public and others. Our job was to listen, to *examine*, and that’s what we’ve done.”
- c. “This decision is an example of a court saying, ‘We don’t want to look, we don’t want to *examine*,’” Ms. Dohrn said.
- d. The prosecutor *examines*, the defense attorney *cross-examines*, the judge *rules*.
- e. “You need to make smart, informed decisions, ask good questions, and not just *assume*,” Miller said, “because the Enrons and WorldComs of the world proved that we need to *analyze, scrutinize, question, examine*.”

In the remaining three sentences from Gigaword, which are displayed in (14a–c), and in example (14d) from the OED, the complement of *examine* is locally unexpressed. Complements of verbs are understood here to be locally unexpressed if they are realized in the preceding discourse context (e.g. Schenk 2019: 87). Since there are anaphoric relations between the null complement of *examine* and a referent in the preceding context, we are dealing here with DNI.⁹

- (14) a. As for the Plan B on each side, let’s *examine*: [...]
- b. While the refugees are at Fort Dix, immigration inspectors will screen them to make sure they are, indeed, refugees from Kosovo and have no criminal records, while doctors *examine*.
- c. These are “meditation” wines that you can sit in a corner with and *examine*.
- d. Many passed it by with careless tread..But others..Pause to *examine*.¹⁰

⁸ See also Goldberg (2001) and Baeskow (2025a) on this point.

⁹ In (14) and further examples displaying DNI, antecedents are highlighted by underlining.

¹⁰ In this example (and in (38d); cf. section 3.2.3), the double dots were taken over from the OED quotations.

While no examples of INI were found for *examine*, the above sentences show that DNI is at least tolerated. This behaviour of *examine* does not come as a surprise. As pointed out by Fillmore (1986: 96), “[o]ne test for the INC/DNC distinction has to do with determining whether it would sound odd for a speaker to admit ignorance of the identity of the referent of the missing phrase.”¹¹ While it is not odd to say “John has just eaten, but I don’t know what he ate”, an utterance like “They examined yesterday, but I don’t know whom (or what)” is pragmatically inadequate. However, given the size of the entire Gigaword corpus (4.5 billion words), the few results indicate that DNI is extremely rare in the context of *examine* and that the syntactic realization of its lexically specified internal argument is definitely preferred. Otherwise, detransitivation should be possible beyond habitual readings, GNI, and occasional occurrences of DNI.

Significantly, Fillmore’s (1986: 96) statement quoted above also holds for the deverbal noun *examination*, for which more occurrences of DNI are attested in Gigaword. The following examples and further contexts provided in Appendix 1 show that the Patient argument which *examination* inherited from its verbal base is realized in a non-canonical position. As far as deverbal nouns are concerned, non-canonical is intended to mean that this argument neither appears as the complement of an *of*-PP (e.g. *Barranco’s examination of her client*) nor as an Object-poss constituent (e.g. *Wang’s examination by the Dutch psychiatrists*).

- (15) a. “We’ve located that vehicle and we’re hopeful that *examination* will lead us to some evidence that might indicate where Hudson is,” Weir said.
- b. Now that the Discovery is in orbit, the *examination* begins.¹²
- (16) a. A flexible tube containing a tiny camera will be used to view the colon and identify any polyps. If any are found, a tiny cutter will be inserted into the tube and used to remove them. After the *examination* is complete, the president will be taken off the sedative, which was chosen because it wears off quickly, Tubb said.
- b. Toward the end of May, the inspectors succeeded in removing the shell remnants. On June 13, Butler, in Baghdad, let Iraq know that the *laboratory examinations* had shown the presence of VX, a poison gas that can kill in minutes with a few drops.

¹¹ The abbreviations INC and DNC stand for ‘Indefinite Null Complements’ and ‘Definite Null Complements’, respectively.

¹² According to the New-York-Times article in which this sentence appears, it is actually the Space Shuttle orbiter (i.e. the Discovery) itself which is subject to examination.

In these examples, the *-ion* derivative superficially looks like a Simple Event Nominal in the sense of Grimshaw (1990: 45) or Alexiadou & Grimshaw (2008: 2), i.e. like a deverbal noun which lacks an argument structure. As a matter of fact, however, it displays DNI, and its locally omitted Patient argument can be inferred from the preceding discourse context. More precisely, we are dealing here with Topical DNI in the sense of Lambrecht & Lemoine (2005) because the locally omitted argument is part of the discourse topic and hence constitutes ‘given’ information, which is accessible to the decoder (i.e. the hearer or reader). According to these authors, a prerequisite for Topical DNI is that the entities to which the implicit arguments refer are discourse-active in that mental representations thereof have already been formed in the hearer’s mind at the moment of utterance. Moreover, the speaker must ensure that the relation of these topical constituents to the propositions are predictable at the time of utterance.

In (15a) and (15b), antecedents for the null argument, which might be replaced by the overt pronoun *its* and hence establishes anaphoric relations, are available in the sentence in which the nominal occurs (i.e. the NPs *that vehicle* and *the Discovery*, respectively). The examples in (16a) and (16b) show that relations of co-reference between implicit arguments and potential fillers can also be established across sentence boundaries (i.e. *the examination [of the colon]; the laboratory examinations [of the shell remnants]*). This phenomenon strongly suggests that the Patient argument is part of the verb’s semantic argument structure and available for inheritance. If verbs and the nominals they derive lacked inherent argument structure, non-locally expressed arguments – especially those which are located beyond the sentence boundary – could hardly be identified as complements. Moreover, the examples in (16) reveal the relevance of the wider discourse context, which tends to be neglected in studies on nominalization.

The examples discussed so far have shown that DNI is at least tolerated by but rarely attested for the verb *examine*, whose rigid transitivity (i.e. *examine* + NP) is lexically determined. The derived noun *examination* differs from its base verb in that it allows the internal argument to be realized in a non-canonical position – provided that it is discourse active (Topical DNI). In these contexts, the derived noun remains a Complex Event Nominal although it superficially looks like a Simple Event Nominal, especially if the antecedent is located beyond the sentence boundary. For any event of examination –

whether referred to by the verb *examine* or by the deverbal noun *examination* in its prototypical event reading, the object of investigation must be identifiable for the decoder (i.e. the hearer or reader).

3.1.2 *Construct vs. Construction*

Similar observations hold for the causative verb *construct* and its derivative *construction*, both of which are typically related to building in Gigaword. Detailed analyses performed by Baeskow (2025a) have shown that *construct* is inherently transitive and eludes object omission. Evidence comes from the fact that the whole Gigaword corpus only provides two sentences in which the verb's complement is not syntactically realized, namely (17a) and (17b). In these rare sentences, *construct* does not refer to concrete events, but conveys generic readings. Both sentences involve an antithesis, i.e. a parallelism which is built around opposing expressions. However, since antitheses involving the canonical antonyms *build* and *destroy* are much more frequent in Gigaword, it is likely that those in (17), which involve *construct* and *destroy*, were formed by analogy.¹³

- (17) a. In response, Mr Lepper accused the prime minister and his party of belittling him and not consulting him on major policy moves. “They are not made for *constructing*, but for *destroying*. They will agree only with people who are on their knees before them,” he said.
- b. We *construct*, he *destroys* ... it's a very good game,” Gusinsky said in an interview with The Associated Press.

As shown by Baeskow (2025a), the verb *construct* contrasts with its native competitor *build* in that it is largely incompatible with atelic readings induced by INI. While both verbs are lexically classifiable as accomplishments, only *build* quite productively allows for an activity reading if its direct object is indefinitely null-instantiated. By convention, the null argument is interpreted as ‘buildings’, while an interpretation as ‘cars’, ‘computers’, ‘bicycles’ etc. is precluded, e.g. *Thirty years ago residents cleared the woods next to the old cemetery and began building* ∅.

¹³ True antonyms surface for example in the following sentence from Gigaword: “*While our government builds, the armed opposition destroys and we have been in this struggle: build and destroy,*” he said.

The inherent transitivity of *construct* is mirrored by the derivative *construction*. Contexts in which the complement of this deverbal noun is syntactically realized are abundant in Gigaword (e.g. *The construction of the cathedral, the world's largest Orthodox church, commissioned by Czar Alexander I, took 44 years and three more Romanov czars*). However, the nominal behaves like *examination* in that it allows for DNI. As outlined above, the semantic argument structure of verbs and their derived nominals plays an important role in the identification of anaphoric relations between null-instantiated arguments and potential antecedents in the preceding discourse context. While an antecedent for the null complement of *construction* is available within the sentences in (18), the anaphoric relation extends across the sentence boundary in (19) (and in further sentences provided in Appendix 1).

- (18) a. The company, which is also seeking to buy the remaining land of the mostly vacant plant site, has not yet determined how big the center will be or when *construction* will start.
- b. Designed by architect Arthur Page Brown, who died before its completion, the building received its first passengers 22 months after *construction* began.
- (19) a. The bridge itself was a grass-roots affair. In 1898, the year it's thought the *construction* began – there are no exact records –, it was a necessity.
- b. It's hard to see how any open-minded visitor to Kansas City can fail to be impressed by the Nelson-Atkins Museum of Art, which has few if any peers west of the Mississippi. Lacking private collections on which to build when *construction* began in 1930, the trustees had to buy everything, and in the Depression years their dollars went a long way.

A significant contrast between DNI observed for *examination* (cf. (15) and (16)) and DNI displayed by *construction* in (18) and (19) above results from the fact that these nominals inherit different Proto-Patient entailments (Dowty 1991) from their verbal bases. Dowty reduces the set of thematic roles, whose number and nature has been discussed controversially in the pertinent literature (cf. for example Rauh 1988), to two proto-roles – a Proto-Agent and a Proto-Patient. These roles are defined over sets verbal entailments, as shown in (20) and (21).

- (20) Contributing properties for the Agent Proto-Role:
- a. volitional involvement in the event or state
 - b. sentience (and/or perception)
 - c. causing an event or change of state in another participant
 - d. movement (relative to the position of another participant)
 - e. exists independently of the event named by the verb
- (21) Contributing properties for the Patient Proto-Role:
- a. undergoes change of state
 - b. incremental theme
 - c. causally affected by another participant
 - d. stationary relative to movement of another participant
 - e. does not exist independently of the event, or not at all

Leaving further details aside, *examine* and *construct* entail the full set of Proto-Agent entailments for their external argument. These fine-grained thematic relations, which are semantically rather than structurally determined, are inherited by *examination* and *construction*. However, while the Proto-Patient of *examine/examination* is causally affected by the Proto-Agent's activity without undergoing a definite change of state, the referent of the complement of *construct/construction* is brought into existence by the Proto-Agent's activity and hence constitutes an incremental theme. Thus, the progress of the activity performed by the Proto-Agent is mirrored by the Proto-Patient's successive change of state. Given these verb-inherent entailments, the reader who comes across a definitely null-instantiated argument will look for an antecedent which is an 'affected' object in the case of *examine/examination* and an 'effected' object which does not exist independently of the event in the case of *construct/construction*. Although the Proto-Agent's activity and the resulting change of state entailed for the Proto-Patient are not processed sequentially if the event is reified, these participants and their relations to each other and to the event are preserved by the nominalizations – as outlined in section 2. Again, these relations would be concealed if the argument structure of deverbal nouns was syntactically determined rather than passed on by inheritance, and once again, an inspection of the wider discourse context is necessary to determine whether a nominalization actually lacks

a complement or whether a non-locally expressed complement is available and discourse active.

To sum up, the contrastive analyses of the two derivationally related verb-noun pairs *examine/examination* and *construct/construction* suggest that the nouns largely follow their inherently transitive base verbs with respect to the realization of arguments in their event readings and that this behaviour is an indicator of argument inheritance. Although the complements of the deverbal nouns are not necessarily realized as *of*-PPs or Object-poss phrases, referents for the locally omitted arguments must be available in the discourse context (DNI). Without an antecedent, a sentence like *The examination is scheduled this morning in Fort Worth*, in which *examination* displays an event reading, is as incomplete as **The doctor examined ∅*; see also Grimshaw (1990: 47) on this point.

3.1.3 A Sample of Further *-ion* Nominals

The two case studies presented in section 3.1.1 and 3.1.2 have shown that the deverbal nouns *construction* and *examination* follow their transitive base verbs closely in their event readings. If the canonical *of*-PP or an Obj-poss NP is missing, a referent for the locally omitted complement must be retrievable from the (wider) discourse context. Thus, the apparent flexibility of nominalizations with respect to argument realization seems to be restricted for prototypical event readings. While further in-depth analyses of verb-noun pairs are beyond the scope of this study, additional evidence for the claim that the argument-taking behaviour of deverbal *-ion* nominals is not independent of their base verbs comes from a random sample of sentences extracted from the English Web 2021 (enTenTen21) provided by Sketch Engine. These sentences include six further *-ion* nominals whose base verbs – according to the OED – are either obligatorily transitive (*installation, implementation, evaluation*) or allow for intransitive readings (*translation, discussion, exploration*). In order to ensure that only event readings are displayed, the search was restricted to contexts in which the nominals are immediately followed by the verb *take* (e.g. *take place; take X time*) or by one of the aspectual verbs *begin, start, or continue*. In further contexts, the nominals are preceded by the temporal adjectives *frequent* or *constant*, and *of*-PPs were filtered out. Thus, it is possible to test whether inherited complements are absent or whether referents for null complements are

retrievable from the (wider) discourse context. As exemplified in (22), (23) and in Appendix 2, the additional sample is compatible with the observations obtained from the detailed contrastive analyses (section 3.1.1 and 3.1.2).

- (22) a. Kano was known as a REMOTE site and *installation* began in 1960. (DNI)
 b. E-governance brings complex challenges. “Getting from the first conversation to full *implementation* takes several years,” Tammearu says. (DNI)
 c. While the new fighter can be operated by a single pilot, it is a two-seat aircraft with an increased payload capacity, electronic flight controls, advanced cockpit and mission systems and software capabilities. Before testing and *evaluation* begins, aircrews will familiarize themselves with the aircraft through local airspace flights. (DNI)
- (23) a. Although the Bible has been translated into almost every language, this English version remains the most influential of all. Timewise, the actual *translation* took three years, as did the review. (DNI)
 b. This method helps you to avoid constant *translation* and instead allows you to think in French. (INI)
- (24) a. Discussion of the proposed 1998-2000 workplan for Commission 7 was led by Dr Paul Munro-Faure (Vice-Chairperson, UK) and preliminary comments were received on its structure and likely topics. The *discussion* continued on Friday 9 May. (DNI)
 b. The group’s live *discussion* started at 7:30 p.m., and continued live until 10:30 p.m. (INI)
- (25) a. The Sculpture Program is an open laboratory for the investigation and manipulation of the world around us. The *exploration* begins with the physical world of objects and materials and extends through the conceptual realm of ideas and cultural dialogue. (DNI)
 b. Whenever you’re ready to travel, take the wheel and let the *exploration* begin with 30% off Avis car rentals in California, Las Vegas, Texas, Florida, New York, Boston, and other top destinations in the United States. (INI)

This additional sample shows that non-locally realized arguments surface in the context of both types of *-ion* nominals, namely those derived from strictly transitive verbs (e.g. *install*, *implement*, *evaluate*) and those derived from optionally transitive verbs (e.g. *translate*, *discuss*, *explore*). As shown in Appendix 2, a referent for the inherited but definitely null-instantiated argument is frequently provided sentence-externally. By contrast, INI most naturally works for nominals whose base verbs, too, can be used intransitively. In the latter case, the complement is “understood” without contextual information, but remains schematic. As indicated already in the introduction to section 3.1, the default interpretation of indefinitely null-instantiated arguments is guided by world knowledge as

represented in Frames (e.g. Fillmore & Baker 2009) and knowledge regarding the verb's selectional preferences (e.g. Rice 1988, Jackendoff 1990, Resnik 1993, Baeskow 2025a). For example, according to FrameNet¹⁴ – the comprehensive lexicographic database initiated by Charles Fillmore and colleagues – the verb *translate* evokes the 'Translating' frame in its prototypical reading "to express the sense of (words or text) in another language". This frame is composed of five core Frame Elements (FEs), namely the 'Cognizer' (i.e. the person who carries out the translation), the 'Content', a 'Source_Representation', a 'Source_Symbol', a 'Target_Representation', and a 'Target_symbol'.¹⁵ The semantic relations holding between these FEs are spelled out in the frame definition: "A Cognizer produces a Target_symbol which represents, in the Target_representation format, a Content that pre-exists in the form of a Source_symbol in a Source_representation format." If the verb *translate* displays INI (e.g. *A security guard translated* Ø; Gigaword), the missing object argument can be filled in by frame information. In other words, frame information enables the decoder (i.e. the reader or hearer) to form a schematic representation of the implicit argument which is sufficient to make sense of the utterance.

Empirical support for the postulate that the implicit object argument of *translate* is of the semantic type 'Content' comes from corpus data. If we generate a Word Sketch for this verb in Sketch Engine, the column "objects of translate" displays the first twelve nouns which typically fill the verb's direct-object position in the 52-billion-word corpus enTenTen21. In Sketch Engine, typicality is calculated on the basis of the LogDice score, which indicates how strong the collocation between two lexical items is, e.g. *translate* and *text* (8.2), *Bible* (7.8), *word* (7.4), *document* (6.9), *poem* (6.8), etc. Unlike other statistical association measures (e.g. the MI score or the T-score), the LogDice score is restricted to the maximal value 14.¹⁶ Since *translate* and its attested complements also collocate with other lexical items, the values specified above only indicate medium collocational strength. Nevertheless, they reveal that the verb *translate* selects for nouns which can be considered instantiations of the abstract FE 'Content' of the 'Translating' frame. Significantly, the

¹⁴ <https://framenet.icsi.berkeley.edu/>

¹⁵ Unlike peripheral FEs (e.g. Manner, Time, Place), core FEs are semantic arguments which constitute necessary components of a frame; cf. Ruppenhofer et al. (2016: 23).

¹⁶ An advantage of this restriction is that the LogDice score is independent of the corpus size, so that it can be used to compare scores between different corpora.

compatibility between frame information and selectional preferences also holds for the derived noun *translation* which, like its base verb, allows for INI. If the complement of this noun is indefinitely null-instantiated, as in sentence (23b), it is inferable from the ‘Translating’ frame as well because frames are not restricted to lexical units of the category ‘verb’. Again, the missing argument is interpretable as ‘Content’, and again, this semantic type is mirrored by collocations. If we generate a Word Sketch for *translation* in Sketch Engine, the column “prepositional phrases” is of particular relevance because it reveals the typicality of nouns occurring in the *of*-PP. In order to obtain a ranking of these nouns in terms of typicality, we need to click on the three dots on the right-hand side of this column and select the option ‘Multiword Sketch’ (rather than ‘concordance’, which yields an unordered set of sentences). The attested complements of ‘translation + *of*’ thus obtained include *Bible* <9.7>, *text* <8.8>, *testament* <8.7>, *poem* <8.0>, *scripture* <7.9>, etc., all of which are represented by the semantic type ‘Content’ (and the Proto-Patient role at a higher level of abstraction).

Similarly, the complements of *discuss* (e.g. *Leave a comment if you’d like to discuss!*; enTenTen21) and its derivative *discussion* (cf. (24b)) allow for INI provided that the discourse does not require a specification of the FE ‘Topic’, which according to Frame Net “expresses the subject that the Interlocutors are trying to come to some agreement about.” The schematicity of the complement is reflected by the top collocations attested for *discuss* (e.g. *issue* <9.3>, *topic* <9.0>, *matter* <8.2>, *possibility* <7.6>) and for *discussion* (e.g. *issue* <9.1>, *topic* <8.6>, *matter* <7.1>, *subject* <7.0>) in Sketch Engine.

According to the OED, the intransitive use of the verb *explore* is restricted to contexts dealing with the exploration of unknown territory or the search *for* something – esp. for minerals, oil, or other raw materials. As the following examples show, these are the contexts in which the derivative *exploration*, too, allows for INI.

- (26) a. Travel and *explore*. Going somewhere new is a great way to open your mind.
(enTenTen21)
- b. The *exploration* begins in the Dinosaur Discovery Maze! (enTenTen21)

- (27) a. Geology students of the University of Oregon in the past summer *explored for* fossils in Crook, Grant, Wheeler and Lake counties. (OED)
- b. *Exploration for* oil and gas reserves has turned to more remote, and sometimes more costly, locations. (OED)

The implication of a place or territory is also inherent to the ‘Scrutiny’ frame evoked by *explore* (and *exploration*). According to the definition in FrameNet, a ‘Cognizer’ (i.e. a person or other intelligent being) is paying close attention to something, the ‘Ground’, in order to discover and note its salient characteristics. Moreover, the ‘Cognizer’ may be interested in a particular characteristic or entity, the ‘Phenomenon’, that belongs to the ‘Ground’ or is contained in the ‘Ground’. This additional piece of frame information accounts for sentences like those in (27), where the ‘Phenomenon’ is the raw material. The nominal *exploration* closely follows its verbal base *explore*. In both readings, the ‘Ground’, i.e. the place or territory to be scrutinized, may remain unexpressed.

The examples briefly discussed in this section provide additional support for the claim that the argument selection behaviour of derived nominals in their event readings is neither arbitrary nor more flexible than the argument selection behaviour of their verbal bases. If the verbs are strictly transitive, the corresponding nominalizations are not likely to display INI either. However, as shown for *examination* (section 3.1.1), for *construction* (section 3.1.2), and for *installation*, *implementation*, and *evaluation* (cf. the sentences in (22) above), DNI is tolerated by these nominals because referents for the locally omitted arguments are retrievable from the discourse context. Applying Fillmore’s (1986) test criterion for Indefinite and Definite Null Instantiation (cf. section 3.1.1) to derived nouns, it would be odd to say “The installation takes 2 days” without revealing the entity to be installed, whereas an utterance like “This method helps you to avoid constant translation” is perfectly interpretable without reference to a particular text or content. For both verbs and derived nominals, topical DNI (cf. section 3.1.1) frequently occurs in news articles if the argument, which is definitely null-instantiated later in the text, is part of the discourse topic. It may even surface in the headline. If a definitely null-instantiated argument is topical, it is readily reactivated by the reader when he/she comes across the verb or deverbal noun to whose argument structure it belongs.

However, it is a well-known fact that deverbal nouns also have non-event readings in which the argument structure of the underlying verbs is only partially realized, or not at

all. These readings are discussed and systematized on the basis of the Scale of Reification in the following section.

3.2 Reification towards the SUBSTANCE and OBJECT Pole

The reactivation of relations and phases which define the underlying situation is not always possible or may remain fragmentary because of the well-known polysemy displayed by deverbal nouns. An important point to be made here is that the applicability of syntactic strategies to motivate event readings (e.g. the use of temporal or aspectual modifiers) depends on the degree of reification of the underlying situation. Recall that according to Radden & Dirven (2007), situations are reified as either objects or substances. This observation has been elaborated here in a way that SUBSTANCE readings and OBJECT readings do not form a dichotomy, but a bidirectional continuum on a Scale of Reification, as shown in Figure 2 (section 2). The continuum is determined by the accessibility of the temporal relations and argument structure, which decreases towards the SUBSTANCE and the OBJECT pole. It should also be observed that the positions on the scale are symmetric, i.e. each position to the left of the ‘Prototypical Event’ corresponds with an opposing position to the right of the ‘Prototypical Event’, i.e. ‘Quantity’ – ‘Instance(s) of an event’, ‘Result State’ – ‘Result Constitution’, ‘Generic Concept’ – ‘Concrete Entity’.

‘Quantity’ readings (e.g. *all/some construction*) and ‘Instance(s)-of’ readings (e.g. *three examinations*) are closest to the ‘Prototypical-Event’ reading. Although they tend towards the SUBSTANCE and the OBJECT pole, respectively, they are not indifferent to time and hence compatible with aspectual verbs like *start*, *stop*, *continue* etc. and other event markers (e.g. *take place*). Thus, they contrast with the ‘Result-State’ (e.g. *the congestion caused by mindless cellphone use on city sidewalks*) and ‘Result-Constitution’ readings (e.g. *the robust construction of the bridge*), which may still display syntactic relics of the base verb’s argument structure, but for which temporal factors are inaccessible. The last pair, namely ‘Generic Concept’ (e.g. *to study composition*) and ‘Concrete Entity’ (e.g. *Naum Gabo’s Kinetic Construction*), is furthest away from the canonical event reading and coincides with the SUBSTANCE and the OBJECT pole, respectively. At the SUBSTANCE pole, the underlying events are conceptualized as an unbounded, homogeneous ‘mass’ for which no temporal composition is discernible. At the opposite extreme, reification as object

coincides with the highest degree of individuation and physical boundedness. Nevertheless, the readings located at the opposite extremes of the Scale of Reification are not entirely independent of the events denoted by the base verbs either. While the verb's internal argument may surface as the modifier of a synthetic compound in the 'Generic-Concept' reading (e.g. *bridge construction*, *road construction*), the 'Concrete Entity' is a participant that stands in a particular relation to the underlying event (e.g. in the relation of the Agent if the noun *commission* is used to refer to a body of people). In the following sections, this proposal will be exemplified for each of the positions of the Scale of Reification, and more examples of individual patterns are provided in Appendix 3.

3.2.1 'Quantity' vs. 'Instance(s) of an Event'

Let us begin by looking at selected 'Quantity' readings, which are represented immediately to the left of the 'Prototypical-Event' reading and which are typically invoked by quantifiers such as *all*, *some*, or *most*. These quantifiers are compatible with deverbal nouns ending in *-ion* if their denotation can be conceptualized as an 'aggregate' (or overall quantity) of the activity denoted by the verbal base, or as a subset thereof. In contexts like those represented in (28), summary scanning manifests itself most obviously. Here we are dealing with abstractions over construction activities for which the participants involved are irrelevant. Moreover, these activities are not necessarily restricted to a particular place, but may be distributed over different locations.

- (28) a. *All construction* is targeted to be completed by 2010, officials said.
 b. *Some construction* also is being done to accommodate the F-150 SuperCrew and apparently the Blackwood.
 c. *Most construction* takes place at night, according to The Macmillan Illustrated Animal Encyclopedia.

Syntactically, the abstraction over construction activities correlates with the mass interpretation of the deverbal noun. Note that in German, the meaning of *construction* in (28) is expressed by the compound *Bauarbeiten* (literally 'construction works'), which is inherently marked for plural (**die Bauarbeit* 'the construction work') and renders the aspect of collectivity even more tangible. Like *construction* in (28), this noun is unspecific with respect to potential results of or changes caused by the building activities.

Although *construction* deviates from the prototypical event reading in its ‘Quantity’ readings because it lacks syntactically realized arguments, it is important to note that temporal relations still play a role. Evidence comes from the nominal’s compatibility with aspectual expressions like *begin*, *continue*, *stop*, *be completed*, *be under way* or event markers like *take place* or *be done*. As compared to canonical event readings (e.g. *The construction of the chateau began in 2000*) it is interesting to observe that aspectual verbs are followed by the preposition *on* in quite a few contexts in which *construction* displays a mass reading.¹⁷ For example, while the deverbal noun refers to unspecified quantities of construction activities in (28), it conflates all the activities which eventually lead to the completion of a *particular* event in (29). In each of these examples, the aspectual expression picks out a stage of this goal-directed ‘bundle of activities’.

- (29) a. Last year, *construction began on* a new home for the Tacoma Art Museum, which is to open next year.
- b. In the same area in Lagos, *construction has stopped on* a Total gas station that was being built by a company believed to belong to Akhigbe.
- c. Copper will be trucked out, and so *construction is already underway on* a two-lane highway across Laos from Thailand to Vietnam.

In each of these sentences, the phase of the scheduled construction event, which is referred to by the aspectual verb, corresponds with a certain state of the Proto-Patient. In (29a), the temporal adverb *last year* and the verbal constituent *began on* indicate that part of the building which is intended to accommodate the museum must already be finished. As for (29b), the gas station remained unfinished because all construction work was cancelled. In example (29c), the building activities which constitute the event are in progress, and the state of the two-lane highway corresponds with this stage of the event, i.e. it is neither in an initial state nor finished. Each of these sentences presents us with a snapshot that depicts a stage of the abstract nominalized event and the object under construction rather than a sequence of phases which lead to the object’s creation. In other words, the object’s gradual coming into existence relative to an Agent’s activity, which is referred to as ‘homomorphism’ (Dowty 1991: 567), is again irrelevant under summary scanning.

¹⁷ Of course, sentences in which the preposition *on* expresses a temporal relation do not fit the pattern in (29), e.g. *Construction began on January 3, 1870*.

Although the phrases *the Tacoma Art Museum* (29a), *a Total gas station* (29b), and *a two-lane highway across Laos from Thailand to Vietnam* (29c) do not constitute syntactic complements of *construction*, they are interpretable as semantic arguments which the deverbal noun inherits from its base verb *construct*.¹⁸

The position of the ‘Quantity’ reading to the left of the ‘Prototypical-Event’ reading corresponds with the position of the ‘Instance(s)-of’ reading, which is located immediately to the right of the ‘Prototypical-Event’ reading on the Scale of Reification. Although both readings (i.e. ‘Quantity’ and ‘Instance(s) of’) conceptualize very different aspects of the underlying event, they have in common that they allow for temporal anchoring, as shown for *construction* in (28) and for *examination*, *discussion*, and *transaction* in (30). Of course, ‘Instance(s)-of’ readings contrast with ‘Quantity’ readings in that they allow for pluralization, which renders them more ‘thing-like’.

- (30) a. *Each examination* lasts three to five minutes.
 b. *Three discussions* taking 3 hours; this means one hour per discussion.
 c. This case involved *a single transaction*, from which Mr. Howard received no personal benefit.

Finally, it should be pointed out that the abstractness of reified events may be compensated by a variety of adjectives. For example, as far as *examination* is concerned, the data from Gigaword show that this deverbal noun tends to be modified with respect to intensity (e.g. *close, closer, deeper examination showed/revealed that...*), progression (e.g. *further, initial, preliminary*), or a domain of expertise (e.g. *medical, physical, forensic*). These modifiers render the abstract examination event more transparent and help the reader to infer information regarding attention to detail, the stage of the event, procedures that are compatible with the domain of expertise, etc.

3.2.2 ‘Result State’ vs. ‘Result Constitution’

We will now turn to the result readings of *-ion* nominals, whose classification is less straightforward because they make reference to different facets of the underlying events.

¹⁸ Note that a ‘stage’ reading is also conveyed by the construction *examination into*. As pointed out in section 2.1, the preposition *into*, which conceptually encodes a path, emphasizes the investigative process and signals an in-depth examination of the matter under investigation.

In the literature (e.g. Bierwisch 1990–1991); Lieber 2016; Olsen 2020), two subtypes of result readings have been identified, namely ‘Result State’ and ‘Result Object’. While deverbal nouns ending in *-ion* refer to a state which results from an event in their ‘Result-State’ reading (e.g. *The pollution of the lake posed a danger to the community*), they denote the outcome or product of the event denoted by the base verb in their ‘Result-Object’ reading (e.g. *The construction on the hill was in ruins*).¹⁹ Although this distinction is crucial, the data suggest that there is a further subtype of the result reading which has received little attention in the literature and which – unlike the ‘Result-Object’ reading – can be described as ‘semi-concrete’ rather than fully concrete. This subtype will be referred to here as ‘Result Constitution’. Lieber (2016: 122) provides an example of the reading in question (cf. (31)), but describes it very generally as ‘result’.

- (31) She explains that even the DDC, which is used worldwide, is not the ultimate system, and owes its success to external factors as much as to its robust construction.

According to Lieber (2016: 124), a result reading arises “when there is nothing in the surrounding context that suggests a concrete reading.” On the other hand, the adjective *robust*, which modifies *construction* in (31), signals a certain degree of concreteness. This ambivalence, which also manifests itself in the sentences in (32) and (33), provides further support for the hypothesis that reification is gradient.

- (32) But the Empire State’s *construction* was far denser.
- (33) a. Already the *composition* of the vaccine for the next flu season, which unofficially begins Nov. 1, has been decided by the Food and Drug Administration’s Vaccines and Related Biological Products Advisory Committee.
- b. But the *composition* of the Senate is significantly different than it was in 1994, when gun-control advocates had their way.

In these examples, the *-ion* derivatives refer to the physical makeup of an entity (32), the chemical composition of a substance (33a), or the internal structure of an institution (33b). Although nominalizations do not pluralize in the ‘Result-Constitution’ reading (e.g. **the Empire State’s constructions*), they are close to the OBJECT-pole of the Scale of Reification. Like *-ion* nominals denoting products (i.e. result objects), but unlike those denoting

¹⁹ These examples were taken from Olsen (2020: 70) and Lieber (2016: 104), respectively.

instances of events (e.g. *each examination lasts three to five minutes*), they are incompatible with temporal or aspectual modification (e.g. **the composition of the Senate in two weeks*).

Significantly, the ‘Result-Constitution’ reading and the ‘Result-State’ reading occupy opposing positions on the Scale of Reification because they differ in their degree of concreteness. While an *-ion* derivative materializes the result by highlighting the physical or internal makeup of some entity in its ‘Result-Constitution’ reading, it refers to a more abstract, ‘substance-like’ state which is the result (or by-product) of an activity in its ‘Result-State’ reading. The latter reading is incompatible with adjectives like *robust* or *dense* and seems to be well motivated by deverbal nouns whose base verbs lack a Proto-Agent or which are low in agentivity. The following examples from the OED show that nominalizations formed from inchoative (variants of) verbs like *hydrate*, *mineralize*, or *fossilize* quite systematically display a ‘Result-State’ interpretation.

- (34) a. In both conditions of *hydration* the crystals of sulphate of nickel are very beautiful.
 b. The final result of the decomposition of organic bodies by bacteria has been termed *mineralization*.
 c. There were also found a variety of other marine substances, in a state of *fossilization*.

In their inchoative readings, the base verbs of these derivatives, which belong to the scientific vocabulary, denote “internally caused” eventualities in the sense of Levin & Rappaport Hovav (1994: 49), i.e. eventualities which happen without the intervention of an agent.

Moreover, as shown by Bierwisch (1990–1991: 70–72) for German nominalizations formed from psych verbs like *Verärgerung* “annoyance”, *Frustration* “frustration”, or *Irritation* “irritation”, the result state may be caused by a non-human Agent, e.g. *Die Verärgerung (der Bewohner) durch den Lärm dauerte an* “The annoyance (of the inhabitants) by the noise continued”. In this sentence, there is no intentionally acting Proto-Agent that brings about the state of the inhabitants. Instead, the result state is caused by an external factor or stimulus, which merely displays the proto-agent entailment ‘causation’. The low degree of agentivity in result-state readings is also mirrored by Olsen’s (2020: 70) example *The pollution of the lake (*by the factory) posed a danger to the community*. The situation depicted in this sentence is not brought about intentionally either. Like the noise in Bierwisch’s example, the pollution of the lake can rather be viewed

as a negative side-effect of some activity which is not further specified. Both readings discussed in this section – the ‘Result-State’ and the more concrete ‘Result-Constitution’ reading – approach, but do not yet coincide with the SUBSTANCE pole and the OBJECT pole of the Scale of Reification, respectively.

3.2.3 ‘Generic Concept’ vs. ‘Concrete Entity’

Finally, we will turn to those readings of *-ion* nominals which are located at the leftmost and the rightmost pole of the scale of Reification. These are the readings which display the highest degree of abstractness and the highest degree of concreteness, respectively, and which are referred to here as ‘Generic Concept’ and ‘Concrete Entity’. In one subtype of the ‘Generic Concept’ reading, deverbal *-ion* nominals refer to economic factors which can be measured statistically. Although this reading is close to the ‘Quantity’ reading (cf. (28)), an important difference is that it is incompatible with aspectual verbs like *begin*, *stop*, *continue*, etc. because there is no occurrence in real time. In (35a), for instance, *construction* refers to the total amount of construction activity that took place in a particular region or in a given survey period. The course of this abstract, internally unstructured whole is subject to economic fluctuations, which are typically expressed by motion verbs such as *fall*, *rise*, *decrease*, etc. If the derivative *production* surfaces in the subject position of these motion verbs, as in (35b), the dynamics of the output of goods and services in a particular sector or region is evoked. This kind of abstract movement, which depends on a variety of factors such as long-term investments, building permits, weather conditions etc. (in the case of *construction*) or supply and demand, availability of resources, supply chains, etc. (in the case of *production*), can only be measured statistically. In other words, it is abstract to a degree that it cannot be perceived as going on in the extra-linguistic world. Abstract movement can also be observed for *consumption* in (35c).

- (35) a. In the Midwest, *construction* fell 15 percent; in the South it dropped 12 percent.
 b. Trade rumors swirled, and Hull’s *production* plummeted.
 c. A simple and fundamental principle of economics is that *consumption* increases as goods become more attractive to the consumer.

These sentences involve an interesting interaction of summary scanning and sequential scanning. On the one hand, the mass readings of *construction*, *production* and *consumption*,

which bundle all the components that make up the economic concepts CONSTRUCTION, PRODUCTION, and CONSUMPTION, are the result of summary scanning. On the other hand, each of the deverbal nouns occurs in the subject position of unaccusative verbs like *fall*, *plummet*, or *increase*. According to Lieber (2004: 29–35) verbs like these bear a semantic feature [+IEPS] “Inferable Eventual Position or State”, which encodes a PATH consisting of a sequence of PLACES or STATES. Given the two modes of construal identified in Cognitive Linguistics, this definition suggests that the processes denoted by these verbs are scanned sequentially. However, since we are dealing here with abstract rather than physical movement, the sentences in (35) are describable as instances of fictive motion. According to Matlock (2004), a characteristic of fictive motion is that a motion verb describes an inherently static scene, “but evokes the simulation of ‘movement’ or ‘scanning’ along a trajectory through imagined space.” As far as the above sentences are concerned, the reader as the ‘conceptualizer’ is invited to mentally track the imaginary path which metaphorically represents the scalar change.

Significantly, the temporal structure of the base verbs is no longer accessible in these compact, non-eventive readings of *construction*, *production*, and *consumption*. By contrast, the inherited internal argument can be realized syntactically, i.e. in the form of an *of*-PP. However, as shown in (36), the *of*-PPs do not induce event readings, but merely restrict the type of the economic factor which is subject to scalar change and to which the figures apply.

- (36) a. *Construction of single-family homes* rose 2.7 percent in July, while *construction of multi-family buildings* fell.
- b. *Production of leather goods* fell 19.4 percent, and *production of textiles* declined 10.8 percent.
- c. Brazilian *consumption of oil products* fell 2.9 percent in December, part of a general economic slowdown caused by government measures to cut spending and raise taxes.

An even higher degree of abstraction is achieved if an *-ion* nominal is interpreted as a sector or domain of expertise (e.g. *Photography wasn’t something Art’s father taught him, but construction was*). In this subtype of the ‘Generic-Concept’ reading, neither temporal modification nor syntactic argument realization are possible. Nevertheless, a “relic” of the

inherited internal argument may surface as the modifier of a synthetic compound headed by the deverbal noun, e.g. *bridge construction, oil production, energy consumption*.

At this point, it is important to emphasize that the readings discussed so far are transpositional and hence semantically related to the meaning of their base verbs. According to Olsen (2020: 69), “[...] 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.” This criterion is not fulfilled if deverbal nouns refer to ‘Concrete Entities’ and hence display the highest degree of reification (e.g. *The construction is just huge*). In the literature (e.g. Grimshaw 1990, Borer 2003, Bierwisch 2015, Lieber 2016, Olsen 2019, 2020), it has been observed that the so-called “R[eferential] nominals” differ from event nominals in that they do not take arguments and display a variety of unpredictable readings. In these “secondary readings” (Lieber 2016; Olsen 2020), deverbal nouns are countable and denote a participant involved in the underlying event. As far as *-ion* nominals formed from telic verbs are concerned, the profiled participant is typically though not necessarily the product of the underlying event, which is also referred to as ‘inanimate patient’ (Lieber 2016: 62) or ‘result object’ Olsen (2020: 72). If *-ion* nominals denote the concrete outcome of an activity, they are incompatible with temporal or aspectual expressions (e.g. **The compositions took an hour*) and do not allow for the syntactic realization of the internal argument of the verbal base, e.g. *Beethoven’s compositions (*of sonatas)*. However, a significant observation made by Bierwisch (1990–1991: 74–76) and Lieber (2016: 125f) is that an *of*-PP is allowed if the complement of the preposition denotes an entity which exists independently of the event denoted by the base verb. For example, while the sonatas cannot be specified as a complement in the above sentence because they are the ‘effected objects’, i.e. the objects brought about by composing (hence the co-reference of *compositions* and *sonatas*), nouns which “elaborate” (Lieber 2016: 125) the denotation of the deverbal noun are acceptable as complements.²⁰ The following examples from Gigaword illustrate this point.

²⁰ Bierwisch (1990–1991: 74–76) discusses this subtle difference on the basis of the German result nominals *Komposition* (“composition”) and *Vertonung* (“setting to music”).

- (37) a. Golden says CuraGen has created *visualizations* of known genes and compares them to newly-discovered genes that may control similar functions in the body.
- b. His debut came in a Stratford *production* of Christopher Marlowe’s “Tamburlaine the Great” in 1956, directed by Guthrie.
- c. Recent archeological finds and new *interpretations* of historical documents, he said, cast a new light on the Vikings, also known as the Norse [...]

Apart from the Inanimate Patient, further participants which can be encoded in *-ion* nominalizations are the Agent, the Instrument/Mean, the Theme, the Location, and the Path (Lieber 2016, Olsen 2020). Given the polysemy of deverbal nouns in their referential readings, Bierwisch (1990–1991, 2015) proposes an analysis within the framework of Generative Grammar according to which these readings are metonymic extensions of the (transpositional) event reading to which they are conceptually related.²¹ Formally, the metonymic readings are created by a shift operation which shifts the reference from the event to a participant in the event, or to the location of the event. As a result of the metonymic shift, the arguments which the nominal inherited from its verbal base are suppressed.

From the point of view of Cognitive Linguistics, however, a formal shift operation is not even required because the derivative itself in its event reading may provide mental access to something that is related to the event – especially to a participant involved in it. A metonymic approach to derivational polysemy has been proposed for example by Ryder (1991) and Panther & Thornburg (2001) for *-er* derivatives which deviate from the prototypical deverbal agent nouns (e.g. *Wall Streeter*, *eater* “apple”, *blue-chipper*) and by Brdar & Brdar-Szabó (2014) for the noun *collection*, which displays a variety of meaning components. If Lieber (2016: 122) and Olsen (2020: 27) state that deverbal nouns may refer to the Agent, the (Inanimate) Patient, the Instrument, the Location, or a Path in their secondary readings, these relations can be directly expressed in terms of metonymy. Apart from sentence (38d), which was taken from the OED, all the examples presented below were taken from Gigaword.²²

²¹ Cf. Olsen (2020: 73f) for a detailed discussion of Bierwisch’s approach.

²² The reversal of metonymic relations like those presented in (38) motivates the construal of events from participants. This process is traditionally referred to as noun-to-verb conversion, e.g. INSTRUMENT FOR ACTION (*to paper-clip*), GOAL FOR MOTION (e.g. *to orbit*), AGENT FOR ACTION (*to author*); cf. for example Kövecses &

- (38) a. The *association* argued that payment for only two-tenths of 1 percent of home health care visits was denied as unnecessary. (EVENT FOR AGENT)
- b. The *addition* was a brilliant idea, long overdue. (EVENT FOR THEME)
- c. Sometimes, the *application* can be closed and then restarted, but sometimes your entire system must be restarted. (EVENT FOR INSTRUMENT)
- d. The island..at the *bifurcation* of the Rhine and the Waal. (EVENT FOR LOCATION)

A metonymic relation is established if a concept A (the metonymic vehicle or source) stands for or represents a concept B (the metonymic target) which is related to A in a way that it can be readily inferred from this source concept without being made explicit. According to Brdar & Brdar-Szabó (2014: 332), the basic function of metonymy is that of a “mental shortcut” which allows speakers to refer to concepts whose expression would otherwise be linguistically complex in a more economical way (e.g. *the ham sandwich* vs. *the person ordering a ham sandwich*). The metonymic approach to secondary readings is well compatible with the summary view of the prototypical event reading motivated by *-ion* derivatives (and other deverbal nouns). While the relations holding within the event are backgrounded in the course of the nominalization process, sentences like those in (38) show that the event as an abstract, atemporal whole can serve as a conceptual link to one of the participants it incorporates. At a higher level of abstraction, the relations in (38) instantiate the metonymy WHOLE FOR PART, which mirrors the holistic view of the reified event. Moreover, while syntactic and word-internal argument realization are blocked at the OBJECT pole of the Scale of Reification, the metonymic activation of individual participants further supports the view that deverbal nouns inherit the semantic argument structure of their verbal bases. As pointed out in section 1, approaches that dispense with argument inheritance would have to explain how roles such as Agent, Patient, or Location are identifiable for the respective referents because these roles have to be defined relative to some event denoted by the base verb. Although *-ion* nominals with ‘Concrete-Entity’ (i.e. referential) readings are not transpositional, they are not entirely idiosyncratic if a cognitive link between the prototypical reified event and a participant involved in the event can be established.

Radden (1998), Dirven (1999), Ruiz de Mendoza Ibáñez & Pérez Hernández (2001), Bauer (2018), Baeskow (e.g. 2021, 2022).

As far as language use is concerned, it is assumed here that secondary referential readings like those exemplified in (38) and supplemented in Appendix 3 are motivated by paradigmatic pressure, i.e. “the need to fill an empty slot in the derivational paradigm” (Lieber 2016: 132). As pointed out by Lieber (2004: 73f), a paradigmatic need may be satisfied either by means of a default process (e.g. conversion or the substantivation of a participle) or by forming a derivative by means of a productive and semantically close affix and to tolerate potential violations of the affix’s selectional restrictions (e.g. *sleeper*, *greener*). As shown in (38), a further possibility is metonymic meaning extension – a non-derivational process which creates new senses directly from conventionalized derivatives (cf. Olsen 2020: 73 for a similar view).

4. Summary and Outlook

Proceeding from the cognitive view that nominalization (exemplified here for *-ion* nominals) involves the reification and hence a more holistic construal of the events denoted by the base verbs, this article proposed that the well-known polysemy of deverbal nouns, which manifests itself in their oscillation between event readings and referential readings, depends on the degree of reification of the underlying events. Significantly, reification is not reduced to the mass-count distinction, but understood as a continuum on a bidirectional scale (cf. Figure 2 in section 2). While prototypical event readings occupy a medium position on the Scale of Reification, other readings tend towards or coincide with the SUBSTANCE pole on the left or the OBJECT pole on the right, and the verb-like behaviour of the deverbal nouns decreases accordingly. Thus, there are readings between the opposite poles of the Scale of Reification which render the underlying events more ‘substance-like’ or more ‘object-like’. Moreover, each position to the left of the ‘Prototypical-Event’ reading contrasts with a position to the right of this reading. Two detailed contrastive studies of the pairs *examine* – *examination* and *construct* – *construction* as well as a more general discussion of six further verb-noun pairs suggest that nominalizations follow their verbal bases with respect to argument realization and omission in their prototypical event readings. While “relics” of the argument structure are preserved even in less central readings, the deverbal nouns’ compatibility with temporal

and aspectual modifiers decreases towards the SUBSTANCE and the OBJECT pole of the Scale of Reification. Significantly, the readings of a deverbal noun may be distributed over different positions of the scale – depending on the context.

Due to the high frequency of occurrence of deverbal nouns in the newswire articles provided by Gigaword and the well-known polysemy of these nouns, the analyses presented in this study had to be restricted to qualitative corpus analyses of *-ion* derivatives. Nevertheless, the Scale of Reification proposed here is intended to serve as a template for further studies, which might include analyses of derivatives displaying different nominalizing suffixes, or quantitative analyses. Although the symmetric arrangement of the positions should be preserved, the scale is dynamic and hence allows for extension (or modification, if required).

In view of doublets like {construct}_V : {construction}_N vs. {construe}_V : {construal}_N, {produce}_V : {production}_N vs. {produce}_V : {produce}_N, and other forms displaying Latinate roots such as {erect}_V, which might suggest the possibility of back-formation, an anonymous reviewer points out that the identification of potential correlations between morphological patterns and semantic attributes might be worth pursuing. At this stage, the interesting question whether such correlations exist cannot be answered because the matter is too complex and requires precise empirical analyses. In particular, the answer is complicated by the fact that many of these complex forms are not the results of transparent English word-formation processes, but borrowings from Latin or French.²³ However, in line with the well-established view that redundancy (or synonymy) is avoided in word-formation (e.g. Lieber 2004: 161, Lindsay & Aronoff 2013), it should be legitimate to state without speculation that these Latinate patterns have the potential to create synchronically observable semantic differentiation. Thus, for example, we can observe that the meaning of *construct*_N is more specialized than the semantics of the polysemous noun *construction* (cf. (7) in section 2) and that it lacks the prototypical event reading productively displayed by the *-ion* nominal. Significantly, *construct*_N differs from *construction* (in its referential reading) in that it denotes the result of a mental process rather than a material structure such as a building or a work of art. According to the OED,

²³ A recent diachronic account of the polysemy displayed by English action and agentive nominalizations, which is concerned with the influence of structural information and usage on the development of meaning components, has been provided by Bauer (2024).

it primarily refers to a concept, idea or belief formed on the basis of (subjective) experience, perception, impressions, or collective views. Hence its occurrence in phrases like *a social/political/cultural construct*. The pattern {construct}_V : {construction}_N is in complementary distribution with the pattern {construe}_V : {construal}_N. While *construction* in its ‘Product/Inanimate Patient’ reading denotes an effected object, *construal* – if followed by an *of*-PP – has an elaborating function. The following sentences from enTenTen21 illustrate this point.

- (39) a. He concludes that “a Thomistic *construal of natural law* requires maintaining a stronger distinction between nature and grace than de Lubac’s collapsing of this distinction tends to allow [...].”
- b. Last, joy is complex in that it coparticipates in the social *construal of reality*.
- c. Yet, this text challenges all such *construal of the world* in terms of our own efforts or in terms of our own ambitions apart from God.

As in phrases like *visualizations of known genes, a Stratford production of Christopher Marlowe’s “Tamburlaine the Great”, or new interpretations of historical documents* (cf. (37) in section 3.2.3), the NP complements *natural law* (39a), *reality* (39b) and *the world* (39c) of the preposition *of* are not created, but exist independently of the event denoted by the nominalization. They are merely subject to human interpretation (and hence elaboration) at a highly abstract level. This kind of elaboration is not conveyed by *construction*.

Furthermore, consider the triplet {produce}_V : {produce}_N : {product}_N. Interestingly, the noun *produce* originally conveyed the event reading “the action or fact of producing; production of something specified”, which according to the OED is now rare. Due to meaning specification, it now mainly refers to agricultural and natural products, e.g. *Even so, remember that you need to handle anything organic – meat, poultry, produce – the same as nonorganic [...]*; (Gigaword). In this mass reading, it contrasts with the count noun {product}_N, which is rather associated with manufactured goods. While {product}_N instantiates the ‘Concrete-Entity’ reading at the OBJECT pole of the Scale of Reification (i.e. Product (‘effected object’)), the meaning of its competitor {produce}_N, which allows for quantification (e.g. *Spinach and virtually all produce is vulnerable to contamination in many ways*; Gigaword), is located near the SUBSTANCE pole (‘Quantity’ reading). The

identification of generalizations which go beyond these “micro-level” observations must be left to future research.

Nevertheless, it should be possible – at least to some extent – to integrate the findings on *-ion* derivatives into the overall picture of English nominalization. To begin with, the suffix *-ion* is in competition with the suffix *-ing*, the far less productive suffixes *-ment*, *-al*, *-ance/-ence*, and *-ure*, which only occasionally surface in novel nouns (cf. Bauer, Lieber & Plag 2013: 199–200), and deverbal conversion. As pointed out by these authors, all English verbs (except auxiliaries) have nominal forms in *-ing*, whose semantics is “more active and typically less lexicalized” than the semantics of other types of nominalization (2013: 202). Moreover, as far as the non-native competitors *-(at)ion*, *-ment*, *-al*, *-ance/-ence* and *-ure* are concerned, “only *-ation* displays a substantial degree of productivity in contemporary English.” (Bauer, Lieber & Plag 2013: 196) While all noun-forming devices of English have the potential to create event readings (cf. Lieber 2016: 36–37), a tentative hypothesis is that the *-ing* and *-ion* nominals share a relatively high disposition towards the reactivation of the backgrounded relations and phases which define the underlying events, whereas contextually induced interpretations displaying higher degrees of reification are tolerated. In other words, the nouns displaying these suffixes prototypically function to convey (moderately reified) event readings which may be contextually overridden by other readings represented on the Scale of Reification.²⁴ Conversely, derivatives displaying the less productive suffixes *-ment*, *-al*, *-ance/-ence*, and *-ure* inherently imply a higher (or high) degree of reification and hence prompt summary scanning in a stricter sense (cf. Fig. 1 in section 2). In this case, it is the contextually generated event reading that is tolerated by the suffixes at least to a certain extent. As far as *-ing* derivatives are concerned, this hypothesis is supported by Lieber & Plag’s data-driven analyses according to which “there is a clear tendency for *-ing* nominalizations to express eventive readings, but referential readings are possible as well.” (Lieber & Plag 2022: 309) Correlations between deverbal conversion nouns and event/referential readings are not immediately obvious. The quantitative analyses performed by Lieber & Plag (2022: 321–322) have shown that

²⁴ For example, sentences from enTenTen21 show that further possible meaning components of *-ing* comprise ‘Generic Concept’ (e.g. *unforced breaking*), ‘Result State’ (e.g. *blessing*, *blocking*), ‘Quantity’ (e.g. *all the destroying*), ‘Instance(s) of’ (e.g. *frequent meetings*, *constant warnings*), or ‘Concrete Entity’ (e.g. *baking* (effected object), *reading* (elaboration), *turning* (location)).

contrary to claims made in the literature, the event readings activated by the conversion nouns of their dataset slightly outnumber referential readings. On the one hand, this finding seems to be in conflict with the concise expression of the underlying events by conversion nouns (which intuitively suggests the atemporal, gestalt-like summary view). On the other hand, this result is less surprising if we recall the transpositional/non-transpositional distinction mentioned in section 3.2.3. If deverbal conversion nouns are transpositional, i.e. used in close relation to the verbal meaning (e.g. *control_N*, *attack_N*, *climb_N*, *fight_N*, etc.), the creation of event readings should be unproblematic. However, if these nouns are non-transpositional, the internal structure of their base verbs is suppressed and their meanings are strongly reified (e.g. *build_N* “bodily shape or physique”, *look* “appearance, style”, *lift* “elevator”, *cut_N* “a piece or slice of meat”).

Of course, a certain degree of semantic overlap between the word-formation patterns sketched above, which cannot be further pursued in the present study, should be expected.²⁵ Moreover, it should be re-emphasized at this point that whenever the event reading located at the centre of the Scale of Reification is activated, the nominal follows its verbal base with respect to complement realization and null instantiation of the complement. The following sample of sentences from enTenTen21 whose derivatives go beyond *-ion* nominalizations illustrates this point.²⁶

- (40) a. Never mind the almost 24/7 *smoking* and *drinking*, but the intentional *destroying* *(of friendships) and the vicious ways he fought his “enemies” – going for the jugular and their destruction. [INI for *smoking* and *drinking*; no null instantiation for *destroying*]
- b. This can be, for example, the intentional *breaking* *(of window glass).
- c. I think the constant *renewal* *(of individual interests) is important in the field of electron device research.
- d. The degree to which a warrior foregoes peeling a sand flea before he eats it, therefore, signals the warrior’s “kiete bukadz,” or “robustness.” Following the successful *devouring*, he may yell out “euliomongi,” or “dominance!” [DNI]
- e. Given the content of the epigram, it is unlikely to have been an accidental placement but was instead the intentional *placement* by an editor. [DNI]

²⁵ For a detailed analysis of the ‘ecology’ of English nouns, the reader is referred to Lieber (2016). Morphological, phonological and semantic properties of English nominalizations are discussed by Bauer, Lieber & Plag (2013: 195–215).

²⁶ In (40a) – (40c), the asterisk and the parentheses, which signal non-omissibility of the complement, were inserted by the author of this article.

- f. ISW can assist you in the day-to-day *maintenance* of your website, even if someone else did the original *development* and *implementation*. [complement of *maintenance* shared by *development* and *implementation*; DNI]

Finally, recall that according to Radden & Dirven (2007), reification of situations is not restricted to nouns derived from verbs. Nouns denoting reified episodic or steady situations include for example simplexes like *idea*, *pain* (episodic situations) or *war*, *peace* (steady situations). Thus, the paradigmatically organized Scale of Reification also allows us to account for the ‘event-like’ properties of nouns such as *trip* or *race* (e.g. Grimshaw 1990: 58f) because their episodic readings are located immediately to the right of the ‘Prototypical-Event’ position. In this position, they pattern with deverbal nouns like *examination* (in a phrase like *repeated examinations*) or *assignment* (in a phrase like *that assignment*). Similarly, the meaning of the non-deverbal noun *autopsy* patterns with the ‘Prototypical-Event’ reading of *examination* and other deverbal nouns in a sentence like *A team of engineers and forensic analysts on Tuesday launched a high-profile autopsy of the blowout preventer from the Deepwater Horizon* (Gigaword). Thus, the Scale of Reification helps us not only to systematize the multiple readings of the *-ion* derivatives under consideration and possibly of other deverbal nouns, but also accommodates event-like readings of nouns which lack a verbal base (e.g. *autopsy*, *trip*).

Moreover, like verbs and their derived nominals, these nouns evoke frames in the sense of Fillmore’s Frame Semantics. While frames help to fill in missing information if the derived nominal – like its verbal base – allows for Indefinite Null Instantiation, they also provide configurations of Frame Elements (FEs) for non-deverbal nouns which can be paired with valence patterns. For example, according to FrameNet, nouns like *trip*, *journey*, *voyage*, *tour*, or *safari* evoke the ‘Travel’ frame which specifies ‘Traveler’, ‘Area’, ‘Direction’, ‘Source’, ‘Path’, ‘Goal’ and ‘Mode_of_transporation’ as core FEs. Further components of the frame, such as ‘Distance’, ‘Duration’, ‘Manner’, or ‘Speed’, are optional and hence constitute non-core FEs. Since frame-element configurations correspond with valence patterns in which each active FE is associated with a phrase type and a grammatical function (cf. for example Fillmore et al. 2003, Fillmore & Baker 2009, Boas 2021), frame information is well-suited to account for event-like readings of simplex nouns which as such lack an underlying verbal argument structure.

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Denominal Converted Verbs with Particles in English: Unlocking the Semantic-Ontological Role of Nominal Bases and Particles through a Lexical-Semantic Approach*

Abstract: This paper investigates the interaction between particle verb formation and noun-to-verb conversion in English complex verbs such as *lawyer up* and *fence off*, using a framework built on the findings of the lexical-semantic investigations into the latter process. Although the syntax and semantics of English denominal conversion verbs have been well studied, the issue of how a particle can be integrated has not yet been explored. This paper addresses this issue by examining (i) which conversion verb type prefers which particle (*up*, *out*, *off*, or *down*) and (ii) how the rich lexical semantics of the base noun and the particle contribute to the production and interpretation of new verbs. Regarding the first question, the correlation is particularly evident in the following pairings: Instrumental and *out*, Similitative and *out*, Ornative and *up*, Performative and *out*, Causative and *out*, Inchoative and *up*, and Privative and *off*. Regarding the second question, we observe that cognitive image schemas, such as UP IS MORE and BODIES ARE CONTAINERS, underlie the interplay between the noun and the particle. Overall, the results lend support to the lexical-semantic approach to conversion and particle verbs, particularly from a cognitive-semantic perspective.

Keywords: particle verbs, denominal converted verbs, lexical-semantic approach, content ontologies

1. Introduction

In Germanic linguistics, the syntax and semantics of particle verbs have been a core research topic since at least the 1920s (Kennedy 1920; Klima 1965; Potter 1965; Bolinger 1971; Fraser 1976; Brinton 1988; Denison 1993; Dehé et al. 2002; Huddleston & Pullum 2002; Jackendoff 2002; Cappelle 2005, 2023; Los et al. 2012; Thim 2012; Goldberg 2016). In Present-day English, particle verbs consist of a verb and a particle that is usually

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homonymous with an adverb or a preposition. The particle follows the verb and can be separated from it:

- (1) a. Suzanne *looked up* the information
 b. Suzanne *looked* the information *up*. (Los et al. 2012: 5)

Syntactically, particle and prepositional verbs should be distinguished; examples such as *to kayak down the river* contain prepositional rather than particle verbs (Denison 1993). The semantic function of the particle that combines with a verb is threefold: directional, aspectual (or completive), and non-compositional or idiomatic (Jackendoff 2002), but these functions can be synthesized in a particle, as in the direction/aspectual combination in (1) and *gather up*, or the aspectual/intensity combination in *gobble up* (Machonis 2009). Despite their syntactic separability, the verb and the particle constitute a tight unit, as evidenced by the unit's semi-idiomatic semantics (e.g., "search for" in [1]) and its participation in word-formation, specifically verb-to-noun conversion:

- (2) a. dictionary *lookups*, a fallout, a break-up, a kick-off, a break-in
 b. a *lookup* table, a pull-down menu, a dial-up connection
 (nonitalicized examples taken from Los et al. 2012: 5)

Complex nouns of this type are considered to be the nominalization of particle verbs, as they inherit the semantics of the corresponding particle verb combination. Also, this type has overt nominalization analogues such as *dropper-in* and *finder-out* (Bauer 1983: 288–289). Los et al. (2012) summarily describe these behaviors of particle verbs as a paradox, meaning that the construction lies at the intersection of syntax, semantics, and morphology. Put differently, it is ill situated in a modular view of grammatical architecture.

The topic of this paper is another, lesser-known type of paradoxical behavior exhibited by English particle verbs: their interaction with denominal verb conversion within a single construction, as illustrated by *elbow out* and *lawyer up* in (3).

- (3) a. She *elbowed out* a rival to get to the front row of the concert. (pickvocab.com)
 b. He hasn't even *lawyered up*, and thinks he can represent himself in court and take custody of the kids. (CED, online)

Here, noun-to-verb conversion, a highly productive word-formation process in English, occurs alongside particle verb formation. This raises an interface-related issue concerning whether the phenomenon illustrates particle verbs to which a noun has been incorporated or converted verbs to which a particle has been added. The former perspective is entirely conceivable within a generativist neo-constructionist approach inspired by Hale & Keyser's (1993, 2002) L-syntax framework. Thus, Miller (2014: 71–74) proposes a neo-constructionist analysis of the nominalization in (2), according to which the verb phrase structure of a particle verb is nominalized by a zero noun or affix occupying the head N position. Following this logic, the verbalization in (3) could be seen as a similar process, whereby the ROOT (such as ELBOW and LAWYER) is incorporated into the V position of the same structure. Significantly, under this approach, the process of conversion is not involved in either (2) or (3).¹ Some might consider this satisfactory because the conversion analysis of the nominalization in (2) is debatable, given the prosodic shift that usually accompanies the category shift (e.g., *look úp* ~ *lók up*). However, no comparable fact is observed for the verbalization in (3). In this paper, we demonstrate that the process of conversion is truly active in the latter case, confirming that the structures of *elbow out* and *lawyer up* are “converted verbs + particle” rather than “particle verbs + noun incorporation”. We argue for this conclusion through a systematic comparison of the verbalization in (3) with denominal verb conversion. This exploration not only confirms the active involvement of the noun-to-verb conversion in (3) but also provides novel evidence for the central role of the base noun in enabling language users to produce and/or interpret a new verb. In the context of the research paradigm of conversion in English, this outcome will help alleviate the excessive burden that has been placed on the verb (phrase) structure since Hale & Keyser (1993, 2002). For the research paradigm of particle verbs, it will not resolve the

¹ An anonymous reviewer asks how the issue of directionality of conversion affects our exploration. From a theoretical point of view, the answer is linked to one's stance on the structure of nominalization in (2) and verbalization in (3). A neo-constructionist perspective is likely to attach less importance to directionality (see Koontz-Garboden 2014 for more details). In contrast, directionality is important in a lexicalist conversion perspective, such as the one adopted in this paper. Firstly, as corroborated by the present study, the base noun information is inherited by the resulting conversion verb, and the information of the latter is in turn inherited by the particled denominal verb. The logic of inheritance (and probably override) would be difficult to maintain in a nondirectional approach. Secondly, nominalization of a particled denominal verb appears to be very rare. This observation, if confirmed by future empirical research, will lend support to the directionality of nominalization in (2) and verbalization in (3), as the “oscillational” conversion in the form of N > V > N or V > N > V is uncommon in itself (Nagano 2008a).

paradox but rather reinforce it. The broader theoretical implications of the structural pathway of the complex verbs in (3) are profound, intricately linked to the mechanisms of category change, compositionality, and the role of world knowledge in constructional meaning.

In the literature, there is paucity of research and insufficient databases regarding the type in (3). A few studies dealing with this construction all highlight the categorizing role of the co-occurring particle, drawing on the existence of denominal verbs that are admitted only in the presence of a particle. Observing that particle verbs are rarely formed with affixed verbs (cf., the parallelism between [2] and *dropper-in*), Nagano (2008a: 137–138) claims that the particle in (3) acts as a category marker, a functional equivalent of the verb-forming affix. McIntyre (2015: 1420) points out that “[m]any CDVs [complex denominal verbs] are unacceptable without preverbs. For example, *they sexed up the theory* ‘made it more appealing’ lacks a corresponding use of *sex_v* without *up*.” However, the licensing particles also make an essential contribution to semantic composition. The particle *out* in *...so now they’re Disneyed out* is essential not only in its categorizing function analogous to *-ize* in *Disneyize* but also in conveying the original meaning “to have dealt with Disney to such an extent that one does not wish to deal with it anymore” (Debouzie 2024: 304). In fact, Jackendoff (2002) posits i) *be+V/N-ed+out* (as in *be coffeed out*) and ii) *V/N+out* (as in *freak out*) as semi-productive construction idioms involving a denominal verb (“V/N”), where the former pertains to an ornative frame while the latter is a similitive one. In the former, *out* resembles a bound morpheme in that it has a force that determines the valency of the construction and, as Hugou (2013: 84) puts it, “it is a word with a specific meaning within this construction”. This means that the original lexical semantics of *out* is overridden by the meaning of the idiomatic construction.

We believe that the verbalization in (3) is compositional, with its components amalgamated not arbitrarily. Instead, the nominal base provides access to the type of actional frame, and the particle indicates the result of this action. The alignment of a particle with a particular type of nominal meaning, as understood through the frame-semantic category (FSC) approach, must be grounded in world-knowledge compatibility. To confirm this hypothesis, the remainder of this paper addresses the following research questions:

- Is there a correlation between the denominal verb's frame-semantic category (e.g., instrumental, similative, inchoative, etc.) and the particle choice?
- If there are FSC-particle correlations, are these also dependent on the (relational) ontologies that emerge from the content ontologies/functions of the base noun and the particle in world knowledge?

The paper proceeds as follows: the next section discusses the basic framework of our investigation, while section 3 introduces our datasets extracted from the *enTenTen21* corpus. Section 4 addresses the two research questions, with sections 4.1 and 4.2 addressing the first research question and section 4.3 addresses the second research question. Section 5 concludes the study. Below, the type in (3) is called NV-Ps (standing for "denominal verbs with a particle").

2. Theoretical Framework

2.1 The Lexical Semantic Approach to Conversion

The semantic, syntactic, and morphological aspects of noun-to-verb conversion in English have long been a topic of intense investigation (Clark & Clark 1979; Bauer 1983, 2018; Štekauer 1996; Lieber 1998, 2004; Plag 1999; Baeskow 2006, 2024, 2026; Nagano 2008a, 2008b; Garcia Velasco 2009; Cetnarowska 2011; Štekauer et al. 2011; Martsa 2013; Varela 2020, 2023; Michaelis & Hsiao 2021; Barbu et al. 2023; Debouzie 2024, among many others). Our framework is based on these previous lexical-semantic investigations and their connection to the semantics-syntax interface of denominal verb conversion, with the assumption that the observed mappings are preserved in NV-P constructions.

Firstly, denominal verbs are associated with certain lexical semantic representations that determine their basic syntactic and semantic properties, particularly their argument structure (including the arguments' semantic or theta roles) and lexical aspect (Lieber 1998, 2004; Plag 1999; Los et al. 2012; Valera 2020). While scholars use different names and formalizations for these representations, such as frame-semantic categories (FSCs) (Fillmore 1976, 2006; Boas 2008) or lexical conceptual structures (LCSs) (Levin & Rappaport 1995, 2005), this debate will not be addressed here. What is far more important

is how the meanings of particles such as *up*, *down*, *out*, and *off* are integrated into the conversion verb frame, thereby expanding and enriching it. For this integration to succeed, there must be a certain degree of semantic compatibility between the particle and the nominal base, in the same way that, for instance, aspectual (or completive) particles interact with accomplishment verbs (Hampe 2002: 86).

Specifically, we start our investigation by classifying NV-Ps into Lieber's (2004: 89-95) ten classes of denominal conversion: *instrumental* ('use N'), *ornative* ('provide with N'), *similative* ('act like N'), *motive* ('move [on/at] N'), *performative* ('do N'), *locative* ('put into N'), *causative* ('make [into] N'), *inchoative* ('become N'), *privative* ('remove N'), and *stative* ('be N'). Next, we expand the semantic frames of these conversion classes with the contribution of the particle by examining concrete NV-Ps as used in sentences. The resulting 'construction-level' decompositional representation captures the argument-structures of NV-Ps and the semantic roles of their arguments (see Appendix for a summary). In other words, the basic syntactic and semantic profile of NV-Ps is determined at this level. Each expanded verb frame consists of four variables: subject [x], object [y], base noun [z], and the particle [w]. The frames identify monovalent or intransitive NV-Ps (e.g., *They beer up*), divalent or transitive NV-Ps (e.g., *She phoned me up*), and divalent NV-Ps with a prepositional phrase (e.g., *They helicoptered down in the forest*). They also capture the semantic roles of syntactic arguments. For example, instrumental NV-P *phone up* involves the subject as an agent using an instrument and the object as a patient receiving the action.

By way of illustration, an ornative frame is presented below.

[x PROVIDE y WITH [[z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]]

This frame, which is labelled Orn_3 in Appendix, underlies NV-Ps such as those in (4a–c).

- (4) a. *light up* "to become or to make something bright with light or color" (OED3)
e.g., The waterfall was *lit up* at night with pink and green floodlights.
- b. *spirit up* "to infuse spirit into (a person, or his or her attributes)" (OED3)
e.g., This, no doubt, is intended to *spirit up* the desponding.
- c. *pension off* "to dismiss someone from service with a pension" (OED3)
e.g., She was *pensioned off* at the age of 56.

The base noun *light*_N is inserted into the change of location/state frame under the role of theme (i.e., something that moves), while the agent (or the causer of the change) and the goal remain as variables ([x], [y]) that will be realized as the syntactic subject and object, respectively. In this case, the particle is integrated into this ornative frame as a result component. As we will discuss in the next section, the integration of the particle depends not only on the type of host conversion verb used, but also on how the speaker interprets the base noun and particle ontologies. The noun *light* in (4a) possesses the feature [property], *spirit* in (4b) [emotion], and *pension* in (4c) [resource], for instance. This rich semantics of the base noun —its semantic “body” (Lieber 2004) — is employed at this step.

Indeed, the data reveal a complex interplay between the base noun and the particle. For instance, the noun *chunk* in (5) associates with *down* to express a change of state where a complex entity (concrete or abstract) is disaggregated into smaller parts.

- (5) Do you know for sure how to *chunk down* your big vision into doable steps to generate income over the next 30 days? (24-7pressrelease.com)

However, when the same noun is associated with *up*, viz., *chunk up*, the expressed change of state is amalgamation. From a conceptual point of view, this explicit semantic contrast is rooted in the working of the image schemas LOW STATUS IS DOWN and HIGH STATUS IS UP, whereby smaller parts correspond to the lower end of the hierarchy. In other words, how nouns and particles are aligned cannot be separated from the language user’s world-knowledge interpretation. To further observe this point, compare *hook up* and *phone up* also, a pair showing the physical versus abstract contrast. While the particle in *hook up* measures the physical height from the speaker’s perspective, the particle in *phone up* indicates the height as a measure of the depth of consciousness. Making or receiving a call implies that the caller is “up” from the speaker’s or hearer’s point of view. In the BNC, *phone up* is used either transitively or intransitively, as in (6).²

² In cases like *bro down* and *mentor up*, the semantic connection between the noun and the particle is not apparent, but it is still possible to establish analogical connections between unmotivated constructions and existing ones. For instance, *buddy down* and *bro down*, both being related to a form of social gathering, might be rooted in expressions such as *hoedown*. Then, the fact that *down* is combined with *bro* and *buddy* is possibly owing to a morphological reanalysis of *hoedown*, and hence analogy, which explains why *down* is detached from its (directional) lexical meaning.

- (6) a. ...the nearest comedy film or show. Or read a funny book. Or *phone up* a cheerful friend who always makes you laugh. Go out with that friend.
- b. ...I, I'll wait and see how we, he might *phone up* and say cancel it, you know, cos...

Clearly, the particle in (6) indicates appearance. The theme of movement — the direct object in (6a) and the subject in (6b) — figuratively arrives at the speaker's location. In our framework, the transitivity, the semantic roles, and the completive aspect are mappings from the verbal frames, while metaphoricity is motivated by the rich semantics of the base noun and the particle. The latter will be the topic of the next section.

2.2 The Noun-Particle Interplay in the SOM Model

The interplay between the base noun and particle is examined using a semantic-ontological model (SOM). The SOM, as illustrated in Fig. 1, is comprised of (i) the content ontologies of the base noun [z] (content ontology A), (ii) the ontologies (or functions) of the particle [w] (content ontology B), (iii) the relational ontology between [z] and [w], and (iv) the configurational template underpinning the ensemble of [z] and [w].³ By schematizing the verbal frames, we can identify the ontologies and functions of these components, revealing how the conceptualization of NV-Ps depends on speakers' perception of the combination of [z] and [w] ontologies as compatible conceptual clusters in world knowledge.

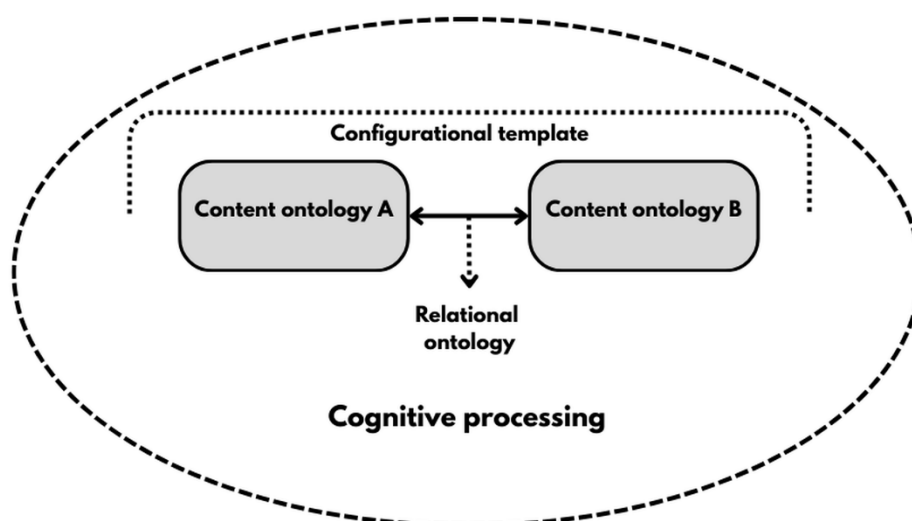


Fig. 1: The semantic-ontological model. Adapted from Paradis (2005)

³ The components of content ontology, schematic ontology, and configurational template are adapted from Paradis (2005).

For instance, in *fence off* in (7), the verbal frame implies a process, in which an instrument (*fence*) is employed to indicate that something/ someone is detached from whatever remains *off* the *fence* limits.

(7) They are trying to *fence off* Americans from Russians with a visa wall. ([reuters.com](https://www.reuters.com))

This is because the ontological function of a *fence* in itself (as an artifact and instrument) has a bearing on the type of relational ontology that emerges: [artifact/location]. Hence, while the base noun contributes with the concept/ontology of [artifact], particularly one employed for enclosing or setting boundaries, the particle expresses a new state, one that both depicts a [location] that is delimited by the instrument and conveys the result of the action. These two ontologies are world-knowledge compatible in the sense that the ontologies of artifacts like *fence* or *rope* are recognized by language users as boundary-setters, and that the ontology of a state and that of a result of an action (such as *off*) adds semantic specificity to the verbal frame. Then, it is not illogical to assume that the combination of the noun and the particle in NV-Ps does not occur randomly, but they rather have a strong cognitive foundation.⁴ Fig. 2 summarizes our content ontologies (Dixon 1991; Lieber 2004).

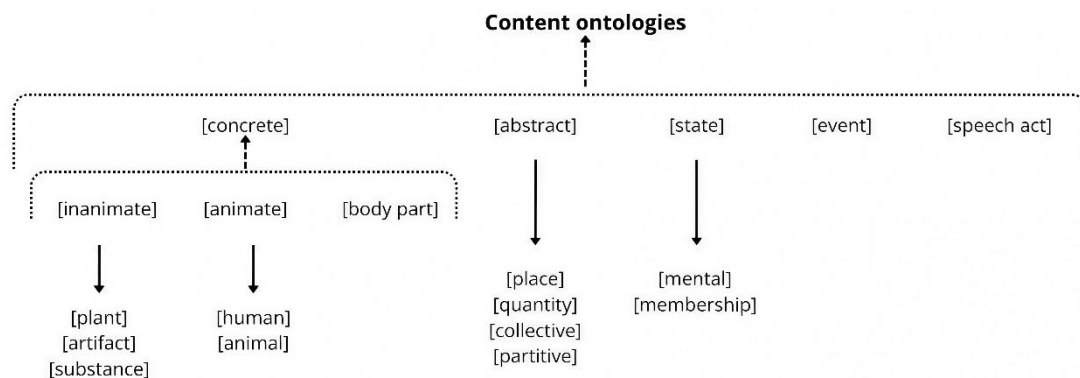


Fig. 2: Content ontologies of nominal bases, adapted from Dixon (1991) and Lieber (2004)

⁴ For the representation of relational ontologies, we employ a three-item descriptor: X/Y(_Z), where X stands for the ontology of the nominal base and Y points to interpretative configurations that relate X and Y. The element Z, on the other hand, conveys an ontological specificity of a configuration, which is useful to differentiate configurations with the same Y. For instance, following the example of *fence off* above, the relational ontology can be represented as [artifact/location_isolation]. While this ontology underpins the ensemble of [z] and [w], it might also fit other NV-Ps like *fence in*, with which *fence off* may be in competition. In the latter case, the meaning of the particle *off*, as illustrated in (7), points to pejorative meaning, in which the relational ontology can be rephrased as [artifact/location_isolation]; the case of *fence in*, on the other hand, pertains to the ontology of [artifact/location_containment].

The SOM is grounded in the concepts of metonymization (see, e.g., Cruse 2002; Paradis 2005, 2011; Paradis et al. 2015) and image schemas (see, e.g., Boers 1996; Lakoff & Johnson 1980, 1999; Cruse 2002). Metonymization is a cognitive operation that underpins “sense developments from one contentful meaning to another contentful meaning” (Paradis 2011: 61), and where these developments are conventionalized through cognitive entrenchment. Following the example of *fence off* above, the instrumentality of *fence* as a boundary-setter is first conventionalized by language users before being employed as [z] in NV-Ps where this salient feature (boundary-setting) relates to its instrumental function. On the other hand, image schemas function as mental representations that support the configurational templates in the SOM. They can be defined as abstracted formulations based on “a recurring dynamic pattern of our conceptual interactions and motor programs that gives coherence and structure to our experience” (Johnson 1987: xiv). In this study, we use the meaning conveyed by [w] to identify the underlying image schema and to establish its connection with [z] (section 4.3). For instance, since the focus of this study is on locative/directional particles, such as *up* and *down*, some of the image schemas employed relate to sensorimotor domains, including, among others: (i) orientation (UP IS MORE, DOWN IS LESS, CONTROL IS UP, HAPPY IS UP); (ii) boundedness (STATES ARE LOCATIONS); (iii) movement (CHANGE IS MOTION, LINEAR SCALES ARE PATHS); and (iv) proximity (SIMILARITY IS CLOSENESS) (Lakoff & Johnson 1999: 50-54).

3. Data Compilation

Our compilation of the data can be summarized in three stages (see Fig. 3).

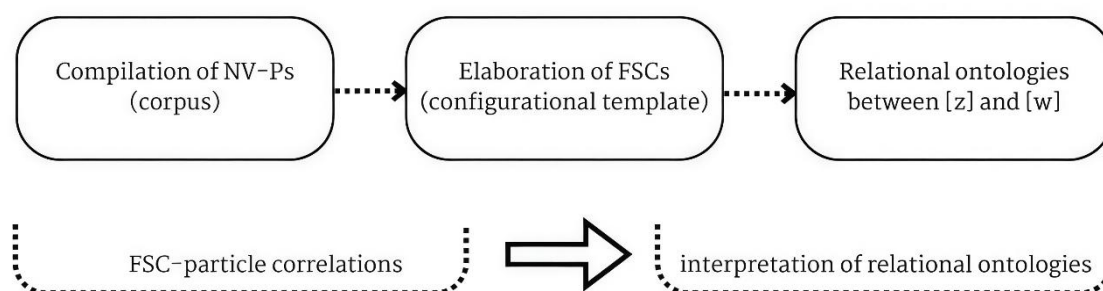


Fig. 3: The methodological stages of the research

The first stage involves the extraction of NV-Ps from the corpus. We extracted the data from *enTenTen21* (*English Web Corpus 2021*), a large collection of texts extracted from the internet. Consisting of 52 billion words, this corpus is part of the *TenTen* corpus family. The corpus is available via the *SketchEngine* corpus platform.

In this study, there are four datasets, each corresponding to a different particle: *NV-out*, *NV-off*, *NV-up*, and *NV-down*. Here, “NV” is a wildcard for a denominal verb. A unitary code in the form of corpus query language (CQL) was used, e.g., for the case of *NV-out* units the following CQL was used: [lemma="to"] [tag="N.*"] [lemma="out"]. We performed a random extraction of 1,000 hits for each particle, leading to a total of 4,000 hits being annotated. As illustrated in this CQL, the search was limited to infinitive denominal forms (using the infinitival ‘to’) to make the resulting dataset more manageable and accurate. The hits were then exported to spreadsheets for manual annotation of the frame-semantic categories. Table 1 shows a summary of the type/token frequencies of the datasets.

Tab. 1: Summary of the types, tokens, and number of words of the four datasets

	tokens (NV-P)	types (NV-P)	number of words
<i>NV-out</i>	371	67	51,510
<i>NV-off</i>	233	62	50,327
<i>NV-up</i>	394	73	50,219
<i>NV-down</i>	407	51	51,926

We compiled four datasets that serve as representative and optimal subsets for the purposes of this study through a simple down-sampling strategy (Sönning & Krug 2022), whereby only a limited portion of the data (4,000 hits) is extracted from the corpus. Each of the four subcorpora comprises approximately 50,000 words, obtained via a concordance setup of 1,000 rows containing 100 characters each from the preloaded corpus. Although the subcorpus size (i.e., the number of words in Table 1) is not a relevant variable for the present study, it is reported here merely to confirm the homogeneous conditions under which the data compilation was carried out. The token frequencies reported in Table 1 (i.e., the number of times an NV-P form occurs within the 1,000-hit window) show whether one type of NV-P is more frequent than another. In this case, no relevant differences are observed. Similarly, the type frequencies (i.e., the number of distinct NV-P types extracted)

confirm that the differences across datasets are not substantial. However, based on the idea that type frequency “represents the extent of use or realized productivity of the suffix” (Säily & Suomela 2017: n.p.), we disaggregate type frequencies according to their verbal categories to assess potential association between NV-Ps and the frame-semantic categories (e.g., instrumental, inchoative). This is represented through frequency heatmaps, as illustrated in Tables 2-11 in section 4. While productivity is not addressed in this article, type frequencies are employed as a valuable measure of NV-P richness and, by extension, of their likely alignment with specific verbal categories.

4. Results and Discussion

Section 4.1 provides an overview of the results, focusing on the correlation, if any, between the type of verbal frame and the particle choice. Section 4.2 offers a more detailed account of each NV-P class, paying particular attention to the content ontologies and functions of [z] and [w]. Finally, following the SOM, section 4.3 examines the most salient relational ontologies emerging from [z] and [w].

4.1 An Overview

Our dataset contains nine types and 28 subtypes of verbal frames (FSC; frame semantic category) in our dataset: instrumental (five subtypes), simulative (four subtypes), ornative (three subtypes), motive (two subtypes), performative (four subtypes), locative (two subtypes), causative (three subtypes), inchoative (two subtypes), and privative (three subtypes). All the types and subtypes are summarized in Appendix. Table 2 shows that NV-Ps are unevenly distributed across Lieber's (2004) ten denominal verb types. In our view, the four particles occur not randomly but in correlation with the semantic category of conversion, the content ontology of the nominal base, and also the type of the object argument (if there is one).

Tab. 2: Heatmap showing types of NV-Ps with *out*, *off*, *up*, or *down* and their type frequencies

Type	NV-up	NV-down	NV-out	NV-off	Total
<i>Inst.</i>	6	15	16	17	54
<i>Sim.</i>	4	2	13	4	23
<i>Orn.</i>	27	5	6	7	45
<i>Mot.</i>	5	7	1	0	12
<i>Perf.</i>	3	4	13	4	24
<i>Loc.</i>	2	5	3	3	13
<i>Caus.</i>	8	6	8	3	25
<i>Inch.</i>	9	1	1	2	13
<i>Priv.</i>	0	3	5	6	14
Total	64	48	66	46	224

In Table 2, the instrumental and ornative frames are the most productive. On the other hand, some FSCs are never or rarely correlated with specific NV-P subtypes, as is the case with NV-up and privative frames, and with NV-out/NV-off and motive ones. As a general tendency, NV-up and NV-out forms are associated with specific frame-semantic functions: while NV-up prevails in the expression of ornative and inchoative meanings, NV-out is predominant in the case of simulative and performative frames. On the other hand, the heatmap in Table 2 also shows that NV-off and NV-down forms are not as semantically niched as the other two types. Finally, we report that the stative frame (Lieber 2004: 91) was not attested in our NV-P datasets.

4.2 Classification and Analysis

4.2.1 Instrumental NV-Ps

In line with Valera’s (2020) account of instrumental denominal verbs, most instrumental NV-Ps in our dataset are transitive, with the exception of Inst_5. From Inst_1 to Inst_4, the subject argument ([x]) is an agent, while the object argument ([y]) is a patient or theme on which the agent performs a specific action using the instrument ([z]). The Inst_5 subtype is an intransitive frame, where the [z] (e.g., *helicopter*, *rope*, *tab*) corresponds to an artifact used by the agent [x] to reach a new location [w] (e.g., *down*). Notably, our dataset contains no pseudo-instrumental verbs (Kiparsky 1997) (e.g., **she elbowed out with her arms*), suggesting that the particle is tightly aligned with the nominal base.

Table 3 shows the correlation between instrumental subcategorization and particle choice, with the strongest association found between Inst_3. and the particles *out/off*.

Tab. 3: Classification of Instrumental NV-Ps

Subtypes	NV-up	NV-down	NV-out	NV-off
Inst.	6	15	16	17
<i>Inst_1</i>	1	3	3	0
<i>Inst_2</i>	1	6	2	7
<i>Inst_3</i>	0	1	10	9
<i>Inst_4</i>	4	2	1	1
<i>Inst_5</i>	0	3	0	0

The particle is polysemous; it can convey a locative meaning (*Inst_2*) while also contributing to the completive meaning (*Inst_1*, *Inst_4*). The results of the actions are indicated by a new location, as in *arrow down* in (8), or a new state, as in *chainsaw off* in (9).

- (8) I can't simply use the arrow keys to *arrow down* or right. (macmost.com)
- (9) I asked that the remaining part of the arbor be left standing but one man chose to *chainsaw off* the ends of two long 2x12's. (homeadvisor.com)

4.2.2 Similitive NV-Ps

Most similitive NV-Ps in our dataset are intransitive. As indicated in (10) and (11), the intransitive FSCs (i.e., Sim_2-4) consist of two general categories: one in which [z] is [animate] and the other in which [z] is [inanimate]. The former involves cases where [z] is either associated with the meaning [human], as in Sim_2, or the meaning [animal], as in Sim_3. Only Sim_1 is transitive, as illustrated in *leech off* in (12), where the recipient of the action [y] experiences negative effects of *leeching*.

- (10) When it comes to fighting food waste, the U.S. government is looking to *partner up* with the faithful. (npr.org)
- (11) I'm not going to change my mind because of war. I'm not going to *wuss out*. (southcoasttoday.com)
- (12) Eventually they locate the ship trailing behind a Klingon cruiser (...) attempting to *leech off* another vessel to repair them. (ditl.org)

As suggested in Appendix, simulative-ness is expressed through a verbal frame that is based on the resemblance of [x] to what is denoted by [z]. In (11), the speaker characterizes herself as a *wuss* by aligning their behavior with salient properties of this base noun. In transitive cases such as *leech off* (12), the resemblance relation is retained, but the base noun *leech* additionally licenses a patient whose ‘physical energy is drained or used up’ (MWD11), thereby conveying a pejorative interpretation. The completive function of particles in simulative FSCs indirectly emerges from locative or directional categories through metaphoric types and image schemas. This indirect connection may result in the fact that there are various cases of synonymic NV-Ps with the same noun and different particles, as in *partner up / partner out*, *buddy up / buddy down*, or *leech out / leech off* (see section 4.3).

Table 4 shows that NV-*out* is prevalent. One finding that stands out in Table 4 is the predominance of [animate] base nouns. In particular, Sim_2 is represented by the idiomatic construction mentioned in Section 1. On the other hand, the [inanimate] base was rare in our dataset.

Tab. 4: Classification of Simulative NV-Ps

Subtypes	NV-up	NV-down	NV-out	NV-off
Sim.	4	2	13	4
<i>Sim_1</i>	1	0	2	1
<i>Sim_2</i>	3	2	10	1
<i>Sim_3</i>	0	0	1	1
<i>Sim_4</i>	0	0	0	1

4.2.3 Ornative NV-Ps

Ornative NV-Ps consist of three types, two of which are intransitive (Orn_1 and Orn_2), where the subject argument [x] is provided with whatever is represented in [z]. Orn_3, on the other hand, is a transitive frame in which [y] occurs as the goal to which [z] is directed. However, not all ornative frames fit into the equation where [x] or [y] is provided with [z], partly because the ontological properties conveyed by [z] define how the provision/ endowment plays out.

Table 5 shows a robust association between Orn_2 and the particle *up*. Orn_3 also suggests the compatibility of this verbal frame with the particle *up*.

Tab. 5: Classification of Ornative NV-Ps

Subtypes	NV- <i>up</i>	NV- <i>down</i>	NV- <i>out</i>	NV- <i>off</i>
Orn.	27	5	6	7
<i>Orn_1</i>	2	0	0	0
<i>Orn_2</i>	17	1	4	2
<i>Orn_3</i>	8	4	2	5

Within the scope of conversion, ornative denominal verbs are generally identified as “expressing an entity’s movement towards a location (*to butter, to nickel, to fringe, to label, to saddle, to paint*)” (Baeskow 2006: 209; italics in the original). Describing the denominal verb *to butter*, Baeskow (2006) claims that the generic knowledge of this ornative verb depends on the prototypical function of *butter* as a type of food-substance: covering a slice of bread, the telic quale of the event (p. 223). A telic quale is distinguished from an imposed telic, “a function contextually coerced on an entity and thus a function which is not inherent to the telic quale of this entity” (Pustejovsky 2003, cited in Baeskow 2006: 229). Following the example of (v.) *butter*, we argue that *butter (someone) up* is an imposed telic because [z] has lost intrinsic elements, such as movement and location, and its prototypical culinary function has been overridden by an attitudinal one (i.e., flattery).

Based on the movement/location corollary that characterizes ornative’s telic quale, we believe that ornative NV-Ps are grounded in the notion that the property or quality of the base noun is transferred onto the participant. This has various degrees of telic imposition, as evidenced by Orn_1, where the qualities being transposed are interpreted as ‘support’ or ‘aid’.

Orn_1 is characterized by a high degree of semantic specificity, as the function of endowment is interpreted as a kind of ‘support’. This has implications for the low-frequency dataset of Orn_1. On the other hand, Orn_2 and Orn_3 are both characterized by high levels of polysemy, where the semantic nature of [z] is not specified, so nominal bases can range from substance (such as *fire* and *soup*) to abstract notions (such as *bliss* and *spirit*). Regardless of these polysemous bases, and perhaps owing to the inclination to figurative nature of ornative frames, the function of [w] is generally

completive. This is indirectly gained through the directional functions and orientational image schemas, as described further in section 4.3. Additionally, in some cases, the nature of the action and the directional meaning of the particle are connected, as in *glue down* and *tick off*, where the particles retain a directional meaning. The former indicates the direction by means of which the action of *gluing* takes place, while the latter points to the fact that the action of being *ticked* or crossed out from a list is completed once the element is detached (or taken *off* the list).

4.2.4 Motive NV-Ps

This category is related to motion. It is infrequent in our dataset, as shown in Table 6. As illustrated in Appendix, two subtypes are established: one in which the subject moves the base noun referent in a direction marked by the particle (i.e., Mot_1) (e.g., *sleeve up*); and another in which the subject moves on or across the path represented by the base in the direction represented by the particle (i.e., Mot_2) (e.g., *course down*). In Talmy’s (1985, 2000) framework, the base noun of Mot_1 corresponds to Figure (something that moves), while in Mot_2, it corresponds to Path (a trajectory). In Mot_2, the base is not limited to a place, but it might as well refer to a stage or phase. At the syntactic level, both FSCs are intransitive. In a syntactic approach, the argument structure of Mot_1 would be seen as a clear case of noun incorporation, with *sleeve up* being derived from *roll one’s sleeve (up)* by incorporating the direct object into the verb.

Tab. 6: Classification of Motive NV-Ps

Subtypes	NV-up	NV-down	NV-out	NV-off
Mot.	5	7	1	0
<i>Mot_1</i>	2	3	0	0
<i>Mot_2</i>	3	4	1	0

4.2.5 Performative NV-Ps

Our datasets include NV-Ps whose verb frame is performative and associated with an action or event-denoting base (Valera 2020). This observation supports our hypothesis that conversion underlies NV-Ps, as performatives, together with instrumentals and similatives,

are typical conversion categories (Debouzie 2024). Roughly half of the performative NV-Ps are intransitive, as in *party down* in (13).

- (13) No, the library card doesn't really offer me college parties; but it does license me to *party down* with all the books and magazines I can handle... which, in my opinion, is just as cool – if not cooler. (cnn.com)

Tab. 7: Classification of Performative NV-Ps

Subtypes	NV-up	NV-down	NV-out	NV-off
Perf.	3	4	13	4
<i>Perf_1</i>	0	0	7	2
<i>Perf_2</i>	1	1	1	0
<i>Perf_3</i>	1	2	0	2
<i>Perf_4</i>	1	1	5	0

Performative NV-Ps consist of four subtypes, where the first two (*Perf_1* and *Perf_2*) are transitive frames. As seen in Table 7, *NV-out* is particularly frequent. The result component [w] is predominantly completive, which means that it indicates that an action/event being specified in [z] is completed, e.g., *test out*, *sale off*. This feature is particularly salient in the case of *NV-out* units, where, as specified by OED3, *out* is employed in particle verbs to “[emphasize] the completion of an action.” Other particles, such as *down*, however, can be polysemous in performative frames, which means that their adverbial meaning of directionality is retained, as in (13).

4.2.6 Locative NV-Ps

Table 8 shows that locative NV-P types are scarce in our dataset and that *down* is the only particle occurring in both *Loc_1* and *Loc_2*.

Tab. 8: Classification of Locative NV-Ps

Subtypes	NV-up	NV-down	NV-out	NV-off
Loc.	2	5	3	3
<i>Loc_1</i>	2	2	3	0
<i>Loc_2</i>	0	3	0	3

As suggested in Appendix, locative frames, where [z] and [w] are semantically filled with the features of [place] and [completive], respectively, divide into two subtypes. *Loc_1*,

being an intransitive frame, conveys the notion that the subject occupies an authentic place [z], e.g., *room, shack, hut*. In contrast, the transitive Loc_2 expresses the subject transferring a theme ([y]) to either an authentic or concrete place (e.g., *bog, ward*) or an abstract or rather metaphorical one (e.g., *zen, list, spam*). Both frames concur in that their function of completive-ness is generally expressed through the function of locative-ness, via an orientational image schema (e.g., UP IS ADVANCED STATE in *room up*, as specified in section 4.3) or directional meaning (e.g., *down* in *list down* might indicate the actual orientation of the action or the position).

4.2.7 Causative NV-Ps

Causative NV-Ps involve a frame in which the subject causes the object to either become the base noun referent (as in Caus_1 and Caus_2) or change the property indicated by the base (as in Caus_3), as shown in Appendix. Although Lieber (2004) distinguishes the verb classes expressing "make (more) x" and "make into x," we conflate them as Causative class. Cause_1 and Cause_2 have a completive particle indicating an aspect. Causative constructions (e.g., *They messed the party up*) are necessarily transitive, since the object (*the party*) acquires the attribute denoted by the base noun (*mess*) as a result of the subject's action. The base noun conveys the resulting attribute transferred to the patient, which aligns with Valera's (2020) assignment of the semantic role 'attribute (resulting)' to causative frames.

Table 9 confirms that Caus_1 is the most prolific, encompassing base nouns ranging from the abstract (e.g., *standard out*) to the concrete (e.g., *gif out*). By contrast, Caus_2 is represented by only one instance, indicating low productivity. Given the inherently directional meaning contributed by the particle [w] in Caus_3, it is unsurprising that only NV-up and NV-down forms occur. García Velasco (2009) notes that causative conversion verbs are relatively rare in English.

Tab. 9: Classification of Causative NV-Ps

Subtypes	NV-up	NV-down	NV-out	NV-off
Caus.	8	6	8	3
<i>Caus_1</i>	4	2	8	3
<i>Caus_2</i>	1	0	0	0
<i>Caus_3</i>	3	4	0	0

4.2.8 Inchoative NV-Ps

Causative and inchoative NV-Ps are typically in the relationship of transitive-intransitive alternation, with their frames characterized by the addition (causative) or deletion (inchoative) of an argument (Haspelmath 1993; Levin & Rappaport Hovav 1995, 2005). Inchoative NV-Ps are associated with the role ‘attribute (resulting)’ (Valera 2020), suggesting an underlying semantic similarity with causative constructions. While causative frames have the patient of change in the direct object position, inchoative ones have it realized as the subject argument. For instance, in *bulk up* and *kink up*, it changes into the state denoted by the base noun, i.e., a *bulk* or a *kink*. The base noun is either a collective noun (Inch_1) or non-collective noun (Inch_2).

Although there are not many attested cases of inchoative NV-Ps, Table 10 confirms that *up* is particularly prolific in this context, clearly surpassing the other NV-Ps. This statistical fact corroborates the preponderance of *up* in inchoative frames, where, as further explored in section 4.3, the completive function of *up* stems from its role in the image schema HIGH STATUS IS UP.

Tab. 10: Classification of Inchoative NV-Ps

Subtypes	NV- <i>up</i>	NV- <i>down</i>	NV- <i>out</i>	NV- <i>off</i>
Inch.	9	1	1	2
<i>Inch_1</i>	8	1	1	1
<i>Inch_2</i>	1	0	0	1

4.2.9 Privative NV-Ps

Privative NV-Ps consist of three verbal frames, all of which concur in the fact that the base noun referent is removed or downplayed. Privative NV-Ps converge on the semantic role of ‘affectee’, insofar as the base noun refers to an affected object (see, e.g., Valera 2020; Baeskow 2024). Privative NV-Ps are predominantly transitive, i.e., Priv-1 and Priv-2. More generally, the semantic-ontological specificity of the base and the particle appears to constrain the distribution of the affected participant. For example, *age* in *age out* denotes a property acquired or lost by the subject alone that cannot be transferred to a patient. Consequently, *age out* surfaces as the intransitive Priv_3.

As suggested in Table 11, the particles *out* and *off* are particularly prolific in privative frames, denoting “[r]emoved from its proper or habitual place or position” and “[e]xpressing separation from attachment, contact, or position” (OED3), respectively. These adverbial meanings are retained in order to express the act of privation of a quality or value, which is then interpreted as a completive function. However, there are various examples in which the particle functions solely as a completive marker, rather than adding a privative meaning. Consider, for instance, the NV-Ps *weed out* and *dust off*, whose verbal bases *weed* and *dust* already convey the privative meaning ‘to remove *weeds/dust*’. Nevertheless, the completive function of *out* and *off* also stems from their primarily directional function, which adds further semantic specificity to the action itself. In *weed out* and *dust off*, for example, *out* and *off* contribute directional meanings that are connected to how the actions of *weeding* and *dusting* are performed: *weeding* involves extraction (the *weed* is removed from the soil), while *dusting* involves removing *dust* from a surface. Finally, Table 11 contains no instances of NV-*up* with privative frames, which suggests that the meaning of *up* is unlikely to be associated with the concepts of loss or removal.

Tab. 11: Classification of Privative NV-Ps

Subtypes	NV-<i>up</i>	NV-<i>down</i>	NV-<i>out</i>	NV-<i>off</i>
Priv.	0	3	5	6
<i>Priv_1</i>	0	3	2	5
<i>Priv_2</i>	0	0	1	0
<i>Priv_3</i>	0	0	2	1

4.2.10 Summary

Our first research question is concerned with the relationship between the verbal frame and the particle choice. The results of our corpus data analysis above reveal that the correlation is particularly evident in the following pairings: Instrumental and *out*, Similitative and *out*, Ornative and *up*, Performative and *out*, Causative and *out*, Inchoative and *up*, and Privative and *off*. More broadly, the results above demonstrate that NV-Ps are truly “converted verbs + particle” rather than “particle verbs + noun incorporation,” because nine out of the ten conversion frames (Lieber 2004) are well represented in the

datasets. Only statives are absent. According to Debouzie's (2004) quantitative investigation of denominal verb formation since 1950s, instrumentals, similatives, and performatives are particularly productive classes in English N-to-V conversion, while statives are much less so.

4.3 Content and Relational Ontologies of [z] and [w] through the Lens of Image Schemas

This subsection addresses the second research question by reviewing the content ontologies involving [body part], [artifact], [animate], [human], [animal], [substance], [collective], [partitive], [place], and [event]. Building on the identification of FSCs and their correlated particles in section 4.2, we attempt to identify and analyze the relational ontologies underlying the said correlations. We discuss the noun-particle interplay in the SOM Model (as reviewed in Section 2.2). The three layers of our analysis, i.e., content ontologies, relational ontologies, and image schemas, are represented in Fig. 4. The outer layer corresponds to image schemas, which are correlated with the completive function, particularly in indirect cases such as *pump up* and *google up*. As illustrated in the figure, in these cases, *up* acquires its completive function via its primary locative meaning and its association with notions of ADVANCEMENT and/or QUANTITY.

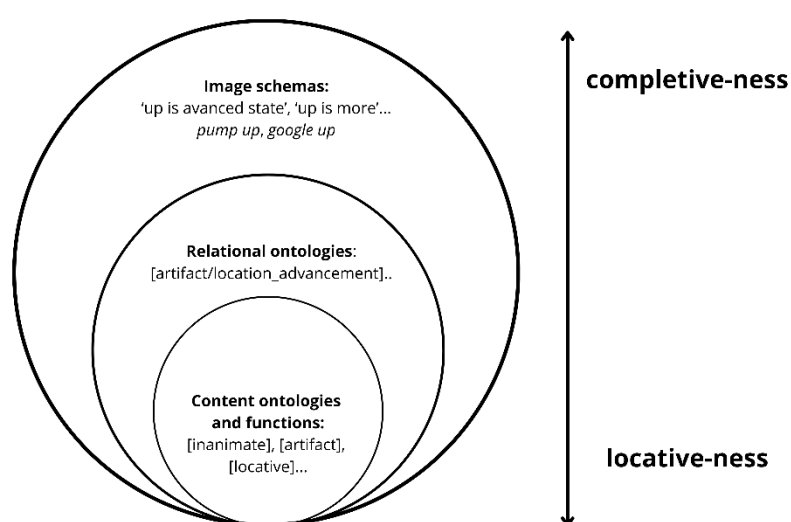


Fig. 4: Representation of the three layers of analysis: content ontologies, relational ontologies, and image schemas

4.3.1 [Concrete] Ontologies

The content ontology [artifact] is not limited to one type of FSC, although it is particularly frequent in instrumental frames, where an object, such as *fax* or *gavel*, is the instrument with which an action is executed. This implies that the configurations (and hence their relational ontology) that emerge from the artifact or instrument and the particle depend, to some extent, on the function of the instrument in world knowledge. For instance, while *NV-off* correlates with objects generally used for enclosing or setting up boundaries, as in *fence* or *rope* (Inst_2), the meaning of [z] in *NV-out*, as happens with Inst_2, relates to the act of sending communications, as in *fax* or *email*. Hence, although both types involve distinct forms of changing location, their instrumental outputs depend on the holistic purpose of the artifact, which can be represented through the relational ontologies of [artifact/location_isolation] (*fence off*) and [artifact/location_communication] (*fax out*).

While [place] is a frequent component of the relational ontologies of instrumental frames, as expressed directly in *fence off* and *fax out*, the ontology [artifact] can also be associated with [place] indirectly, as happens in the relational ontology [artifact/location_advancement]. In this respect, as also illustrated above in Fig. 4, the particle *up*, glossed as “or into a better or more advanced state” (MWD11), is connected to the schema UP IS MORE, and by extension UP IS ADVANCED STATE, as illustrated in *pump up* and *google up*. Through the SOM, we can confirm that *fax out* and *pump up* are both grounded in the [artifact/location] relational ontology; however, they are clearly distinguished by their conceptual templates: *fax out* → [communication] and *pump up* → [advancement]. They differ, therefore, in the way the [completive] function is expressed, which is directly in the former and indirectly in the latter.

The ontology [artifact] is also associated with ornative frames, although to a lesser degree than with instrumental ones, as in *mask up* and *suit up*, where the nominal base is not an instrument but something with which someone provides oneself. In this case, the relational ontology is [artifact/expansion], where *up* contributes the meaning of fullness (or full expansion), and hence completive-ness, through the image schema UP IS MORE.

As regards [body part], most of the cases attested are body parts employed as forms of instrument, as in *knee down* or *jawbone down*, where there is a clear association between [body part] and the particle *down*, through the relational ontology [body-part/

location_means], where the body part is a means or an instrument to accomplish this action. The integration of *down* in this relational ontology is grounded in the image schema CONTROL IS UP, according to which “it is easier [...] to exert force on an object from above, where you have gravity working with you” (Lakoff & Johnson 1999: 53).

The content ontology [animate] is prolific in simulative frames, particularly through the subtype ontologies [human] and [animal], as in *buddy up* and *leech off*, respectively. However, most simulative frames involve the ontology [human] and the particle *out*, which suggests that *out* is the representation of the final stage of a transition, as in *Hulk out* and *geek out*, where someone becomes (or transitions into) *Hulk* or a *geek*. In this case, the relational ontology can be represented as: [human/transition], which is also underpinned by the schema BODIES ARE CONTAINERS. This schema is based on the scenario “revealing one’s identity”, which is in turn understood as “coming out of the container” (Dyrmo 2022: 30). Following the example of *freak out* in section 1, and as pointed out by Jackendoff (2002), the meaning of the verbal construction is ‘to go into an unusual mental state’ (p. 73), where the subject becomes (or ‘goes into the state of’) a new persona. Then, we can claim that the original meaning of *out* contributes to the simulative frame, meaning that the components [z] and [w] are indeed ontologically integrated. A plausible semantic contribution, which forms part of the ontology that relates *out* with an animate, nominal base, is through the meaning of *out* as indicative of the end of the transition towards a new persona, e.g., *chicken out* → ‘one ‘comes out’ acting as (or being) a *chicken*’. The new persona thus emerges (comes out) from the container as an expression of identity’s self-revelation.

The semantic contribution of *out* (i.e., signalling the end of a transition) and the new mental state conveyed by the construction, as also claimed by Jackendoff (2002), have a bearing on competition resolution, particularly when two different particles are attached to the same base, as in *partner up* and *partner out* (see examples [14] and [15] below), where *partner up* means “to act as someone’s partner in a sport, game, dance, or activity” (CDE), and *partner out*, as illustrated in the example below, also refers to acting as (or being like) a partner. While *partner up* conveys the meaning of becoming members of a partnership, with special emphasis on its social implications, *partner out* points to a state of shared interests and willingness to collaborate.

- (14) Watch the video now to learn how to *partner up* and power up your retail strategy (technologytherapy.com)
- (15) (...) a dynamic pipeline of cutting-edge programs which we can grow organically or choose to *partner out* to deliver the most value for patients. (ucb.com)

Interestingly, most similitive frames with the ontology [human] involve pejorative axiology. In some cases, negative traits are intrinsic, as in *wuss*, *nerd*, *geek*, but in other cases, as in *Hulk* and *doll*, only pejorative features of these concepts are underscored as a result of the transitional process, leading, respectively, to features of violence (*Hulk*) and flashy appearance (*doll*).

The content ontology [substance], as in *beer up* and *juice up*, is associated with the particle *up* through the function of completive-ness. In these two ornative examples, *up* indicates that the provision of something is completed, which is owing in part to the image schemas of UP IS MORE and HUMAN BODIES ARE CONTAINERS, and, as a result, their intensifying function. Hence, the relational ontology can be represented as [substance/quantity], where quantity is accessed via *up* as manifestation of full provision.

The content ontologies [partitive] and [collective] form part of the part-whole schema, in which wholes are dependent on the configurations of their parts, the latter also relying on their physical distribution. The ontology [partitive], as in *part*, *portion*, *slice*, or *subset*,⁵ generally combines with *out* (see Caus_1 in Appendix). Rather than finding an explanation in orientation and social groups (see the case of [collective] ontology below, in section 4.3.2), *out* is connected to the idea that parts are the by-products of fractionalizing the whole, which results in isolated fractions taken out of the whole. What this means is that in subdividing an entity, its parts are first detached, and then, logically taken *out* (physically or metaphorically) of the whole of which they form part. Through a relational ontology [partitive/fractionalization], *out* contributes a sense of fraction while also conveying a sense of completion (i.e., once a fraction or a part is taken *out* of the whole, the action of sizing down is completed).

⁵ Although some of the categories such as *subset* or *part* are abstract, they are described here, which means that the ontology [partitive] is not limited to concrete nouns.

4.3.2 [Event] and [Abstract] Ontologies

For the ontology [event], as in the performative NV-Ps *game out* and *test out*, the completive function of *out* can be linked to the notion of transition, by means of which someone performs an event/activity until the object of the action (as in ‘the spread of new diseases’ in [16]) completes its transition into a form of a game. This notion is grounded in the image schema STATES ARE LOCATIONS, by means of which the object of the action has two states, an intrinsic one (before the transition) and an imposed one (after the transition). The latter is also connected to the schema BODIES ARE CONTAINERS, whereby the result of the transitional process is marked by the coming out of the container. Accordingly, personas are framed within two places: ‘inside’ and ‘outside’ the body, where ‘inside’ refers to the state before the transition, and ‘outside’ to the state after the transition.

- (16) Health experts (...) ran simulated exercises to *game out* the spread of new diseases.
(theatlantic.com)

Similarly, the content ontology of [state], as illustrated in (17), is associated with *out*, and underpinned by the image schemas STATES ARE LOCATIONS and BODIES ARE CONTAINERS. In this respect, the agent of the action, generally human, undergoes a transition that involves experiencing the state of *fandom*, and where their body, as a container, indicates that the new persona coming out has indeed experienced *fandom*. Hence, the relational ontologies that are represented in these performative cases are: [event/transition] and [state/transition].

- (17) The dog days of summer are the perfect time to *fandom out*. (mtv.com)

In other cases, which are also grounded in the relational ontology [event/transition], the particle signals the completion of an action through the resulting state of its agent, supported by the schema STATES ARE LOCATIONS, and in some particular cases, LASSITUDE IS DOWN, the latter emerging from the orientational metaphor UNCONSCIOUS IS DOWN (Lakoff & Johnson 1980). Rather than unconscious, we employ the word ‘lassitude’ to describe the state of exhaustion, fatigue, or unconsciousness, as a result of a violent or intense action. An example is *party down*, where *down* denotes a new location that is plausibly associated with the agent’s state of weariness or exhaustion.

Accordingly, the relational ontology in this case can be specified as [event/transition_lassitude].

The [collective] ontology, as expressed by *bulk*, *team*, *group*, and *platoon*, is involved in inchoative frames in that someone or something becomes part of a group. As corroborated by the inchoative FSCs, there is a clear association between [collective] and the particle *up*, which suggests that the particle *up* is connected to the expression of higher degree of a category. The relational ontology that emerges from [z] and [w] is that of [collective/membership], which is couched in Boers' (1996) understanding of "orientational image schemas of physical space" (p. 24), according to which *up* is connected to the expression of higher degree of a category, as happens with, for instance, social hierarchies (where HIGH STATUS IS UP and LOW STATUS IS DOWN) and quantity (where MORE IS UP and LESS IS DOWN) (ibid). Hence, this relational ontology helps understand how 'a group of people' can be interpreted as a high-status entity, in which becoming part of this collective implies being at a higher level.

Nonetheless, the concept of HIGH STATUS also emerges from its internal-theoretical meaning of 'unity,' linked to the PART-WHOLE schema. This schema interprets social collectives (wholeness) as products of unity, which contributes to their elevated status, in contrast to individuals (parts), seen as detached from this perception of unity. This idea aligns with one of the formal-ontological tools developed by Bottazzi et al. (2006), which allows for the identification of collectives based on their unity criteria (n.p.). Therefore, we argue that the particle *up* is associated with nouns that denote high status, particularly in the context of social collectives, such as *team up* or *squad up*, reflecting the meaning of unity.

It does not come as a surprise that the ontology [place] is particularly prolific in locative FSCs. For instance, the particles *down* (as in *hut down* and *list down*) and *off* (as in *ward off*) express completion of an action, but through different image schemas. The example of *hut down*, as in (18), is an interesting example because there are two possible readings: [place/transition_lassitude] and [place/isolation]. The former, as happens in *party down*, is primarily grounded in the schema STATES ARE LOCATIONS: the agent of the action remains in the place (*hut*) to the extent of lassitude. The latter, on the other hand, is underpinned by the schema DOWN IS NOT VISIBLE (and UP IS VISIBLE), which might

be linked to the notion that *down* is spatially connected to the ground, where things and people hide more easily. In contrast, *up* entails clear visibility because of height. Hence, based on the schema involving orientation and visibility, *down*, as in *hut down*, conveys a sense of separation or detachment as if something or someone were placed in isolation or under lockdown.

- (18) So House GOP leaders chose to HUT DOWN until Thursday, giving them a chance to reassess the package. (yourvalley.net)

Similarly, the locative NV-P *ward off*⁶ indicates that [place] and *off* can be connected to the notion of detachment and isolation, through the image schema ISOLATION IS SAFE. In this case, the particle *off* exhibits a locative meaning, i.e. being isolated in a ward and secured (or *off*) from potential dangers. This might explain its imposed telic in figurative readings, as in *ward off a cold* (MWD11). This schema contrasts with the locative meaning conveyed by the notion of isolation (as in *fence off* and *rope off* above), where the semantic role of an artifact (as a form of instrument) is limited to spatial isolation, rather than ‘safely isolated’.

Other examples involving [place] and *down*, such as *list down* and *spam down*, are more directly tied to the directional function of the particle. This function allows for two possible interpretations. Firstly, *down* indicates that the process of adding items to a *list* or a *spam* folder proceeds from top to bottom. On the other hand, *down* is primarily linked to the act of writing, where the object on which someone writes is naturally positioned flat and low, as also seen in *write down* and *note down*.

5. Conclusions

This paper observes that particle verb formation occurs in conjunction with noun-to-verb conversion process and examines this interface phenomenon from a lexical-semantic perspective. While the intersection of these two major linguistic constructions raises a number of intriguing issues, none of these have yet been brought into the limelight. As this

⁶ Although originating from [place], the NV-P *ward off* is also used metaphorically with the meaning of ‘protecting someone or someone from potential harm’. In this paper, no distinction is made between its literal and figurative uses.

is virtually the first study to address this phenomenon, the paper focuses on two research questions, demonstrating that particled denominal verbs (NV-Ps) are produced by combining the verbal frame of a denominal conversion verb and the information of the particle. In addition, the noun-particle alignments are grounded in world-knowledge interpretations. Building on the previous research into denominal verb conversion, we argue that the lexical semantics level provides a reliable means of capturing the syntax-semantics interface of word-formation phenomena. This approach can explain the argument structure and semantic role distribution of NV-Ps. Furthermore, it can be seamlessly integrated with the SOM to capture the contributions of the ontological information of the noun and the particle.

From a broader theoretical perspective, this paper demonstrates that noun-to-verb conversion plays an active and essential role in the formation of particle verbs. The findings summarized above provide evidence for the centrality of the base noun in this process. It is hoped that this insight will help to rebalance the excessive emphasis traditionally placed on verb phrase structure within the research paradigms of noun-to-verb conversion and of particle verbs. As we mentioned at the outset, this paper is not intended to resolve the paradoxical nature of the particle verb construction. Our conclusion largely aligns with the models of the grammatical architecture proposed by Jackendoff (2002), Lieber (2004), Fillmore (2006), and Los et al. (2012). However, due to the methodological and philosophical inconsistencies between these frameworks, the nature of the paradox remains a particularly challenging research question in our field.

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Appendix

The following table summarizes our classification and analyses of NV-Ps. The abbreviations are as follows: Inst: Instrumental, Sim: Similitative, Orn: Ornative, Mot: Motive, Perf: Performative, Loc: Locative, Caus: Causative, Inch: Inchoative, Priv: Privative.

(sub)types	Verb frames and the ontologies/functions of [z] and [w]	NV-Ps
Inst_1	[x USE [INSTRUMENT [z <NOUN>]] ON [y]] UNTIL [COMPLETIVE [w <PART>]] or UNTIL [LOCATIVE/COMPLETIVE [w <PART>]] [z] → [artifact], [body part] [w] → [locative], [completive]	NV-up: <i>phone up</i> NV-down: <i>dick down, jawbone down, knee down</i> NV-out: <i>snout out, elbow out, mask out</i>
Inst_2	[x CAUSE [y BECOME [BE AT LOCATIVE [w <PART>]] WITH [INSTRUMENT [z <NOUN>]]] [z] → [artifact] [w] → [locative], [completive]	NV-up: <i>hook up</i> NV-down: <i>arrow down, cursor down, dial down, chest down, lock down, shot down</i> NV-out: <i>fax out, e-mail out</i> NV-off: <i>fence off, rope off, screen off, dremel (brand) off, e-stim (brand) off, wheel-lift off, combo off</i>
Inst_3	[x CAUSE [y BECOME [AT LOCATIVE [w <PART>]] WITH [INSTRUMENT [z <NOUN>]]] [z] → [artifact] [w] → [locative], [completive]	NV-down: <i>gun down</i> NV-out: <i>airbrush out, poo out, pump out, filter out, floss out, storyboard out, contract out, server out, FUD out (<fear, uncertainty, doubt), photoshop out</i> NV-off: <i>boot off, chainsaw off, wand off, wire-brush off, laser off, cycle off, bevel off, profit off, wick off</i>
Inst_4	[x ENABLE [y] WITH [INSTRUMENT [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [artifact] [w] → [locative], [completive]	NV-up: <i>google up, server up, amp up, pump up</i> NV-down: <i>gavel down, track down</i> NV-out: <i>gavel out</i>

	[z] → [artifact] [w] → [completive], [locative]	NV-off: <i>blaze off</i>
Inst_5	[x USE [z <NOUN>]] UNTIL [LOCATIVE/COMPLETIVE [w <PART>]] [z] → [artifact] [w] → [locative], [completive]	NV-down: <i>helicopter down, rope down, tab down</i>
Sim_1	[x ACT LIKE/AS [ANIMATE [z <NOUN>]] ON [y] UNTIL [COMPLETIVE [w <PART>]]] [z] → [animate] [w] → [completive], [locative]	NV-up: <i>coach up</i> NV-out: <i>leech out, ferret out</i> NV-off: <i>leech off</i>
Sim_2	[x ACT LIKE/AS [PERSON [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [animate/human] [w] → [completive], [locative]	NV-up: <i>partner up, buddy up, MacGyver up</i> NV-down: <i>bro down, buddy down</i> NV-out: <i>partner out, nerd out, geek out, freak out, Hulk out, duke out, wuss out, chicken out, doll out, punk out</i> NV-off: <i>jack off (< jackass)</i>
Sim_3	[x ACT LIKE/AS [ANIMAL [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [animate/animal] [w] → [completive]	NV-out: <i>pork out</i> NV-off: <i>swan off</i>
Sim_4	[x ACT LIKE/AS [OBJECT [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [artifact] [w] → [completive]	NV-off: <i>yo-yo off</i>
Orn_1	[x PROVIDE ONESELF WITH [PERSON [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [animate/human] [w] → [completive]	NV-up: <i>lawyer up, mentor up</i>
Orn_2	[x PROVIDE ONESELF WITH [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [substance], [abstract]	NV-up: <i>beer up, juice up, mastic up, fire up, gas up, beef up, belt up, energy up, skill up, seal up, heat up, hype up, level up, mask up, power up, stock up, suit up</i>

	[w] → [completive]	NV-down: <i>dress down</i> NV-out: <i>bliss out, ego out, space out, source out</i> NV-off: <i>bond off, number off</i>
Orn_3	[x PROVIDE [y] WITH [[z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [substance], [abstract] [w] → [completive]	NV-up: <i>soup up, spice up, spirit up, glam up, light up, rev up, back up, jazz up</i> NV-down: <i>glue down, water down, reprice down, torque down</i> NV-out: <i>index out, kit out</i> NV-off: <i>plus off, pension off, seal off, bootstrap off, tick off</i>
Mot_1	[x MOVE [z <NOUN>] THROUGH [DIRECTIONAL [w <PART>]]] [z] → [body part], [artifact] [w] → [directional], [completive]	NV-up: <i>sleeve up, knuckle up</i> NV-down: <i>chest down, knuckle down, knee down</i>
Mot_2	[x MOVE ON/AT [LOCATIVE [z <NOUN>]] UNTIL [LOCATIVE [w <PART>]]] [z] → [place] [w] → [directional], [completive]	NV-up: <i>ramp up, summit up, trend up</i> NV-down: <i>course down, track down, trend down, source down</i> NV-out: <i>transition out</i>
Perf_1	[x PERFORM [ACTION/EVENT [z <NOUN>]] ON [y]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [action/event] [w] → [completive]	NV-out: <i>test out, trial out, budget out, role-play out, spec out, game out, balance out</i> NV-off: <i>sale off, suction off</i>
Perf_2	[x PERFORM [ACTION/EVENT [z <NOUN>]] ON [y]] UNTIL [DIRECTIONAL [w <PART>]]] [z] → [action/event] [w] → [directional], [completive]	NV-up: <i>force up</i> NV-down: <i>force down</i> NV-out: <i>force out</i>
Perf_3	[x PERFORM [EVENT [z <NOUN>]] UNTIL [AT LOCATIVE [w <PART>]]] [z] → [action/event] [w] → [completive]	NV-up: <i>zhuzh up</i> NV-down: <i>mulligan down, trade down</i> NV-off: <i>game off, vendue off</i>
Perf_4	[x PERFORM [ACTION [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [action/event]	NV-up: <i>synch up</i> NV-down: <i>party down</i> NV-out: <i>rock out, loan out, glitch out, error out, fandom out</i>

	[w] → [completive]	
Loc_1	[x BECOME [AT LOCATIVE [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [place] [w] → [completive], [locative]	NV-up: <i>room up, shack up</i> NV-down: <i>hut down, niche down</i> NV-out: <i>camp out, zen out, route out</i>
Loc_2	[x CAUSE [y BECOME (PART OF) [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [place] [w] → [completive], [locative]	NV-down: <i>list down, bog down, spam down</i> NV-off: <i>ward off, bank off, boulder off</i>
Caus_1	[x CAUSE [y BECOME [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [substance], [abstract/property], [abstract/partitive], [concrete/partitive], [place] [w] → [completive], [locative]	NV-up: <i>barf up, line up, max up, mess up</i> NV-down: <i>bevel down, phase down</i> NV-out: <i>cash out, standard out, gif out, slice out, portion out, part out, subset out, plan out</i> NV-off: <i>tribute off, level off, plateau off</i>
Caus_2	[x CAUSE [y BECOME [PERSON [z <NOUN>]]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [animate/human] [w] → [completive]	NV-up: <i>femme up</i>
Caus_3	[x CAUSE [y CHANGE PROPERTY [z <NOUN>]] UNTIL [DIRECTIONAL [w <PART>]]] [z] → [abstract/property] [w] → [locative], [completive]	NV-up: <i>number up, scale up, size up</i> NV-down: <i>scale down, scope down, tone down, tune down</i>
Inch_1	[x BECOME PART OF [COLLECTIVE [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [abstract/collective] [w] → [completive]	NV-up: <i>bulk up, chunk up, crop up, team up, squad up, group up, pack up, platoon up</i> NV-down: <i>chunk down</i> NV-out: <i>top out</i> NV-off: <i>faction off</i>
Inch_2	[x BECOME [[z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]] [z] → [substance], [property] [w] → [completive]	NV-up: <i>kink up</i> NV-off: <i>gas off</i>

Priv_1	<p>[x DEPRIVE y OF [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]</p> <p>[z] → [substance], [property], [object], [plant] [w] → [completive], [directional]</p>	<p>NV-down: <i>power down, nipple down, air down</i> NV-out: <i>weed out, spirit out</i> NV-off: <i>power off, dust off, tarp off, grid off, spirit off</i></p>
Priv_2	<p>[x DEPRIVE y THROUGH INSTRUMENT [z <NOUN>] UNTIL [COMPLETIVE [w <PART>]]]</p> <p>[z] → [object] [w] → [completive]</p>	<p>NV-out: <i>stamp out</i></p>
Priv_3	<p>[x IS DEPRIVED OF [PROPERTY [z <NOUN>]] UNTIL [COMPLETIVE [w <PART>]]]</p> <p>[z] → [property], [event] [w] → [completive]</p>	<p>NV-out: <i>age out, role out</i> NV-off: <i>back off</i></p>

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Sergei Monakhov

Conference Report:

49. Österreichische Linguistiktagung. Workshop “Native vs. Borrowed Word Formation in Synchrony and Diachrony”
(5–6 December 2025; Klagenfurt, Austria)

The workshop “Native vs. Borrowed Word Formation in Synchrony and Diachrony” took place from the 5th to the 6th of December, 2025 in Klagenfurt (Austria) as part of the 49. Österreichische Linguistiktagung. It focused on the cross-linguistically widespread but still understudied phenomenon of the coexistence of borrowed and native word-formation morphology (Matras & Sakel 2007; Gardani et al. 2015). The workshop included 13 presentations offering a comprehensive and theoretically informed exploration of morphological borrowing across many languages (Ancient Greek, Bosnian / Croatian / Montenegrin / Serbian, Dutch, English, French, Georgian, German, Greek, Italian, Korean, Latin, Lithuanian, Palestinian Arabic, Polish, Russian, Slovenian, Turkish) and domains (derivation, compounding, nominalization, morphological productivity, and affix rivalry, among many others).

The key perspectives of the workshop were outlined in the introductory talk by the convenors **Marko Simonović** (University of Graz), **Laura Grestenberger** (University of Vienna), **Gianina Iordăchioaia** (University of Graz), **Veronika Mattes** (University of Graz), and **Martina Werner** (Austrian Academy of Sciences) as follows. From a synchronic perspective, it has been observed that in many languages, borrowed morphemes pattern systematically on various levels of grammar and remain distinct from the native ones (Matras 2009; Haspelmath & Sims 2013). These distinctions can be characterized along several dimensions: phonological features (e.g., segments, stress patterns), phonological processes (e.g., alternations), morphological processes (e.g.,

statum-specific inflection or derivation), restrictions on combinability with elements from other strata, etc. For example, English *-ity* can serve as a prototypical Latinate morpheme (especially as compared to the native counterpart *-ness*): (i) it triggers a stress shift (e.g., *atómic* vs. *atómic-ity*; cf. *atómic-ness*), (ii) it triggers velar softening (e.g., *electri[k]* vs. *electri[s]ity*), (iii) it does not combine with Germanic bases (e.g., *humidity*, *humanity*, **wetity*, **slowity*; *humidness*, *humanness*, *wetness*, *slowness*), (iv) it often combines with bound bases (e.g., *society*, *quality*), and (v) it is often semantically opaque (e.g., *hospitality*). There are different theoretical ways to explain this very special behavior of borrowed morphemes. First, loanwords can be analyzed as a lexical class that can have their own co-phonology (Anttila 2002; Uchihara & Mendoza Ruiz 2022). Second, loanwords can be interpreted as marked with a special feature (or a set of features for multiple lexical strata) which regulates the application or under-application of certain morphophonological processes (Itō & Mester 1995; Jurgec 2010). Third, the specificity of loanwords can be accounted for by the fact that they simply have different representations whereas neither the grammar nor the lexicon are in any way sensitive to their loanword status (Inkelas et al. 1997; Newell 2021).

From a diachronic perspective, the distinction between native and borrowed word-formation morphology corresponds to the important dichotomy of internal and external morphological / morphosyntactic change (Pat-El 2013). Specifically, while internal change is directional, proceeding generally from the ‘lexical’ to the ‘functional’ pole (Grestenberger 2023), external change (borrowing) may be counter-directional, targeting morphologically complex forms while bypassing their bases or related words and leading to the increased morphological opacity in the recipient language. Taking this into account allows, among other things, to investigate how different types of language contact influence language change (Robbeets 2015; Roberts 2021; Walkden et al. 2023).

From a language acquisition perspective, it is remarkable that borrowed morphology becomes productive relatively late (typically from middle school age to young adulthood) and follows a developmental trajectory distinct from native morphology. Specifically, different studies attested a considerably weaker manifestation of overgeneralization in borrowed morphology as a result of its higher opacity (Tyler & Nagy 1989; Bar-Ilan & Berman 2007; Mattes 2018). If this distinction is not driven by a [\pm native] feature but by

correlated phonological, morphological, syntactic, and semantic properties, one can further expect to find variation within borrowed morphology depending on its degree of integration, including phonological and semantic transparency and distributional constraints.

The key research questions the workshop engaged with were formulated by the convenors as follows. Is the distinction between native and borrowed items part of the grammatical knowledge of speakers? What drives speakers’ perception of nativeness and what are the consequences of the process of morphological integration? How do languages integrate morphology borrowed from different sources (e.g., Latinate and English borrowings in German), and (how) does this give rise to different strata of word-formation patterns? How universal are the various proposed borrowability scales and what is their status in the different theoretical approaches to word formation? What are the differences in the integration or nativization of borrowed morphemes between different morphological types (e.g., compounding vs. derivation vs. inflection) and what might be the morphological reason behind these empirical differences? How do borrowed affixes become native-like diachronically? Is there a difference between the development of borrowed vs. native morphology during L1 acquisition? Do languages differ w.r.t. the importance of nativeness for morphological productivity and if so, how is this distinction best modelled?

Nino Amiridze (Tbilisi State University), **Rusudan Asatiani** (Tbilisi State University), and **Zurab Baratashvili** (Tbilisi State University / The Australian National University) presented their study on verb formation and loan verb accommodation (LVA) within various Georgian language contact settings, specifically focusing on the Imerkhebian dialect’s long-term contact with Turkish and modern spoken Georgian’s contact with Russian (from the middle of the 19th century until the beginning of the 1990s) and with English (since the late 1990s). By selecting these three distinct scenarios, the research compares the effects of diverse donor languages and varying intensities of contact, ranging from the several-century-long influence of Turkish to the relatively brief exposure to English. The primary objective of the analysis is to identify the specific accommodation devices utilized in each variety and to situate Georgian’s preverb-based strategies within the broader typological framework of LVA. Drawing on data from the Georgian Dialect Corpus, the study concludes that Georgian employs a specific variation of the ‘direct

insertion' strategy described by Wohlgemuth (2009). The investigation reveals a distinct developmental pattern in how Georgian integrated foreign verbs over time. At the beginning of each contact period, Georgian used the preverb *da*—the most grammaticalized among Georgian preverbs—as the sole means of LVA. As the contact intensified, other possible preverbs became activated to facilitate the integration of new lexical items. The authors claim that this transition from a single-preverb strategy to a more diversified morphological approach reflects internal restructuring of the verbal system rather than simple replication of donor-language patterns.

Lina Inčiuraitė-Noreikienė (Vilnius University) gave two closely related talks: on hybrid compounds in Lithuanian (in co-authorship with **Danguolė Straižytė** [Vilnius University]) and on hybrid prefixed derivatives in Lithuanian. Both studies draw upon data from three major Lithuanian dictionaries and the Corpus of Contemporary Lithuanian Language. The first study investigates the morphological structure of compounds with borrowed constituents in Lithuanian and their integration into the native word-formation system. A characteristic feature of Lithuanian compounding is the combination of two stems—mostly simplex—that function as free words. This is best illustrated by native compounds such as *žand-i-kaul-is* ('jawbone'), which combine the independent stems *žand-as* ('jaw') and *kaul-as* ('bone'). In contrast, certain borrowed stems used in compounds, such as *-skopas* ('-scope'), remain bound and cannot function independently. This distinction motivates an analysis based on the relationship between free and bound stems. From this perspective, the research introduces two types of hybrid compounds in Lithuanian, categorized by the degree of their morphonological integration. The first type consists of compounds with a native first stem and a borrowed second stem; these generally conform to the established patterns of native compounds in the recipient language. The second type comprises compounds with a bound first stem, which generally show no morphonological accommodation or integration into the Lithuanian word-formation system. Finally, the study examines the distribution of determinative and copulative hybrid compounds, providing a comprehensive overview of how these diverse elements are synthesized in the Lithuanian language.

The second study looks into the morphological structure of hybrid prefixed derivatives. The research raises a central question regarding the extent to which hybrid prefixed

derivatives of different degree of integration resemble indigenous prefixed derivatives. The study establishes that while prefixation is a vital method for noun formation in Lithuanian, it yielded fewer derivatives compared to other morphological processes. The research classifies hybrid derivatives into two distinct groups: those formed from borrowed bases with indigenous prefixes, and those formed from indigenous bases with borrowed prefixes. Furthermore, the analysis introduces a distinction between two types of integration into the native word-formation system. The first type consists of morphologically integrated hybrid derivatives, which exhibit no structural differences from indigenous ones, while the second type consists of non-integrated derivatives that remain structurally distinct. The study also identifies the most frequent borrowed prefixes that combine with indigenous stems and examines cases of morphological ambiguity, where formations can be interpreted as either suffixed or prefixed depending on the chosen base word. Through these combined observations, the study provides an important insight into how hybrid forms are assimilated within the current functional state of the Lithuanian language.

The first day of the workshop concluded with a talk by **Petra Sleeman** (University of Amsterdam) dedicated to borrowed word formation in French and specifically, to the deverbal nominalizing suffix *-ing*. Historically, research on French morphology, such as the work of Dell & Selkirk (1978), distinguished between native and non-native (learned) Latinate suffixes, noting that only the latter could trigger backing of the preceding vowel (e.g., *fleur* [flœʁ] ‘flower’ → *floral* [flɔʁal] ‘floral’). More recent linguistic theories, building upon the syntactic approach to morphology (e.g., Creemers et al. 2015; Don et al. 2015), propose a three-way distinction of French suffixes: (i) root suffixes (e.g., *-able*, *-ique*) are categorially flexible, attach closely to roots, and affect stress; (ii) head suffixes (e.g., *-ment*, *-age*), corresponding to Dell & Selkirk’s (1978) native suffixes, are rigid category assigners and are stress-neutral; finally, (iii) first head suffixes (e.g., *-[a]tion*) are intermediate, attach to bound roots, and trigger learned backing. This more complex system allows to explain why some French suffixes that are not strictly learned still cause the stem vowel to back, unlike pure head suffixes. Sleeman claims that the borrowed suffix *-ing* should be classified as a root suffix. While Latinate root suffixes like *-al* and *-eux* typically trigger learned backing, the study observes that this specific phonological process does not apply to *-ing*. Corpus research reveals that *-ing* in French attaches exclusively to English verbs

which lack autonomous status within the French lexicon and can therefore be analyzed as bound roots. Furthermore, the study demonstrates the categorial flexibility of the suffix. Although *-ing* generally forms nouns in French, the research identifies instances where *-ing* forms are used as verbal forms in place of French infinitives. This evidence of functional versatility supports the argument that *-ing* operates as a root suffix. By situating a borrowed English element within the structural levels of French morphology, the study provides a clearer understanding of how foreign suffixes can be integrated into a recipient language.

Opening the second day of the workshop, **Nikolas Webster** (University of California, Santa Cruz) presented his study examining the morphosyntactic differences between Sino-Korean and native Korean predicates and challenging traditional views on root categorization and argument structure. The research highlights a fundamental distinction: Sino-Korean predicates require a light verb in the sentential domain but lack verbal functional structure within their corresponding process nominals. Conversely, native Korean predicates require verbal functional structure in process nominals but disallow light verbs in the sentential domain. These findings suggest that argument structure is not inherently tied to a specific syntactic domain but originates from the root itself. Consequently, the study argues that both Sino-Korean process nominals and their predicate counterparts utilize a $\sqrt{(\text{Root})P}$ (Harley 2014), where roots function as heads capable of projecting phrases and taking complements. The investigation draws on these observations to challenge decompositional morphosyntactic theories that assume roots to be syntactically deficient and unable to exist in a structure without categorization (e.g., Alexiadou 2014; Embick & Marantz 2008). The data suggest that ‘root categorization’ is not a genuine grammatical function. Because Sino-Korean loanwords resist combination with native derivational affixes, they generate predicates with transparent morphological forms that map directly onto their underlying structures. The author argues that while categorizing heads exist, they serve only to demarcate transitions between verbal and nominal domains and do not attach directly to roots. Finally, the study proposes that loanwords should be used as a diagnostic for determining the size of the minimal unit that can be expounded post-syntactically (Bobaljik 2012). By analyzing these loanword structures, researchers could predict which syntactic information is obscured by the morphological

forms of native predicates. Webster concludes that rigorous cross-linguistic investigation of loanwords provides a vital methodology for resolving longstanding questions regarding the nature of argument structure and the role of syntactic categorization.

Lior Laks (Bar-Ilan University) and **Maha Nassar** (Bar-Ilan University) discussed the emergence of doublets in Palestinian Arabic verb formation due to loanword integration, specifically focusing on the competition between the *CaCCaC* and *tCaCCaC* morphological patterns (e.g., *baʕrefna:s malyana-t* ‘I know people became millionaires’ vs. *tmalyan-et min il-ʔazme* ‘I became a millionaire from the crisis’). The research uses online data to illustrate how a single loanword, such as *malyo:n* ‘million’, can generate two distinct verbal forms—*malyan* and *tmalyan*—both denoting the intransitive event of ‘becoming a millionaire’. Semitic morphology relies highly on non-concatenative formation where verbs are formed in patterns. The patterns dictate the phonological shape of the verbs, including their prosodic structure, vowel placement, and affixation (Berman 1978; Aronoff 1994). While previous literature identified *CaCCaC* and *tCaCCaC* as the only productive patterns among the ten existing in Arabic, the study highlights a shift in how these patterns are used. The investigation reveals that the traditional boundaries of transitivity between these two patterns become increasingly unstable. Historically, *CaCCaC* was associated with transitive verbs, while *tCaCCaC* was reserved for intransitive ones. However, the analysis of new web-based data shows the frequent appearance of intransitive doublets, such as *hastar / thastar* ‘become hysterical’ and *banšar / tbanšar* ‘become punctured’. The study offers some generalizations regarding the distribution of these forms. It is observed that while *tCaCCaC* remains strictly intransitive, the *CaCCaC* pattern expands to host both transitive and intransitive types. This expansion is partly motivated by a preference for avoiding the phonological complexity of *tCaCCaC* which features an initial consonant cluster that some dialects tend to avoid. Furthermore, the research establishes that the unification of these two patterns is only possible when there is no functional contrast between transitive and intransitive meanings for the same concept. In cases where a morphological distinction remains necessary to mark transitivity—such as in the pair *makyaj* ‘put makeup on someone else’ vs. *tmakyaj* ‘put makeup on oneself’—the language continues to maintain the formal contrast.

Emma Molloy (University of Copenhagen) presented her study about the competition between native German plural affixes and the borrowed S suffix, providing a test case for how foreign morphology integrates into a native grammatical system. Historically, the S-plural is traced to contact with French and Low German and has been functionally described as a ‘default option’ used primarily for untypical nouns, such as borrowings and abbreviations (see Monakhov et al. [2025] for a recent review and discussion). The suffix is also traditionally characterized as a northernism in dialectology. The research uses synchronic experimental data to evaluate whether the distribution of S is best explained by regional dialect or by functional, phonological constraints. The investigation utilizes a completion task involving 219 native speakers from various regions within the German-speaking area. Participants were asked to pluralize both codified nouns and nonce words designed to test specific phonological constraints. The results strongly support the functional account over the regional one. Spatial autocorrelation modelling reveals no significant differences between High, Central, and Low German dialect areas. All participants preferred S for most codified tokens (many of which were borrowings) as well as for both vowel- and consonant-final nonce items. Building on the model proposed by Wiese (2009), Molloy argues for a three-level inflectional framework where S functions as a word-level affix used in the absence of a stored irregular or analogical pattern. The research concludes that the typicality effect—where a speaker’s perception of a word’s nativeness guides affix choice—offers a principled account of how morphological productivity is conditioned in modern German.

The workshop continued with **Franz Rainer’s** (WU Vienna) contribution that critically examined the concept of ‘neoclassical word formation’. Rainer argues that this concept does not constitute a relevant or homogeneous part of synchronic linguistic competence. From a synchronic perspective, neoclassical patterns are actually a series of smaller, internally consistent patterns that lack any unique traits distinguishing them from ordinary word-formation processes. By contrast, a diachronic approach justifies treating patterns derived from Greek and Latin as a collective group. However, even historically, the mechanisms driving these changes are identical to those governing change in word formation in general. The research demonstrates that differential outcomes across languages are primarily the result of cultural factors or the degree of proximity to donor

languages, a point illustrated through a comparative analysis of French and Italian. A major finding of the diachronic investigation concerns the historical neglect of Modern Latin. The study reveals that many loan translations from Modern Latin went unnoticed. Furthermore, the analysis shows that many neologisms—particularly in the sciences prior to the 19th century—were not formed on a vernacular basis. Instead, they were constructed by bilingual writers using Greek or Latin word-formation principles and then immediately adapted to the vernacular language. The talk concluded by highlighting a shift that occurred in the 19th century. Whereas earlier neologisms relied on the direct structural links to classical languages, more recent formations were increasingly created by speakers with insufficient knowledge of Greek or Latin. These speakers began coining new words based solely on the existing neoclassical formations already attested in their language.

The case study presented by **Sandra Birzer** (University of Bamberg) analyzes the productivity of the Latinate suffix *-ist(a)* in Slavic noun formation, focusing on Polish, Russian, and Serbian. While Russian and Polish use only the variants *-ist* and *-ista* respectively, Serbian accepts both forms, e.g., *pijanista* vs. *pijanist* ‘pianist’ (Klajn 2005). The analysis is synchronic and draws on data from web corpora to capture everyday usage, which allows a more accurate estimation of linguistic productivity. The study pursues two interrelated objectives: evaluating the suffix’s degree of integration across the three branches of Slavic and addressing the competition between the Serbian variants. The research identifies a three-stage developmental pathway for the suffix’s integration. The first stage involves borrowed internationalisms, such as the Russian *ideal-ist*, representing ‘matter replication’ (Sakel 2007). The second stage consists of language-internal formations using borrowed bases, such as the Russian *futbol-ist* ‘football player’. The final stage comprises formations with native Slavic bases, such as the Russian *očerk-ist* ‘essayist’. The findings reveal that while Russian and Polish have successfully reached the third stage of nativization, the Serbian suffix still remains limited to borrowed bases. Regarding the affix rivalry in Serbian, Birzer argues that though *-ista* formations currently dominate in both type and token frequency, there is a divergent trend for recent English borrowings, such as *sajentist* ‘scientist’ or *sajklist* ‘cyclist’, which occur exclusively with the *-ist* variant. The study concludes by exploring whether the patterns observed in Russian, Polish, and Serbian can be analyzed as a case of ‘allogeneous exaptation’ (Gardani 2016), with the suffix

initially assuming a specialized function as a loan marker and then losing this status when fully integrated into the native lexicon.

The talk by **Anthoula Revithiadou** (Aristotle University of Thessaloniki), **Ilias Mittas** (Aristotle University of Thessaloniki), and **Giorgos Markopoulos** (University of the Aegean) was dedicated to the encoding of morphological nativeness in Greek through the lens of loanword assimilation. Historically, linguistic analyses recognized a binary distinction in Greek: loanwords were either treated as unassimilated, indeclinable forms (e.g., *tanks*) or as fully assimilated words integrated into the Greek inflectional system (e.g., *lórð-os*). The research identifies a previously undocumented intermediate pattern where established unassimilated forms, such as *tíktok*, coexist with emergent assimilated variants like *tíktók-i*. This phenomenon provides a unique opportunity to observe the real-time dynamics of morphological integration and the specific criteria speakers use to determine a word's status within their grammar. The investigation reveals that while morphosemantic factors—such as whether a referent is human—influence adaptation, the primary driver for integration is inflection class productivity. Specifically, the study finds that the highly productive neuter *-i* class readily accepts new loanwords, whereas other neuter classes, such as *-o*, are systematically excluded. This leads to the conclusion that Greek speakers do not rely on phonotactic gatekeeping to encode nativeness (e.g., the presence of word-final *k* in *tíktok*, which is illicit in Greek phonotactics, does not trigger phonological adaptation). Instead, nativeness is encoded through the selection of productive morphological classes. Furthermore, the analysis establishes a link between the productivity of an inflection class and stress predictability. The research shows that speakers prefer to channel foreign roots into classes with predictable stress patterns, such as the *-i* class, where nouns are systematically stressed on the penultimate syllable. By prioritizing these stable, productive patterns, speakers facilitate the integration of foreign lexical items into the native grammatical structure. The study concludes that morphological nativeness in Greek is defined more by the alignment with productive inflectional regularities than by the rigid adherence to native phonological constraints.

The two concluding talks of the workshop formed one thematic block, dedicated to the problem of competing Latinate and native nominalizations in different European languages. **Gianina Iordăchioaia** (University of Graz) and **Sergei Monakhov**

(University of Graz) presented a large-scale corpus study of three competing nominalization patterns in German: (i) Latinate *ion*-formations (e.g., *Dekoration*), (ii) native *ung*-formations (e.g., *Dekorierung*), and (iii) native nominal infinitives (e.g., *Dekorieren*). Taking into account that both native derivations require the Latinate verbalizer *-ier-* and building on Grimshaw’s (1990) distinction between the so-called Argument Structure Nominals (ArgStrN) and Result Nominals (ResN), the authors hypothesize that along the continuum of verbal event structure preservation in nominals, *ion*-nouns are closest to the result reading pole, nominal infinitives are closest to the argument-structure reading pole, with *ung*-nouns falling somewhere in between and competing with the former two for respective interpretations. In many cases, nominalizations can be ambiguous between the two readings, which is why Iordăchioaia and Monakhov, first, estimate the probabilities of the respective classes of nouns to appear (i) with inflectional or prepositional genitive phrases and (ii) in plural and second, use the log-odds ratio of these two probabilities as a formal diagnostics of the nouns’ ArgStrN-hood and ResN-hood. Positive values of the ratio indicate that the nouns are, on average, more likely to be encountered with genitive phrases than in plural form and hence, preserve much of the verbal event structure. Negative values of the ratio, by contrast, show that the nouns are more likely to be used in plural than with genitive phrases and hence, have drifted far way from the ArgStrN-reading pole. Using frequency counts of 4,390 *-ion*-, *-ung* and infinitive nominalizations extracted from the German *deTenTen23* corpus (Sketch Engine) and Bayesian hierarchical modelling approach, the authors compare the ArgStrN-properties of three groups of competing nominalizations: (i) *ion*-, *ung*-, and infinitive nominalizations built from the same verb root (e.g., *dekor-*); (ii) *ung*- and infinitive nominalizations derived from Germanic verbs that do not show *ion*-nominals and contain no *-ier-* verbalizer (e.g., *Abbildung / Abbilden* ‘depiction’); and (iii) *ung*- and infinitive nominalizations derived from verbs that do not show *ion*-nominals but contain *-ier-* (e.g., *Jodieren / Jodierung / *Jod(is)ation* ‘iodization’). Comparing these three groups of families allows to separately estimate two effects: (i) the rivalry effect induced by the presence / absence of *ion*-noun and (ii) the structure effect, induced by the presence / absence of the verbalizer *-ier-*. The results show that items with *-ier-*, both infinitives and *ung*-nouns, indeed appear more ArgStrN-like than their counterparts

without the verbalizer. Further on, Iordăchioaia and Monakhov observe that within the pair of *ung*-nominalization classes with verbalizer, those nouns for which there is no attested *ion*-counterpart behave more ResN-like than those that have this counterpart. This finding suggests that *ung*- and *ion*-nominalizations compete for the ResN reading, and when the possibility of using an *ion*-noun is missing, the respective *ung*-noun has to take on its functions.

The workshop concluded with a talk by **Marko Simonović** (University of Graz), **Predrag Kovačević** (University of Novi Sad), **Joeri Vinke** (University of Graz), and **Petra Mišmaš** (University of Nova Gorica) on Latinate nominalizations in Germanic and Slavic languages. The authors investigate the specific behavior of Latinate nouns ending in *-ion* in competition with native deverbal nominalizations in Dutch and Western South Slavic (WSS) languages (Slovenian and Bosnian / Croatian / Montenegrin / Serbian). A key feature of these languages, which distinguishes them from English, is that native nominalizations here preserve an obligatory overt verbalizing morpheme required in Latinate verbs but absent in Latinate nominalizations. For instance, the Dutch *conserv-er-en* has two corresponding forms: native *conserv-er-ing* and Latinate *conservatie*. Similarly, in WSS, there are two competing nouns associated with the verb *konzerv-ira-ti*: *konzerv-ira-nje* and *konzervacija*. The focus of the investigation is on how these morphological differences affect the verbality of the resulting nouns. While Dutch and WSS share the requirement for verbalizing morphemes, they differ in their treatment of the infinitive; in Dutch, the nominalized infinitive can function as a noun and take genitive arguments, whereas in WSS, the infinitive cannot be nominalized, leading to a system where every Latinate verb derives a native nominalization in *-nje*. The study draws on corpus data to track the frequency of plural and genitive-marked forms. Following syntactic literature, the authors hypothesize that plural marking indicates a simpler, less verbal structure, while the presence of genitive complements signals a more complex verbal structure (Grimshaw 1990). The findings consistently support the hypothesis that Latinate nominalizations carry less verbal structure than their native counterparts. In Dutch, 42 % of native nominalizations are followed by a genitive (*van*) complement, compared to only 29 % of Latinate forms. This pattern is mirrored in Slovenian, where the numbers are 48 % for native forms and 29 % for Latinate ones. Conversely, the data

regarding pluralization—a marker of noun-like behavior—show the opposite trend. In Dutch, Latinate forms are pluralized at a rate of 7 % compared to 4 % for native forms. In Slovenian, the contrast is even starker: Latinate nominalizations are pluralized in 13 % of cases, while native *-nje* forms are almost never pluralized, appearing at a rate of only 0.5 %. Ultimately, these results suggest that the absence of verbal morphology in Latinate nominalizations facilitates their transition into pure nouns. Native nominalizations, by retaining the verbalizing morpheme, remain anchored to their verbal origins, favoring event-based structures that require arguments. This distinction highlights a fundamental link between the internal morphological makeup of a word and its subsequent syntactic behavior across different European language families.

In sum, the workshop *Native vs. Borrowed Word Formation in Synchrony and Diachrony* offered a comprehensive and theoretically informed exploration of morphological borrowing in many languages and domains. Across the individual contributions, several thematic clusters emerged. First, talks on loan-based verb formation revealed how borrowed roots interact with native verbal systems, often triggering internal restructuring rather than simple copying. Second, studies of nominalization and affix rivalry showed that borrowed morphology participates in paradigmatic relations and affects the behavior of native formations. Third, research on hybrid word formation highlighted degrees of morphological integration and the importance of structural criteria over etymology. Finally, multiple studies converged on a usage-based notion of morphological nativeness, grounded in productivity, predictability, and speaker perception. Taken together, the workshop demonstrated that the study of native and borrowed word formation provides crucial insights into morphological structure, change, and variation, and that borrowing is best understood as an integral part of grammatical systems rather than as a peripheral phenomenon.

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