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Monika Rathert, Artemis Alexiadou (Eds.)

THE SEMANTICS OF NOMINALIZATIONS ACROSS LANGUAGES AND FRAMEWORKS

INTERFACE EXPLORATIONS



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The Semantics of Nominalizations across Languages and Frameworks

Interface Explorations 22

Editors

Artemis Alexiadou

T. Alan Hall

De Gruyter Mouton

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edited by

Monika Rathert

Artemis Alexiadou

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Preface

The chapters in this volume grew out of papers presented at the workshop “Nominalizations across Languages” that we organized at Stuttgart University, Germany, in December 2007. It was a lively and engaging workshop, with many good papers – in fact too many for a single volume. We decided to split the papers in two volumes, one focusing on the semantics of nominalizations (the current volume, IE 22), the other one focusing on the syntax of nominalizations (IE 23). The split reflects nicely the kinds of contributions we received, although we want to stress that there are, of course, many overlapping and unifying questions.

The current volume IE 22 explores the semantics of nominalizations from different theoretical points of view: formal and lexical semantics, cognitive-functional grammar, lexical-functional grammar, discourse representation theory. Data from a variety of languages are taken into account, including Hungarian, Italian, French, German and English. The papers discuss the semantics of distinct readings of nominalizations and meaning differences observed between competing affixes.

It was an enormous pleasure for both of us to prepare the volumes. We would like to thank our authors for their contributions, we have benefited enormously from reading their chapters. Many thanks also to our reviewers for their insightful and inspiring comments.

Many thanks also to the DFG for the financial support that made this event possible.

Finally, we would like to thank Anke Beck, Julie Miess and Ursula Kleinhenz at Mouton de Gruyter for their valuable editorial assistance and guidance. Thanks also to Frank Benno Junghanns for proofreading and taking care of the formatting of the manuscripts.

Monika Rathert and Artemis Alexiadou
Wuppertal/Stuttgart, May 2010

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Contributors

Artemis Alexiadou is Professor of Theoretical and English Linguistics at the Universität Stuttgart. Her research interests lie in theoretical and comparative syntax, with special focus on the interfaces between syntax and morphology and syntax and the lexicon. She is currently working on nominal structure and verbal alternations. She has published work in *Linguistic Inquiry*, *Natural Language and Linguistic Theory*, and *Studia Linguistica* among others.

Chris Barker is Professor of Linguistics at New York University. His interests include the semantics of nominals, especially of possessives. He currently works on applications of computational and logical approaches to natural language semantics, including continuations and substructural logics.

Regine Brandtner is researcher/PhD student in a project on the formation and interpretation of derived nominals, part of the collaborative research centre *Incremental specification in context* (SFB 732) at the University of Stuttgart. She is especially interested in the semantics-pragmatics interface, ambiguity and discourse structure.

Klaus von Heusinger is Professor of General and German Linguistics and Director of the Center for Linguistics and Cognition at the Universität Stuttgart. His research interests are the interface between semantics and syntax as well as the interface between pragmatics and syntax. His current research focuses on differential object marking and the encoding of definiteness and specificity in different languages. He has published work in *Journal of Semantics*, *Linguistics*, *Probus* and *Morphology*.

Liesbet Heyvaert is an assistant professor at the University of Leuven (Belgium). She has always had a keen interest in lexicogrammar in general and how it encodes meaning and has published mainly on nominalization and middle formation (in journals such as *Cognitive Linguistics*, *Linguistics*, *Functions of Language*, *Folia Linguistica* and *Word*, among others). She is also the author of *A cognitive-functional approach to nominalization in English*, published by Mouton de Gruyter in 2003 (*Cognitive Linguistics Research Series* 26).

Hans Kamp is research fellow in the Center for Linguistics and Cognition at the University of Stuttgart and visiting professor in Linguistics and Philosophy at the University of Texas at Austin. Scientific interests are primarily in the areas of semantics and pragmatics of natural language and the philosophy of language, logic and mind. Among current topics of interest are: propositional attitudes and their reports; tense and aspect; computation and justification of presuppositions; vagueness, ambiguity, underspecification and ways of reducing them; modes of definite and indefinite reference; linguistic and cognitive aspects of space; forms of context dependence and contextual information; sublexical syntax and semantics. Most of these topics are being pursued within frameworks based on Discourse Representation Theory.

Tibor Laczkó is Associate Professor of Linguistics at the University of Debrecen, Hungary. He works in the framework of Lexical-Functional Grammar. His main research areas include Hungarian and English syntactic, morphological and morphosyntactic phenomena with especial attention to noun phrases, nominalization, possessive constructions, participial and infinitival non-finite clauses, and bracketing paradoxes. His book, *The Syntax of Hungarian Noun Phrases*, was published by Peter Lang in 1995.

Fabienne Martin is a postdoctoral researcher at the Institut für Linguistik/Romanistik of the University of Stuttgart. Her research interests include lexical semantics, aspect and the semantics/pragmatics interface. She received her PhD in Linguistics in 2006 from the Université libre de Bruxelles, and is the author of *Les Prédicats Statifs* (De Boeck).

Chiara Melloni is Assistant Professor of General Linguistics at the University of Verona. Her research interests cover the fields of morphology and lexical semantics. Her scientific production, published in international journals and miscellanies, has focused on the formal and semantic properties of the morphologically complex lexicon and, specifically, on word formation phenomena such as nominalization and compounding.

Monika Rathert is Professor of German Linguistics and Director of the Center for Linguistics at Bergische Universität Wuppertal. Her research interests lie in morphosyntax, semantics, and the language of the law. Her books include *Textures of Time* (Akademie, 2004), and *Sprache und Recht* (Winter, 2006); she has edited *Perfect Explorations* (Mouton, 2003) together with Artemis Alexiadou and Arnim von Stechow, *Formal Linguistics and Law* (Mouton, 2009) together with Günther Grewendorf, and *Quantification*,

Definiteness, and Nominalization (Oxford, 2009) together with Anastasia Giannakidou.

Antje Roßdeutscher is Senior Researcher at the Institute for Computational Linguistics at the University of Stuttgart. Her research interest lie in formal semantics and pragmatics from the point of view of interpretation and generation. Her work focuses on lexical semantics based on Discourse Representation Theory. She has published own and joint work in *Linguistische Berichte*, *Theoretical Linguistics* and *Linguistics and Philosophy* among others.

Melanie Uth is PhD student at the Department of Romance Linguistics at the University of Stuttgart. She is interested in derivational morphology, lexical semantics, language and cognition, language change and creole genesis. In her PhD thesis, she discusses the role of semantics in derivational morphology on the basis of a contrastive analysis of the French nominalization suffixes *-ment* and *-age*.

Introduction

Monika Rathert and Artemis Alexiadou

Deverbal nouns have been important and controversial in linguistic research, as they constitute an instance of structures showing categorially ambivalent behaviour, cf. Roeper (2005). Do deverbal nouns inherit the arguments of the underlying verbs? English data such as (1b) show that nominalizations of transitive verbs allow the inheritance of both the agent and the theme argument of the verb:

- (1) a. destroy (x_{Agent} , y_{Theme})
b. [the enemy's]_{Agent} destruction [of the city]_{Theme}

But the agent is only realized in presence of the theme. If the theme is suppressed, *enemy's* is no longer the agent but the theme of destruction:

- (2) a. *[the enemy's]_{Agent} destruction
b. [the enemy's]_{Theme} destruction

In contrast to English, the prenominal position in nominalizations is more or less limited to proper names in today's German¹:

- (3) a. ?? des Feindes Zerstörung (equivalent to (2b))
the enemy's destruction
b. Churchills Zerstörung
Churchill's destruction

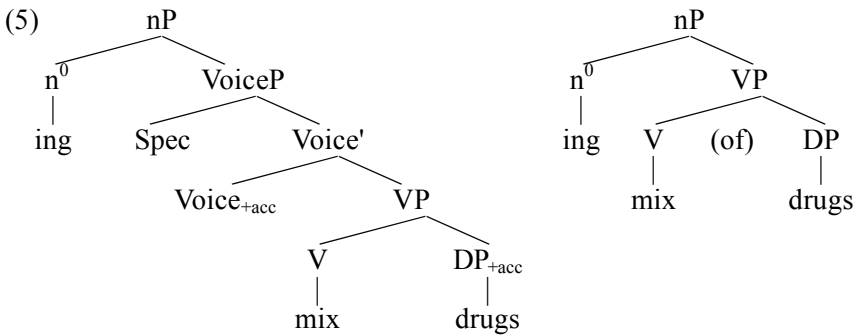
While the nominalizers *-tion* in (2) and *-ung* in (3) lead to clearly nominal outputs, this is not the case for other affixes. As for the English *-ing*, a relatively verbal ACC-ing gerund contrasts with a nominal ING-of gerund:

- (4) a. ACC-ing
Belushi foolishly mixing drugs was the cause of...
b. ING-of-Gerund
Belushi's foolish mixing of drugs was the cause of...

¹ Cf. Demske (2001); it is only after the end of the 17th century that the prenominal position was restricted to proper names like this.

The ACC-ing gerund *mixing* in (4a) is relatively verbal as it assigns accusative case and is modified by an adverb (*foolishly*). ING-of gerund in (4b) is nominal as it allows only adjectival modification and as the object does not receive accusative (but genitive from *of*).

Within the framework of Distributed Morphology, this contrast receives a syntactic explanation. Similar to Abney (1987), Alexiadou (2001), Harley (2009) proposes that *-ing* dominated a VoiceP with the ACC-ing gerund, but only a VP with the ING-of gerund:



This analysis is not without problems, consider that adverbial modification is possible in both cases, contrary to the data in (4).

If a syntactic analysis would be the solution to deverbal nominalizations, well-known facts about restrictions on productivity and lexicalization phenomena would be left unaccounted for. The following nouns do not show the event or process reading one would expect with German *-ung*-noun (examples from Fleischer and Barz 1992):

- (6) Erfrischung, Lenkung, Kupplung, Innung, Losung, Schöpfung

As already mentioned, in English a relatively verbal ACC-ing gerund contrasts with a nominal ING-of gerund. But there is even more variation with *-ing* formations (examples from Quirk et al. 1985):

- (7) a. Brown's painting of his daughter hangs in the museum
 b. The painting of Brown is as skillful as that of Gainsborough
 c. ING-of: Brown's deft painting of his daughter is a delight to watch
 d. POSS-ing: Brown's deftly painting his daughter is a delight to watch
 e. PRO-ing: Brown is well known for painting his daughter
 f. ACC-ing: I dislike Brown painting his daughter
 g. Brown is painting his daughter

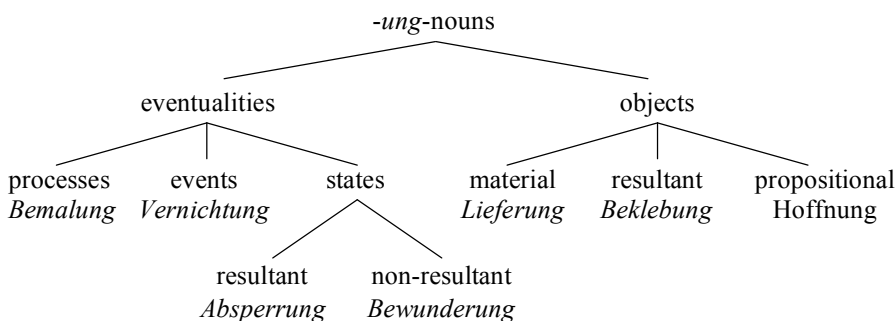
With the POSS-ing in (7d), the agent (Brown's) is expressed as a possessor. As for the PRO-ing in (7e), one assumes a proform as [painting his daughter].

Several tests show that ACC-ing and PRO-ing display a verbal/propositional semantics whereas the semantics POSS-ing is rather nominal. Horn (1975) has shown differences in agreement:

- (8) a. That Pat came and that Chris left bothers / ?bother me (S)
 b. Pat coming and Chris leaving bothers / ?bother me ACC-ing
 c. Coming and leaving (so often) bothers / ?bother me PRO-ing
- (9) a. Pat and Chris *bothers / bother me (NP)
 b. Pat's coming and Chris's leaving ?bothers / bother me POSS-ing

Another problem is the non-constant meaning of nominalizing affixes, their so called sortal ambiguity. German *-ung* shows up to seven distinct types of meaning:

- (10) *-ung*-Nomen according to Ehrich and Rapp (2000):



Not all readings are available for all deverbal *-ung*-nouns:

- (11) a. *Lieferung*: no resultant state **die Lieferung hat Bestand*
 b. *Vernichtung*: no material object **die Vernichtung der Akten wird gelagert*

Empirical work with corpora (e.g. Reinhard 2001) has tried to determine the relationship between the semantics of the verbal base and the sortal ambiguity of the deverbal noun. The picture is complicated by blocking phenomena; although semantically equivalent, *-ung*-nouns and nominalized infinitives show variation with respect to blocking:

- (12) a. *-ung*-nouns and nominalized infinitives: equally acceptable
 die Normalisierung – *das Normalisieren*
 the normalizing – the normalizing
- b. preferences for the infinitive
 **die Streichelung* – *das Streicheln*
 the petting
- c. preferences for the *-ung*-noun
 eine Überwachung für die Urlaubszeit – ??*ein Überwachen für die Urlaubszeit*
 a monitoring during the vacations
- d. equally bad
 **die Herumliegung des Mülls* – **das Herumliegen des Mülls*
 the lying around of garbage

The reasons for the varying grammaticality are not completely clear. They are currently under examination by Kamp and Rossdeutscher and Alexiadou and Schäfer within the context of the SFB 732 in Stuttgart. Is the deviance of (12c) due to the fact that nominalized infinitives are closer to verbs than *-ung*-nouns in that their accusative object may not be omitted? The deviant infinitive in (12d) might be due to a restriction on animacy limited to stative verbs, cf. the grammatical *das Rauschen der Wälder* Jacobs (2002).

The papers in this volume address these issues and introduce further and finer distinctions in the semantics of nominalization. Let us briefly summarize their main contributions.

Barker is concerned with the question whether nominals provide criteria of identity. He claims that there is no need for positing lexical criteria of identity, and so nominals provide only criteria of application. The impression that some nominals have non-trivial criteria of identity is due to the fact that in certain limited pragmatic situations, nominals can shift their meaning from a set of individuals (people) to a set of stages (passengers). Because some nominals are episodically linked to a set of events, they are especially likely to undergo this meaning shift, but under the right circumstances, other nominals can shift. Circumstances that promote per-event shifts include situations in which tracking individuals becomes difficult: large numbers of individuals, long periods of time between observations, or salience of a nominal's qualifying events. Ultimately, then, the granularity of individuation depends on spatial, temporal, and causal contiguity, in combination with the pragmatic needs of the discourse, and not on lexical criteria of identity.

Brandtner and Heusinger's discussion of predicate transfer is devoted to a similar kind of pragmatically-triggered meaning shift. As mentioned before, nominalizations denote different sortal types, e.g. events, states etc., depending on a variety of parameters. Brandtner and Heusinger focus on the sortal readings of *-ung*-nominalizations in German that are triggered by the sortal restrictions of adjectival modifiers and the predicates that govern the nominalizations. They start with the observation that some nominalizations can occur in a context where they have different sortal readings imposed by the adjectival modifier on the one hand and by the predicate on the other. They provide a new analysis for these cases based on Nunberg's notion of predicate transfer. They assume that the predicate extends its meaning and thereby imposes different selectional restrictions, rather than shifting the meaning of the nominalization.

Heyvaert offers a cognitive-functional perspective on deverbal nominalization in English. Rooted in the Cognitive Grammar framework as developed by Langacker while also adopting some of the fundamentals underlying Halliday's systemic-functional analysis of language structure, the approach to nominalization that it proposes involves a usage-based description of the 'symbolic' status of various nominalization types, of the compositional relationships which they realize (in particular, of their component functions – which, it is argued, may be highly schematic categories realizable both in clauses and in nominal structures); and, thirdly, of the paradigmatic relationships which nominalizations enter into as 'complex' linguistic categories with non-nominalized noun phrases and with clausal structures. Among its most distinctive features is certainly the importance it attaches to the role played by functional categories that relate to the speech event or 'ground' (e.g. modality, tense, subject) and that have long been attributed exclusively to clausal structure.

Laczkó is concerned with a new account of possessors and event nominals in Hungarian within Lexical-Functional Grammar. The gist of the analysis is that a lexical conversion process creates a raising predicate from an ordinary noun and an equi predicate from a relational/deverbal noun, and the Poss morpheme functions as the PRED of their (XCOMP) propositional argument. This approach solves two classical problems: (i) modelling the "embedded" nature of the possessive relation and (ii) avoiding dual theta role assignment. Laczkó also discusses issues raised by possessive constructions with complex event nominal heads. A crucial feature of the new approach is that the argument structure that the deverbal noun inherits from the input verb is, as a rule, also augmented by the lexical predication template with a propositional argument. Consequently, the possessor in such construc-

tions is not a simple equivalent of the subject argument of the input verb, because it is also involved in an equi-type functional control relationship.

Martin investigates the semantics of eventive suffixes in French. Eventive deverbal nouns (EDNs) can be formed with at least three suffixes in French, namely -age, -ment and -ion. The goal of Marin's paper is to explain the distribution of these three suffixes in contemporary French. The hypothesis she explores is that these suffixes have an abstract semantical value, which contributes to explain why verbs select different suffixes in the operation of nominalisation, given the additional premise that the meaning of the verbal stem and the one of the suffix must match. She also tackles the acceptability of neologisms. For this study, two kinds of empirical data have been investigated, namely existing EDNs listed in dictionaries (*Le Petit Robert*, *Le Littré* and *Le Trésor de la Langue française*) as well as existing EDNs which are present in corpora (e.g. on Internet) but not listed in dictionaries.

Melloni investigates polysemous action nominals which not only denote events but also refer to the results or effects of the events themselves. She is looking *inside* action nominals, hence paying attention to verbal semantics, rather than examining their behaviour in the syntactic context. The hypothesis she develops is that it is possible to predict the potential polysemy of action nominals by exploring the structural and, especially, the conceptual semantics of the base verb. The analysis of several verb classes allows her to capture the semantic features of the relevant argument or semantic participant of the base that semantically corresponds to the referential noun. In particular, she isolates the conceptual-semantic, thematic and aspectual features of the heterogeneous class of result/referential nouns. Melloni focuses on Italian data, but her analysis surely carries over to other Romance languages, and might be extended to Germanic and Slavic.

Roßdeutscher and Kamp are concerned with syntactic and semantic constraints on the formation and interpretation of German -*ung*-nouns. The central aim of this paper is to explain when -*ung*-nouns can be formed and what an -*ung*-noun can mean in case it can be formed. The general approach to these questions is to develop a theory of the internal, root based structure of verbs, building on the works from within Distributed Morphology. New is the way in which morpho-syntactic structures familiar from DM (or structures closely related to those) are given a formal semantics (specified by Roßdeutscher and Kamp in the form of semantic representations cast in a version of DRT).

Uth investigates the rivalry of French -*ment* and -*age* from a diachronic perspective. She shows that even in New French, the several differences

exhibited by the *-ment* and *-age* nominalizations should best be traced back to a single underlying semantic difference, relating to the perspective from which the nominalized forms refer to the event designated by the base verb. She argues that *-age* nominals focus on the property of subject referents to take part in the event designated by the base verb, whereas *-ment* nominalizes the property of Theme arguments to participate in the state resulting from the base event. It follows that, in the case of *-ment*, the exact meaning of the nominals will highly depend on the Aktionsart-related characteristics of the base verb. The paper clearly supports the hypothesis that *-ment* and *-age* may indeed be distinguished with respect to a single underlying semantic difference.

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Nominals don't provide criteria of identity

Chris Barker

Or else maybe they are all the selfsame electron. In 1948 John Archibald Wheeler, in a telephone conversation with his student Richard Feynman, proposed the delightful hypothesis that there is just one electron in the universe. The single particle shuttles forward and backward in time, weaving a fabulously tangled “world line.” At each point where the particle’s world line crosses the spacetime plane that we perceive as “now,” it appears to us as an electron if it is moving forward in time and as a positron if it is going backward. The sum of all these appearances constructs the material universe. And that’s why all electrons have the same mass and charge: because they are all the same electron, always equal to itself. (Hayes 1998)

1. What’s at stake

Geach (1962: 39, 154) suggests that nouns carry, as part of their meaning, criteria of identity:¹

- (1) *Heraclitus bathed in some river yesterday, and bathed in the same river today.*
- (2) *Heraclitus bathed in some water yesterday, and bathed in the same water today.*

Geach notes that (1) can very well be true (he washed in the same river) at the same time that (2) can be false (he washed in different water). Apparently, whether the fluid Heraclitus washed in on the two days counts as the same or not depends on whether we conceive of that fluid either as a river, or as water. (Geach explicitly assumes that whatever is a river is water.)

More specifically, Geach proposes that nouns, in addition to having criteria of application – roughly, the properties in virtue of which an object

¹ Thanks for helpful discussion to Tom Leu, Magdalena Schwager, two insightful referees, and the audience of the Workshop on Nominalizations across Languages.

counts as a river – also have criteria of identity: criteria that determine whether the river Heraclitus bathed in yesterday is the same river as the one he bathed in today. If the criteria of identity for *river* and *water* differ, then two distinct quantities of matter can count as the same river without counting as the same water.

But surely in this case it is enough to know the criteria of application. That is, if we can reliably answer the question “Is this object a river?”, then we already know everything we need in order to judge whether two objects are the same river: we simply observe whether they are related to each other spatially, temporally, and causally in the way that we expect different parts or different stages of a single object to be related. This is not to say that judgments of identity are always easy or simple (see, e.g., Brennan 1988 for the familiar paradoxes); only that they do not depend on special lexical meaning for resolution.

Nevertheless, a number of philosophers and linguists have endorsed lexical criteria of identity, including Gupta (1980), Carlson (1982), and Baker (2003) (not to mention myself in earlier work, Barker 1998, 1999). For instance, Gupta (1980: 2), commenting on Geach, allows that a common noun supplies a principle of identity: “A common noun, such as ‘river’, provides a rule that determines when an object at a time (and a world) is *the same river* as an object at another time (and a world)” [italics in original].

Indeed, Baker (2003: 105) builds relative identity into the syntax and the semantics of nouns at the most fundamental level:

For any noun X , the syntactic representation $X_{\{i,k\}}$ corresponds semantically to the interpretation ‘ j is the same X as k ’, or in symbolic terms $same(X)(j,k)$.

Thus each nominal introduces a pair of referential indices, rather than the usual single index:

- (3) *I bought a pot_{i,k} and a basket_{l,m}. The pot_{n,i} is heavy.*

Since we have that object i is the same pot as object k , and that object n is the same pot as object i , we recognize that the objects indexed by i , k , and n all count as the same pot.

In fact, Baker (2003: 95, 105) proposes criteria of identity as the essential element distinguishing nouns from all other lexical categories cross linguistically. The stakes could hardly be any higher!

I will argue here that nouns do not in fact have criteria of identity, at least not as any idiosyncratic part of their meaning. The mistaken impression

that they do comes from the fact that some nominals (especially certain productive nominalizations) have meanings that promote the likelihood of a certain kind of pragmatic shift in meaning that replaces a set of individuals with a set of stages.

2. Arguments in favor of nominal criteria of identity

Before arguing against criteria of identity, we should consider the case in favor. Geach's (1962: 39) proposal rests on the following reasoning suggesting an intimate connection between counting, sameness, and identity:

[We] cannot count As unless we know whether the A we are now counting is the same A as we counted before.

Geach's claim is that objects will be distinct relative to a nominal concept N only if we count them as more than one N. Conversely, if we can refer to one of them as *the same N* as some other, those two objects must be identical, relative to the choice of the noun N.

Geach's observation generalizes Frege's (1884: § 62) ideas relating specifically to the concept of number:

If we are to use the sign *a* to signify an object, we must have a criterion for deciding in all cases whether *b* is the same as *a* ... In doing this, we shall be giving a general criterion for the identity of numbers (*ein allgemeines Kennzeichen für die Gleichheit von Zahlen*).

This translation (by J. L. Austin) appears to be the origin of the expression 'criteria of identity'.

2.1. Counting passengers

There is a non-essential weakness in Geach's motivating examples, since he confounds criteria of identity with the difference between mass and count. For instance, in (1), *river* is a count noun, and in (2), *water* is a mass noun. The same confound is present in other examples of Geach's (the statue versus the stuff the statue is made of, etc.). Ever since Link (1983), it is common to provide a systematic mapping (more specifically, a homomorphism preserving joins) from the set of individuals into the quantities of matter that make them up, e.g.:

$$\mu(\text{earring}_1 \oplus \text{earring}_2) = \mu(\text{earring}_1) + \mu(\text{earring}_2)$$

Here ‘ $\oplus$ ’ is the mereological join operation in the domain of count individuals, ‘+’ is the corresponding join operation in the domain of mass quantities, and μ maps individuals to the quantity of matter that make them up. Then this equation expresses the thought that the stuff that makes up the sum of the earrings is the same as the sum of the stuff that makes up each individual earring. Link explicitly allows for the entities in the individual domain to be distinct from the corresponding entities in the mass domain (his “wild ontological caprice”). As long as the earrings ($\text{earring}_1 \oplus \text{earring}_2$) denote a distinct entity from the stuff that makes them up ($\mu(\text{earring}_1 \oplus \text{earring}_2)$), it is easy to understand how we can count two earrings without counting two ‘golds’.

Adopting Link’s proposal, the river/water puzzle can be resolved by allowing the homomorphism μ to change over time, so that the two distinct quantities of water can easily be part of the matter making up the same river. Thus the case for criteria of identity would be stronger if we could find examples that did not depend on mass nouns.

Well, Frege (1884, §22) observes that if we confront a person with a pile of playing cards and ask him to count them, he cannot oblige unless we provide a noun such as *card* or *deck*, since there may be 52 cards but only 1 deck. The contrast between *card* and *deck* establishes that the counting of objects must be relative to a specific noun (*deck* versus *card*). However, it does not follow that this difference depends on postulating criteria of identity. Schwarzschild (1992, 1996) and Barker (1992) argue that group nouns such as *deck* denote atomic objects that are independent of (though related to) the individuals (the cards) that serve as members of the group. Given a linguistic semantics on which decks are distinct objects from collections of cards, the observed counting behavior depends only on the criteria of application for these nouns, and there is no need for postulating differences in criteria of identity.

Fortunately for advocates of criteria of identity, Gupta (1980) provides a case that does not run afoul of either the mass/count issue or the individual/group issue:

- (4) *Easyjet served 10 million passengers last year.*
- (5) *Easyjet served 10 million people last year.*

The intuition is supposed to be that (4) can be true at the same time that (5) is false. The idea is that if a person flies on Easyjet twice, that one person

counts as two passengers. Gupta (1980: 23) concludes that “the principle of identity for *passenger* is clearly non-trivial”: if the noun *passenger* has more stringent criteria of identity than *people*, then the same person on two different trips can count as two distinct passengers.

So at this point we have at least a *prima facie* case for contemplating criteria of identity as part of the lexical meaning of nouns.

2.2. Stages, events, and deverbal nominalizations

Neither Geach nor Gupta say much about what criteria of identity might be like, beyond claiming that we need them. Carlson (1982) makes an explicit connection between criteria of identity and events.

(6) *Clements struck out 15 batters in a row in the game last night.*

This sentence is supposed to be capable of being true despite the fact that baseball teams consist of only nine players, as long as these nine players continued to go to bat over the course of 5 innings until Clements has achieved his 15 strike-outs. Just as in the *passenger* example, we arrive at an argument in favor of criteria of identity by observing a counting discrepancy: we count 15 batters, but only 9 players.

Carlson (1982) suggests that some nouns, such as *batter*, have stages in their extension, where a stage is a temporal slice of an individual. In the same way that a neck is a part of a person that is limited in its spatial extent (say, the part that extends from the head to the shoulders), a stage is a part of an individual that is limited instead in its temporal extent: the portion of the individual that extends from one moment of time until some other later moment of time. Thus *caterpillar*, *boy*, and *teenager* all arguably have stages of individuals in their extension.

But *caterpillar*, *boy*, and *teenager* do not lead us to suspect that some nouns have non-trivial criteria of identity, since they all involve stages that occur once per lifetime. In order to give rise to a counting discrepancy, it is necessary for a noun to describe stages that an individual can go through more than once. That is why it is important for present purposes that a single person can be a passenger again and again, and a single baseball player can be a batter more than once in a single game.

It appears, then, that the most persuasive examples of nouns with non-trivial criteria of identity are nouns describing objects that are systematically linked with events. That is, a batter is a person who participates in a

certain role in a batting event; a passenger is a person who participates in a certain way in a travelling event; and so on (see section 3.3). Furthermore, given that at least agentive *-er* nominals are a productive class, we appear to have an unbounded class of nouns that may need (non-trivial) criteria of identity. Barker (1998, 1999) claims that the only productive nominalizations in English that can have non-trivial criteria of identity are agentive *-er* nominals and *-ee* nominals.

3. Arguments against nominal criteria of identity

The arguments in this section challenge the claim that nominals have criteria of identity distinct from criteria of application.

3.1. If criteria of identity do exist, they're not (exclusively) lexical

Krifka (1990) discusses a phenomenon that bears a striking similarity to the Geach/Gupta facts:

(7) *4000 ships passed through the lock (last year).* (Krifka 1990)

(8) *4000 different ships passed through the lock.* (Barker 1998)

Krifka judges that (7) is ambiguous: it either has a per-ship reading, which guarantees that there are at least 4000 distinct ships that passed through the locks; or else it has a per-event reading, on which there may be fewer than 4000 distinct ships, as long as the total number of lock traversals is at least 4000. In contrast, as pointed out in Barker (1999), (8) seems to only have the per-ship reading.

On Krifka's analysis, (7) contains an ambiguous silent determiner. One version of the determiner gives the usual per-individual reading, and the other gives the per-event reading. The fact that (8) does not (easily) have a per-event reading is surprising on such an analysis: if it is the determiner that introduces the ambiguity, we should expect that *ships* and *different ships* both denote a set of distinct ship individuals, incorrectly predicting that (8) should have all of the interpretations available to (7). The alternative, of course, is that the different construals are local to the nominal (*ship* versus *different ship*).

If the variability in construal illustrated in (7) and (8) is indeed part of the same phenomenon as the *passenger/person* opposition, as I believe it is,

it has an important consequence: it shows that criteria of identity are not exclusively part of lexical meaning, but depend also on compositional or pragmatic variability. The reason it shows this is that, as Krifka points out, it is implausible that the noun *ship* is ambiguous between an individual-level denotation and a stage-level denotation. Unlike, e.g., *passenger*, objects in the extension of *ship* do not have any systematic association with any specific event. Therefore the per-event reading is contributed by some semantic or pragmatic factor independent of the noun itself. (Deciding how best to account for the per-event reading is quite challenging; see Krifka 1990, Musan 1997, Doetjes and Honcoop 1997, and Barker 1999.)

If per-event readings are available for nouns such as *ship*, the simplest analysis is that whatever mechanism provides the per-event interpretation for *ship* also provides the per-event interpretation for nouns like *passenger* and *batter*. If so, two predictions follow. The first prediction is that even the most implacably individual-level noun should be capable of a stage-level use under the right circumstances.

This seems to be the case. For instance, consider *person*, our paradigm case of a noun that picks out individuals rather than stages. Certainly when *person* is explicitly contrasted with *passenger*, as in Gupta's original examples given above in (4) and (5), we will be more likely to associate a per-individual interpretation with *person* and a per-event interpretation with *passenger*.

But in other contexts, a per-event interpretation of *people* does arise. The careful arithmetic in the following excerpt from the web page of the Baton Rouge United Way guarantees that the first occurrence of *people* must receive a per-event interpretation:

A recent report shows that in 2005, CAUW Member Agencies served 1,807,113 people. There are 788,235 people in the 10-parish area according to the July 1, 2006 Census update. That means that the agencies provided services equivalent to 2 1/4 services per person in the 10-parish area!

Similarly, in the following example, notice that *people* must be a per-event use.

- Q. How many passengers flew out of Denver International Airport in the year 2000?
A. In 2000, 19,357,290 people deplaned at Denver Intl.

The answer-writer clearly intended for the word *people* to answer a question about *passengers*. The size of the numbers make it highly likely that *people*

is used here with a per-event interpretation, counting each deplaning passenger as a distinct person.

A similar point is made by this example:

Newton has a new, state-of-the-art, award-winning Library which served 602,951 people in 1993.

This sentence appeared on a real estate profile which reports that the population of Newton as 84,603. Given that public libraries typically require proof of local residence, it is highly unlikely that the author of this sentence assumed that the library served more than half a million different people. In other words, this appears to be a per-event interpretation of *people*.

I claim, then, that *person* can be used with per-event criteria of identity. This is certainly not because *person* can have as part of its criteria of application anything like charity-recipient or library-patron. Thus even if some nouns arguably have non-trivial criteria of identity, it is certainly possible for non-trivial criteria of identity to be supplied either by semantic context or by the pragmatics.

The second prediction that follows from assuming that per-event interpretations are not exclusively lexical is that even those nouns like *passenger* or *batter* that are highly compatible with a per-event interpretation should be capable of a per-individual use. The question, then, is whether *Easyjet served exactly 1 million passengers* can be true if Easyjet served 1 million different people, each of whom flew on Easyjet twice (for a total number of trips of 2 million). I suspect that the sentence does have such an interpretation, but it is difficult to be sure. We can, however, get indirect support for this claim based on examples such as (9).

(9) *Half of the passengers were women.*

If *passenger* only had a per-event interpretation, we would expect this sentence to be able to be true if 5 million tickets were purchased by 1 million women, even if the other 5 million tickets were purchased by 5 million different men. I suspect that this sentence could be used in such a situation. However, my native speaker informants agree that it also has a reading on which it is true if each woman passenger flies only once but each male passenger flies five times, as long as the number of women is at least as large as the number of men. The only way the sentence could be true in such a situation is if *passenger* received a per-individual interpretation.

In sum, under the right pragmatic circumstances, all nouns seem capable of a per-event interpretation; and even those nouns most heavily biased in

favor of a per-event interpretation can be interpreted with per-individual criteria of identity.

3.2. Availability of per-event interpretations is pragmatically restricted

If per-event readings did arise from lexical meaning, they should be available no matter what the pragmatic context. Yet per-event readings are difficult if not impossible in contexts in which it is implausible that the discourse participants could lose track of the identity of the individuals involved.

It is no accident that Gupta's key example involves millions of passengers, and that Krifka's key example involves thousands of lock traversals. The principle I am suggesting is that an interpretation will fail to recognize two objects as the same individual in roughly the same circumstances in which a human would. The best examples of this phenomenon concern situations in which there are too many individuals to easily keep track of; in which the individuals involved are so similar that they are difficult to distinguish; or in which events are typically widely separated in time from each other or from the utterance time. Carlson's example (*batter*) is an interesting case, since a batting sequence of nine players is just long enough to be difficult to hold in one's mind at once. In contrast, it is not possible to say that McGwire hit home runs off three pitchers in a row unless there are three different pitchers involved: spectators are expected to keep careful track of when pitchers are replaced.

Similarly, it would be odd for me to report that I drove five of Easyjet's passengers to the airport if all five of them were my husband. Yet if the same person on different trips really did count as a different passenger, that is what we would expect. In the same situation, it would be even more difficult to respond to the question *How many of Easyjet's passengers live in your house?* with the answer "5".

In order to emphasize that counting granularity depends on the pragmatic circumstances, note that *different* (as in (8)) does not always force an individual-level individuation. Rather, it signals that special care must be taken to keep track of which entity is which in view of the needs of the situation at hand. If we can construct a situation in which it is important not to count a single stage more than once, but in which we don't care about identifying which stages are part of the same individual, it should be possible for *different* to do some useful work without forcing an individual-level interpretation.

Imagine therefore that you work for Easyjet, and you are faced with a stack of receipts for drinks that have been bought on two recent Easyjet

flights. Your job is to calculate the average amount spent on alcohol per passenger. Then your boss might ask you *How many different passengers do these receipts correspond to?* There is no need to figure out which passengers correspond to the same individual across the two flights; rather, it is only necessary to figure out which receipts correspond to a single passenger stage. If so, then *different* is not guaranteeing per-individual identity, but only stage identity.

It follows that (8) does not force an individual-level reading in any absolute sense, but rather, only favors an individual-level reading, especially in contrast with (7). In general, then, the choice of granularity when distinguishing among objects for the purposes of counting or for applications of *same* or *different* depend on the practical needs of the situation at hand, and not on aspects of the lexical noun involved.

3.3. Criteria of identity are suspiciously limited in variation

If nouns were able to lexically specify criteria of identity, we would expect to see a wide variety of non-trivial criteria of identity. However, as near as I can tell, criteria of identity come in an extremely limited number of flavors. So far, we have only the normal, default per-individual criteria (the usual interpretation of *person*), and per-event criteria (*passenger*) (though see section 4 below on type/token variation).

In the case of nominalizations such as *traveller* or *batter*, the putative criteria of identity are closely related to a prominent component of the criteria of application. A person is a traveller by virtue of participating in a travelling event, and a person is a batter by virtue of participating in a batting event. In general, we can say that a nominalization is episodically linked to its stem verb just in case an object satisfies the predicate only if it participates in the type of event corresponding to the stem verb. Similarly, we can say that *passenger* is episodic, since a person counts as a passenger only by virtue of participating in a certain kind of traveling event. Whether episodically linked or merely episodic, these nouns apply to an object only if the object participates in a characteristic qualifying event.

Thus the reason episodic nominals are such good candidates for a per-event interpretation is that their criteria of application make a certain class of events – the relevant qualifying events – highly salient. When such a noun appears in a sentence in which the main predicate describes their qualifying event, a stage-level reading becomes prominent: when Easyjet serves 10M passengers, each (atomic) serving event is coextensive with the

travelling event that qualifies the person in question as a passenger; when Clements strikes out 15 batters, each striking-out event is simultaneous with the batting event that qualifies the person as a batter, and so on.

In order to see how limited the range of criteria of identity proposed so far is, it will help to imagine what a class of nouns with a more idiosyncratic set of identity criteria might look like. Therefore consider the *brother* relation: a person x counts as a brother just in case x is male and x stands in a sibling relation with some other person y . If being a sibling were a qualifying eventuality, and if nouns could have arbitrary lexical criteria of identity, we might expect the number of brothers could exceed the number of people. That is, if John, Bill, and Tom all have the same parents, and if *brother* had per-eventuality criteria of identity the way *passenger* is supposed to, then John, Bill, and Tom will count as three people but six brothers (one for each being-the-sibling-of eventuality that qualifies the person as a brother). But this is not remotely possible in English, nor, I strongly suspect, in any other language.

Well, perhaps non-trivial criteria of identity require participation in a verbal event, rather than a stative eventuality such as being a sibling. Imagine, then, a room containing Paul Erdős and two other mathematicians. Erdős is collaborating with each of the other mathematicians, so Erdős is involved in exactly two distinct projects. (The two non-Erdős mathematicians are not collaborating with each other.) How many collaborative teams are there in the room? The answer is clear and robust: two teams, with Erdős as a member of both. How many collaborators are there in the room? The answer “four” is completely impossible. Erdős cannot count as two distinct collaborators, despite the fact that he is involved in two distinct collaborations.

On the other hand, now imagine that each collaboration resulted in a single paper. How many authors put their names on the papers? Here, four may be a possible answer, since “Erdős” put his name on both papers (though I am skeptical); however, how many published authors are in the room? Definitely only three. Similarly, if Erdős is simultaneously playing two games of chess, one with each of his collaborators, there are still only three chess players in the room, not four; and if Erdős wins both games, there is only one winner, not two.

Thus on any given occasion, the number of individuals counted for the nominals *collaborators*, *authors*, *winners*, and *players* cannot exceed the number of individuals.

As near as I can tell, it is never possible to have more stages than there are individuals at any given moment of time.

Spatio/temporal exclusion principle:

if two objects count as distinct with respect to a nominal predicate *N*,
then the objects either occupy different places or different times.

The ring and the gold the ring is made of can be distinct objects occupying the same place at the same time because we individuate them with respect to different nominal predicates (say, *ring* versus *gold*). But for a given fixed choice of noun, say *passenger*, a single person at some particular moment of time cannot count as more than one. The number of passengers in a room at a particular moment of time can never exceed the number of people.

This is surprising if nouns really did have non-trivial criteria of application. If nominals had the lexical power to distinguish more individuals than there are objects, why shouldn't the number of collaborators in a room be able to exceed the number of people?

4. Sameness versus identity, types versus tokens

How many letters in the word *Typewriter*? "Ten" is clearly a valid answer. But how many *different* letters? Since there are two *t*'s, two *e*'s, two *r*'s, "seven" now seems the most appropriate answer. Just as we sometimes count stages and sometimes count individuals, we sometimes count tokens and sometimes count types. And just as I have argued that counting stages is a pragmatic strategy independent of any special lexical meaning, so too with the counting behavior of types and tokens.

Note that the type/token variation is in one respect the inverse of individual/stage variation. That is, Gupta imagines adding "non-trivial" criteria of identity to the noun *passenger* in order to distinguish between two stages of the same person. For Gupta, then, special criteria of identity are associated with nouns that make more fine-grained distinctions among entities (hyperindividuation). However, in the present case, we are supposing that the noun *letter* provides, in addition to its criteria of application, criteria of identity that classify a capital *T* and a lowercase *t* as the same letter. Thus for types versus tokens, the special criteria of application are to be associated with nouns that make less fine-grained distinctions among individuals (hypoindividuation).

This conception of criteria of identity as blurring distinctions rather than sharpening them may have been more like what Geach originally had in mind, since he imagined that the criteria of identity for *river* allow distinct bodies of water to count as the same river, just as distinct graphical objects can count as the same letter.

The question at hand, then, is whether we need to stipulate lexical criteria for recognizing when two objects are members of the same type. In this case, criteria of application clearly suffice: what makes *T* and *t* able to count as the same letter is that they are both tokens of the letter named "Tee". It is knowing the criteria of application for the noun *tee* that allows us to recognize them as the same type, not knowing the supposed criteria of identity for the noun *letter*.

Part of the temptation for postulating criteria of identity comes from confusing sameness with identity. In the literature advocating criteria of identity, there is an unexamined assumption that expressions such as *the same N*, whether in the object language or in the metalanguage, provide a reliable guide to which objects are identical. For instance, Geach (1962: 152) tells us that "[*T*]he same *A* and the same *B* will give criteria of identity iff *A* and *B* are substantival terms (i.e., common nouns)." (See also, e.g., Gupta 1980: 2.) But in fact *same* is notoriously flexible in its criteria for similarity, and means something like 'similar enough in all respects relevant for present purposes'. (Likewise, *mutatis mutandis*, for *different* and other expressions in the same semantic field.) If I tell you that I read the same book that you did, it could be the same volume, the same edition, or merely the same story, perhaps even translated into a different language.

Nor does it seem likely that there is any natural language expression that means absolute identity. In German there is at least a prescriptive rule that distinguishes *dasselbe* 'self-same' from *gleich* 'same'. As Frege (1884, §76) puts it, "*dasselbe* may indeed be thought to refer to complete agreement in all respects, *gleich* only to agreement in this respect or that." As the joke goes, if I say to a waiter *Ich hätte gern dasselbe wie der Herr dort drüben* 'I'd like to have the same thing as that man over there', using *dasselbe* rather than *gleiche*, I am supposedly asking the waiter to bring me the very self-same plate the other diner is eating from. However, my native speaker German consultants tell me that although overt contrasts between *gleich* and *dasselbe* certainly go in the predicted direction, even *dasselbe* is often used for similar but distinct objects. A referee points out that this occurs most often precisely when the difference between types and tokens is least clear: *Mein Tapete hat dasselbe/das gleiche Muster wie deine* 'My wallpaper has the self-same/the same pattern as yours'. In view of these considerations, arguments that rely on the existence of a perfect identity predicate should be treated with skepticism.

The point I am making is that shifting from tokens to types, and in general, variability in tolerance for degrees of similarity, is a pervasive, systematic feature of language use, and should not be encoded in information asso-

ciated with specific lexical items. Rather, this variability is a matter of semantic interpretation (e.g., Nunberg 1984) or pragmatics (e.g., Lasnik 2000).

5. Conclusions

There is no need for positing lexical criteria of identity, and so nominals provide only criteria of application after all. The impression that some nominals have non-trivial criteria of identity is due to the fact that in certain limited pragmatic situations, nominals can shift their meaning from a set of individuals (people) to a set of stages (passengers). (See Brandtner and von Stechow's discussion of predicate transfer in this volume for a similar kind of pragmatically-triggered meaning shift.) Because some nominals are episodically linked to a set of events (*passenger*, *batter*), they are especially likely to undergo this meaning shift, but under the right circumstances, other nominals can shift (*ship*). Circumstances that promote per-event shifts include situations in which tracking individuals becomes difficult: large numbers of individuals, long periods of time between observations, or salience of a nominal's qualifying events. Under no circumstances, however, can two distinct stages occupy the same place and the same time.

Ultimately, then, the granularity of individuation depends on spatial, temporal, and causal contiguity, in combination with the pragmatic needs of the discourse, and not on lexical criteria of identity.

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Nominalization in context – conflicting readings and predicate transfer

Regine Brandtner and Klaus von Heusinger

Abstract

Nominalizations denote different sortal types, e.g. events, result states and objects, depending on a variety of parameters. We focus on the sortal readings of *ung*-nominalizations in German that are triggered by the sortal restrictions of adjectival modifiers and the predicates that govern the nominalizations. We start with the observation that some nominalizations can occur in a context where they have different sortal readings imposed by the adjectival modifier on the one hand and by the predicate on the other. We then provide a new analysis for these cases based on Nunberg's notion of predicate transfer. Thus we assume that the predicate extends its meaning and thereby imposes different selectional restrictions, rather than shifting the meaning of the nominalization.

1. Introduction

Deverbal nominalizations derived with *-ung* in German display different sortal readings (e.g. events, result states and objects) depending on the context that they occur in. We concentrate on contexts formed by adjectival modifications and by the selectional restrictions of the predicates the nominalizations are arguments of. There are cases that show conflicting selectional restrictions and hence pose problems for the compositional process as in (1) and (2). We mark the selectional restriction on the adjective or verb by the superscript *EV* for event and *RE* for result. In (1) the adjective *wiederholt* 'repeated' selects an event reading of *Messung* 'measuring/measurement', while the predicate *belegen* 'show, demonstrate' selects the result reading in the sense that the results or the figures of the measurements show that something is the case. Note that the plural in (1) does not necessarily select for a result reading (as claimed by Grimshaw 1990).

- (1) *Die [wiederholten]^{EV} Messungen [belegen]^{RE}, dass keine Besserung eingetreten ist.*
 ‘The [repeated]^{EV} measurements [show]^{RE} that there has not been an improvement.’

While a shift from an event reading to a reading referring to its result seems more natural, we also find the reversed order of the respective sortal readings as in (2), where *vorliegend* ‘present’ selects a result object and *durchgeführt* ‘conducted’ an event:

- (2) *Nur wenn man die genaue Bezeichnung des Videosystems kennt, kann man abschließend sagen, ob die [vorliegende]^{RE} Messung [regelmäßig durchgeführt]^{EV} wurde und somit verwertbar wäre.¹*
 ‘You can only tell whether the [present]^{RE} measurement [was conducted regularly]^{EV} and is hence utilizable, if you know the precise name of the video system.’

These examples illustrate cases of conflicting readings selected by different selectional properties of the involved modifiers and predicates. This paper will address the question how we can analyse such constructions. In the literature it is generally assumed that the nominalization itself shifts its meaning to meet the requirements of contextual restrictions one by one or that the nominalization has an underspecified meaning, thus agreeing with different selectional restrictions. We do not think that such a solution can be applied to examples like (1) and (2). In both examples the selectional restrictions of the adjective require a reading different from the one the predicate selects. Therefore, we suggest a new analysis which preserves the first reading of the nominalization (triggered by the adjective) and shifts the meaning of the predicate to a different (extended) reading that fits the already fixed sortal type of the nominalization. According to this analysis, once a sortal reading is suggested by the first expression it remains fixed. We assume that the selectional restrictions of the first expression in the sentence have primacy over the restrictions expressed by the second², i.e. it is always the first indicator that determines the reading of the nominal, no matter if it is an event or a result indicator.

¹ www.frag-einen-anwalt.de/Polizeivideo-bei-Geschw.%C3%BCberschreitung_f26038.html (7.02.2008).

² This assumption is preliminary and must be corroborated by additional evidence.

To gain a deeper understanding of the interaction between different contextual restrictions we will first take a closer look at the different kinds of selectional restrictions that come about by different expressions (section 2). Some further examples in section 3 will show that the conflicting readings are a common phenomenon in discourse and can occur in various constructions. As a basis for the introduction to the notion of predicate transfer (Nunberg 1995, 2004), we will contrast several other types of sortal shifts in section 4 to test if they can account for conflicting readings and will then present a different analysis in section 5 before we convey it to our examples. Section 6 discusses the pragmatic restrictions for the very powerful mechanism of predicate transfer concerning simple nouns as well as nominalizations.

2. Types of selectional restrictions

As we have seen in examples (1) and (2), different types of expressions, henceforth called indicators, display different selectional restrictions and specify the actual reading of the nominalization in context. We can further subdivide this class of indicators into different types according to their position and their functionality. We will give examples for local and structural indicators as well as for the temporal structure of the discourse as an indicator.

2.1. Local indicators

Local indicators can appear as a modifier of the nominalization within the DP and as the main predicate of the clause. Event and process readings are e.g. indicated by modifiers and predicates that refer to their duration or date, while result objects can e.g. undergo physical change and have a physical location. Examples for these properties are listed in tables 1 and 2:

Table 1. Local indicators for event readings

Predicates	DP modifiers
Time frame predicates: <i>beginnen / aufhören / weitergehen</i> to 'begin' / 'stop' / 'continue'	Dates: <i>am 7. Juli</i> 'July 7 th ' Process indicating adjectives: <i>vorsichtig</i> 'cautious'
Duration: <i>dauerte 6 Monate</i> 'takes 6 months'	Iteration: <i>permanent / wiederholt</i> 'permanent' / 'repeated'

Table 2. Local indicators for result object readings

Predicates	DP modifiers
Location: <i>auf dem Tisch liegen / vorliegen</i> 'lie on the table' / 'be present'	Location: <i>vorliegend, linke / r</i> 'present', 'left'
Internal structure: <i>(200 Seiten / Teile) umfassen</i> 'consist of 200 pages / parts'	Internal structure: <i>(200 Seiten / Teile) umfassend</i> 'consisting of 200 pages / parts'
Physical change: <i>überreichen / erscheinen / zerstören</i> 'present' / 'appear' / 'destroy'	Size, shape etc.: <i>lang, hoch, rot</i> 'long, high, red'

These indicators are well studied (cf. Ehrich and Rapp 2000; Heid et al. 2007) and many of them can appear in the form of a modifier as well as of a predicate. As already noted in section 1, we mark these indicators with the superscripts EV for event and RE for result objects in example sentences. We use this notation for convenience to show the sortal restriction of the modifier and the predicate. In addition to local indicators like these, we find a variety of other types exemplified in the next chapters.

2.2. Structural indicators: coordination and sense relations

If we have a construction with coordination within the sentence we expect the two conjuncts to be of the same sortal type. If we look at example (4)

we recognize that *Einschätzung* ‘estimation’ is unambiguous and can only be interpreted as an event and since only two events can diverge and not their results; so we can infer that the conjunct *Messung* ‘measuring’ has an event reading, too:

- (4) *Die Divergenz zwischen [Einschätzung]^{EV} und [Messung]^{EV} könnte unter diesen Umständen also bedeuten: Der Mensch hört allmählich schlechter, aber er merkt es nicht.* (cosmas³)
 ‘The divergence between the [estimate]^{EV} and the [measuring]^{EV} under these circumstances could hence mean: Humans hear gradually worse, but they do not recognize it.’

The structuring within the sentence plays a role here but we should also look at examples with coordination across sentences as in (5), where we have two synonymously used nominals in sequent sentences:

- (5) *Bei der Messung [am 30. Juli]^{EV} an der Romanshorerstrasse 12 war es gar fast jedes dritte Fahrzeug, das die Geschwindigkeitsbegrenzung überschritt. Auch bei der [Kontrolle]^{EV} auf der Staatsstrasse im Rohrenmoos beim Restaurant Traube waren es nicht viel weniger.* (cosmas)
 ‘During the measuring [on July 30th]^{EV} at Romanshorerstrasse 12 even every third car drove too fast. At the [check]^{EV} at Staatsstrasse in Rohrenmoos at the restaurant Traube it also was not fewer.’

The date *am 30. Juli* ‘on July 30th’ already indicates that *Messung* ‘measuring’ refers to an event. In the next sentence *Kontrolle* ‘check’ is used synonymously to avoid repetition, and since it can only refer to an event we have another indicator so that *Messung* ‘measuring’ has a strong preference for an event reading, too. In addition, the anaphoric function of the discourse particle *auch* ‘also’ hints at this synonymous relation as well. Another way to determine the sortal reading of a nominalization is by means of sense relations as in (6):

- (6) *Die Messung [am Handgelenk]^{EV} ist von allen [Methoden]^{EV} die praktischste. Das Gerät wird mit der Manschette am linken Handgelenk befestigt.*
 ‘Of all [techniques]^{EV} measuring [on the wrist]^{EV} is the most practical one. The device is attached to the left wrist with the wrist band.’

³ Examples marked with ‘cosmas’ are taken from the cosmas corpus of the IdS Mannheim: <https://cosmas2.ids-mannheim.de/cosmas2-web/>

In this context *Methoden* ‘methods’ functions as a hypernym to *Messung* ‘measuring’ and as a method can only refer to an event, the hyponym *Messung* can be inferred to denote an event, too. As we have seen, there are different kinds of indicators other than the well studied local ones. In addition, we even find similar phenomena within the wider discourse exemplified in the next subsection.

2.3. Temporal structure of the discourse as an indicator

In (8) the ongoing discourse promotes or warrants a sortal shift: The verb *abschließen* ‘complete’ is telic and hence a result from this action is suggested.

- (8) *Die Messung ist gestern [abgeschlossen worden]_{EV}. Sie [spricht eine deutliche Sprache / fiel positiv aus]_{RE}.*
 ‘The measuring [was completed / finished]_{EV} yesterday. It [speaks for itself / turned out positively]_{RE}.’

We can proceed with this result in the ongoing discourse and even refer back to the nominalization with the pronoun *sie* ‘she’ although the pronoun refers to a type different from the antecedent: This is possible since the measuring that was interpreted as an event in the first sentence has been finished. These discourse phenomena are more or less neglected in the literature, but aspectual properties of the predicates and anaphoric relations are crucial for the interpretation in many cases (see ter Meulen and Smessaert 2004).

- (9) *Die Emissionen von Feuerungsanlagen müssen alle zwei Jahre überprüft werden. Die [im März durchgeführte]_{EV} Messung zeigt im [nun vorliegenden Bericht]_{RE} auf, dass die für diese Feststoff-Feuerungsanlage anzuwendenden Emissionsgrenzwerte deutlich unterschritten und somit bestens eingehalten werden. (cosmas)*
 ‘The emissions of firing systems have to be checked every two years. The measurements [conducted in March]_{EV} show [in the report now present]_{RE} that the prescriptive limits for this solids-firing system are definitely under-run and hence are optimally adhered to.’

In (9) the temporal structure is emphasized in addition with the date *im März (durchgeführt)* ‘(conducted) in March’ and the present participle (*nun*) *vor-*

liegend ‘(now) present’, which shifts the perspective to the present. The result of the measuring is also denoted by the non-derived object ‘report’.

In this section we have discussed some means for sortal indication, which play a role in the composition process. Some apply locally and some apply in the wider context. In the following we will primarily use a structure with an adjective indicator and a predicate indicator expressing conflicting selectional restrictions with respect to the type of sortal reference.

3. Conflicting readings

We have seen that there is a variety of methods to indicate a reading in context and we often find more than one indicator for the referential sort of the nominalization. Thus, it is not surprising that we also find a great number of instances where the different indicators are in conflict, i.e. where we have only one token of the nominalization that corresponds to two types (event and result object).⁴ For the sake of clarity we will focus on examples with local indicators with the ordering *Event-Result* and *Result-Event* to investigate this phenomenon in more depth. The examples will show that we find many such examples, that the ordering of the two indicators does not play a role for acceptability and that these examples do not strike us as marked or unusual.

Event-Result

In (10) the adjective *langwierig* ‘tedious’ modifies an event whereas the VP *brachte mir viel Geld ein* ‘earned me a lot of money’ predicates over a result object⁵:

- (10) *Die [langwierige]^{EV} Übersetzung [brachte mir viel Geld ein]^{RE}.*
 ‘The [tedious]^{EV} translation [earned me a lot of money]^{RE}.’

We can also extend this analysis to cases with a sentence coordination structure: The first part of example (11) includes the telic verb *abschließen* ‘complete’ which indicates the completed event of translating a work, but the conjunction proceeds with the result object predicate *erscheinen* ‘appear’:

⁴ This phenomenon is well-known under the name of *copredication* concerning simple nouns.

⁵ We assume here, that the author earns money with the sold books and is not paid for the hours the event took.

- (11) *Die Übersetzung dieses Werks konnte bereits 1990 [abgeschlossen werden]^{EV} und als erster Band des Gesamtprojekts [erscheinen]^{RE}.*
 ‘The translation of this work could already [be completed]^{EV} in 1990 and could [appear]^{RE} as the first volume of the overall project.’

Result-Event

One could be tempted to think that the transition from an event to an object that results from this event is somewhat easier to achieve than from the result to the event, but we also find examples like (12) and (13):

- (12) *1514 [überreichte]^{RE} er Louis XII die [schwierige]^{EV} Übersetzung von Texten des Thukydides.⁶*
 ‘In 1514 he [gave]^{RE} Louis XII the [difficult]^{EV} translation of texts by Thucydides.’
- (13) *Die Übersetzung [lag endlich auf dem Tisch]^{RE} sie hatte wirklich [6 Monate gedauert]^{EV}.*
 ‘The translation [was finally on the table]^{RE} it had really [taken 6 months]^{EV}.’

The backshift in time in the previous example seems to be emphasized by the construction with the adverb *endlich* ‘finally’, whereas the second sentence gives kind of a motivation or explanation for the use of the adverbial modification with *endlich* ‘finally’. We can only hint at the additional conditions of temporal structure here, which we should pay attention to.

Result-Event-Result

We even find cases where there is a shift from an interpretation as a result to an event, and we can again proceed with a result indicator as in (14):

- (14) *Nur wenn man die genaue Bezeichnung des Videosystems kennt, kann man abschließend sagen, ob die [vorliegende]^{RE} Messung [regelmäßig durchgeführt]^{EV} wurde und somit [verwertbar]^{RE} wäre.*
 ‘You can only tell whether the [present]^{RE} measurement [was conducted regularly]^{EV} and is hence [utilizable]^{RE}, if you know the precise name of the video system.’

⁶ http://www.hist.uzh.ch/static/ag/e-learning/bdb_detail.php?id=468 (25.08.2009)

In these examples we have at least two different reading triggers, one within the DP and one as the main predicate of the sentence: *vorliegend* ‘present’ indicates a result, just like *verwertbar* ‘utilizable’, whereas only an event can be conducted regularly (*regelmäßig durchgeführt*). The question arises as to how the conflict can be solved, since it poses a problem for compositionality⁷ and annotation, as the nominalization’s reading cannot be definitely and uniquely determined.

Before we clarify Nunberg’s general notion of predicate transfer, which we will then apply to nominalizations, we will first give an overview on different meaning shift principles and discuss whether they could account for these contrasting readings.

4. Types of sortal shift

Since nominalizations can have different sortal readings we have focused on event and result object readings here – depending on the context they occur in, we need a theory of sortal shift to account for how this ambiguity comes about. Most approaches attribute a sortal shift to the nominalization itself, as we will outline in 4.1 and 4.2, but they differ in that they involve lexical, structural and semantic types of shifts. We have to keep in mind that they deal with the potential of nominalizations to display different readings in context in general and not with copredication examples in particular. In section 5 we will deal with a pragmatic type of shift that does not focus on the nominalization itself and we will then apply it to our nominalization examples.

4.1. Underspecification analyses

There are different views on the question whether nominalizations are underspecified and whether only one part of them (base verb, suffix) is concerned. Theories on the lexical semantics of affixes deal with their contribution to the meaning of the (sortally ambiguous) derivatives and the question whether

⁷ Ambiguity in general is often used as an argument for non-compositionality (cf. Pagin and Westerstahl (to appear), Pelletier (2004): 145–147 for a discussion). However, in conflicting cases we do not only have to deal with the specification of one word in context, but with two different readings entering into the composition process at the same time.

an affix has an abstract core meaning common to all its occurrences. The explanation for the variety of sortal references would be that *-ung* is underspecified or polysemous and needs contextual information (from the base and the sentence environment) to specify its function. See Plag (1998) and Lieber (2004) for underspecified representations of the lexical semantics of affixes, which treat them similarly to the underspecified meanings of ambiguous words.

Bierwisch (1989) assumes that the nominalization as a whole has an abstract core meaning, which all readings have in common and which is conveyed into specified forms by interaction with the conceptual system, analogous to his work on simple nouns (Bierwisch 1983).

The systematic shift from event readings to result readings and the interpretation of nominalizations could also be attributed to differences in its internal structure (cf. Alexiadou and Schäfer 2010; Alexiadou 2001; Roß-deutscher et al. 2007). According to this view, different layers of functional structure are responsible for the interpretation of nominals. Hence, an event reading differs from the result reading not only in its referential properties, but also in its functional structure accounting for the syntactic behaviour of event or result nominalizations. However, it is not clear to us, how such a structural approach can account for different readings of one and the same occurrence of a nominalization. On the other hand, an approach that allows for the underspecification of the structural properties, and therefore the sortal reading, has problems with examples as in (15) and (16) where we do find a conflict that is not resolvable and therefore leads to ungrammaticality or at least to incoherence:

- (15) #*Die [hölzerne]^{RE} Absperrung [hat lange gedauert]^{EV}.*
 ‘The [wooden]^{RE} fencing [has taken a long time]^{EV}.’

- (16) #*Die [gemeinsame]^{EV} Bemalung der Wand [hat Flecken]^{RE}.*
 ‘The [collective make-up / painting]^{EV} of the wall [has got stains]^{RE}.’

Here the adjective restricts the reference of the nominalization to one type such that the selectional restriction of the predicate is in conflict with it. The conflict cannot be resolved, other than in cases as (1) or (2), where a coherent interpretation is possible. We will argue below that a shift in the selectional restriction of the predicate is only possible if there is an obvious relation between the lexical meaning of the predicate and the extended meaning of the predicate.

4.2. Conceptual shift/coercion as lexical ambiguity

Pustejovsky (1995) deals with alternations that appear with simple nouns as well. Frequent types are among others the product-producer alternation as with *newspaper* in (17) and the process-result alternation as with *merger* in (18):

- (17) a. John spilled coffee on the newspaper.
 b. The newspaper fired its editor.
- (18) a. The company's merger with Honda will begin next fall.
 b. The merger will lead to the production of more cars.

He assumes that certain alternations are systematic and should be compositionally derived. Hence, he enriches the lexicon with generative and compositional aspects, so that we have a structural template to which semantic transformations can be applied. This template consists e.g. of aspects like telic role or purpose to which certain modifiers can refer then.

In (19) the verb *begin* needs an event type as a complement, so we have to coerce the noun *novel* to an event in which the novel plays a salient role. Depending on the context, this can lead to different interpretations on the basis of the lexical entry:

- (19) a. The author began the novel last month. (= write the novel)
 b. John began the novel last month. (= read the novel)

Similar alternations can be observed with nominalizations and thus Pustejovsky treats simple nouns and nominalizations equally with respect to this:

- (20) difficult translation, difficult text
 a. difficult to write (event)
 b. difficult to read (result)

For an interesting combination of an underspecification account with a conceptual level of representation, see von Heusinger and Schwarze (2006). They assume that conceptual information of the context selects one particular function of an otherwise underspecified form. Again, this approach would have problems accounting for conflicting readings.

5. Meaning shift as pragmatic enrichment

As we have seen in the last section, most theories focus on the nominal itself when it comes to its interpretation in context. All these analyses account for the different sortal readings a nominalization can have and for their specification in context, but they would have difficulties in dealing with the conflicting reading cases: We would have to think of two structures or readings in the same context and could not determine the interpretation of the nominalization. We will now turn to another type of (in this case pragmatic) enrichment as an alternative solution for these special cases, which is less systematic and less lexical. This theory was developed by Nunberg (1995, 2004) for simple nouns and we will then convey its principles to nominalizations to see whether they can shed light on examples with conflicting readings as well.

5.1. Predicate transfer in terms of Nunberg

Nunberg (1979, 1995) developed a theory of pragmatic processes for meaning transfer or meaning enrichment. Nunberg (1995: 1) defines the general notion as follows: “‘Transfers of meaning’ are linguistic mechanisms that make it possible to use the same expression to refer to disjoint sorts of things.” He maintains the notion of *predicate transfer* especially for context dependent cases⁸ as: “The ham sandwich sits at table 7” where it is in fact not the ham sandwich, but the person who orders it. We will introduce this mechanism in this section rather informally to explain the general assumptions before we apply it to nominalizations and then present its formalization in section 5.3.

While most researchers have focused on nouns, Nunberg (1995) shows that meaning shift or meaning transfer can affect the argument *or* the predicate in a sentence. He calls the latter *predicate transfer* and illustrates the contrast between the two kinds of metonymic transfer by means of the following examples. (21a) and (22a) are uttered in a situation where a customer hands his key to an attendant at a parking lot (We indicate the shifted meaning or the extended meaning of an expression in curly brackets):

⁸ But also for systematic polysemy, cf. Nunberg (1995: 116–119).

- (21) a. **This** is parked out back.
 b. {**This**_{key} = *the car*} is parked out back.
 → transfer of argument meaning / deferred ostension
- (22) a. I am parked out back.
 b. I am {*the owner of a car that is* [parked out back]}
 → predicate transfer

In (21) *this* is used to tell us something about the entity that is related to the key the speaker points at, namely the car and in (22) the speaker says something that concerns himself because he owns the car. The question is whether these examples function in the same way and whether we want to assume that it is always the noun or indexical that is shifted to another entity or something else instead.

We can test whether the subject or the predicate shifts its meaning by a coordination test. Additionally we assume that shifted entities constitute referential islands, i.e. once I have shifted from *this*_{key} to car, I cannot refer back to key. So in (23a) we shift to car and the second conjunct *may not start* is also predicated on the referent car. However, in (23b), the second conjunct *fits only the left front door* needs an argument of type key, which is not available since the shift is a referential island. Therefore we can say that in (23) it is the subject that shifts its meaning.

- (23) a. {**This**_{key} = **the car**}_{car} is parked_{car} out back and may not start_{car}.
 b. # {**This**_{key} = **the car**}_{car} is parked_{car} out back and fits only the left front door_{key}.

In (24) we have the opposite distribution: In (24a) we can coordinate two predicates that require persons as arguments, but in (24b) we cannot use a second conjunct that requires a car as an argument. Therefore, we assume that the first predicate shifts its meaning, rather than the argument *I*.

- (24) a. I_{person} am {*the owner of a car that is* [parked out back]}_{person} and have been waiting_{person} for 15 minutes.
 b. # I am {*the owner of a car that is* [parked out back]} and may not start_{car}.

Although both types of meaning transfer are metonymic of the type owner / car, they differ in whether the transfer affects the argument or the predicate. Other diagnostics for the transfer position by Nunberg show that the number and gender of the demonstrative depend on the intended referent (the

car)⁹, and if we have a language with gender marked demonstratives and adjectives, these agree with the referent (the car). This is not the case with “I am parked out back”; hence we recognize once more that it is not the pronoun *I* that is affected by the transfer principle here. Note also that if the derived property is expressed by a description here, only deferred ostension is blocked (cf. Nunberg 1995: 111–112):

- (25) #The key I’m holding is parked out back.
 But: The man with the cigar (Mr....) is parked out back.

Thus, once a predicate is applied to the noun *key* it cannot be shifted. This brings us back to our treatment of the contrasting readings of nominalizations, as we assume that the nominalization cannot be shifted a second time to match local selectional restrictions once the first modifier has selected one particular reading. Having considered these tests it should be clear that we have to deal with different kinds of shifts.

Nunberg’s notion of predicate transfer can also account for what he calls “sortal crossings” as in (26), which represent contrasting readings with simple nouns (cf. Nunberg 1995, 2004), by suggesting that we actually deal with two properties of persons here:

- (26) Roth is Jewish and [widely read]_{books}.
 → Roth is Jewish and {an author whose books are
 [widely read]_{books} }_{person}

Cases like this resemble our conflicting reading cases with nominalizations since we have two predicates with different selectional restrictions that apply to the same token of a nominal, here a proper name. In the next section, we will convey these considerations to our phenomenon.

5.2. Predicate transfer and nominalizations

We can apply the mechanism of predicate transfer to our conflicting reading cases, so that we only have one interpretation for the nominal: The pragmatic enrichment allows for the shifting in meaning of the nominalization’s context, rather than the nominalization itself (see above). We repeat examples (1) and (2) as (27) and (28):

⁹ “**This** is parked out back” would be used in the case that several presented keys fit one car and “**These** are parked out back” for one key that fits several cars.

- (27) *Die [wiederholten]^{EV} Messungen [belegen]^{RE}, dass es keine Verbesserung gab.*

‘The repeated measurements show that there hasn’t been an improvement.’

- *Die [wiederholten]^{EV} Messungen {haben Resultate, die [belegen]^{RE}}^{EV}, dass...*

‘The repeated measurements {have results that [show]^{RE}...}^{EV}.’

The first indicator *wiederholt* ‘repeated’ modifies an event and so we claim that the composition of this modifier with the nominal already fixes its interpretation. Hence, the second (result-) indicator *belegen* ‘show’ is accommodated to this by enriching it to an event predicate as well, i.e. by filling in that the event is such, that it has results that prove something.

Nevertheless, we do not claim that it is always the event that triggers the enrichment of a conflicting second indicator – in our opinion the order in the sentence determines which interpretation will be adhered to: In (28) we first have a modification with *vorliegend* ‘at hand’, so that the nominalization is indicated as a result reading and is preserved as such by enriching the second (event-) indicator *regelmäßig durchgeführt* ‘conducted regularly’ into a result predicate:

- (28) *Nur wenn man die genaue Bezeichnung des Videosystems kennt, kann man abschließend sagen, ob die [vorliegende]^{RE} Messung [regelmäßig durchgeführt wurde]^{EV} und somit [verwertbar]^{RE} wäre.*

‘You can only tell whether the [present]^{RE} measurement [was conducted regularly]^{RE} (...), if you know the precise name of the video system.’

- *...ob die [vorliegende]^{RE} Messung {das Ergebnis einer Handlung ist, die [regelmäßig durchgeführt wurde]^{EV}}^{RE} und somit [verwertbar]^{RE} wäre*

‘...whether the [present]^{RE} measurement {is the result of an event that [was conducted regularly...]}^{EV} }^{RE}

As an intermediate summary, we recognize that since we do not have to shift the nominalization, we only have to deal with one reading for the nominalization; hence predicate transfer allows for an analysis of the conflicting readings which enables us to preserve compositionality.

Nevertheless, this procedure overgenerates in that it also predicts examples like the following to be acceptable:

- (29) #Die [hölzerne]^{RE} Absperrung [hat drei Tage gedauert]^{EV}.
 ‘The wooden blocking has taken three days.’
 → #Die [hölzerne]^{RE} Absperrung {ist das Resultat eines Ereignisses, das [drei Tage gedauert hat]^{EV}}^{RE}.
 #The wooden^{RE} blocking {is the result of an event that [has taken three days]^{EV}}^{RE}.
- (30) #Das Resultat der Messung [hat drei Stunden gedauert]^{EV}.
 ‘The result of the measurement has taken three days.’
 → #Das Resultat der Messung {ist das Resultat eines Ereignisses, das [drei Stunden gedauert hat]^{EV}}^{RE}.
 #The result of the measurement {is the result of an event that [has taken three days]^{EV}}^{RE}.

To be able to account for cases like these, we will present Nunberg’s rule for the notion of predicate transfer and his constraints in the next section.

6. Rules and conditions for predicate transfer

6.1. Salience and noteworthiness

As the notion of predicate transfer is a very general mechanism we will present Nunberg’s condition and constraints in this section and we will show how it excludes cases like the above ones. For this purpose, we repeat example (22) here:

- (22) a. I am parked out back.
 b. I am {the owner of a car that is [parked out back]}.

Nunberg (1995: 112) states the following condition on the general applicability of predicate transfer between two properties or predicates, i.e. he tells us in which cases we are able to use one expression instead of another:

(31) Rule for predicate transfer

Let A and A' be sets of properties that are related by a salient transfer function $g: A \rightarrow A'$. Then if F is a predicate that denotes a property $P \in A$, there is also a predicate F' , spelt like F , that denotes the property P' , where $P' = g(P)$.

Applied to example (22) where we have the two sets of properties CARS and DRIVERS that are related by the function ‘ownership’ (or rather “driver-ship” as we will see), this derives the enriched predicate below in the following way:

(32) **Predicate transfer of *parked out back***

Let *car* and *owner / driver of a car* be sets of properties that are related by a salient transfer function g (being the owner of): $car \rightarrow owner\ of\ a\ car$. Then if *parked out back* is a predicate that denotes the property of *being parked out back* ε *being a car*, there is also a predicate *parked out back*’, spelt like *parked out back*, that denotes the property of *being the owner of a car that is parked out back*, where *being the owner of a car that is parked out back* = g (*parked out back*)

[parked out back] $\Rightarrow$ {the owner of a car that is [parked out back]}

In other words: We have two sets, e.g. cars and owners / drivers (of cars). If these two sets are related in a salient way we can use expressions that primarily refer to one of these sets for the other as well and we do not have to change anything in the lexical form of this expression (though the form corresponds to two properties). Hence, since we have the salient relation of ownership between cars and their owners, we cannot only say that cars are parked somewhere, but we can also say that its owner is parked somewhere: If I own a car it is clear to speaker and hearer that some things that concern the car also concern me as the owner or driver and hence can be expressed as if I was in the car’s place. Hence, what this means is that we enrich the predicate while we stick to its lexical form instead of shifting the nominal itself. The meaning of nominals could in general be metonymically shifted to avoid mismatches, but in this theory, another viewpoint is taken for certain examples that fulfill the mentioned condition. The condition for the application of this mechanism is thus the following:

(i) there is a salient functional relation between the bearers of the properties

If we only had this constraint the principle would still overgenerate: Imagine e.g. a situation where you have lent your car to someone else – you would not say that you are parked out back then although the ownership relation still holds. Accordingly, Nunberg states an additional constraint, which is more context dependent than the salient relation (i) available in all contexts:

- (ii) the enriched version is noteworthy in the utterance situation for the identification or classification of the bearer.

That means it is noteworthy and helpful to classify customers according to their orders (as in “The ham sandwich is at table 7”) and the situation of a driver through properties of his car. Let us consider some of Nunberg’s examples with simple nouns that fulfill this constraint and some which do not:

- (34) Ringo was hit in the fender by a truck when he was momentarily distracted by a motorcycle.
→ Ringo {owns a car that [was hit in the fender by a truck]} when he was momentarily distracted by a motorcycle
- (35) #Ringo was hit in the fender by a truck two days after he died.
→ #Ringo {owns a car that [was hit in the fender by a truck]} two days after he died.

Obviously, it is not noteworthy for Ringo what happens to his car when he is already dead and so we get an odd sentence if we try to classify his car by a dead man’s name. In Asher and Pustejovsky (2004) we also find examples that are odd for reasons of what they call *discourse coherence*:

- (36) a. The Sunday newspaper weighs 5 lbs and documents in depth the economic news of the week.
b. #The newspaper was founded in 1878 and weighs 5 lbs.¹⁰

6.2. Constraints with nominalizations

As we have already seen, we can also apply predicate transfer in examples where we have two conflicting indicators for the nominalization. Here, the second indicator is enriched so that it also fulfils the requirements of the first. The rule can hence enrich events as well as results, depending on the ordering within the sentence.

As we have seen, there are also unacceptable examples with nominalizations, which can now be explained: Noteworthiness is not given here either, e.g. the material of a result object (*hölzern* ‘wooden’) does not seem to be so

¹⁰ Note that we could improve b. by establishing a noteworthy relation:

i. The newspaper was founded in 1878 and is still typed in Sütterlin.

naturally connected to the event and its duration, as shown in (29) repeated here as (37), at least not without a suitable special context. In (38) we have the predicate *geht weiter* ‘continues on’, which indicates an ongoing change, that cannot be implicitly related to a perceivable result state (*sichtbar* ‘observable’), because you cannot really see the actual progression from outer space, but only the result of it (that there is no rainforest anymore).

#Result-Event

- (37) #Die [hölzerne]^{RE} Absperrung [hat drei Tage gedauert]^{EV}.
 ‘The [wooden]^{RE} blocking [has taken three days]^{EV}.’

→ # ‘The wooden^{RE} blocking {is the result of an event that [has taken three days]^{EV}}^{RE}.’

#Event-Result

- (38) #Die Abholzung des Regenwaldes [geht weiter]^{EV} und ist aus dem Weltall [sichtbar]^{RE}.

‘The cutting down of the rainforest [continues on]^{EV} and is [visible]^{RE} from outer space].’

→ # ‘The cutting down of the rainforest continues on and {the result [is visible from outer space]^{RE}}^{EV}.’

Note also the subtle difference if we only change the modifier of the nominalization within the same construction:

- (39) a. Die [zufällige]^{EV} Ausgrabung wird im Museum [ausgestellt]^{RE}.

‘The coincidental excavation will be exposed in the museum.’

- b. #Die [mühsame]^{EV} Ausgrabung wird im Museum [ausgestellt]^{RE}.

‘The tedious excavation will be exposed in the museum.’

Our intuition concerning (39) is that in a. the relation is more salient or noteworthy as it is something special to discover something by chance and that is why it is exposed, while in b. it is not. But it is clear that these are only first intuitions and we have to investigate and classify the character of those relations in more depth. Nevertheless, we have shown that there are crucial differences in acceptability that somehow have to be accounted for and that the factors introduced by Nunberg seem to play a role in that.

Still, even if salience and noteworthiness are given, we also want to exclude cases like the following already mentioned above:

- (40) # *Das Resultat der Messung [hat drei Stunden gedauert]*^{EV}.

‘The result of the measurement has taken three hours.’

→ # The result of the measurement {*is the result of an event that* [has taken three days]^{EV}}^{RE}

Since predicate transfer is a general mechanism that does not constrain the input it applies to this should be possible, but since the example becomes even longer then, this seems to be implausible here, analogous to the pragmatic principle “be brief”.¹¹ Generally, the speaker’s strategy behind predicate transfer is to express something more briefly while making use of stereotypical knowledge: *I am parked out back* is shorter than *I am the owner of a car that is parked out back* and so is *Messung* for events and their results likewise.

We find additional structures that interact with predicate transfer, e.g. temporal structure as mentioned above and discourse structure: In (41), the particle *finally* connects the past and the present and makes it more convenient to bring the event and its result together here:

- (41) *Die Übersetzung war [langwierig]*^{EV} *und [liegt jetzt / endlich auf dem Tisch]*^{RE}.

‘The translation was [tedious]^{EV} and [is **finally** on the table **now**]^{RE}.’

In (42), the salient relation between the way, in which the event was conducted and its influence on the result is unexpected (we would expect that student do not have enough experience to measure precisely), but it is repaired by *although*, which emphasizes the causal relation and shows that it is unexpected in this case:

- (42) *Obwohl die Messung von Studenten [durchgeführt wurde]*^{EV} *ist sie sehr [genau]*^{RE}.

‘**Although** the measuring was [conducted]^{EV} by students it is very [precise]^{RE}.’

- (43) a. Lunch was delicious, **but** took forever.
b. The apple was a funny colour **but** is delicious.¹²

This can also be seen in the following pairs of examples:

¹¹ We owe this observation to an anonymous reviewer.

¹² Examples (43) a. and b. are taken from Asher (2007).

- (44) *Die einfache Übersetzung brachte mir **dennoch** viel Geld ein.*
 ‘The easy translation **still** earned me a lot of money.’
 → Periphrasis: The result earned me a lot of money, **although** the related event was easy.

Remember the example where we had the tedious translation and claimed that this is noteworthy since it explains why it earned me so much money. In (44) this explanation does not hold, but still the causal relation can in a sense be rescued by the particle *still*.

Similarly, in (45) the causal expectations are met while they are violated in (45’):

- (45) *Die [täuschend echte]^{RE} Fälschung [dauerte lange]^{EV}.*
 ‘The deceptively real-looking imitation took a long time.’
 (45’) *#Die [schlechte]^{RE} Fälschung [dauerte lange]^{EV}.*
 ‘#The bad imitation took a long time.’

Still, the noteworthy relation between event and result can be assembled by motivating that it is unexpected, which is made explicit by *trotzdem* ‘still’:

- (45’’) *Die [schlechte]^{RE} Fälschung [dauerte **trotzdem** lange]^{EV}.*
 ‘The bad imitation **still** took a long time.’

We will not go into the details of these discourse effects here, but it should have become clear that they have an impact on the acceptability of such examples.

We have only dealt with event and result object readings here, but as Melloni (2007) has shown, there are many other referential readings, e.g. abstract objects (*Übersetzung* ‘translation’ as information), means (*Heizung* ‘heating’), psych stimulus (*Vergnügung* ‘amusement’) or sense extensions (*Verwaltung* ‘administration’). If we unify these readings with the default event reading we recognize differences in acceptability again:

- (44) *#Die Leitung der Anwaltskanzlei ist [schwierig]^{EV}. Sie hat [angerufen]_{AGENT}.*
 ‘#The management of the law firm is [difficult]^{EV}. It has [called]_{AGENT}.’
 (45) *#Die teure Reinigung [der Kleider]^{EV} [liegt in der Innenstadt]_{LOCATION}.*
 ‘#The expensive dry cleaning [of the clothes]^{EV} is [located in the city centre]_{LOCATION}.’

- (46) #Die [regelmäßige]^{EV} Lüftung des Kinderzimmers ist wichtig, aber [kaputt]_{MEANS}.
 ‘# The [regular]^{EV} ventilation of the nursery is important, but [damaged]_{MEANS}.’

What these examples show is that the conflicting readings (or “copredication”) provide diagnostics (together with other diagnostics) for the distinctness of two readings (cf. Cruse 2002, Asher 2007 on copredication with simple nouns). In the case of deverbal nominals this may tell us something about default readings, the distance between readings and their distribution (see Brandtner 2009), since in principle we should not be able to unify a default with a coerced reading.

7. Summary and open questions

In this paper we have dealt with the systematic alternation between event and result readings (among other readings) of German *-ung* nominalizations. The examples have shown that the linguistic context provides different indicators for event or result readings, some applying locally, some in the wider context. To account for this phenomenon there are different theories or types of meaning shift of nominalizations, namely lexical, structural, semantic (cf. section 4) and pragmatic shifts (section 5).

Except for the latter, they focus on shifts concerning the nominalization itself and hence they cannot explain conflicting readings of a nominalization. Nevertheless they should not be seen as incompatible with the analysis pursued in this paper. There is a high number of instances with conflicting indicators, where one and the same nominalization expresses two readings. Instead of shifting the nominalization, the embedding context can be enriched or adjusted to the sortal restrictions set so far; to achieve this we have applied Nunberg’s notion of *predicate transfer*. As this mechanism does not act on the assumption that the nominalization has two readings at the same time, we are able to preserve compositionality.

Predicate transfer is a very powerful pragmatic principle that is restricted by the principles of salient functions and noteworthiness. These principles have to be clarified in more detail in the future, but first results from a test-questionnaire seem to corroborate our analysis that predicate transfer is licensed by the salient and noteworthy functions assumed so far and is blocked if there is no such function. A more detailed and broader questionnaire has already been carried out and is described in Weiland

(2009) and another one refined again is in the process of preparation (cf. Featherston, von Heusinger and Weiland, in preparation).

This analysis allows us to account for a particular type of meaning alternation, leaving other types for other theories of meaning shift operations (cf. section 4), which then do not have to be complicated. Predicate transfer is a general shifting principle that can give new insights into a variety of phenomena e.g. the context dependent shifts of simple nouns, restrictions in systematic polysemy (cf. Nunberg 1995), copredication cases and resultative adverbs (cf. Geuder 2002). On the other hand, copredication can give new insights into a widely neglected area: The distribution of readings deverbal nominals display: Some seem more closely intertwined with the event than others. This observation is further developed in Brandtner (2009).

Additionally, this paper has shown that the (wider) context is worth an in depth investigation. We have dealt with one contextual type here; other ones such as discourse relations and temporal aspects have only been touched upon and leave further work for the future to achieve a broad understanding of the interpretation of nominalizations in context.

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A cognitive-functional perspective on deverbal nominalization in English. Descriptive findings and theoretical ramifications

Liesbet Heyvaert

1. Introduction

Following Lees's (1960) seminal work on nominalization, the linguistic phenomenon of deverbal nominalization has always remained at the forefront of linguistic theorizing, particularly within more formal or syntactic frameworks (see, for instance, Chomsky 1970; Fraser 1970; Grimshaw 1990; Siloni 1997; Alexiadou 2001; Roeper 2005). That nominalizations are "not only pervasive but theoretically significant" (Langacker 1991: 22) is not surprising since, as Roeper (2005: 125) puts it, the process of nominalization "reveals primary principles": "It has been at the center [of linguistics, L.H.] since many people have the intuition that the right level of abstraction in grammar would equally capture a description of both sentences and nominalizations, but has been at the fringe because every theory of phrase-structure fails to capture the facts in a natural way. To put it more succinctly: where theories fail to extend naturally to include the effects of category-changing affixes, the theories themselves fail to be natural" (Roeper 2005: 125). This paper wants to explain and illustrate a theoretical-descriptive approach to deverbal nominalization that I have elsewhere labelled 'cognitive-functional' or 'radically functional' (Heyvaert 2003a) and that has been developed over the years in a number of descriptive studies of specific nominalization systems (-*er* in Heyvaert 1997, 1998, 2003a and b; -*ee* in Heyvaert 2006; -*ing* in Heyvaert 2003a and 2008 and in Heyvaert, Rogiers and Vermeylen 2005). Rooted in the Cognitive Grammar framework as developed by Langacker (1987 and 1991) while also adopting some of the fundamentals underlying Halliday's systemic-functional analysis of language structure (see, for instance, Halliday 1966a and b, 1979, 1994), the approach to nominalization that it proposes involves a usage-based description of the 'symbolic' status of various nominalization types (i.e. of their status as linguistic units which encode a particular meaning); of the compositional relationships which they realize (in particular, of their com-

ponent *functions* – which, it is argued, may be highly schematic categories realizable both in clauses and in nominal structures); and, thirdly, of the paradigmatic relationships which nominalizations enter into as ‘complex’ linguistic categories with non-nominalized noun phrases and with clausal structures. It distinguishes itself from other, formal and functional, approaches to nominalization in a number of ways. It is based on qualitative analyses of corpus data and thus firmly grounded in authentic language use, but is at the same time aimed at mapping out the schematic properties of the systems behind it; it views nominalizations not as ‘empoverished’ clauses or mystifying amalgams of clausal and nominal categories, but as constructions in their own right which point to the existence of highly schematic linguistic categories that are realizable in both the clause and the noun phrase; and, finally, it explicitly attempts to move beyond the purely syntactic level and connect the lexicogrammar of the various nominalization types that it includes in its scope to the meanings that they realize. Among its most distinctive (and controversial) features is certainly the importance it attaches to the role played by functional categories that relate to the speech event or ‘ground’ (e.g. modality, tense, subject) and that have long been attributed exclusively to clausal structure.

In what follows I will consecutively discuss the theoretical assumptions that underpin my theoretical-descriptive framework of nominalization, the insights that emerged from my descriptive studies, and, last but not least, their theoretical ramifications. Section 2 will introduce some of the fundamental cognitive and functional assumptions and notions that have influenced my approach to nominalization: the symbolic and multifunctional analysis of language structure, Langacker’s functional model of the noun phrase and the clause, the cognitive network view of language and the various possible relationships between the structures that figure in it. Section 3 will elaborate on a number of descriptive studies that I carried out, i.e. of *-er* and *-ing* nominalization. In Section 4, then, I will summarize the theoretical implications of my descriptive analyses and confront them with the general research tradition on nominalization, identifying the main resemblances and differences with a number of existing, more formal analyses of it.

2. Theoretical preliminaries

2.1. A cognitive-functional approach

The ‘radically functional’ approach to nominalization that I propose (Heyvaert 2003a), founded on a combination of cognitive and (systemic-)functional tenets and analytical constructs, includes a fresh perspective on nominalization that may be puzzling to people who are not familiar with the theoretical frameworks in question. Let me therefore briefly enlarge upon the notions of ‘cognitive’ and ‘functional’ as I understand them (for a more elaborate account, see Heyvaert 2003a: Chapter 2) and introduce the basic tenets of cognitive and systemic-functional linguistics that proved most valuable to the analysis of nominalization.

Functional analyses of language build on the assumption that the nature of the language system is “closely related to the particular needs that language is required to serve” (Halliday 1970: 142). Language is, more particularly, claimed to be shaped by the functions that it serves, and language structure has these various specific functions built into it. Linguistic analysis consequently consists of relating “the internal patterns of language – its underlying options and their realization in structure – to the demands that are made on language in the actual situations in which it is used” (Halliday 1970: 165). In addition to being determined by the functions that it serves, it can be argued, language is also fundamentally shaped by the cognitive abilities of the people that use it. In cognitive linguistics, the language system is thus viewed as an integral part of human cognition, i.e. as a part which does “not necessarily constitute an autonomous or well-delimited psychological entity” (Langacker 1987: 57). From a cognitive linguistic perspective, therefore, an analysis of linguistic structure should articulate the principles of cognitive processing that it is determined by.

Crucially, the language system that arises, moulded by the functions it serves and by the cognitive abilities of the ones that use it, is as it were ‘tested’ by the language user – it is not a generative or constructive system which itself generates well-formed, novel structures as its output. Actual language use is viewed as “a problem-solving activity that demands a constructive effort and occurs when linguistic convention is put to use in specific circumstances” (Langacker 1987: 65). It is this dynamic interaction between the language system and language use which both functional and cognitive linguists prefer to take as starting point of their analyses, because it forms the “crucible of linguistic structure” and the “source of language change” (Langacker 1987: 70).

With its various functions built into it and within the confines of the language user's cognition, linguistic structure is viewed as essentially symbolic in nature: one of the basic tenets of both cognitive and functional linguistics is that grammatical patterning itself associates a particular meaning with a particular form, and this "above and beyond the symbolic relations embodied in the lexical items they employ" (Langacker 1987: 12). Importantly, the linguistic sign is thus not viewed as an expression that points to a content outside the sign. Rather, it encodes or realizes meaning via its lexicogrammatical properties (see also Hjelmslev 1961: 47 and 57). It follows that the relation between grammar and semantics is a natural, non-arbitrary one and grammar and semantics are not considered as autonomous entities or separate 'components' of language (Langacker 1987: 12). Likewise, the distinction between lexicon and syntax that underlies much of the formal linguistic literature (and has figured prominently in its discussion of nominalization) is not adhered to in the cognitive and functional approaches to language. There is no reason, it is argued there, to assume a sharp distinction between lexical and grammatical issues. In systemic-functional linguistics, grammar is for that reason referred to as 'lexicogrammar', with lexis being the "most delicate grammar" (Halliday 1961: 267) and the relation between lexis and grammar viewed as a cline or continuum (an idea which is also found in Langacker's work).

To establish the meaning of symbolically complex units integrating two or more symbolic units into a grammatical construction, then, we have to analyze their lexicogrammar in detail. Such an analysis involves the elucidation of various 'contexts' (Langacker 1987: 401): their syntagmatic context (i.e. the relations which the linguistic unit enters into through composition) and their systemic or paradigmatic context, defined in Cognitive Grammar as their position "within the schematic networks that collectively constitute the grammar of a language" (Langacker 1987: 401). Among the aspects of the syntagmatic context that are most pertinent to my analysis of nominalization is the multifunctional view, which I will elaborate in the following section.

2.2. A multifunctional view of language structure

2.2.1. *Multifunctional layering*

In line with Halliday (1994), I view language, and therefore also language structure, as metafunctional, i.e. as serving and incorporating several functions at the same time (note that Halliday is not the only functionalist to

make that claim; many of the functional theories of language posit that constructions are characterized by different layers of functional organization, cf. the Prague School, the functional schools of Dik and Givón). Most important for the analysis of nominalization is the distinction made in systemic-functional linguistics between representational functions and interpersonal/constructional functions. The representational layer covers all those options in language which enable language users to express their “experience of the real world, including the inner world of ... [their] own consciousness” (Halliday 1970: 143). Included are experiential categories such as processes, participants and circumstances. The interpersonal functional layer of language, in contrast, concerns the communicative function of language or language as exchange: it incorporates the grammatical options which a language user has to adopt a particular speech role and assign one to others (e.g. making assertions, asking questions, giving orders). It also includes the various linguistic categories that enable the language user to relate what they say to the moment of encoding/decoding, the speech event (e.g. the categories of subject, tense, modality). The clause

(1) *She cleaned the room thoroughly.*

thus represents a situation in which, from a representational perspective, *she* functions as agent of the material process *cleaning* and *the room* is presented as being the patient. From an interpersonal/constructional perspective, *she* functions as subject of the finite verb *cleaned*, while *the room* is object. The event is moreover situated in time or ‘grounded’ with respect to the speech event. Categories functioning at the so-called ‘interpersonal’ level of the clause or the subject-finite-predicator layer (Halliday 1985; Hengeveld 1989) are thus, among others, tense, modality, finite vs. non-finite and negation. What at first sight appear to be characteristic properties of a single unit (e.g. agentivity and subjecthood) are thus interpreted as distinct functions, which are either mapped onto each other in a single component or are realized by distinct components, as in (2) below, where the subject *the room* in this sentence is no longer also the agent of the cleaning.

(2) *The room will be cleaned daily by one of our cleaning ladies.*

2.2.2. Functional resemblances between clausal and noun phrase structure

Langacker’s general functional model of the nominal and the clause (laid out in Langacker 1991) basically argues that significant parallels exist be-

tween, on the one hand, nouns and verbs, and, on the other hand, nominals and finite clauses. According to Langacker, nouns and verbs represent the conception of a 'type specification', which "specifies the basis for identifying various entities as being representatives of the same class but is not tied to any particular instance of that class" (Langacker 1991: 53). Nominals and finite clauses, in contrast, presuppose "that an instance has been established", they include quantification (how many instances are established?) and they give "some indication concerning its relation to the speech-act participants", i.e. they *ground* the instance (Langacker 1991: 58). Importantly, Langacker argues that we find the functions of type specification, quantification, instantiation and grounding in *all* nominals, be it in many different ways. When coded separately, the head noun (together with adjectives and other modifiers) provides the type specification (e.g. *black cats*), the quantifier is added as a separate layer (e.g. *three black cats*), and a grounding element is appended at the outermost layer (e.g. *those three black cats*). Many nominals, however, realize functions that "are not uniquely associated with distinct levels of constituency" (Langacker 1991: 54). One can think here of pronouns and proper names, where all four functions are conflated in a single expression: even though from a strictly structural perspective they seem to have hardly anything in common with common nouns, like them they realize the 'grounded instance of a type' functional model of the nominal: a pronoun such as *she* profiles the schematically specified type 'human female'; in a proper name like *James* the type specification that is incorporated is that of 'male human'. Both profile single instances that are inherently definite and uniquely apparent to the speech-act participants (Langacker 1991: 59). As such, pronouns and proper names do not need separate marking of their definite status. Or, as Huddleston and Pullum (2002: 517) put it: "By virtue of its use to refer to a particular entity or collection of entities that bears the name, a proper name is inherently definite. This ... makes the marking of definiteness unnecessary".

Interestingly, Langacker claims that not only the noun phrase, but clauses too can be analyzed into a type specification and grounding devices. Langacker (1991: 195) suggests that in the clause "the specification of tense and modality be analyzed as the grounding predication, with the remainder of the verb group (other auxiliaries and the main verb) regarded as a complex clausal head analogous to a head noun". All non-grounding auxiliaries of modality, secondary tense and passivity are, in other words, part of this 'clausal head'. In Davidse (1997: 420) it is argued that objects, complements and circumstantial adjuncts are part of the clausal head as well and serve to *subcategorize* the general process type, turning it into a

‘complex name’ (Davies 1979: 64). In the examples in (3), the clausal type specifications or heads are thus *clean the room thoroughly* and *have gone to school this morning*:

- (3) a. *She cleaned the room thoroughly.*
 b. *She must have gone to school this morning.*

This clausal head can then either be related to the here-and-now of the speech event, viz. by the finite element of the verb group (through tense and modality; Langacker 1991; Halliday 1994) and through ‘grammatical person’ or person deixis (coded by both the finite element and the subject; Davidse 1997); or it can be atemporalized by the atemporal markers *-ing* or the *to*-infinitive, which can be added to the same processual structures that are elaborated by grounding elements (Heyvaert 2000, 2003a):

- (4) a. *cleaning/ to clean the room thoroughly*
 b. *having/to have gone to school this morning*

Atemporalized clausal heads or type specifications cannot themselves be grounded in the clause (**she should cleaning/to clean the room; *she will having/to have gone to school*), but they can be instantiated or turned into the conception of an instance, viz. through the inclusion of a subject: *playing the piano* can be used to designate a *type* of activity, but *her playing the piano* as in *Her playing the piano surprised me* designates an instance (viz. either a specific single event, or a habitual activity). The subject, in other words, serves the role of ‘instantiator’ (Davidse 1997; Heyvaert 2003a). Following Davidse (1997), I argue that the subject in that respect differs fundamentally from objects or ‘secondary’ focal participants, which cannot themselves instantiate a type specification: while they can further specify and refine the instance that has been established by the clausal type specification and the subject, as in *my eating – my eating spaghetti*, they cannot themselves turn a type specification into the conception of an instance. Taylor (2002: 391–392) makes a comparable observation when he points out that

“there might be reasons for attributing some special status to a structure intermediate between the bare verb and the fully specified clause, consisting of the verb with its complements (and possibly modifiers) but excluding the subject ... This intermediate structure corresponds to the traditional category of verb phrase. ... The category of ‘verb phrase’ is justified to the extent that the relation between a verb and its tr [i.e. its subject, L.H.] is typically

looser than between a verb and its other complements and even its modifiers. Generally, a verb imposes much tighter restrictions on its non-subject complement than on its subject.”

2.3. A network view of language

2.3.1. *Schematization and prototype extension*

In general, the language system as it is described in Cognitive Grammar (Langacker 1987, 1991) consists of “massive networks in which structures with varying degrees of entrenchment, and representing different levels of abstraction, are linked together in relationships of categorization, composition, and symbolization” (Langacker 1999: 95). In addition to being composite, Langacker (1988: 149) argues, a grammatical construction is also *complex*, i.e. it does not reside in a single structure, but rather in a “family of structures connected by categorizing relationships”, and its position “within the schematic networks that collectively constitute the grammar of a language” (Langacker 1987: 401) constitutes an essential part of its analysis.

Subordinate nodes in the language user’s cognitive language network (subschemata or more specific structures) either merely instantiate a higher-order or superordinate schema, conforming to its specifications. They then only differ from the higher-order schema in that they are less abstract/schematic, i.e. “characterized in finer-grained detail” (Langacker 1999: 93) (e.g. the agentive noun *teacher* instantiating the superordinate agentive schema for *-er* derivation [[V/...]-[[-ER]/[-er]]). Subordinate nodes may, however, also extend a superordinate schema, i.e. deviate from its prototypical features (e.g. non-agentive *-er* within the system network of *-er* derivation). Importantly, Cognitive Grammar thus incorporates two fundamental perspectives on constructions: the prototype perspective (based on Rosch 1978), and that of schematization (instantiation or elaboration). This dual perspective, Langacker (1988: 139) argues, is necessary, because a category’s extension from the prototype tends to be “accompanied by a certain amount of upward growth, as schemas are extracted to generalize over a more diverse array of category members”.

2.3.2. *Systematic relationships between constructions*

Lees’s idea of positing underlying, transformationally derived, clauses for nominalizations was to capture systematic relationships between different

structures has through the years come to be minimized and the analytical value of identifying and describing such systematic relationships neglected. Yet, in the systemic-functional as well as in the cognitive approach to language, the importance of analysing not only the syntagmatic but also the systemic relations of a construction has always been emphasized. Inspired by Gleason's (1965) work on agnation, Halliday's (1985/1994) systemic-functional approach likewise emphasizes the need to take into account all those systemic or paradigmatic relations that "seem to fit into an interconnecting system ramifying far and wide through the language" (Gleason 1965: 33). According to Gleason (1965: 202), two constructions that share the same major lexical items or "conceptual content" (Langacker 1991: 549) but are different in structure can be said to be systematically related or "agnate" when their "relation in structure is regular and systematic", i.e. when it "can be stated in terms of general rules" (Gleason 1965: 202). Importantly, for a relation to be identifiable as agnation, it must not be a "unique relation between isolated pairs of constructions" but involve *large numbers* of constructions. Agnation is in other words "a recurrent thing, involving large numbers" and "based on the pervading patterns of the language" (Gleason 1965: 202). As a result, specific agnate structures are always part of a *network* or grouping of structures (for an elaborate account of the notion of agnation, see Davidse 1998 and Heyvaert 2003a) (based on Davidse 1998: 293):

- (5) *He saw it.* $\Leftrightarrow$ *It was seen by him.*
 He heard it. $\Leftrightarrow$ *It was heard by him.*
 He felt it. $\Leftrightarrow$ *It was felt by him.*

The agnate structures in (5) all happen to be clauses, but relationships of agnation are not necessarily between constructions of the same grammatical level: Gleason (1965: 212) also mentions the relation between the nominalization *the boy's running* and the clause *the boy runs* as an example of agnation.

3. Some descriptive case studies

3.1. Introduction

My interest in nominalization was first prompted by the observation that, in spite of the fact that nominalizations have been extensively discussed in the literature, existing accounts are skewed – towards the theoretical ramifications of the phenomenon of nominalization in general, and towards certain,

primarily syntactic, properties of it. Comprehensive descriptive corpus studies of specific nominalization systems, attempting to unravel their unique symbolic status ('what does nominalization system X mean and why?') were lacking – descriptive accounts often starting from a selection of nominalization examples, but ultimately zooming in on more encompassing theoretical questions (see, for instance, the discussion of *-er* nominalization in Booij 1986; Levin and Rappaport 1988 and Rappaport Hovav and Levin 1992; the discussion of nominal gerunds in Pullum 1991; the discussion of *-ee* nominals presented in Barker 1998 and Booij and Lieber 2004). Certain theoretical questions have thereby received far more attention than others: the issue of what has been called the 'inheritance' or 'preservation' of the base verb's argument structure, for instance, is an obvious example of a descriptive issue that has inspired a stream of publications: the theoretical question whether nouns can have argument structure at all and if so, under what conditions, has mainly been addressed by syntactically-oriented linguists (e.g. Williams 1981; Grimshaw 1990; Booij 1992; Hoekstra 1986; Roeper 1987, 1993), but also by functionalists (e.g. Mackenzie 1985, 1996, 2007).

In my own research on nominalization, then, I started with small-scale descriptive studies and tried to shed a new light on specific nominalization types. My main aim was to develop an accurate description of their symbolic properties based on a coherent theoretical view of the language system drawing on both cognitive and functional linguistics. In addition to being usage-based, from the start my approach was also characterized by a systematic focus on the (levels of) functions that could be distinguished in the nominalized noun phrases and on systematic relations between the nominalized structure and other, clausal and nominal structures. Interestingly, the patterns that emerged from my descriptive case studies ultimately allowed me to put forward new hypotheses concerning the process of nominalization in general. These hypotheses will be the subject of Section 4. In what follows, I will first summarize my descriptive findings on *-er* and *-ing* nominalization.

3.2. *-er* nominalization (Heyvaert 2003a)

3.2.1. *Starting point*

The system of *-er* nominalization started out as an 'agentive' system (Marchand 1969; Kastovsky 1971, 1985), but has come to designate quite a number of entities that can no longer be classified as such:

- (6) instruments such as *stapler*, *peeler*, *grinder*
- (7) *scratcher* ‘a lottery ticket that one has to scratch to reveal the winning patterns’, *squeezer* ‘a kind of container that you have to squeeze in order to extract something from it’
- (8) *stroller* ‘a small chair on wheels, in which a baby or small child can sit and with which one can stroll’, *walker* ‘a special kind of frame which is designed to help babies or disabled or ill people to walk’, *viewer* ‘a device for viewing photographic transparencies’
- (9) *bestseller*, *easy-rider* ‘a motorbike that rides easily’, *easy-walker* ‘a kind of stroller that is designed in such a way that it walks easily’

Starting point of my own analysis was therefore the question whether the originally agentive system of *-er* nominalization has come to designate a new, higher-level constructional schema. I thereby also wanted to integrate the distinction between what Levin and Rappaport (1988) have called ‘event’ vs. ‘non-event’ nominalizations:

- (10) *Gough, the Welsh destroyer of Del Harris’s hopes ...* (CB)¹ [event]
- (11) *destroyer* ‘a small, heavily armed warship’ [non-event]

3.2.2. Existing analyses

Cognitively-oriented research on *-er* nominalization has argued in favour of a purely *semantic* or conceptual analysis of *-er* derivation, with a focus on identifying the semantic prototype and how it relates to its various extensions rather than looking for an overarching, schematic semantics linked up with the system’s formal properties (Ryder 1991; Panther and Thornburg 2002). The best-known attempt to generalize across the system of deverbal *-er* nominalization is more formal in origin, i.e. proposed by Levin and Rappaport 1988 and Rappaport Hovav and Levin 1992. Like Marchand 1969, Bauer 1983 and Mackenzie 1990, they suggest a syntactic analysis, i.e. the ‘external argument generalization’: *-er* nominals, they argue, may bear a wide range of semantic relations to the verbs from which they are

¹ The examples followed by the abbreviation (CB) were extracted from the CO-BUILD corpus and are reproduced here with the kind permission of Harper-Collins.

derived, but “they most systematically correspond to the external argument of the base verbs” (Rappaport Hovav and Levin 1992: 145) and therefore only derive from verbs which have external arguments. In Heyvaert (2003a: 110–115), a detailed analysis of the evidence that Levin and Rappaport adduce in favour of the external argument generalization is given. Most problematic for their generalization is probably a group of *-er* nominalizations that derive from *cooking* verbs (e.g. *baker* ‘a food (meat, fruit or vegetable) that is suitable for baking’, *broiler* ‘a young chicken suitable for broiling’, *fryer* ‘a young chicken or rabbit suitable for frying’, *roaster* ‘a kind of meat suitable for roasting’ and *steamer* ‘an edible clam’). These nominalizations refer to the “theme argument of the base verbs (the entity that changes state)” (Levin and Rappaport 1988: 1077). Other problematic cases are *bestseller*, *loaner* ‘something that is loaned to someone’ and *sticker* (Rappaport Hovav and Levin 1992: 149). All of them present a problem to the external argument generalization because they are generally assumed to profile an internal rather than external argument. As Levin and Rappaport (1988: 1078) point out, however, these nominals “do not receive the interpretation that would be expected if they were derived directly from the transitive or unaccusative uses of the related verb”. In fact, their meaning seems to come closer to the interpretation that their base verb receives when it functions in a clausal middle construction (Levin and Rappaport 1988: 1078): a *broiler*, for instance, designates a chicken which is *bred* or *intended to be broiled*, as in *This chicken broils well*. Even though, they admit, most accounts of the middle construction consider the single argument of middles as internal (e.g. Keyser and Roeper 1984; Roberts 1987), they argue that the occurrence of *-er* nominals such as *broiler*, *baker* and *steamer* might be taken as support for an “alternative analysis of the middle construction” (Levin and Rappaport 1988: 1078), i.e. one which involves “the externalization of the direct internal argument of the verb in the lexicon” (Rappaport Hovav and Levin 1992: 149). An *-er* nominal that is systematically related to a middle construction thus profiles an external argument after all.

The notion of ‘external argument’, I have argued (Heyvaert 2003a: 114–115) fails to capture the high-level schema that all *-er* nominals instantiate, because it does not distinguish accurately between the representational layer of language (i.e. the function of agent) and the interpersonal/constructional one (the function of subject). What it seems to stand for is ‘being the most likely candidate for serving as subject’, and this, by and large, corresponds to being the agent of the process or to being agent-like. This interpretation, however, excludes quite a number of interesting developments within the system of *-er* nominalization: *-er* nouns that profile the ‘oblique

participant' (clausally realized in the form of a prepositional phrase, Laffut 2006: 106), like *stroller*, *walker* and *viewer*, for instance, cannot be said to profile the agent-like, external argument of the base verbs (a *stroller* does not *stroll*; a *viewer* does not itself do the *viewing*). The same goes for nominals that profile the location of a specific process, such as *kneeler* 'a (church) chair one has to kneel on' and *stepper* 'a surface one has to step on to work out'. They derive from intransitive verbs (in formal terms, from unergative verbs) and do not designate the external argument (the one that does the *kneeling* and *stepping*). In addition, Levin and Rappaport's analysis of the so-called middle-related type of *-er* nominals is circular: as pointed out by Ryder (1999: 275), Levin and Rappaport "hypothesize that *-er* forms must always appear as external arguments of their root verbs and then ... decide that the subjects of middle verbs are external arguments primarily based on the possibility of turning the verbs into bases for *-er* nominals".

The external argument generalization may not be watertight, it does represent a serious attempt to provide a coherent account of *-er* nominalization that does not consider non-agentives as mere idiosyncracies. It is moreover based on interesting semantic observations on the resemblances that exist between non-agentives and middle constructions. What makes the latter structures especially interesting is that, firstly, semantically speaking they seem to come much closer to certain non-agentives than does, for instance, the passive (e.g. *cooker*, *boiler*, *broiler*); and, secondly, their unique but intriguing combination of a non-agentive subject and an active finite verb. In my own analysis of *-er* nominalization, I therefore took Levin and Rappaport's analysis as starting point and set out to propose an analysis combining syntax and semantics (i.e. a symbolic analysis), linking up the meaning of *-er* nominalization with their constructional, formal properties in a more satisfactory way than the external argument generalization.

3.2.3. *An alternative, symbolic perspective*

I first mapped out the most problematic, i.e. non-agentive type of *-er* nominalizations in detail and identified two major subcategories: patientives and obliques (entities which at clause level are realized as prepositional phrases). Within the patientive subtype, I distinguished between inert, affected entities (e.g. *scratcher*, *squeezer*); less affected entities (e.g. *reader*, *loaner*); and *-er* nominals designating the participant of an ergative process which is not purely patientive but co-participates in the process (e.g. *broiler*, *cooker*, *steamer*). Among the oblique category, then, I identified instrumentals (e.g.

stroller, walker, viewer) and nominals designating the location of the particular activity expressed by the base verb (e.g. *stepper, sleeper, kneeler*). In general, I then pointed out, non-agentive *-er* nominalizations designate entities of which the properties are conducive to a specific purpose. In fact, many of them seem to be *designed or bred for a specific purpose/to undergo a specific process* (see also Lemmens 1998; Panther and Thornburg 2002). Some non-agentives even contain the adjective *easy*, indicating that their properties allow for the easy carrying out of a certain process; others indicate ‘where’ a certain process should aim for (e.g. *low-loader, front-loader*). These semantic properties are remindful of the clausal middle construction, and I therefore explored the resemblances between non-agentive *-er* nominalization and the middle construction (Levin and Rappaport 1988; Lemmens 1998) in more detail, starting with a careful description of the clausal middle construction itself (Davidse and Heyvaert 2003; Heyvaert 2003a; Davidse and Heyvaert 2007). Middle clauses, it was shown, allow for (prototypical) transitive, but also for ergative and intransitive processes, as illustrated in the examples below:

- (12) *This shirt irons easily.* [transitive]
- (13) *These potatoes cook well.* [ergative]
- (14) *They rolled the green before the match and it ran three seconds faster ... (CB)* [intransitive]

Middles prototypically have a facilitating meaning (‘easily’), but may also be feasibility-oriented, destiny-oriented and result-oriented (for a more elaborate account of the various semantic orientations that might be distinguishable among middle constructions, see Heyvaert 2003: Chapter 6 and Davidse and Heyvaert 2007):

- (15) *This shirt irons easily.* [facility-oriented]
- (16) [about a cook-book holder] *Folds up and packs away for convenient storage.* (CB) [feasibility-oriented]
- (17) [children’s coat] *Outer flap wraps around little hands and secures with Velcro.* (CB) [destiny-oriented]
- (18) *Her face is her best asset because she has very good bone structure which will photograph well.* (CB) [result-oriented]

Partly in line with earlier suggestions in the literature, it was then argued that the relationship between the subject and finite verb in middle construc-

tions is basically modal in nature (see also Fellbaum 1985; Fagan 1992; Massam 1992; Iwata 1999). Rather than positing a modal meaning of possibility/ability (*can*), however, middle constructions realize a type of modality that can be labelled as ‘letting’ modality (cf. the Dutch ‘laat zich’ construction; English constructions with *won’t* and *refuse*). The modality of ‘letting’ in middle constructions can be characterized as dynamic (cp. with the modality of volition, willingness and ability) in that the locus of potency, which in subjective types of modality becomes increasingly implicit, is still located in the entity construed as subject: the latter is directed towards the realization of the process, not, however, by bringing it about itself, but by *letting* it be carried out. That the subject-entity is able to do that is due to its properties, which make it conducive to a particular process (for an elaborate account, see Heyvaert 2003a and Davidse and Heyvaert 2007).

Non-agentive *-er* nominalizations turn out to have much in common with the clausal middle construction: they also designate entities of which the properties are conducive to a specific process and can also be analyzed as expressing a modal relationship between a process and an entity: a *cooker* is more than *an apple that cooks* and a *broiler* is more than *a chicken that broils*: they *cook and broil WELL due to their properties*. Their semantics can be further differentiated according to the categories that were also distinguished for middles:

e.g. *bestseller, easy-rider, easy-walker*: facility/quality-oriented

front/toploader ‘an appliance, such as a washing machine or a clothes drier which allows for material to be inserted at the front or from the top’, *low-loader* ‘a vehicle in which the carrying platform is kept low for ease in loading’: destiny-oriented

viewer, walker, sleeper: feasibility and facility-oriented

kneeler, squeezer, stepper: destiny-oriented

cooker, steamer, broiler, fryer: destiny- and result-oriented

Agentive lexicalized *-er* nominalizations too typically imply a dynamic type of modality: most prototypical agentives imply the dynamic modality of *ability* (*can*) (e.g. *teacher, baker, preacher, life-saver, trainer*). Some also imply regularity or persistent habit (*will*) (e.g. *gambler, drinker*). In short, in both agentive and non-agentive lexicalized nominalizations, an essentially modal claim is made, i.e. a claim about potentiality, about some process that characterizes an entity while abstracting away from the actual occurring of that process (cp. with Levin and Rappaport’s notion of ‘nonevent’

nominalization). Instrumental *-er* nominals embody one of the fundamental choices that is offered by *-er* suffixation, i.e. that between an agentive and a non-agentive, letting profile. Instruments by definition hover between being able to carry out a process themselves (as agent-like participants) and letting others carry it out (as non-agentive entities). Those instrumental *-er* nominalizations that are non-agentive resemble middle constructions in that they profile an entity that has properties that let an implied agent perform a particular action (e.g. *stroller*, *walker*, *viewer*). Agent-like instrumentals, on the other hand, foreground the agent-like ability of the tool which they refer to (e.g. *transmitter*, *toaster*). A large group of instrumental *-er* nouns lies in between the agentive and non-agentive type: depending on which perspective is chosen, they can be interpreted as either agentive or non-agentive. Even instruments which strongly depend on the intervention of a human agent in order to fulfill their function can, in certain contexts, be presented as agent-like, witness the following attestations of *peeler* and *grater*:

- (19) *All purpose peeler – peels fruit and vegetables quickly and safely.* (CB)
- (20) *... a ... stainless steel double grater that grates ingredients finely or coarsely ...* (CB)

Ad hoc or ‘event’ *-er* nominalizations instantiate the same high-level constructional schema of deverbal *-er* nominalization, i.e. that of a relationship that is comparable to that between subject and finite at clausal level. However, whereas lexicalized *-er* nominaliations systematically draw on the modal option within the Mood or subject-finite unit, ad hoc nominalizations typically instantiate the *temporal* option which that unit offers (cf. the ‘event’ notion of Levin and Rappaport 1988) (see also Strang 1968, 1969) (for a more detailed account of subtypes of ad hoc *-er* nouns, see Heyvaert 2003a):

- (21) a. *Alex Gough, the Welsh destroyer of Del Harris’s hopes on Tuesday ...* (CB) [temporal: he destroyed Del Harris’s hopes on Tuesday]
- b. *destroyer* ‘small, heavily armed warship’ [the agentive type of modality, i.e. that of possibility/ability: a warship that can destroy]

In conclusion, then, by analyzing the correspondences between the clausal subject-finite unit and agentive and non-agentive *-er* nominalizations more closely, I shed a new light on the system of deverbal *-er* derivation. While it had thus far been approached from the perspective of its (representational)

semantics only (-*er* as basically agentive) or in terms of the formal notion of 'external argument' (which fails to account for the many cases of internal argument-denoting -*er* nouns), I showed that the most fundamental generalization behind its various instantiations might rather be tied up with a constructional or interpersonal type of functional relationship: -*er* nominals profile an entity that is related to a process much like a clausal subject is related to the finite verb in a clause. Unlike clauses, however, -*er* derivation does not profile the relationship between the subject and the finite, but zooms in on the subject itself. In agentive -*er* nominals, the profiled entity is, representationally speaking, typically also the 'doer' of the process, in non-agentive -*er* nouns we observe the added meaning that is also associated with the subject of the active verb in middle constructions, i.e. the meaning of conduciveness. By positing a systematic relationship of agnation between non-agentives and middle constructions and describing this relationship in detail, I also revealed other commonalities with agentive -*er* nouns: lexicalized -*er* nouns in general seem to be characteristically modal in nature, expressing the dynamic modalities of ability/possibility or willingness (agentive nouns) or letting (non-agentives), all associated with a 'potent' subject-entity, while 'ad hoc' or 'event' nominals relate more systematically to a subject-finite unit that expresses a primarily temporal relationship.

In Heyvaert (2006), I wrote out a comparable symbolic analysis of -*ee* derivation (which originated as an anglicized version of the feminine form of the French past participle suffix, as in *assigné(e)*; *appelé(e)*; *donné(e)*) (Marchand 1969; Barker 1998). What appears to unite -*ee* nouns, I argue, is the nature of the constructional relationship which they establish between an entity and a process, a relationship which is comparable to that at clause level between an entity and a verb in the form of a past participle. The various meanings that can be realized by a past participle (passive, present perfect, statal passive) shed new light on the system of -*ee* nominalization. Importantly, what at first sight constitutes the most tricky subtype of -*ee* derivation, i.e. that which profiles an agent (e.g. *escapee* 'someone who has escaped', *resignee* 'someone who has resigned', *returnee* 'someone who has returned', *attendee* 'someone who is attending a meeting or conference') appears to have central aspects of the past-participial semantics, as described in Langacker (1991: 200–207, 221–225), in common with the prototypical core of -*ee*. Agentive -*ee* nominalizations profile the resultant state which an agentive entity finds itself in after some change and are thus "downstream" with respect to the flow of time; non-agentive -*ee* nominalizations profile a terminal participant or an entity which is downstream with respect to the flow of energy. This entity may in addition be downstream with re-

spect to the flow of time and portrayed as stative (as in *adoptee*, *abusee*, *electee*). A clear division of labour thus also becomes clear between agentive *-ee* and *-er* suffixation: while *-ee* nouns have a strong tendency to profile the *state* a person is in, typically – though not necessarily (cf. *attendee*) – as the result of having carried out a process once, *-er* formations designate entities which are characterized by the fact that they *can* or *will* carry out a process, or which carry out that process *regularly*.

3.3. *-ing* nominalization (Heyvaert 2008)

3.3.1. *Starting point*

Starting point of my analysis of verbal gerunds was the observation that the semantic labels used in the discussion of gerundive nominalization ('action' and 'fact') cannot distinguish gerundives from the so-called 'action' type of *-ing* NOM (e.g. *the signing of the contract*) because they apply to both the gerundive and the action type of *-ing* nominalization (Langacker (1991: 32) discusses factive action nominalizations; Quirk et al. (1985: 1064) and Declerck (1991: 497) mention the existence of action-referrent gerundives) (see also Heyvaert 2004):

- (22) a. *At the end of today's session, European foreign ministers again condemned [Saddam Hussein's taking of foreign hostages].* (CB) [factive action nominalization]
- b. *They say [Saddam's targeting of Israel] did not achieve its objective ...* (CB) [factive action nominalization]
- c. *Tensions are growing between London and Dublin over [Britain's vetoing of government aid for Irish Steel ...].* (CB) [factive action nominalization]
- (23) a. *When the soul had become one of their concerns, it had turned out to be not simply a matter of [Kate's taking the children off to Mass every Sunday, and enrolling them in Catholic schools ...].* (CB) [action-referrent gerundive nominalization]
- b. *My husband speaks very well, but his job involves [my answering the phone on his behalf quite a bit of the time].* (CB) [action-referrent gerundive nominalization]

In addition, with so many other linguists, I was puzzled by the fact that possessive/genitive determiners are still licensed by the overall noun phrase

status of modern English gerundive nominalizations while other nominal determiners such as articles and demonstratives – which, diachronically speaking, were once part of the gerundive system – no longer are.

- (24) a. *The great art of poets is either the adorning and beautifying of truth, or [the inventing pleasing and probable fictions].*
(Dryden 1674, cited in Visser 1972: 1210)
b. *I do not like [this leaving without a word all those to whom she is dear].* (Maugham PV 210, cited in Jespersen 1914–1929, 5: 119)

And why are adjectival modifiers no longer acceptable, while, like articles and demonstratives, they were possible in earlier stages of the English language?

- (25) a. *This sodaine sending him away must seeme Deliberate pause*
(Jespersen 1914–1929, 5: 96)
b. *Between rheumatism and constant handling the rod and gun.*
(Jespersen 1914–1929, 5: 96)

Finally, while there is general consensus on the formal – nominal and clause-like – options and restrictions that characterize gerundive nominalizations (see, among others, Jespersen 1914–1929, 5; Lees 1960; Fraser 1970; Chomsky 1970; Declerck 1991; Pullum 1991), the question of how these nominal and clause-like features are structurally integrated into one nominal unit is more controversial: how can a basically clause-like unit acquire nominal-like functional behaviour?

3.3.2. *Towards an alternative analysis*

In Heyvaert 2008, I approach verbal gerunds from a ‘radically functional’ perspective and analyze their internal properties as noun phrases in detail, thereby continuing a line of analysis first set out in Schachter (1976), who first described Lees’ category of gerundives that “cannot have any expressed subject” (Lees 1960: 72) as *determinerless* noun phrases belonging to the paradigm of generic nouns. In particular, I argue that all nominal-constructive options of determination and modification that were once possible with gerundive nominalization have given way to the basic option of *specific* vs. *generic* reference (as illustrated in (26a) and (26b), respectively), and within this distinction, the option to construe the gerundive with no subject (see (27)), with an explicit subject in the oblique (as part of the

downranked unit) (as in (28)), with an explicit, genitive/possessive subject (as in (29)), or with a retrievable subject, through control or anaphoric/exophoric reference ((30)). In this binary symbolic potential and the role of the subject in it in my view lies the key to a more accurate, structurally-based understanding of the semantics of gerundive nominalizations.

- (26) a. *I'm very grateful for [you sharing that with us].* (CB) [specific]
 b. *[Having an ugly wife] makes a man mean.* (Postal 1970: 462)
 [generic]
- (27) *The law forbids [shooting deer].* (Wasow and Roeper 1972: 50)
 [generic, no subject]
- (28) a. *We're behind you because you're a winner and a champion. Appreciate [you being a Cowboy fan, an old boy from Arkansas].*
 (CB) [specific reference, oblique subject]
 b. *Arnold disapproves of [children drinking Coca Cola].* (Noonan 1985) [generic, oblique subject]
- (29) *Its volume alone would be impressive, but its originality and sheer brilliance vindicate completely [her having been declared Doctor of the Church].* (CB) [specific reference, possessive subject]
- (30) a. *... had decided to boycott me for the mere fact of [having written a book on Franco that was not a denunciation].* (CB) [specific reference, control]
 b. *She likes [driving fast cars] and [going to wild parties].* (Declerck 1991: 509) [generic reference, control]

From a nominal-constructional perspective, all options which are normally available to nominal constructions (such as adjectival modification, the use of determiners other than the genitive/possessive and the use of relative clauses), it could be argued, have gradually given way to the symbolic choice which, in my view, the modern system of gerundive nominalization is centred on, i.e. that of including the subject or not.

In particular, I suggest that the system of gerundive nominalization has moved away from Old English action *-ing* nouns, which profile(d) an action the participants of which were or were not included in the noun phrase, to become a nominalization system with a related, but more schematic semantics. Rather than necessarily profiling actions, gerundives can now designate actions as well as states; rather than nominalizing the action verb or process only (nominalization at word level), gerundives nominalize what I have

identified as a functional clausal unit, i.e. an atemporalized clausal head (Langacker 1991), which may or may not itself have been turned into the conception of an instance through the inclusion of an oblique subject. The gerundive nominalization – as *nominal* construction – then either leaves this ‘downranked’ clausal unit as such, profiling the *process type specification* itself (generic use) or the *instantiated process type* (if there is an oblique subject included in the downranked unit); or the nominalized noun phrase encodes the relation between a subject and the process type, i.e. it profiles the *instantiation* of the process type by the subject, by including a possessive/genitive or using anaphoric/exophoric reference or control.

As the examples below illustrate, gerundives can zoom in on a wide range of aspects to do with the instantiation of the process type: they can focus on a single specific instance (as in (31)) or on repeated instantiation (as in (32)); they can take as it were an ‘inside’ perspective and designate the actualization of the instantiation, i.e. the instantiation ‘while it is going on’ (as in (33)); or they can profile non-specific instances, i.e. reference can be, not to a single or repeated event, but to a non-specific instantiation of a process type (habitual, as in (34) or generic as in (35)).

- (31) *I feel such a mug for [signing the agreement]. I didn’t receive a copy and never saw the small print.* (CB)
- (32) *When the soul had become one of their concerns, it had turned out to be not simply a matter of [Kate’s taking the children off to Mass every Sunday, and enrolling them in Catholic schools ...].* (CB)
- (33) *And then all of the sudden [sic], it fractures again and a third time, and the third time, there’s an enormous ripping sound, and that is [her having the stroke].* (CB)
- (34) *She likes [driving fast cars] and [going to wild parties].* (Declerck 1991: 509)
- (35) *[Having an ugly wife] makes a man mean.* (Postal 1970: 462)

The disappearance of adjectival modification in gerundives (**his kind walking me home*), and, related to that, the observation that gerundives cannot be used in sentences such as the one in (36), seems to corroborate the hypothesis that I propose. Since gerundive nominalizations now focus either on the type specification or on the relation of instantiation (between subject and process type) *itself*, the instantiating relationship cannot be modified through adjectival modification. If there is information on *how* the process

is carried out, it is in the form of a manner adverbial which is part of the downranked atemporalized clausal head (as in (37b)) – the only *nominal-constructional* link which gerundives can realize remains that between the subject and the clausal type specification. Notice that this is an important difference between gerundive and action *-ing* nominalizations, which can take adjectival modification and function in sentences such as that in (37a). Action *-ing* nominalizations nominalize not the instantiating relationship between a subject and an atemporalized process type specification, but a simple action verb, the participants of which can be fore- or backgrounded in the noun phrase, as can the manner in which the action is carried out.

- (36) a. [*Sam's washing of the windows*] was meticulous.
 b. *[*Sam's washing the windows*] was meticulous. (Langacker 1991: 32)
- (37) a. [*Sam's meticulous washing of the windows*] surprised me.
 b. [*Sam's meticulously washing the windows* / *Sam('s) washing the windows meticulously*] surprised me.

If the overall semantics of present-day English gerundive nominalizations is most accurately described in schematic terms, where do the labels of 'fact' and 'action' come in then? I argue in Heyvaert 2008 that they do apply, but then at a lower schematic level, capturing the pertinent generalization that characterizes *subtypes* of gerundive nominalizations. In particular, generic gerundives, which either profile the process type specification only or designate a generic instance, are necessarily non-factive (as already pointed out by Lees 1960). Or, as Noonan (1985: 108) points out, they are "used to refer to kinds or states, not to specific events or states constituting backgrounded information". Within the specific type of gerundive nominalizations, on the other hand, some designate actions (or states) and are not used factively, while others are used in factive contexts and thus presuppose the truth of what they designate.

4. Theoretical-descriptive implications

In spite of the fact that the linguistic phenomenon of nominalization has been described extensively in the literature, analyses often fail to clarify what it actually *means* to use nominalization and why the language user opts for a particular nominalization type. Formal analyses of nominalization have tended to be primarily aimed at unravelling the wider theoretical relevance

of (certain features of) specific nominalization types to, for instance, the theory of argument structure or theorizing about the process of nominalization in general. More functionally- or semantically-oriented analyses, on the other hand, in my view too often emphasize 'local' phenomena such as small-scale semantic (e.g. metaphorical or metonymic) extensions of the meaning of specific nominalization types and the textual or genre-related potential of nominalization, to the neglect of the overall functional blueprint of the system and the meaning-encoding value of its structural properties.

In my descriptive work on *er*, *-ee* and *-ing* nominals, I have developed a theoretical-descriptive framework that might be said to add to the existing accounts and perspectives on nominalization in a number of ways. First, it hypothesizes that the semantics of nominalizations derives not only from the verbal or clausal properties of the starting point of the nominalization, but also from the constructional properties of the nominalization as nominal group: It treats nominalizations as re-classifications of *verbal* predicates into *nominal* groups which are only possible due to the fundamental correspondences between the functional organization of the nominal group and that of the clause, as described in Langacker (1991) (for a more elaborate account, see Heyvaert 2003a). Nominalizations reclassify a processual starting point, of which the 'size' can vary from a verb stem to a processual expression with complements or even a full clause (vb. *play*→*player*; *walking home alone*→*her walking home alone*). It is with this reclassified component that the nominal constructional elements have to be integrated. The reclassified component must always receive *nominal* end-status, with nominal quantification and grounding, and often also extra pre- and postmodifiers (e.g. *a singer of songs*, *her quick signing of the contract*, *her signing the contract quickly*). In some cases, there is no such overt premodification or determination, as is also true of, for instance, proper name noun phrases (e.g. *signing the contract quickly*; *that she signed the contract*). By looking at nominalizations through such a systematic noun phrase perspective, I managed to identify the distinct subtypes of gerundive nominals (an analysis initiated in Schachter 1976), reveal the internal coherence between them and link up the system's semantics (i.e. of instantiation by the subject) with its formal subtypes.

Secondly, my analysis points to systematic resemblances between clauses and nominalizations, whereby nominalizations cannot be reduced to clauses, but consist of *relationships* that also occur at clause level. This raises some interesting theoretical questions about the relationship between the categories realized at clause level and those realized at noun phrase level. I would suggest that, within the cognitive system network view of

language, clauses and nominalizations are viewed as instantiating partly similar schemata. A particular powerful such schematic category is without doubt that which we, at clause level, label ‘subject’ – both in its function of ‘instantiator’ (cf. gerundive nominalization) and in its function of ‘modally responsible element’ of a potential/modal or temporal claim (see Heyvaert 2003a: 87–92 for a more elaborate account of Halliday’s (1994) notion of ‘modal responsibility’; see also Davidse 1997). Identifying these ‘super-categories’ and describing them in more detail in my view forms one of the most exciting challenges of nominalization research. Interestingly, other linguists also call for a more schematic approach which includes both nominal- and clausal-constructional categories: Spencer (2005: 94) sighs that “it would undoubtedly be simpler and hence methodologically superior to assume a single overarching model encompassing both sentence structure and word structure”. Roeper (2005: 125) observes that “many people have the intuition that the right level of abstraction in grammar would equally capture a description of both sentences and nominalizations”. In most cases thus far, however, “the proposal veers either toward an exceptional treatment of nominalizations, or toward an abstraction that makes nominalizations seem just like sentences”.

Third, my theoretical-descriptive approach is multifunctional and shows that both representational and interpersonal functions figure in an analysis of nominalization that is aimed at being comprehensive – word-formation operating on the basis of both of them, even though they sometimes differ in terms of the impact that they have. My analysis of *-er*, *-ee*, and *-ing* nominalization suggests that these systems have all evolved from primarily representationally-driven systems (agentive *-er*; patientive *-ee* and action-oriented *-ing*) to more schematic systems, driven by interpersonal/constructional functions (the subject-finite combination in the case of *-er* nominalization, past participial constructions in the case of *-ee* derivation; instantiation vs. type reference in gerundive nominalization). What distinguishes *-ing* nominalizations from *-er* and *-ee* nominals, then, is that in the case of *-ing* nominalization, the reanalysis from the representational semantics of actions to a more schematic, constructional semantics (i.e. of types and instances) did not take place *within* the system of action *-ing* nominals but led to the development of a lexicogrammatical alternative system of *-ing* nominalization.

My descriptive analyses also highlight the descriptive value and theoretical significance of including systematic relationships between nominalizations and other constructions in the analysis of nominalization (cf. the description of middle clauses, which helped identify the formal and semantic ‘motive’ behind *-er* derivation; the link between *-ee* suffixation and the past

participle, which proved to be a real eye-opener and integrated agentive *-ee* suffixation naturally into the system; and the noun phrase analysis of gerundives, which shed a new light on the system of gerundive nominalization and its semantics). Importantly, I have argued in Heyvaert (2003a: 57), relationships of agnation primarily involve relationships between schemata rather than between constructions, i.e. they are not necessarily a matter of all “individual lexical items” (Barker 1998: 706) within a system being related to exactly the same agnate structure. Not all non-agentive *-er* nouns can be related to a correct clausal middle construction, for instance, but that has more to do with restrictions that apply at clausal level than with the system of *-er* derivation. In general, non-agentives do relate systematically to the middle construction and show striking similarities with its semantics of conduciveness. Another example to illustrate the schematic nature of agnation is the ad hoc nominalization *signer of the check*. Dik (1967) argues, in my view correctly, that it is ‘neutral’ with respect to time and that it depends on the context which particular tense is adopted. Various specific clausal constructions can, in other words, be said to agnate with it: e.g. *he signs the check*, *he (has) signed the check*, *he will sign the check*. One way of generalizing across the different temporal interpretations is by viewing them schematically, claiming that ad hoc *-er* nominalizations relate to an overall schematic category of temporal grounding, which in the clause is realized through tense, but in nominalization is to be ‘filled in’ by the context.

Finally, my analyses also point to the significance of taking into account authentic corpus data, of moving beyond the prototypical instantiations of a system and, rather than discarding them as mere idiosyncracies, including less prototypical or less frequent cases in the analysis (e.g. non-agentive *-er*; agentive *-ee*; gerundives that do not have a possessive/genitive premodifier). More quantitatively-oriented analyses of the language user’s actual communicative behaviour with respect to nominalizations, however, are necessary and will undoubtedly add to the cognitive-functional, qualitative analyses that I propose. Ultimately, I believe, it is in such usage-based perspective and in the wonder of authentic occurrences of nominalization, that cognitive, functional and formal approaches to nominalization can find common ground and strive for complementary analyses.

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A new account of possessors and event nominals in Hungarian

Tibor Laczkó

1. Introduction ^{*}

In the past two decades, a considerable number generative analyses of Hungarian determiner phrases have been developed in a variety of frameworks, e. g., Government and Binding Theory (GB), the Minimalist Program (MP) and Lexical-Functional Grammar (LFG). All of them need to tackle several intriguing aspects of Hungarian possessive constructions within determiner phrases. Most of them adopt or adapt some fundamental and insightful generalizations and solutions proposed by (Szabolcsi 1994). However my claim is that there are at least two key aspects of Szabolcsi's analysis, and those of other accounts inheriting these aspects, that can be shown to be problematic (or, minimally, these solutions can be considered to be rather marked in the given frameworks).

The first general problem is that in these analyses the possessive marker (that is, the Poss predicate), which is realized by a morpheme attaching to the possessed noun head, is formally the central (co)head of the noun phrase; however, the possession relationship has to be treated as determiner phrase internal, invisible from "outside". In previous approaches this fact is only captured in a stipulative manner.

The second problem is marked theta role assignment when the noun head is also an argument taking predicate (e. g., a relational noun or a derived

^{*} This paper, primarily based on my presentation at the workshop entitled *Nominalization across Languages* (Stuttgart University, 29th November – 1st December 2007), is a considerably revised and extended version of (Laczkó 2007). The difference is threefold. Firstly, the discussion of the key aspects of my new analysis of possessive constructions in Hungarian, originally developed in the framework of Lexical-Functional Grammar, is, on the one hand, shortened, and, on the other hand, supplemented with explanations for readers unfamiliar with this model. Secondly, I also show how this new account can be couched in a Chomskyan model. Thirdly, and most importantly, I explore the crucial aspects of the analysis with respect to the treatment derived nominals to a much greater extent.

nominal): Szabolcsi (1994) postulates that both the Poss predicate and the relational noun or derived nominal head are theta role assigners: the former assigns a formal theta role, and the latter assigns a contentful one.

My claim is that my new analysis of Hungarian possessive determiner phrases yields principled solutions to both of the above-mentioned general problems. My goal here is to present the most crucial aspects of this account and then to explore its consequences for complex event nominalization in Hungarian.

The paper has the following structure. In section 2, first I discuss some crucial aspects of Hungarian possessive constructions as well as two general problems with previous generative accounts, and then I summarize Bresnan's (2001) approach to English possessors. In section 3, I highlight the most important aspects of my new analysis. First I concentrate on possessive constructions with ordinary noun heads, then I discuss those with argument taking heads, and finally I show how my Lexical-Functional Grammar analysis can be translated into Chomskyan frameworks. In section 4, I explore the major aspects and consequences of extending the new account to possessors and event nominalization. First I present the crucial properties of the extension. Then I discuss the importance of my assuming that the (POSS) grammatical function is semantically unrestricted. Next I show how the new account explains the incompatibility of non-semantic constituents and the (POSS) function. Finally, I point out a potential problem with the number of (XCOMP) functions in the argument structure of a deverbal nominal predicate and sketch two possible solutions. In section 5, I offer a summary of the paper by enumerating the most significant points.

2. On some previous generative accounts

In section 2.1, I discuss a basic assumption shared by several recent generative approaches to possessive determiner phrases in Hungarian (section 2.1.1), and I highlight those aspects of previous analyses that are directly relevant for our present purposes with special emphasis on the two central problems to be addressed (section 2.1.2). In section 2.2, I briefly show Bresnan's (2001) treatment of English possessive determiner phrases, as it partially motivated my new account.

2.1. Hungarian possessive constructions

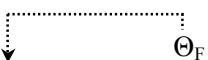
2.1.1. *A basic assumption: a distinct Poss morpheme*

It is a widely accepted assumption that it is feasible to distinguish the Poss and the Agr morphemes (although they often get “fused”), cf. Szabolcsi (1994), Komlósy (1998, 2002), Bartos (2000), É. Kiss (2002). The standard argument for the separation is that in certain cases there is a morpheme intervening between the Poss morpheme and the Agr morpheme, cf. (1a), in which the intervening morpheme encodes the plurality of the possessed noun. In (1b) the Agr morph also encodes what under ordinary circumstances Poss expresses (in addition to the always unmarked singularity of the possessed noun). In (1c), by contrast, according to several analyses, the Poss morph also encodes 3SG (Agr) (again, in addition to the always unmarked singularity of the possessed noun).

- (1) a. (*az én*) *kalap-ja-i-m*
 the I hat-Poss-PL-1SG
 ‘my hats’
 b. (*az én*) *kalap-om*
 the I hat-Poss.SG.1SG
 ‘my hat’
 c. (*az ő*) *kalap-ja*
 the he hat-Poss.SG.3SG
 ‘his hat’

2.1.2. *Szabolcsi (1994)*

In Szabolcsi’s (1994) highly influential GB analysis the noun head and the Poss make up a complex predicate in the lexical component. The Poss is the theta role assigner and it is assumed that this is formal theta role assignment (Θ_F).

- (2)  *az ő kalap-ja*
 the he.NOM hat-Poss.3SG
 ‘his hat’

Szabolcsi (1994: 197) provides the following logical interpretation for the $N+I_{[+poss,agr]}$ complex noun head in (2).

- (3) $\lambda x \lambda y [N(x) \ \& \ R(y,x)]$

‘the set of pairs where x is a N and bears some relation R to y , and the range of y is restricted by the agr features’

As a rule, in these possessive constructions $Poss$ is equal to R , and in the case of (2) N is equal to *hat*.

My claim is that the problem with the formula in (3) is that it does not satisfactorily capture the fact that the $Poss$, although it is taken to be, and it is represented as, a copredicate in the complex lexical predicate, is subordinate to the noun head copredicate. Consider the impossible and the real interpretation of (2) in (4a) and (4b), respectively:

- (4) a. *‘the possession of the hat by him’
b. ‘the hat that is possessed by him’

This is the first general problem that is characteristic of all Chomskyan approaches to Hungarian possessive determiner phrases that adopt Szabolcsi’s complex predicate analysis (whether this complex predicate is created in the lexicon, cf. Szabolcsi 1994, or in the syntax, cf. Bartos 2000 and É. Kiss 2002), and it is equally characteristic of my previous LFG accounts adapting Szabolcsi’s basic generalization, cf. Laczkó (1995, 2000). My new analysis sufficiently solves this problem.

The second general problem with Szabolcsi’s (1994) approach and with the approach of several other authors (cf., again, Bartos 2000 and É. Kiss 2002), for instance) is related to possessive determiner phrases with relational/deverbal noun heads. In these cases Szabolcsi assumes that both elements of the complex predicate assign their respective theta roles to one and the same constituent, the possessor. Again, the $Poss$ predicate has its formal role to assign (Θ_F), while the argument-taking noun head is taken to assign a contentful role (Θ_C). In (5), for instance, the deverbal head assigns the theme theta role it inherits from the input verbal predicate.

- (5) $\begin{array}{ccc} & \downarrow & \downarrow \quad \downarrow \\ & \Theta_C & \Theta_F \\ az & ő & megérkez-és-e \\ the & he.NOM & arrive-DEV-Poss.3SG \\ ‘his & arrival’ & \end{array}$

Needless to say, this is a rather marked theta theoretical process. If the assignment of the formal role by itself can satisfy Theta Theory in the case of ordinary noun heads, cf. (4), then in the case of relational/deverbal heads the classical version of the Theta Criterion is inevitably violated. Naturally, this criterion can be weakened, cf. É. Kiss and Szabolcsi (1992), for instance, but the unquestionably marked aspect of this solution remains. My new analysis eliminates this problem as well.

It is also worth pointing out that the semantic subordination of Poss to the noun head is even more surprising in the light of this dual theta role assignment mechanism. Szabolcsi (1994) claims that formal theta role assignment by Poss is instrumental in contentful theta role assignment by relational/deverbal nouns, that is, the latter is formally dependent on the former. Consequently, of the two copredicates it would be natural to expect Poss to be superior to, or at least equal to, but definitely not subordinate to, the relational/deverbal noun head, contrary to the relevant aspect of Szabolcsi's solution.

2.2. Possessors in English: Bresnan (2001)

The essence of Bresnan's (2001) account of English possessive constructions in the framework of LFG is as follows. The lexical form of an ordinary noun without a predicate argument structure is augmented with what she calls a lexical predication template, introducing a "subject" of predication.¹

(6) a. *hat*₁, N 'HAT <>' → b. *hat*₂, N 'HAT-OF <(↑POSS)>'

In effect, a lexical conversion process creates a relational noun from an ordinary, non-relational one. The newly introduced argument is assumed to have subject-like properties.

In my novel analysis I apply a conversion process similar to this in spirit; however, there are significant differences as far as the details are concerned.

¹ The essence of the LFG representation of lexical items can be schematized as follows:

(i) *phonological form*, CATEGORY 'MEANING <argument structure >'

3. The new approach

Contrary to my earlier view, in this new analysis I separate Poss and Agr, cf. the discussion in section 2.1.1. I set out to solve the two general problems of (i) modelling the “embedded” nature of the possession relationship and (ii) avoiding dual (parallel) theta role assignment. In addition, I aim at developing a uniform treatment of possessive constructions with either ordinary or argument taking (relational/derived) noun heads. In this section, firstly, I concentrate on possessive constructions with ordinary noun heads (section 3.1), secondly, I deal with those with argument taking heads (section 3.2), and thirdly, I show how my Lexical-Functional analysis can be translated into Chomskyan frameworks (section 3.3).

3.1. Ordinary nouns and possession

It is a generally held view that possession is a predicative relationship, cf. Szabolcsi (1994), Dikken (1999), Laczkó (2000), Bresnan (2001), Chisarik and Payne (2003). In my new account I capture this relationship in an explicit morphosyntactic fashion that directly feeds semantics: the predicate of this possession relationship is Poss, which has one argument that receives the semantically unrestricted (POSS) grammatical function, cf.:

$$(7) \quad -(j)A, [N__]_N \text{ '}\pi \mid x \text{ is related to } y \mid < (\uparrow \text{POSS}) >'$$

y

This analysis is similar to that of attributive “relational” adjectives according to which these adjectives (and attributive adjectives in general) have no subject argument in their predicate argument structure.²

The two crucial aspects of the new account are the following.

- (i) In Bresnan’s (2001) predication template manner I postulate a lexical redundancy rule that converts an ordinary noun without an argument structure into a one-place nominal predicate.
- (ii) This nominal predicate is a raising predicate, just like the verb *seem*.³

² In this analysis the lexical form of the adjective *proud* in attributive use is as follows.

(i) *proud*, A ‘x is proud of y < ($\uparrow$ OBL) >’

y

Consider (11) illustrating this conversion process.⁴

- (8) a. *kalap*₁, N ‘HAT <>’ →
b. *kalap*₂, N ‘HAT <(↑XCOMP)>’ (↑POSS)
(↑POSS) = (↑XCOMP POSS)

Thus, the fundamental difference between Bresnan’s (2001) template and mine is that the former simply introduces an argument structure with a possessor argument, while the latter introduces an argument structure with a propositional argument mapped onto the (XCOMP) propositional grammatical function, and also associated with a non-semantic (POSS) function. The propositional (XCOMP) requirement is, as a rule, satisfied by Poss attaching to the *kalap*₂ type noun head. (XCOMP) is an open grammatical function in that its subject(-like) argument is not overtly realized; instead, it is functionally controlled by one of the arguments of the matrix predicate (see footnote 3). In (8b), for instance, the (XCOMP)’s covert (POSS) is controlled by (identified with) the (POSS) of the matrix predicate, *kalap*₂.

Let us now see the new account of a possessive construction like (1a), repeated here as (9) for convenience.

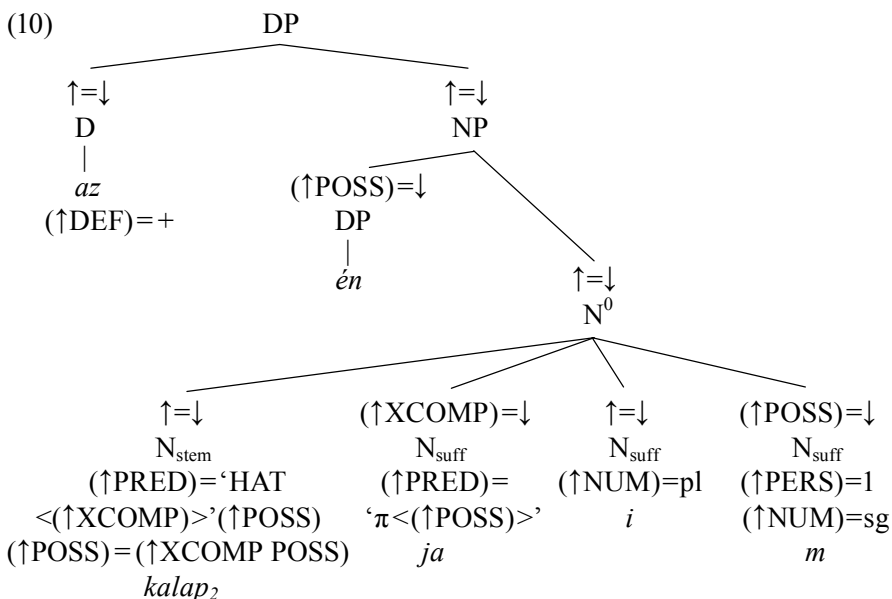
³ In LFG, the essence of the treatment of “raising” predicates in the Chomskyan sense is as follows. The predicate, in its lexical form, subcategorizes for a propositional argument that receives what LFG calls an open propositional grammatical function: (XCOMP). It is open in that it has no overtly expressed subject argument in constituent structure, and this “missing” subject argument is functionally controlled (identified) with an overt (subject or object) argument of the raising predicate itself: (SUBJ) = (XCOMP SUBJ) or (OBJ) = (XCOMP SUBJ), cf. (i) below. Thus, LFG treats *seem* type and *believe* type predicates in a basically identical fashion, the only major difference being that *seem* has an “extra” (SUBJ)ect grammatical function to assign, while *believe* has an “extra” (OBJ)ect grammatical function to assign. The “extra” nature of these functions is due to the fact that the predicates in question do not assign them to a semantic argument. The fact that a grammatical function is non-semantic from the perspective of the given predicate is indicated by its being outside the angle brackets, which represent the argument structure of the predicate, cf. the representation of the (SUBJ) function in (i).

(i) *seem*, V ‘SEEM <(↑XCOMP)>’ (↑SUBJ)
(↑SUBJ) = (↑XCOMP SUBJ)

⁴ Let me point out that in this analysis of possessive DPs I deploy the (POSS) grammatical function, which I assume to be a genuine counterpart of the (SUBJ) function in a clausal environment. For a discussion, see section 4.1.

- (9) *(az én) kalap-ja-i-m*
 the I hat-Poss-PL-1SG
 ‘my hats’

I show the constituent structure of (9) in (10). For expository purposes I also include sublexical representation so that the functional structure contribution of each morph in this example should be easily detectable. The lexical form of the complex noun head as used in this particular case is given in (11). I present the simplified functional structure of (9) in (12).⁵



⁵ As is well-known, LFG is a version of non-transformational, unificational grammars. It is a representational, as opposed to a derivational, model in the sense that the two crucial levels of syntactic representation it employs are simultaneously assigned to sentences: constituent structure and functional structure. The correspondence between these two parallel dimensions is encoded by functional annotations associated with nodes in constituent structure. For further details, see Bresnan (2001).

- (11) *kalapjaim*, N ($\uparrow$ PRED)= 'HAT <($\uparrow$ XCOMP)>' ($\uparrow$ POSS)
 ($\uparrow$ POSS)= ($\uparrow$ XCOMP POSS)
 ($\uparrow$ XCOMP PRED)= ' π <($\uparrow$ POSS)>'
 ($\uparrow$ NUM)=pl
 ($\uparrow$ POSS PERS)=1
 ($\uparrow$ POSS NUM)=sg

- (12)

PRED	'HAT <($\uparrow$ XCOMP)>'($\uparrow$ POSS)								
NUM	pl								
DEF	+								
CASE	nom								
POSS	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>PRED</td><td>'pro'</td></tr><tr><td>PERS</td><td>1</td></tr><tr><td>NUM</td><td>sg</td></tr><tr><td>CASE</td><td>nom</td></tr></table>	PRED	'pro'	PERS	1	NUM	sg	CASE	nom
PRED	'pro'								
PERS	1								
NUM	sg								
CASE	nom								
XCOMP	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>PRED</td><td>'π <($\uparrow$POSS)>'</td></tr><tr><td>POSS</td><td></td></tr></table>	PRED	' π <($\uparrow$ POSS)>'	POSS					
PRED	' π <($\uparrow$ POSS)>'								
POSS									
-

As this LFG style functional structure representation shows, my new account provides a principled solution to the first general problem: modelling the embedded nature of the possessive relationship. The noun head selects this relationship as its propositional argument carrying the (XCOMP) function, in other words, possession is subordinate to the noun head.

3.2. Argument taking nouns in possessive constructions

This new account can be extended to argument taking nouns in a principled manner, and, thus, it makes a uniform analysis of possessive constructions with ordinary and argument taking predicates possible. By uniformity I mean the same basic treatment which, at the same time, is also capable of capturing the differences that are due to contrasts between the two noun head types. As has been shown in section 2.1.2, Szabolcsi's (1994) approach is uniform in this respect, because she employs an invariant Poss predicate (and the difference is that in the case of argument taking nouns dual theta role assignment takes place). By contrast, my account in Laczkó (2000), for instance, is overtly non-uniform in that I assume that the complex possessive morphology, in addition to the standard agreement features,

also encodes an argument taking predicate in the case of ordinary noun heads, while it is only responsible for agreement in the case of nouns with an argument structure. It is similar in spirit to Barker's (1995) analysis of English possessive constructions. My main motivation for a uniform treatment in the new approach is the invariant possessive paradigm in the case of both noun head types.

In this uniformity vein, I assume that an argument taking noun undergoes the same conversion process, that is, the same lexical predication template applies to it, introducing the propositional argument expressing the possessive relationship. The minimal contrast is that the (POSS) function also introduced by this conversion is assigned to the argument (or one of the arguments) of the relational/deverbal noun, in other words: the conversion makes argument taking nouns equi⁶ (rather than raising) predicates.⁷

- (13) a. *húg*₁, N 'YOUNGER-SISTER-OF < Θ >'
 b. *húg*₂, N 'YOUNGER-SISTER-OF < ($\uparrow$ POSS) ($\uparrow$ XCOMP) >'
 ($\uparrow$ POSS) = ($\uparrow$ XCOMP POSS)

The following legitimate question could be raised in connection with (13a): Why does such a predicate need the lexical predication template? Why does

⁶ Note that the terms "raising" and "equi" have been taken from the classical, pre-GB version of Chomsky's generative grammar to unambiguously identify the relevant construction types. LFG has never applied a raising (transformational) device, nor has it used equi-NP-deletion. The reason why I have avoided using the term control predicate (instead of equi predicate), and thereby following the more recent Chomskyan terminology, is that LFG also has a notion of functional control; however, it is significantly different from a GB/MP style control analysis. In actual fact, LFG assumes that in the treatment of both raising and equi constructions exactly the same LFG style functional control is involved, cf. the discussion in footnotes 3 and 7.

⁷ LFG assigns the very same constituent structure to both raising and equi constructions, with the same functional equations. The only difference lies in the fact that raising predicates assign a non-thematic grammatical function ((SUBJ) or (OBJ)) to a constituent (and this constituent is assumed to functionally control the "unexpressed" (SUBJ) argument of the (XCOMP) propositional argument), while equi predicates assign these designated functions to one of their semantic arguments. Compare the lexical form of *want*, an equi predicate in (i) below with that of *seem*, a raising predicate, in footnote 3.

(i) *want*, V 'WANT < ($\uparrow$ SUBJ) , ($\uparrow$ XCOMP) >'
 ($\uparrow$ SUBJ) = ($\uparrow$ XCOMP SUBJ)

it not assign the (POSS) function to its argument in a direct manner? My answer is this. I assume that nouns in general, whether ordinary or argument taking, are incapable of assigning this function. In the nominal domain mapping of an argument onto the (POSS) function is exclusively licensed by the predication template.

Let us now see the details of the new analysis of relational nouns through the example of (14).

- (14) *(az én) húg-a-i-m*
the I younger.sister-Poss-PL-1SG
‘my younger sisters’

The lexical form of the complex noun head as used in this particular case is given in (15). Its argument structure contains two arguments: its original (relational) argument and the propositional argument introduced by the lexical predication template. The template enables it to assign the (POSS) function to its relational argument. In addition, this (POSS) functionally controls the covert (POSS) of the (XCOMP)’s predicate, which is realized by the Poss morpheme. The other morphemes encode the regular number and agreement features. Following from the relevant general principles of Lexical-Functional Grammar, the constituent structure representation of (15) would be exactly the same as that of (9), given in (10), and its functional structure would be almost identical to that of (9), given in (12), the only difference being that in (12) the (POSS) function assigned by the noun head is represented as non-semantic, while in the functional structure of (14) this function would be represented as semantic (the typical raising vs. equi contrast in Lexical-Functional Grammar terms).

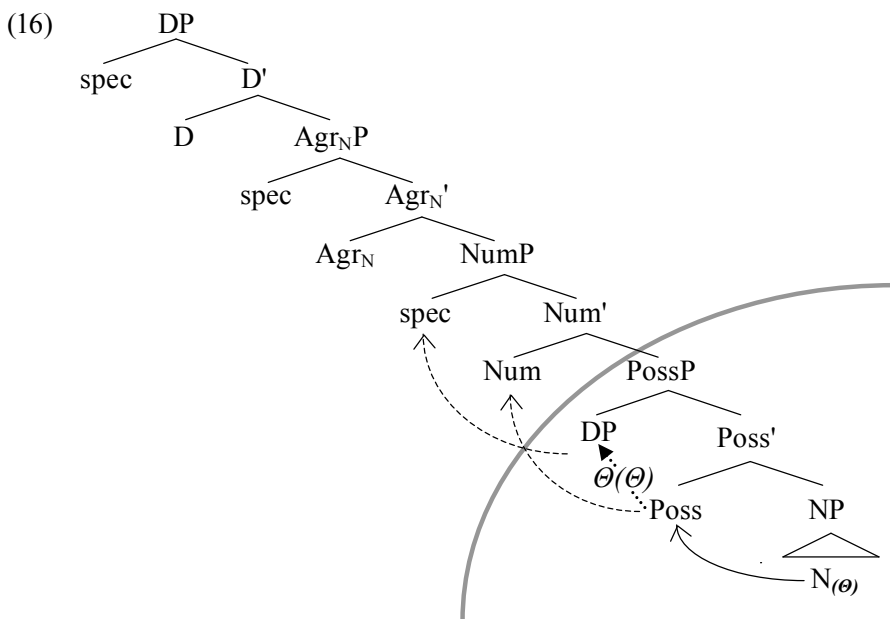
- (15) *húgaim*, N ($\uparrow$ PRED)=‘YOUNGER-SISTER <($\uparrow$ POSS) ($\uparrow$ XCOMP)>’
($\uparrow$ POSS)=($\uparrow$ XCOMP POSS)
($\uparrow$ XCOMP PRED)= ‘ π <($\uparrow$ POSS)>’
($\uparrow$ NUM)=pl
($\uparrow$ POSS PERS)=1
($\uparrow$ POSS NUM)=sg

It is a major advantage of this new approach that it also solves the second general problem discussed in section 2.1.2: that of “dual theta role assignment”. The relational/deverbal noun has a (POSS) argument and the Poss predicate (the PRED of XCOMP) also has an “open” (POSS) argument and the former functionally controls the latter (a typical Lexical-Functional Grammar style equi scenario). That is, there are two arguments bearing the (POSS)

function and there are two predicates each of which takes only one of the two arguments, or, in Chomskyan terms, there are two theta role assigners and two arguments receiving their respective theta roles on a one-to-one basis.

3.3. Extending the analysis to other frameworks

I consider it a rather advantageous feature of the new account that it can be translated into current Chomskyan frameworks in a straightforward and principled manner. The main reason for this is that there are various well-developed and widely accepted treatments of raising and equi constructions in these models. In this section I discuss these issues briefly. Below, first I show Bartos's (2000) structural analysis of Hungarian possessive determiner phrases in the Minimalist Program in (16) and then I demonstrate a simple way of accommodating my alternative solution in that framework in (17).⁸



⁸ It is to be emphasized that this is not a fully-fledged analysis in that model, it is only used to illustrate along what lines one can develop an account in the spirit of my approach. In addition, the comparison to be made here will help readers more familiar with the Chomskyan paradigm than with Lexical-Functional Grammar to grasp the similarities and differences between earlier accounts and my new proposal.

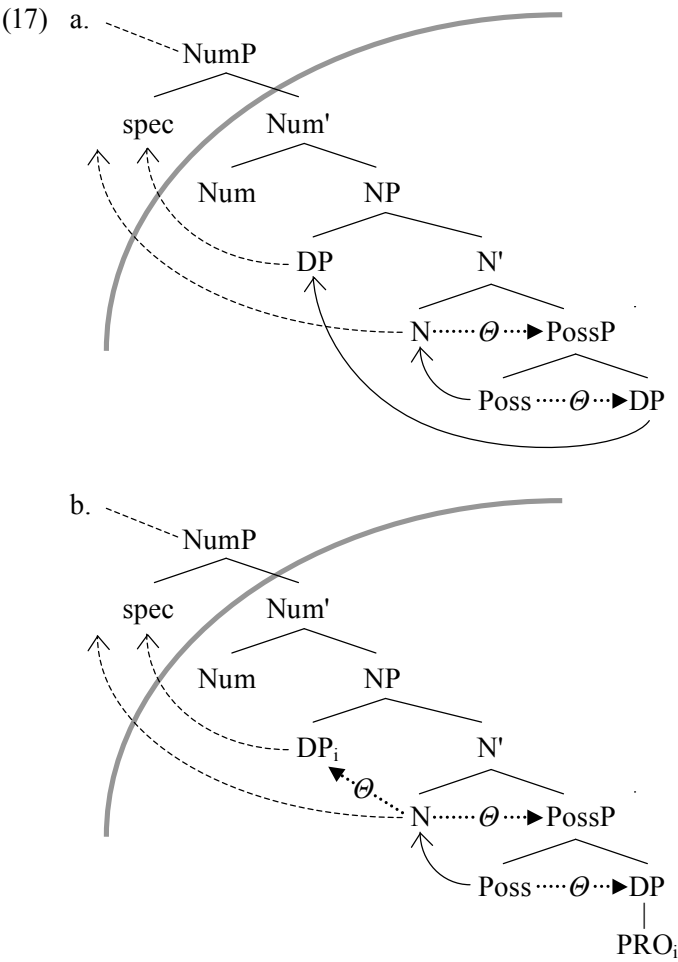
As has been mentioned above, Bartos's (2000) possessive determiner phrase analysis relies heavily on Szabolcsi's (1994) account, the only remarkable difference being that in the latter the noun head and the Poss make up a complex predicate in the lexicon, while in the former they get combined in the syntax via head movement, cf. the curving arrow from N to Poss. (16) shows Bartos's entire determiner phrase structure for the sake of completeness, but here we are primarily interested in the domain below Num', indicated by the curved line. Both the N+Poss complex and the possessor in [Spec,PossP] undergo further movement operations in the course of the derivation, as the dotted arrows show.

In this representation I illustrate both general problems with Szabolcsi's original solution. (A) Poss is always an argument taking predicate (it always assigns a theta role) and it takes the noun phrase as its complement; however, it is still N that counts as the central predicate for the semantics, as the possessive relation is not visible from outside the determiner phrase. (B) When the noun head is also an argument taking predicate then the N+Poss complex simultaneously assigns two theta roles to the possessor determiner phrase in [Spec,PossP], cf. the Θ symbol in parentheses after both N and Poss.

As (17a) and (17b) show, rather minimal principled modifications are necessary to turn (16) into a representation that can be taken to be a translation of my new account couched in Lexical-Functional Grammar into a Minimalist Program framework. In both (17a) and (17b) we have the same basic structure. The hierarchical positions of the noun phrase and the possessor phrase constituents have been reversed, as compared to Bartos's structure in (16). Thus, in our representation it is the noun head that takes the possessor phrase as its complement (and not the other way around). The other major difference is as follows. Given that in our analysis even originally ordinary (nonrelational) noun heads without an argument structure are converted into relational nouns that subcategorize for a propositional argument, as a result of our lexical predication template, such a noun also assigns a theta role to the possessor phrase constituent, as is shown in (17a). The Poss predicate also assigns its theta role to its own complement, and then both the Poss head and its determiner phrase complement get moved, the latter operation yielding the ordinary raising effect. (17b) demonstrates the scenario with originally argument taking nominal predicates (relational/deverbal nouns). They also undergo the lexical predication template process, and, as a result, they also assign the very same propositional theta role to the possessor phrase complement. The essence of the contrast between the two types is that here the deverbal/relational noun also assigns a theta role (at least one theta role) in its own right, the complement of Poss is assumed

to be a PRO element that is controlled by the argument (or one of the arguments) of the deverbal/relational noun head, which is a typical equi scenario.

A general remark is in order in this connection. If an account can be implemented in various frameworks, then this can often be regarded as a favourable aspect. It may suggest that correct theory-neutral generalizations have been made, and a feasible and tenable analysis has been developed.



4. The new account and event nominalization

In this section I discuss issues related to, and complications posed by, event nominalization for my new analysis. In section 4.1, I present the crucial properties of the extension. In section 4.2, I highlight the importance of my assuming that the (POSS) grammatical function is semantically unrestricted. In section 4.3, I show how the new account explains the incompatibility of non-semantic constituents and the (POSS) function. In section 4.4, I point out a potential problem with the number of (XCOMP) functions in the argument structure of a deverbal nominal predicate and sketch two possible solutions.

4.1. Hungarian complex event nominalization and Lexical-Functional Grammar

In several works, e. g. in Laczkó (1995, 2000, 2004), I have developed an analysis of Hungarian complex event nominalization in the framework of Lexical-Functional Grammar.⁹ In agreement with Szabolcsi (1994), I adopt Grimshaw's (1990) distinction between complex event and simple event nominals and assume that a deverbal noun in the former category preserves the argument structure of the input verb. Again, in accordance with Szabolcsi's (1994) claim, but contrary to Grimshaw's (1990) view of English nominalization, I postulate that in the Hungarian language complex event nominalization does not suppress the external argument of the input verbal predicate; instead, it is realized by a Lexical-Functional Grammar style *pro* element.

In the Lexical Mapping Theory component of Lexical-Functional Grammar, I have proposed various algorithms for capturing how arguments of derived nominals are mapped onto grammatical functions in the nominal domain.¹⁰ Space limitations prevent me from a detailed discussion of these issues. However, I would like to make three significant general points.

(A) In the new approach, in the case of derived nominals, just like in the case of underived relational nouns, cf. section 3.2, the central idea is that

⁹ For partially different Lexical-Functional Grammar analyses, see Komlósy (1998, 2002) and Chisarik and Payne (2003).

¹⁰ For a variety of different algorithms, see Laczkó (1995, 2000, 2004), Komlósy (1998, 2002) and Chisarik and Payne (2003), and for an overview, see Laczkó (2004).

the argument structure of the nominal predicate (inherited from the input verb) is augmented with a propositional argument, whose predicate is Poss. Conceptually, this means that on this account nominalization does not simply result in a verbal predicate's showing up in a nominal domain, and, as a consequence, in partial changes in the expression of the arguments owing to the partially dissimilar inventories of grammatical functions in the two domains, but something more substantial takes place as well. The possessive relation is "meaningful" in this area, too, in the sense that it brings about a genuine semantic relationship between the possessor constituent and the event denoted by the nominal predicate, one of whose participants is obligatorily taken to be identical to the possessor (cf. the equi type scenario discussed in section 3.2). In other words, the possessor in a derived nominal context is not merely the default equivalent of the input verb's subject or object argument.

(B) In the light of my new analysis, the real nature of the triggering of the lexical mapping process in the nominal domain is considerably different. So far I have assumed in all relevant works, cf. Laczkó (1995, 2000, 2004), that the (POSS) grammatical function is readily available to designated arguments of nominal predicates, whether relational or derived nominal predicates. In other words, it is simply in the inventory of grammatical functions at the disposal of certain arguments in the nominal context. As I briefly pointed out in section 3.2, now I posit that it is the lexical predication template that introduces or licenses this grammatical function. On the one hand, it makes this function available to the nominal predicate it creates (either as a non-semantic function in the raising version or as an ordinary semantic function in the equi variant), and on the other hand, the Poss predicate always assigns (POSS) to its sole argument.

(C) In each variant of my Lexical Mapping Theory of Hungarian *-ás/-és* nominalization, cf., for instance, Laczkó (1995, 2000, 2004), I have considered the (POSS) grammatical function semantically unrestricted, just like the (SUBJ) or (OBJ) function in the verbal domain. The classification of grammatical functions in the semantically restricted/unrestricted dimension is a fundamental distinction in Lexical-Functional Grammar. A function is regarded as unrestricted if, among other things, it can be assigned to a whole variety of arguments bearing different semantic roles, and, furthermore, typically it can also be associated with a non-semantic (e. g. idiom chunk or expletive) constituent.¹¹

¹¹ For further details, see section 4.2.

If there is assumed to a semantically unrestricted function in the nominal domain, the following legitimate question could be asked in this connection. Why regard it as (POSS); would it not be better regarded as (SUBJ)?¹² There are several considerations against this idea, and my strongest motivation is that in my most recent approach both the (SUBJ) and the (POSS) grammatical functions are available to the arguments of deverbal nominal predicates. For details, see Laczkó (2004).¹³

Now consider the examples in (18). The lexical forms of the relevant deverbal predicates in (19b–d) illustrate all the three general remarks above.

- (18) a. *a dokumentum eléget-és-e Péter által*
the document.NOM burn-DEV-Poss.3SG Peter by
‘the burning of the document by Peter’
b. *a dokumentum eléget-és-e*
the document.NOM burn-DEV-Poss.3SG
‘the burning of the document’
- (19) a. *eléget*, V ‘BURN < (↑SUBJ), (↑OBJ)>’
b. *eléget-és₁*, N ‘BURNING < Θ, Θ>’
c. *eléget-és₂*, N ‘BURNING < (↑OBL)_{AG}, (↑POSS), (↑XCOMP)>’
(↑POSS) = (↑XCOMP POSS)
d. *eléget-és₃*, N ‘BURNING < (↑SUBJ), (↑POSS), (↑XCOMP)>’
(↑POSS) = (↑XCOMP POSS)

(19a) shows the simplified lexical form of the input verbal predicate, whose two arguments are mapped onto the (SUBJ) and (OBJ) functions. The attachment of the *-ás/-és* deverbal suffix to this predicate brings about a nominal predicate, cf. (19b); however, my new version of Lexical Mapping Theory, as developed in Laczkó (2004), is not capable of mapping the two

¹² It is interesting to note that in her analysis of Modern Greek possessive noun phrases, Markantonatou (1995) does not call this function either name, and Ørnes (1995) calls the corresponding constituent in Danish (SUBJ). By contrast, Rappaport (1983), Laczkó (1995, 2000, 2004) and Bresnan (2001), among others, use the (POSS) function label. Also see footnote 14.

¹³ I adopt this idea from Komlósy (1998) in a somewhat modified setting. Although in a considerably different Lexical-Functional Grammar analysis, Chisarik and Payne (2003) also employ both (SUBJ) and (POSS) as unrestricted grammatical functions in English and Hungarian noun phrases.

arguments onto compatible grammatical functions, given that the (POSS) function is not (yet) available in the light of my novel possessive analysis, and the (OBJ) function is not available in a truly nominal domain in languages like Hungarian. The agent external argument could be mapped either onto (OBL)_{AG} or onto (SUBJ), cf. (18a) and (18b), respectively, but the patient internal argument would be left without any grammatical function; neither (OBJ), nor (POSS) would be available. In order for appropriate mapping to be possible, my lexical predication template has to apply to (19b), enabling Lexical Mapping Theory to yield either (19c) or (19d) after the introduction of the (POSS) function. The lexical forms in (19c) and (19d) also show that the argument structure of the nominal predicate is augmented with a propositional argument. It is also important to note that Lexical Mapping Theory associates the semantically unrestricted feature with an argument bearing a patient(-like) role. From this it follows that such an argument can only be mapped onto a semantically unrestricted function, which is another, independent motivation for considering (POSS) unrestricted. For further discussion, see the next section.

4.2. On the semantically unrestricted nature of (POSS)

In Laczkó (1995) I argue extensively for assuming that the (POSS) function is semantically unrestricted, at least in languages like Hungarian, in which there is fundamentally only one possessor constituent available. I also offer arguments against Rappaport's (1983) claim to the contrary on the basis of English phenomena. I point out that most of the evidence she offers for the restricted nature of (POSS) in English loses much of its force in the light of a more refined approach to nominal types (especially the complex vs. simple event nominal distinction). Moreover, in Hungarian, (POSS) is not in complementary distribution with any other function (cf. English (OBL)_{THEME}, realized by *of* prepositional phrases), therefore, it is even less restricted than its English counterpart. I admit that there is a restriction on its use: it cannot be assigned to non-semantic constituents. However, I take assignability to a non-semantic argument to be a sufficient but not necessary feature of an unrestricted function.¹⁴

¹⁴ The view that POSS is semantically unrestricted is not unprecedented in the generative literature. Below, I briefly mention those previous works sharing this assumption, to varying extents, that I am aware of. Zubizarreta (1987) explicitly argues that the constituent realized by determiner phrases within deter-

The most crucial aspect of my new analysis is that a constituent mapped onto the (POSS) function is involved in raising and equi type phenomena, which Lexical-Functional Grammar handles in terms of its functional control apparatus. One of the most essential aspects of this control theory is that only semantically unrestricted grammatical functions can be involved in it, e. g. (SUBJ) and (OBJ). If I assume that (POSS) is also involved in such relations then I am forced to consider this function semantically unrestricted as well. Thus, in a sense, this new analysis yields additional motivation or justification for postulating that (POSS) is semantically unrestricted.

4.3. Explanation for the lack of expletive possessors

The challenge is as follows. If the (POSS) grammatical function is considered semantically unrestricted, it has to be explained why it is incompatible with expletive and non-semantic constituents such as idiom chunks, unlike (SUBJ) and (OBJ), which are readily compatible with these kinds of elements. Consider the following systematic contrast.

miner phrases is unrestricted. However, for her it has an adjunct function and as such it cannot be compared with the SUBJ and OBJ functions in a meaningful way. Booij and van Haften (1988) basically accept Rappaport's (1983) generalizations about nominalization but they mention in a footnote that the semantically (un)restricted nature of POSS is still to be investigated. Komlósy (1992) assumes that POSS in Hungarian is unrestricted, but offers no justification and does not mention Rappaport's (1983) claim to the contrary. Markantonatou (1995) argues, in a Lexical Functional Grammar framework, that the genitive constituent in Modern Greek determiner phrases realizes an unrestricted function, but she does not call this function any specific name (neither SUBJ nor POSS), also see footnote 12. Within the same framework, in Laczkó (1995), independently of Markantonatou (1995), I assume that the possessor constituent in Hungarian determiner phrases realizes the unrestricted POSS function, and I discuss Rappaport's (1983) account and speculate about a possible extension of such an analysis to the English counterparts. In the same framework again, Chisarik and Payne (2003) subscribe to the same unrestricted view. Although Bresnan (2001) does not explicitly discuss this issue, the fact that in her analysis of verbal gerunds the (POSS) function is involved in a functional control relationship, which in Lexical-Functional Grammar automatically means that the function in question must be taken to be unrestricted. In his Head-Driven Phrase Structure Grammar framework, partially influenced by Markantonatou (1995), Ørsnes (1995) postulates that in Danish the genitival constituent is unrestricted and it realizes the SUBJ function.

- (20) a. *Péter be-ad-t-a* *a kulcs-ot.*
Peter PV-give-PAST-3SG.DEF the key-ACC
(i) ‘Peter handed in the key.’ (literal)
(ii) ‘Peter kicked the bucket.’ (idiomatic)
- b. *a kulcs-nak a Péter által-i be-ad-ás-a*
the key-DAT the Peter by-AFF PV-give-DEV-POSS.3SG
(i) ‘the handing in of the key by Peter’ (literal)
(ii) ‘*Peter’s kicking of the bucket’ (idiomatic)

These examples show that in the verbal domain the idiom chunk can get the (OBJ) function, but in the nominal domain it cannot get the (POSS) function. The general factors and the essence of the explanation in my analysis within my Lexical-Functional Grammar framework are as follows.

- (a) The (POSS) function is assigned by two predicates: the noun head and Poss.
- (b) For an ordinary (non-argument-taking) noun this (POSS) is non-semantic, so in theory it could be associated with an expletive element.
- (c) However, the Poss predicate always assigns it to a semantic argument, and the two (POSS)'s are functionally identified by Lexical-Functional Grammar's functional control mechanism.
- (d) If (POSS) was assigned to an expletive element (by the noun head), this would inevitably lead to a violation of completeness, given that, as a result of functional control, the same expletive element would be required to satisfy the semantic argument need of the Poss predicate, which it would be unable to perform. The well-formedness condition called completeness would be violated.

Thus, the lack of compatibility between non-semantic constituents and the (POSS) function assumed to be semantically unrestricted is explained in a principled manner in my new approach, as opposed to my previous analyses within the framework of Lexical-Functional Grammar, e.g. Laczkó (1995, 2000, 2004), where I had to stipulate this incompatibility to a considerable extent.

It has to be pointed out that although Szabolcsi (1994) does not discuss the problem of why non-semantic elements cannot be possessors (as opposed to subjects or objects), her theory also offers a principled explanation implicitly. Its essence is that the possessor constituent receives either a formal or a formal and a contentful theta role from a predicate or from two

predicates. This means that a non-semantic constituent has simply no chance to appear as a possessor, given that it has to be a unit capable of receiving a theta role.

4.4. (XCOMP) and biuniqueness

There seems to be a serious potential (and possibly apparent) problem with this new approach, which requires further elaboration. In the case of deverbal nouns, if the input verb already has an argument mapped onto the open propositional (XCOMP) function then as a result of the conversion process, that is, the operation of the lexical predication template, there will be two (XCOMP)s in the argument structure of such a deverbal noun. This appears to be a violation of the biuniqueness well-formedness condition, which prohibits the association of the same grammatical function with more than one argument within the same argument structure. Consider the following example.¹⁵

- (21) a. *a kerítés (Péter által-i) zöld-re fest-és-e*
the fence.NOM Peter by-AFF green-SUBL paint-DEV-Poss.3SG
‘the painting of the fence green’
- b. *festése*, N (↑PRED)=
‘PAINTING < ((↑OBL)_{AG}), (↑POSS), (↑XCOMP₁), (↑XCOMP₂) >’
(↑POSS) = (↑XCOMP₁ SUBJ)
(↑POSS) = (↑XCOMP₂ POSS)
(↑XCOMP₂ PRED) = ‘ π < (↑POSS) >’
(↑NUM)=sg
(↑CASE)=nom
(↑POSS PERS)=3
(↑POSS NUM)=sg

The speciality of the argument structure in (21b) is that it contains two (XCOMP) functions. The first, represented as (↑XCOMP₁), has been inherited from the input verb, cf. footnote 15, and the second, represented as

¹⁵ The clausal example and the verbal input predicate are as follows.

- (i) *Péter zöld-re fest-ett-e a kerítés-t.*
Peter.NOM green-SUBL paint-PAST-3SG.DEF the fence-ACC
‘Peter painted the fence green.’
- (ii) *fest*, V (↑PRED)= ‘PAINT < (↑SUBJ), (↑OBJ), (↑XCOMP) >’

($\uparrow$ XCOMP₂), has been introduced by the template of my new analysis. A potential counterargument may run like this. Just as there can be no two (SUBJ) grammatical functions assigned in the same argument structure, there cannot be two (XCOMP) functions, either.

There are at least two plausible avenues for exploring a solution to this problem.

(A) In classical Lexical-Functional Grammar, too, there were several kinds of (XCOMP)s (on a fundamentally categorial basis): (VCOMP), (NCOMP), etc. Now it can be argued that in a more careful semantic analysis propositional arguments come in different varieties: eventuality, relation, property, etc., and, consequently, different kinds of (XCOMP) functions (XCOMP)_Θ are to be distinguished: (XCOMP)_{EVENTUALITY}, (XCOMP)_{RELATION}, (XCOMP)_{PROPERTY}, etc. Compare this with various versions of the oblique function: (OBL)_Θ. The assignment of more than one (OBL)_Θ function to arguments even within the same argument structure does not lead to bi-uniqueness violation as long as these (OBL) functions are associated with different semantic role labels, e.g. (OBL)_{AGENT}, (OBL)_{GOAL}, (OBL)_{THEME}, etc. It is also noteworthy in this connection that the status of the original (OBJ2) grammatical function in classical Lexical-Functional Grammar has also been reconsidered, and now we have (OBJ)_Θ instead.¹⁶

In order for an account along these lines to be considered a principled solution to this problem, it would be necessary to develop a finer grained semantic theory of propositional arguments.

(B) Another possible solution could be based on the nature of the “open” grammatical function assigned by the predicate of the (XCOMP) propositional argument. It may be feasible to distinguish between an (XCOMP) with the (SUBJ) open function and an (XCOMP) with the (POSS) open function: (XCOMP)_{SUBJ} vs. (XCOMP)_{POSS}. Naturally, for this distinction to be sufficiently motivated one would need to find at least one independent phenomenon, either in Hungarian or in some other language, that calls for a solution in this vein.

I leave the thoroughgoing investigation of this (XCOMP) issue to future research.

¹⁶ Thanks to Tracy H. King for calling my attention to this additional factor.

5. Conclusion

1. In the first half of the paper I highlighted the most important aspects of a novel and more principled Lexical-Functional Grammar treatment of Hungarian possessive constructions.
 - The gist of the analysis is that a lexical conversion process creates a raising predicate from an ordinary noun and an equi predicate from a relational/deverbal noun, and the Poss morpheme functions as the PRED of their (XCOMP) propositional argument.
 - This approach solves two classical problems: (i) modelling the “embedded” nature of the possessive relation and (ii) avoiding dual theta role assignment.
 - It can be translated into Government and Binding Theory or the Minimalist Program in a principled manner.
 - It makes a uniform analysis of all kinds of noun heads in Hungarian possessive constructions possible.
2. In the second half of the paper, in the spirit of this uniform analysis, I discussed issues raised by possessive constructions with complex event nominal heads.
 - The most crucial feature of the new approach is that the argument structure that the deverbal noun inherits from the input verb is, as a rule, also augmented by the lexical predication template with a propositional argument.
 - Consequently, the possessor in such constructions is not a simple equivalent of the subject argument of the input verb, because it is also involved in an equi-type functional control relationship.
 - The new approach is compatible with my Lexical Mapping Theory analysis of Hungarian complex event nominalization as developed in Laczkó (2004). In this connection, the fact that I assume the (POSS) function to be semantically unrestricted is highly significant, because it enables lexical mapping to apply in an unmarked way: a patient(like) argument, having the unrestricted intrinsic feature specification, must be mapped onto a semantically unrestricted grammatical function. Thus, (POSS) naturally serves this purpose.
 - The new account, contrary to my previous analyses, offers an explanation for why non-semantic constituents (expletives and idiom chunks) cannot be possessors. This fact is crucially relevant in the case of

complex event nominals. Even if their input verbs are capable of assigning either (SUBJ) or (OBJ) to a constituent non-semantically, their derived nominal counterpart is not capable of assigning (POSS) in a similar fashion. The essence of the explanation is that the Poss predicate, introduced by the lexical predication template, always assigns this function semantically.

- There is one issue that requires further investigation: the nature of (XCOMP), or rather, exploring the possibility of postulating more than one (XCOMP) in the same argument structure. I sketched two possible solutions whose tenability is yet to be examined.

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The semantics of eventive suffixes in French

Fabienne Martin

1. Introduction

Eventive deverbal nouns (henceforth EDNs) can be formed with at least three suffixes in French, namely *-age*, *-ment* and *-ion*. The goal of this paper is to explain the distribution of these three suffixes among EDNs in contemporary French. One possible view is that there is nothing to be explained to begin with. Indeed, one could assume that the distribution of these suffixes cannot be motivated in synchrony, since the nouns in which they enter have often been copied from the Latin ones. Therefore, the argument goes, if the distribution of the suffixes depends on the semantics of the verbal bases, it is on the Latin ones.

However, this “null” hypothesis is not completely satisfactory for several reasons.

The first counter-argument comes from *neologisms*. Very often, native speakers tend to choose the same suffix(es) to form new nouns from new verbs, and this reflects in corpora. For instance, the verb *doper* (‘dope’, born in 1903 according to *Le Petit Robert*) is nominalized more than 800 times in *-age*, 3 times in *-ment*, and never in *-ion* on the Internet.¹ This regularity is left unexplained if one assumes that these suffixes do not have a syntax/semantics guiding the nominalizing process. Besides, it is not rare that even when a noun formed with a verbal base *v* and a suffix *S*₁ already exists in French, subjects create another noun with the same base *v* and another suffix *S*₂. For instance, while *indignation* already exists, one quite often finds *indignement* in corpora. One could argue that this kind of neologisms is simply the sign of a certain lexical incompetence, but then, one does not explain why *indignage* is never created.

The second counter-argument comes from *pseudo-nouns*. Pseudo-nouns are built on pseudo-verbs, that is invented, meaningless but morpho-phonologically well-formed French verbs. One observes that subjects tend to have intuitions on the semantical differences between pseudo-nouns built on the same base *v* with different suffixes *S*₁, *S*₂ ... (Dumay and Martin 2008). Let

¹ The searches were made between December 2007 and April 2008.

us take for instance the pseudo-verb *toliner*. To the question “*Imagine that the non-existing verb toliner describes an action. If you want to describe an action of this type which is not finished, would you rather use tolinage or tolination?*”, the subjects preferably choose the *-age* EDN. This kind of intuitions can certainly not be explained if the semantic value of these suffixes is empty.

A third counter-argument comes from the *semantical systematicity* taking place between EDNs derived from different suffixes. Often, the semantical relation taking place between nouns built with a suffix S_1 and nouns built with a suffix S_2 is similar from base to base. For instance, the semantical difference we document below between $^{\circ}miaulage^2$ and *miaulement* (from *miauler* ‘meouw’) is the same as the one between *secouage* and *secouement* (from *secouer* ‘shake’). Again, this cannot be explained if the semantics of these suffixes is supposed to be empty.

The alternative hypothesis explored here is that these suffixes have an abstract semantical value, which contributes to explain

- a) why verbs select different suffixes in the operation of nominalization, given the additional premise that the meaning of the verbal stem and the one of the suffix must match;
- b) the interpretation of existing EDNs, including the semantical differences of two EDNs derived from the same verbal base but with different suffixes;
- c) the acceptability of neologisms.

For this study, two kinds of empirical data have been investigated, namely existing EDNs listed in dictionaries (*Le Petit Robert*, *Le Littré* and *Le Trésor de la Langue française*) as well as existing EDNs which are present in corpora (e.g. on the Internet) but not listed in dictionaries. The latter are prefixed with “ $^{\circ}$ ”.

The paper is divided as follows. Firstly, I introduce a new indicator for the reading of EDNs under study, namely the eventive one (section 2). Secondly, I present the results of an inquiry on the impact that the aspectual category of the verbal base might have on the choice of the suffixes. Basically, the results are pessimistic: no clear correlation emerges. However, the following sections present data suggesting that other aspectual values of the verbal base play a role here. I address successively the competition between

² The meaning of the symbol $^{\circ}$ will be explained below.

(i) *-age* and *-ment* (section 4), (ii) *-ment* and *-ion* (section 5) and (iii) *-age* and *-ion* (section 6).

2. Selecting the eventive reading of deverbal nouns

For this preliminary study, DNs built with different suffixes will only be compared on their *eventive* reading. I will not try to differentiate the suffixes by the range of readings they are supposed to yield as in Lüdtke (1978), Heinold (2005) or Uth (2008a). The distribution of the suffixes will not be investigated either on the stative or referential readings of DNs.

Many –if not all– of the tests which are supposed to diagnose the eventive reading of DNs raise serious problems once applied to French. For instance, Roodenburg (2006) shows that contrary to what is predicted by Grimshaw's (1990) analysis, DNs can pluralize on their eventive reading in French:

- (1) *Le général a filmé les désamorçages de bombes lourdes par les recrues.* (Roodenburg 2006)
'The general filmed the disassemblies of heavy bombs by young soldiers.'

Secondly, modifiers like *fréquent* ('frequent') or *constant* ('constant') do not allow to differentiate stative and eventive readings, since they are compatible with nouns clearly denoting states, like *maladie* or *état*:

- (2) *C'est une maladie constante du projet républicain: il se retourne contre lui-même.* (Internet)
'It is a constant illness of the republican project: it turns against itself.'
- (3) *Le bonheur est un état constant.* (Internet)
'Happiness is a constant state.'

Progressif ('progressive') or *graduel* ('gradual') have also been used as diagnostics of eventivity (cf. e.g. Meinschaefer 2005). However, even if these adjectives are indeed possibly incompatible with stative DNs, they also reject DNs like *effarement* ('bemusement') which have an eventive reading, but denote an event which is so quick that it is not easy to emphasize its development, as it is arguably required by these two modifiers, cf. (4).

- (4) *#L'effarement progressif de Pierre.*
'The progressive bemusement of Pierre.'

Given the confusion that might be caused by the use of these tests, I propose to introduce another construction as a diagnostic of eventivity, namely the predicate *assister à* ('to witness'/'to attend'). Contrary to the perception verb *voir* ('see') which imposes much less restrictions on its object, the verb *assister à* robustly rejects objects denoting individuals, states or facts and exclusively selects events:

- (5) **J'ai assisté au livre.*
'I witnessed the book.'
- (6) ??*J'ai assisté au fait qu'il était parti/à son état.*
'I witnessed the fact that he was gone/his state.'

Besides, contrary to *progressif* or *graduel*, it accepts any kind of eventive DN, including the ones like *effarement* denoting a very short event:

- (7) *J'ai assisté à l'effarement de Pierre.*
'I witnessed the bemusement of Pierre.'

In line with traditional analyses of perception reports (e.g. Vlach 1983), I will assume that the DN denotes the event which has to be witnessed for the sentence to be true, and only this event. For instance, according to this principle, *soins* ('treatment') only denotes the action of the doctor, cf. (8), while *guérison* ('curing') only denotes the change of state of the patient, cf. (9):³

- (8) *J'ai assisté aux soins.*
'I witnessed the treatment.'
- (9) *J'ai assisté à la guérison.*
'I witnessed the curing.'

If we assume, besides, that modifiers are predicates of the event denoted by the DN, we generally point to the same conclusion with regard to the denotation of the DN. For instance, for (10) to be true, the action of the doctor only has to be quick (the curing itself can be slow), and for (11) to be true, the change of state of the Patient only has to verify this property (the treatment itself can be slow):

³ Note that *assister à* does not allow (and is not meant) to distinguish between complex and simple event readings (with and without argument structure), contrary to the tests introduced by Grimshaw (1990). Indeed, (8) and (9) show that *assister à* is acceptable with nouns that do not have an argument structure.

- (10) *Des soins rapides ont eu lieu.*
 ‘A quick treatment occurred.’
- (11) *Une guérison rapide a eu lieu.*
 ‘A quick curing occurred.’

In the next section, I show that there is no clear correlation between the distribution of the suffixes in EDNs and the (a)telicity of its verbal base.

3. No impact of the (a)telicity of the verb on the choice of the suffix

A robust difference between eventive suffixes under study is that they do not manifest the same preferences for determiners. For instance, while mass DPs built with *du*, *de la* or *des* (French equivalents of bare nouns) are very frequent with *-age*, they are comparatively much less common with *-ment*:

- (12) *C'est du déchiffrage.* (434 occurrences on the Internet)
 ‘It is ‘du’ deciphering.’
- (13) *C'est du déchiffrement.* (2 occurrences on the Internet)
- (14) *C'est ‘du’ gribouillage* (930 occurrences on the Internet)
 ‘It is ‘du’ scribbling.’
- (15) *?C'est du gribouillement.* (0 occurrences on the Internet)
 ‘It is ‘du’ scribbling.’

This fact certainly underlies the intuition that *-age* EDNs are “more mass nouns”. Let us combine this observation with an old hypothesis of Mourelatos (1978), namely that count nouns are derived from telic verbs, while mass nouns are derived from atelic ones.⁴ The prediction which naturally follows from this combination is that the (a)telicity of the verbal base may partly play a role in the choice of the suffix. For instance, if Mourelatos is right, given that *-age* DN are more frequent with mass nouns, we would expect that *-age* DN will preferably be derived from atelic verbs.

To check whether the (a)telicity of the verb can indeed partly drive the choice of the eventive suffix, I tested 300 causative psychological verbs

⁴ Brinton (1995) also argues that the (a)telicity of the verbal base is determinant for the choice of the suffix.

with regard to this aspectual value. For this test, I always selected the same kind of object, namely a bounded one ([+SQA] in the terminology of Verkuyl 1972).⁵ For instance, according to the traditional adverbial tests, *embêter* ('to tease') has the atelic reading only, cf. (16), while *séduire* ('to seduce') has an atelic or a telic reading, cf. (17):

(16) *J'ai embêté Pierre #en dix minutes/pendant dix minutes.*
'I teased Pierre in ten minutes/for ten minutes.'

(17) *J'ai séduit Pierre en dix minutes/pendant dix minutes.*
'I seduced Pierre in ten minutes/for ten minutes.'

To each of these verbs were associated

- a) The existent DN(s) (e.g. *emballement* 'enthusiasm' for the psych-verb *emballer*, 'to thrill')
- b) The available (telic and/or atelic) reading(s) (tested with a [+SQA] object)
- c) The other meaning(s) this verb might have (e.g. the physical verb *emballer* 'to wrap' was linked to the psych-verb *emballer*) and, again, the available telic/atelic reading for this new sense⁶
- d) The available DN(s) for the other sense(s) (e.g. *emballage* 'wrapping' was linked to the physical verb *emballer*)

The results of the inquiry are summarized in Table 1 (a fourth suffix *-erie* was also taken into account for the inquiry). The results for atelic and telic readings are given because for some verbs, none of the two is acceptable. The number of DNs containing a certain suffix is put in parenthesis. For instance, the second column indicates that out of 194 DNs in *-ment*, 95 (ie 48,2%) are derived from verbs which have a telic reading, and 139 (70,5%) are derived from verbs which have an atelic reading (remember that some verbs have a telic and an atelic reading). Note finally that as the same verb may have different aspectual value on its different readings, the DN is counted twice if it nominalizes two different readings.

⁵ With a non-bounded object, the yielded VP would invariably be atelic.

⁶ "Other" meanings should not be interpreted as "derived" or "secondary" meanings. In the case of psych-verbs, the physical reading is of course very often the first one (of which the psychological reading is derived).

Table 1. Correlation between the choice of the suffixes and the aspectual value of the verbal base

	-ment (194)	-ion (146)	-age (49)	-erie (16)
Telic r. of the verb OK	48,2% (95)	56,8% (83)	59,1% (29)	31,2% (5)
Atelic r. of the verb OK	70,5% (139)	71,6% (104)	77,5% (39)	93,7% (15)
No telic r. for the verb	50,2% (99)	41,0% (60)	36,7% (18)	62,5% (10)
No atelic r. for the verb	23,8% (47)	21,9% (32)	18,3% (9)	6,2% (1)

As one can see, no clear correlation emerges between the choice of the suffixes and the aspectual value of the verbal base. The results then indirectly falsify the Mourelatos hypothesis. The *-erie* suffix is the only one to exhibit a clearly different pattern, but the number of corresponding nominalizations is so low that some cautiousness seems in order here.⁷ Note that according to A. Fabregas (p.c.), the (a)telicity of the verbal stem seems irrelevant for the choice of the suffix in Spanish too.

These negative results are not very surprising in view of the fact that quite a few verbs have inverse aspectual values under two different readings, but nominalize the same way:

- (18) *L'éponge a absorbé la flaque en/??pendant dix minutes.* (>absorption)
 'The sponge absorbed the puddle in/for ten minutes.'

- (19) *Pierre m'a absorbé ??en/pendant dix minutes.* (> absorption)
 'Pierre absorbed me in/for ten minutes.'

However, we will see in the following sections that other aspectual values of the verbal stem play a role in the distribution of suffixes.⁸

⁷ Note that a finer typology of atelic readings may change the results; for the test, no distinction was made between the case where the durative adverbial scopes over the event and the one where it scopes over the resultant state.

⁸ Note that we can explain the distribution of the determiners illustrated in (12)–(15) independently of the Mourelatos hypothesis. We could for instance assume with Uth (2008b) that *-age* functions as a plural operator which produces an atelic iterative reading when applied to a telic verbal base, while *-ment* functions as an individuator which produces a telic reading when applied to an atelic verbal base. Of course, this line of reasoning gives up the assumption of Mourelatos according to which the aspectual properties of the verbal base directly determine the aspectual properties of the corresponding nominalisation.

4. -age versus -ment

4.1. Two previous claims

Two previous claims have been made about the rivalry between the suffixes *-age* and *-ment*. According to Dubois (1962) and Dubois & Dubois-Charlier (1999), *-age* is selected by transitive verbs, and *-ment* by intransitive ones. Verbs like *siffler* ('whistle', 'blow') or *froisser* ('crease') confirm this generalization, since they nominalize with *-age* on their transitive reading and with *-ment* on their intransitive one:

- (20) *L'arbitre a sifflé le joueur.* > *Le sifflage/#le sifflement du joueur par l'arbitre.*
 'The referee blow the player.' 'The blowing of the player by the referee.'
- (21) *Pierre siffle en travaillant.* > *Le sifflement/#le sifflage de Pierre.*
 'Pierre whistled while working' 'The whistling of Pierre.'
- (22) *J'ai froissé ma jupe.* > *Le froissage de la jupe*
 'I creased my skirt.' 'The creasing of my skirt.'

However, this rule also suffers counter-examples. Firstly, some transitive verbs can nominalize in *-ment*, cf. (23):

- (23) *J'ai froissé ma jupe.* > *Le froissement de la jupe.*
 'I creased my skirt.' 'The creasing of my skirt.'

Sometimes, they even must do so. For instance, on its psychological transitive reading, *froisser* 'offend/bruise' cannot nominalize in *-age*, but only in *-ment*. Secondly, some intransitive verbs cannot nominalize in *-ment* (cf. *arriver*, 'to arrive' > *arrivage*, 'arrival/delivery'; ??*arrivement* does not exist anymore) or select both suffixes (cf. *miauler*, 'to meouw' > °*miaulage*, *mialement* 'meouwing').

Kelling (2001, 2004) admits that *-ment* can be selected by transitive verbs. However, according to her, the two suffixes still differ then in that *-age* is supposed to be selected when the subject of the transitive verb is a prototypical agent according to Dowty (1991)'s proto-agent properties, while *-ment* is selected in other cases:

- (24) *x a gonflé y.*
 'x inflated y.'

If <i>x</i> is an Agent:	>	<i>le gonflage de y</i> . 'The inflating of <i>y</i> .'
If <i>x</i> is not an Agent:	>	<i>le gonflement de y</i> . 'The inflating of <i>y</i> '

But this generalization also suffers counter-examples. As already noted by Heinold (2005), transitive verbs can nominalize in *-ment* even when the context indicates that the subject is clearly agentive. In fact, I would add that they even sometimes *prefer -ment to -age*, as in this example:⁹

- (25) *Le gonflement/?le gonflage des chiffres par certaines sociétés.*
'The inflating of figures by certain companies.' (Heinold 2005)

4.2. A multi-feature analysis

Given these counter-examples to the two previous claims, I will here admit that in principle, *-ment* and *-age* can both nominalize transitive or intransitive verbs. But the preferences observed by the authors are certainly correct, and should be captured by the analysis as well as their exceptions. However, these exceptions also suggest that it is hopeless to try to capture the difference between two kinds of nominalizations by one feature only.

In what follows, I distinguish *-ment* and corresponding *-age* EDNs by four properties P_1 , P_2 , P_3 and P_4 . In the *paradigmatical* case (arguably the one targeted by previous authors), the two competing nouns derived from the same base differ from each other by each of these four properties. However, in some cases, the verbal base itself "neutralizes" some of these properties, because its semantics does not allow to exploit it (see below). In this case, the other properties still allow to differentiate the two competing EDNs.

This analysis presupposes a more fine-grained classification of verbal bases than in previous works, because one should be able to identify the "active" or "neutralized" properties in the nominalization process. In sum, the relevant properties concern (i) the length of the denoted eventive chain (section 4.2.1), (ii) the degree of agentivity of the subject (section 4.2.2), (iii) the incremental relation between the event and the Theme (section

⁹ According to a reviewer, (25) needs not be a counter-argument against Kelling's claims, because the first argument of the nominalisation may appear to be less proto-agentive than the first argument of *gonflage du pneu*. I am not convinced by this view, because it is difficult to evaluate to which degree an abstract entity like the one denoted by *sociétés* satisfies the proto-agent properties (e.g., do they move in an abstract space?)

4.2.3), and (iv) the ontological domain to which the denoted eventive chain pertains (section 4.2.4).

4.2.1. Property P_1 : Length of the eventive chain

The first relevant property concerns the mereological relation between the two events e_{ment} and e_{age} respectively denoted by an *-ment* EDN and the corresponding *-age* EDN. This property is ‘active’ with verbal bases which present a certain type of semantical underspecification, namely bases which can denote longer or shorter eventive chains. Firstly, this is the case of verbal bases of which are derived verbs enduring the causative/inchoative alternation. At least, these bases are assumed to be underspecified in the “Y-model” proposed by Piñón (2001a), where both the transitive and intransitive version of causative/inchoative verbs are derived from a same (underspecified) base, itself being derived from the adjective. Piñón offers a lot of cross-linguistical empirical arguments showing that this model is to be preferred to the alternative ones, where the causative verb is supposed to be derived from the inchoative one (traditional model), or the inchoative one from the causative one (Levin and Rappaport 1994’s model).

Secondly, it is also the case of bases from which are derived transitive (ex: *shake*) or intransitive (ex: *meouw*) verbs which can either denote a single event or an iteration of it.

I propose that with underspecified bases of this kind, *-age* selects the longer reading, while *-ment* selects the shorter one.¹⁰ Basically, with these bases, e_{ment} is always a (proper) subpart of e_{age} ($e_{\text{age}} \supset e_{\text{ment}}$). Let us first examine the case of causative/inchoative bases.

Causative/inchoative verbal bases. With verbs enduring the causative/inchoative alternation, the witness test presented above allows to show that while *-age* EDNs denote the full causation, the corresponding *-ment* ones denote the change of state of the object only:

(26) *Pierre a assisté au gonflage des ballons.*

‘Pierre witnessed the inflating of the balloons.’

> *Pierre witnessed the whole causation.*

¹⁰ Funnily, at least two of the informants to which I present some of the relevant *-ment/-age* pairs seem to justify “phonologically” their choice in saying that “-aaaaaage is longer”. Maybe some iconic effect between semantics and phonology is at play here (either *-age* has a better phonology to denote longer events, or subjects perceive *-age* nominals as denoting longer events and try to justify their intuition phonologically).

- (27) *Pierre a assisté au gonflement des ballons.*
 ‘Pierre witnessed the inflation of the balloons.’
 > *Pierre witnessed the change of state only*

e_{ment} is then clearly a subpart of the corresponding e_{age} . Recall however that as already noted above (cf. (25)), *-ment* EDNs can be used with a *par*-phrase denoting the Agent. In this case, the whole causation must be denoted by the Noun Phrase, exactly as with *-age* EDNs. This is confirmed by the *witness* test; while in (27), Pierre only witnessed the change of state, in (28), he has to attend the whole causation:

- (28) *Pierre a assisté au gonflement des ballons par X.*
 ‘Pierre witnessed the inflation of the balloons by X.’
 > *Pierre witnessed the whole causation*

However, even if (26) and (28) have the same truth conditions, they can still differ compositionally. While in (26), the deverbal noun itself is responsible for the denotation of the causing event, in (28), the interpretation of this event results from the composition of the deverbal noun denoting a change of state with the *by*-phrase denoting an Agent of an event causing this change of state. As the *by*-phrase is responsible for the interpretation of the causing event, this event does not have to be interpreted in absence of this adjunct PP.

The fact that with these verbal bases, *-age* EDNs target the causative reading of the base while *-ment* EDNs select the inchoative one accounts for the previously noticed preference of *-age* EDNs (vs *-ment* ones) for transitive verbs (vs intransitive ones).

Verbal bases with an iterative/non-iterative reading. With intransitive verbs like *miauler* (‘meouw’) and transitive ones like *secouer* (‘shake’), the verbal stem can also denote a longer or shorter event in the sense they can denote a single event or an iteration of it. And again, with these bases, *-age* EDNs select the longer reading (the iterative one), while *-ment* ones select the shorter one (the single-event one). For instance, while *miaulement* and *secouement* denote only one production of sound/one movement, $^{\circ}\text{miaulage}$ or *secouage* entail an iteration of them.¹¹ So again, the relation $e_{\text{age}} \supset e_{\text{ment}}$ is

¹¹ According to A. Fábregas (p.c.), Spanish suffixes also differ from each other on this point: *sacudimiento* denotes an iteration of shakings (for example, if a house shakes for a while as an effect of an earthquake), and *sacudida* denotes a single instance of shaking (for example, if a bull hits a car only once, that is a *sacudida*). As this example already shows, there is no correspondence between the

verified, although in a different way. In favour of this analysis, note that when headed by a noun like *session* which selects the iterative reading, the *-ment* EDNs must bear the plural morphology, which is not the case of the *-age* ones:

- (29) *Une session de °miaulage/secouage.*
 ‘A shaking/meouwing session.’
- (30) **Une session de miaule^{ment}/secouement.*
 ‘A shaking/meouwing session.’
- (31) *Une session de miaule^{ments}/secouements.*
 ‘A shaking/meouwing session’

Besides, subjects tend to find (32) more natural than (33):

- (32) *Plusieurs miaule^{ments} (secou^{ements}) font ensemble un °miaulage.*
(secou^{age})
 ‘Several meow-**ments** (shake-**ments**) make together a meow-**age**.’
(shake-**age**)
- (33) ?*Plusieurs °miaulages (secou^{ages}) font ensemble un miaule^{ment}.*
(secou^{ement})
 ‘Several meow-**ages** (shake-**ages**) make together a meow-**ment**.’
(shake-**ment**)

The idea that *-age* has an iterative value with some verbs is not entirely new. It was already proposed by Bally (1965). For Old French, Uth (2008b, this volume) argues that non-eventive *-age* nouns (more precisely nouns denoting a non-eventive entity) systematically denote *groups* or *kinds* (which are necessarily instantiated by non-singular entity, cf. Chierchia 1998). This suggests that *-age* has this iterative value in eventive *and* non-eventive nouns.

Verbal bases neutralizing P_1 . As already mentioned, a property differentiating two competing EDNs can be neutralized with some verbal bases. We will show here that P_1 is neutralized with verbs having a transitive and an intransitive reading (henceforth TIVs), but without enduring the causative/inchoative or iterative/non-iterative alternations. This is for instance the case of *pousser*.

French *-ment* and the Spanish *-miento*. See Fábregas (2010) for an analysis of affix rivalry in Spanish.

Recall that among TIVs, *most* of them, like *gonfler* ('inflate') display the causative/inchoative alternation, ie entail a causation on their transitive use, cf. (34), and a change of state on their intransitive one. However, verbs like *pousser* 'push' or *tirer* 'pull' are *not* causative on their transitive use. They only entail an event performed by the subject, but no change of state, cf. (35) (cf. Jackendoff 1990 on *push*, Stein 2007 on *pousser*):

(34) *J'ai gonflé le ballon, #mais il n'a pas gonflé.*

'I inflated the balloon, but it didn't inflate.'

(35) *J'ai poussé la voiture, OK mais elle n'a pas bougé.* (Stein 2007)

'I pushed the car, but it didn't move.'

It would be weird to assume that on one of its reading, the verbal stem of these verbs denotes a change of state *e'*, since the verb itself does not entail it. In fact, it is more natural to assume that contrary to *gonfl*-stems, *pouss*-stems univocally denote the event *e* performed by the subject *x*, and never the change of state *e'* (possibly) endured by *y*. Then, once combined with *-ment*, the resulting EDN corresponds naturally to the event *e'* involving *x*. *Poussement* is indeed defined as the "action of pousser" in the dictionary *Le Littré*. As we just saw, this interpretation is available with *gonfler*-verbs when a *par*-phrase is implicated only:

(36) *J'ai assisté au poussement.*

> the event involving *x* **must** be seen

(37) *J'ai assisté au gonflement.*

> the event involving *x* **can** be seen

Given the fact that with *pousser*-verbs, bases do not exhibit the relevant underspecification (they do not have a "shorter" or "longer" reading), the *-age* DN's do not denote a longer event as the corresponding *-ment* ones as in the previous case. The property *P*₁ is then "neutralized". *-ment* EDN's denote the same kind of eventive chain as corresponding *-age* ones.¹²

¹² One could wonder what exactly denote *pousser*-bases and how many of them we have to assume. In fact, it is very likely that *pousser*-bases invariably denote the performance of *x*, *x* corresponding to the subject of the transitive or the intransitive verb. In both readings, this performance can be defined the action of exerting a force in a direction that goes away from *x*. For instance, the event denoted in (38a) can be described as a pressure performed by Pierre away from

4.2.2. Property P_2 : Agentivity

In the previous section, I show that *-age* and *-ment* EDNs can differ by the length of the denoted eventive chain. I will now address one of the other features differentiating the two suffixes, including when the first one is neutralized, as for *pousser*-verbs.

The first of them concerns the thematic role of the subject. As already suggested by Kelling (2001, 2004), *-age* EDNs are more agentive than *-ment* ones. My claim goes in the same direction, but differs from hers on three points. Firstly, I will assume that while *-age* EDNs must be agentive, *-ment* ones tolerate this reading without imposing it. This first claim is illustrated by the contrast above:

- (39) *Le décollement des tuiles par le vent / par l'ouvrier.*
 'The unsticking/removal of the tiles by the wind/by the worker.'
- (40) *Le décollage des tuiles par #le vent / par l'ouvrier.*
 'The unsticking/removing of the tiles by the wind/by the worker'

For instance, native speakers accept the *-age* version in (40) only in a context where a fictive intention is attributed to the wind.

Secondly, I will not assume with Kelling that EDNs select *-age* when the first argument of the verbal base is a prototypical agent. This would impede us to explain why some unaccusative verbs like *arriver* nominalize in *-age*. I will assume that *-age* EDNs are "agentive" in the following way: *the eventive chain denoted by an -age EDN must begin with an action, or must have been triggered by an action (not denoted by the noun itself)*. So in two words, *-age* requires the occurrence of an action, either inside the denoted eventive chain, or outside it. With verbs like *décoller* (cf. (40)) or *miauler*, this constraint is very simply translated in identifying the event denoted by the EDN itself with the required action. For instance, it explains why (41) is only accepted by native speakers in a magical context where doors intentionally make noise:

Pierre, and the one denoted in (38b) as the pressure exerted by the tooth and away from the tooth:

- (38) a. *Pierre pousse la table.*
 'Pierre is pushing the table.'
- b. *La dent pousse.*
 'The tooth is growing.'

- (41) *Le miaulement*/#*miaulage* d'une porte qui grince.
'The meouw-ing of a squealing door.'

In the same way, *poussage* differs from *poussément* in that it suggests that *x* is a real Agent. This explains why *poussage* is often used to describe a (shipping) technique, as this technique 'intrinsically' implies an Agent endowed with intention, while *poussément* is preferred to nominalize the normally non-intentional process denoted by the intransitive reading translated with *grow* in English:

- (42) *La dent pousse.* > *le poussément*/#*poussage* de la dent.
'The tooth is growing.' > 'the growing of the tooth'

But sometimes, the intransitive *pousser* can also be used agentively in the relevant sense:

- (43) *Poussage* de poils (title of a mail in a forum). *Svp, comment faire pour que les poils poussent sur le torse?* (Internet)
'Growing of hair. Please, how to proceed for hair to grow on the chest?'

Crucially, (43) does not require a personification of the hair to be acceptable. Rather, the choice of *-age* is here justified by the (non default) context where the hair growing process (denoted by the noun) is intentionally triggered upstream through an action. This action is *not* denoted by the noun; as is confirmed by the witness test, cf. (44), but also by the fact that these EDNs nominalizing the intransitive reading do not accept a *par*-phrase, cf. (45). This incompatibility is unexpected if the noun itself denotes the action performed by the referent of the *par*-phrase.

- (44) *J'ai assisté au poussage* de ses poils.
'I witnessed the growing of his hair.'
I do not necessarily witnessed the action causing the growing event
- (45) **Le poussage* des poils par X.
'The growing of the hair by X.'

The same way, (41) could also be appropriate in a context where somebody plays with the door in order to provoke its meowing squealing. And again, the witness test and the distribution of the *by*-phrase suggests that this action cannot be denoted by the noun itself.

The *-age* EDN derived from the intransitive verb *arriver* must also be agentive in our sense. Indeed, contrary to *arrivée*, *arrivage* is "agentive" in

that it implies that the change of state *e'* denoted by *arriver* is caused by an action *e* (not denoted by the noun). This is the reason why (47) is weird on the *-age* version: contrary to normal assumptions, it suggests that the arrival of meteorites was caused by an action.

(46) *L'arrivée/l'arrivage de légumes.*
'The arrival of vegetables.'

(47) *L'arrivée/#l'arrivage de météorites.*
'The arrival of meteorites.'

However, according to the witness test, *arrivage* only denotes a change of state *e'*, just as *gonflement*:

(48) *J'ai assisté à l'arrivage des légumes.*
I witnessed the arrival of vegetables.
> *I witnessed the change of state only*

Besides, data show that the Agent of the action *e* who must have caused *e'* cannot be expressed by a *par*-phrase:

(49) **L'arrivage des légumes par les ouvriers.*
'The arrival of vegetables by the workers.'

In conclusion, *-age* EDNs are more agentive than *-ment* EDNs not because they impose the role Agent to the subject, but because they systematically signal the existence of an (intentional) action, either at the beginning of the denoted eventive chain, or upstream.

4.2.3. Property *P*₃: Incrementality

An interesting fact which cannot be accounted for by *P*₁ and *P*₂ is illustrated by the contrast below, where two different senses of the same verb are used:

(50) *Marie a intentionnellement plissé sa jupe.* > *Le plissement/-age de la jupe.*
'Marie intentionally pleated her skirt.' 'The pleating of the skirt.'

(51) *Marie a intentionnellement plissé les yeux.* > *Le plissement/#plissage des yeux.*
'Marie intentionally squinted her eyes.' 'The squinting of the eyes.'

If only P_1 and P_2 are taken into account, *plissage* is expected to nominalize (51) as well as (50) (in both cases, the causative reading is selected, and the adverb *intentionally* signals the presence of an intentional action). The contrast (50)–(51) is due to the third relevant property P_3 , which has to do with the relation taking place between the denoted event and its Theme. More precisely, the hypothesis is that for *-age* to be acceptable, a (loose) incremental relation has to be conceivable between the event e and the Theme x : for every (relevant) proper part y of the Theme x , y stands in the relation θ denoted by the verb to some proper part e' of e (cf. the property (46) of Krifka 1998, called *mapping to subevents*). This relation can easily be satisfied in (50) (every (relevant) part of the skirt can be the Theme of a pleating subevent), but not in (51) (it does not make sense to say that every (relevant) part of the eyes is the Theme of a squinting subevent).¹³ Note that P_3 is neutralized with Themeless verbs like unergative ones, since these cannot be concerned by the Theme-event relation.

P_3 also accounts for the contrast between (53) (perfectly normal) and (54) (which is very scabrous, even when the intention to injure is taken for granted):

- (52) *Pierre a écrasé la banane/le piéton.*
'Pierre crushed the banana/ ran over the pedestrian.'
- (53) *L'écrasage de la banane.*
'The crushing of the banana.'
- (54) *#L'écrasage du piéton.*
'The running over of the pedestrian.'
- (55) *OK L'écrasement du piéton.*
'The running over of the pedestrian.'

If (54) is scabrous, it is because in order to fulfill P_3 , the interpreter has to evoke a scene where to different parts of the subject's action corresponds different parts of the pedestrian, ending up with a bloody scenario.

¹³ The relation we need is looser than the Krifkean one (cf. Krifka 1998) because it allows the same part y of the Theme x to be the Theme of different subevents e' , e'' ...of e . For instance, VPs like *iron the skirt* satisfy our incremental relation, even if for some parts e' and e'' of the whole ironing e , e' and e'' can have the same subpart of the skirt as a Theme (e.g., the same part of the skirt can be ironed twice). In other words, we admit here that an incremental relation takes place between the event and the Theme even if the property (47) of Krifka 1998 (*uniqueness of events*) is not satisfied.

P_3 also accounts for the fact that sometimes, *-age* EDNs are better with a plural Theme. Indeed, a Theme made of a plurality of entities is an alternative way to satisfy the incremental relation when it cannot be fulfilled with one entity only:¹⁴

- (56) *Le °tuage des mouches.*
'The kill-age of the flies.'
- (57) *#Le °tuage de la mouche.*
'The kill-age of the fly.'
- (58) *L'arrivage des légumes/#d'un légume.*
'The arriv-age of the vegetables/of one vegetable.'
- (59) OK *L'arrivée d'un légume.*
'The arrival of one vegetable.'

4.2.4. Property P_4 : Ontological domains

The last property driving the competition between *-ment* and *-age* concerns the ontological domain to which pertains the denoted eventive chain. The proposed hypothesis is that *-age* is marked for a specific domain, namely the physical one, while *-ment* is ontologically unmarked.

A first prediction of this hypothesis is that *-age* will not be selected by verbs which do not have a physical reading. This is the case of a subset of psych-verbs, like *penser* 'think', *préoccuper* 'preoccupy', *effrayer* 'to frighten', or *imaginer* 'imagine'. And indeed, the *-age* EDNs of these verbs appear odd to native speakers (cf. ??*pensage*, ??*préoccupage*, ??*effrayage*, ??*imaginage*). However, one finds from time to time occurrences of them, but they seem to involve a metaphor: the psychological interaction is depicted as a physical one. For instance, *effrayage* is slightly present in corpora, but it denotes the (physical) event by which one triggers fear on the Experiencer (and, as expected given P_2 , this causing event is conceived as an intentional action).

Another prediction of the hypothesis is that when the base is underspecified wrt to the ontological domain of the denoted event (like *gonfler* 'inflate', which can denote a physical event or an abstract one depending on

¹⁴ There are some exceptions to this picture though. For instance, *poussage* used to denote a shipping technique does not seem to require a plural Theme to be acceptable. I do not have an explanation for this.

the nature of the Theme), *-age* will select the physical reading, and *-ment* the other ones. This is indeed the case, cf. (60). And again, when an abstract event is denoted with the help of an *-age* EDNs as in (61), a metaphor seems to be involved in the interpretation:

(60) *Le gonflement des prix/le gonflage du ballon.*

‘The inflating of the prices [abstract Theme] / the inflating of the balloon.’ [physical Theme]

(61) *Le gonflage des prix.* (metaphorical)

‘The inflating of the prices.’

P_4 is less coercitive than properties P_1 – P_3 , since it often seems possible to accommodate it with a metaphorical reading.

5. *-ment* versus *-ion*

This section is dedicated to the differences between the suffixes *-ment* and *-ion*. The competition between these two suffixes represents a much more difficult area than the previous one, maybe because *-ion* and *-ment* are supposed to be quite unproductive in modern French – although not totally, while *-age* is very productive, cf. Heinold (2007).¹⁵ Indeed, the relative difficulty to create neologisms in *-ion* and *-ment* obliges to play with verbs who actually have the two nominalizations.

Dubois (1962) assumes that *-ment* and *-ion* are synonymous and come from the same syntactical structures. He only notes that two competing nominalizations select different readings of the same verb, the *-ion* ones being “more technical or more recent” (Dubois 1962: 28). In what follows, I will show that there are more systematical differences between *-ion* and *-ment* than suggested in previous literature.

¹⁵ For instance, in a corpus of the newspaper *Le Monde* extending on several years, Heinold found 65 neologisms in *-age*, 10 in *-ment* and 20 in *-ion*. It should be noted, however, that in less formal corpora, one finds quite often neologisms in *-ment* and *-ion*. Of course, these productions can be analysed as results of lexical incompetence. But then, as already said in the introduction, the question remains of why some neologisms *never* show up in any corpora.

5.1. Property P_1 : Length of the eventive chain

Roughly, as far as P_1 is concerned, there seem to exist some similarities between *-age* and *-tion* in the way they compete with *-ment*.¹⁶

Firstly, with bases of causative/inchoative verbs, *-ion* EDNs tend to be underspecified: they can target either the ‘longer’ or the ‘shorter’ reading (while, as we saw before, *-ment* selects the shorter one). More precisely, *-ion* can either denote the whole causation, or the change of state only, while *-ment* denotes the change of state, but not the whole causation.¹⁷ This is illustrated here:

- (62) *L'isolement de la maison.*
 ‘The house’s isolation.’
 i. the isolated (change of) state of the house.
 ii. #the action of isolating the house.
- (63) *L'isolation de la maison.*
 ‘The house’s isolation.’
 i. the isolated (change of) state of the house.
 ii. the action of isolating the house.
- (64) *Le dénaturement de la presse.*
 ‘The denaturation of the press.’
 i. the press alters by itself.
 ii. #an external event triggers the alteration.¹⁸
- (65) *La dénaturation de la presse.*
 ‘The denaturation of the press.’
 i. the press alters by itself.
 ii. an external event triggers the alteration.

¹⁶ I should add that some of the native speakers I consulted do not have intuitions about the distinctions made in this sub-section, which seems to suggest, as Dubois (*id.*) proposes, that *-ion* and *-ment* tend to be used as synonyms in modern French. However, some other speakers *do* recognise them, and we will see that they also receive some diachronical and syntactical support.

¹⁷ It is interesting to see that this hypothesis is confirmed by some dictionaries, but not all. For instance, *Le Littré* defines *dénivellement* (*deleveling*) as the result of the process denoted by *dénivellation* (*deleveling*). But *Le Trésor de la Langue française* defines *dénivellement* as denoting an action.

¹⁸ Of course, this reading is acceptable for (64) as soon as a *par*-phrase is added (cf. the discussion above about (27) and (28)). But the point here is that it is not available in absence of such a PP.

With some alternating bases, *-ion* EDNs only access the long reading. This confirms that *-ion* is more ‘causation’ oriented while *-ment* is more ‘result’-oriented. For instance, *finition* ‘finishing’ cannot denote the change of state only, and must denote an event triggering it upstream. This explains the unacceptability in (67b), since the ending of the autumn cannot be caused by an event of which it would be the Theme.

- (66) *Le finissement de l'automne.*
‘The ending of the autumn.’
- (67) a. *La finition du poème.*
‘The finishing of the poem.’
b. *#La finition de l'automne.*
‘The finishing of the autumn.’
- (68) *La voiture s'est déportée sur la gauche.* (inchoative reading)
‘The car swerved to the left.’
- (69) *Le déportement/ #la déportation de la voiture.*
‘The swerving of the car.’
- (70) *Les Nazis ont déporté des millions de Juifs.* (causative reading)
‘Nazis sent millions of Jews in concentration camps.’
- (71) *Le #déportement/ la déportation des Juifs.*
‘The deportation of the Jews.’

As with causative/inchoative bases, *-ment* EDNs tend to denote the change of state only, it is harder to adjunct them a *par*-object than with *-ion* EDNs:

- (72) *L'oppression/ l'excitation des enfants par Paul.*
‘The oppression/ excitation of the children by Paul.’
- (73) *L'oppressionnement/ l'excitement des enfants #par Paul.*
‘The oppressment/ excitement of the children by Paul.’

Causative bases without inchoative readings (ie, obliged to denote the entire causation on all their uses) also confirm that *-ion* denotes longer eventive chains than *-ment*. Indeed, such bases have more difficulty to combine with *-ment* than with *-ion*. On the other hand, *-ment* neologisms are not rare with causative verbal bases having an inchoative reading (if the *-ment* noun does not already exist in the lexicon). This can be illustrated through a difference between two types of causative psych-verbs, namely *indigner*-verbs (which have an inchoative reading, cf. (75)–(76) below), and *séduire*-ones (which

- Note that the Latin suffix *-io* was already more ‘causative’ than the Latin suffix *-men(tum)*. The following pairs taken from Gaffiot (1934) shows that *-io* nominalizations tend to denote the causation or the result of it, while *-men(tum)* corresponding ones denote either the result of the action or one of its reifications:²²

²² Note that some precaution is in order with this kind of etymological arguments, since, as underlined by Merk (1970), the correspondence between French and Latin suffixes is far from perfect. For instance, *-tio* nouns have given *-ion* but also *-ance* and *-ment* nouns.

- (79) a. *motio*, *-onis*: action of moving, movement, impulsion
 b. *momentum* (*movimentum*): movement, impulsion
- (80) a. *fractio*, *-onis*: action of breaking
 b. *fragmen*: fragment, broken pieces
- (81) a. *argutio*, *-onis*: action of blaming
 b. *argumentum*: argument, evidence

As for intransitive verbs denoting a single event or an iteration of it, P_1 does not seem to play any role in the competition between *-ment* and *-ion*. Sometimes, *-ion* seems to target either the short or the long reading, while *-ment* selects only the short one (for instance, it is more natural to conceive a *suffocation* as an iteration of *suffoquements* than the reverse). But this does not seem to be a general tendency, and the plural/singular morphology does not reflect this intuition (one cannot replicate for the *-ment/-ion* pair the kind of contrasts (32)–(33) obtained for *-ment/-age*). Besides, P_1 does not make any prediction about intransitive verbs which do not have an iterative and a non-iterative reading, nor about causative verbs who systematically denote the whole causation (ie without a inchoative reading) and for which the nominalization in *-ment* and in *-ion* are both available in the lexicon. Indeed, as with such verbs, any nominalization denotes the whole causation, one cannot say anymore that *-ion* ones only target the long reading.

5.2. Property P_4 : Ontological domains

However, other features allow to differentiate the two suffixes with all these classes of verbs. Very often, when comparing semantically their *-ment* EDN and the corresponding *-ion* one, one finds that the latter one roughly corresponds to the first one, but augmented with adjuncts specifying further some properties of the process:

- (82) a. *agenouillement*: action of kneeling or its result (TLF)
 b. *généflexion*: action of kneeling *in sign of respect or submission* (*id.*)
- (83) a. *crucifiement*: action of crucifying²³ (Le Petit Robert)
 b. *crucifixion*: “*crucifiement de Jésus-Christ*” (*id.*), ie “crucifixion of Jesus-Christ”

²³ Note that *crucifier* ‘crucify’ does not endure that causative/inchoative alternation. In that case, *-ment* EDNs do not denote the change of state only, since the verbal base is not underspecified in the relevant way.

The same way, a ‘renonciation’ could be defined as a ‘renoncement’ *made public* (which explains why one can sign a *renonciation*, but not a *renoncement*, or why *déclaration de renonciation* is fine, while *déclaration de renoncement* is strange).

Very often, the specification carried out by *-ion* triggers a change in the ontological domain to which pertains the denoted event: while an *agenouillement* can be a simple physical event, *génuflexion* compulsorily denotes a social, ethical event. Of course, the target domain can vary from nouns to nouns, but in many cases, *-ion* transfers the event denoted by the corresponding *-ment* noun in an abstract domain.

Note that there is a common point behind the properties P_1 and P_4 in the way they differentiate the two suffixes, namely that in both cases, *-ion* has a richer, more complex meaning than the corresponding *-ment* one.

5.3. P_5 : Discontinuity

Another intuition about the difference between *-ment* and *-ion* is that *-ion* is more ‘prototypically telic’ than *-ment*. Firstly, note in Table 1 above that even if *-ment* take bases of verbs having a telic reading, it is less often the case than *-ion* (46% versus 57%). Secondly, the bases selected by *-ion* resemble more the prototypical accomplishments (the ‘eat a sandwich’ Vps) than the ones selected by *-ment*. Indeed, with verbs denoting an event e_1 and a change of state e_2 , *-ion* EDNs seem to require that the event e_1 can be conceived as performed in several discontinuous steps e_1' , e_1'' , e_1''' ... (sub-event/subresult, pause, subevent/subresult, pause...). I will assume that the verb satisfies this requirement when it can be modified by *en plusieurs étapes* ‘in several steps’. On the contrary, *-ment* seems to preferably select bases denoting an event conceived by default as taking place without interruption. This difference is illustrated below:

- (84) a. *J’ai éclaté le ballon #en plusieurs étapes.*
 ‘I exploded the balloon in several steps.’
 b. *éclatement* / **éclatation*
- (85) a. *Samira a alphabétisé Pierre en plusieurs étapes.*
 ‘Samira alphabetized Pierre in several steps.’
 b. *alphabétisation* / **alphabétisement*
- (86) a. *Il m’a étonné/affolé #en plusieurs étapes.*
 ‘He astonished/threw me into panic in several steps.’
 b. *étonnement, affolement* / **étonnation, *affollation*

- (87) a. *Il m'a séduit/humilié en plusieurs étapes.*
 'He seduced/humiliated me in several steps.'
 b. *séduction, humiliation* / **séduisement, *humiliement*

There are counter-examples to this correlation (for instance, *gonfler* is acceptable with *en plusieurs étapes* but cannot nominalize in *-ion*), but until now, I found more nouns confirming it than the reverse. Dumay and Martin (2008) try to test it through experiments on pseudo-verbs.

6. *-age* versus *-ion*

Several predictions about the differences between *-age* and *-ion* derive from what has been proposed in the sections 4 and 5. Firstly, we expect *-age* and *-ion* to preferably denote events from different ontological domains when attached to the same bases. This is confirmed by the following data:

- (88) a. *un cassage de doigt*, #*une cassation de doigt*. (physical event)
 'a breaking of a finger.'
 b. *la cassation d'une décision juridique*, #*le cassage d'une décision juridique*. (jur. event)
 'the canceling of a juridical decision.'
- (89) a. *le fixage d'un tableau*. (non metaphorical)
 'The fastening of a painting.'
 b. *le fixage des prix* (metaphorical) vs *la fixation des prix*. (non metaphorical)
 'The setting of the prices.'

Note however that *-ion* can sporadically denote physical events too. For instance, *fixation* would be acceptable in (89a) without involving any metaphor (whereas it is not possible in (88a)). But this does not undermine the claim that *-age* and *-ion* differ in their preference for specific domains.

Another expected difference is that contrary to *-age* which always implies the presence of an action (cf. P_2), making it difficult to use to denote pure change of state (ie not caused by the action of an entity upstream), *-ion* can denote such pure changes of state. Take again the verb *fixer* when it translates the intransitive *settle* (as said above, this inchoative reading often requires the use of the pronoun *se*).

- (90) a. *La tribu s'est fixée dans cette région.*
 'The tribe settled in this region.'
 b. *La fixation de la tribu/#le fixage de la tribu.*
 'The settling of the tribe.'

On this use of *fixer*, *-age* cannot be used, except if the speaker wants to signal the existence of an action of which the settling is the result.²⁴ *Dessaler* also only nominalizes in *-ion* in its inchoative reading (examples taken from Dubois 1972: 28):²⁵

- (91) a. *On dessale l'eau de mer.* *Le dessalage de l'eau de mer.*
 'We remove the salt from seawater.' 'The removing of the salt from seawater.'
 b. *L'équipage du canoé a dessalé.* *La dessalaison*²⁶ / *#le dessalage de l'équipage.*
 'The crew of the canoe capsized.' 'The capsizing of the crew.'

The same way, (92), but not (93), automatically suggests the existence of an action upstream triggering the Theme's change of state (which makes e.g. the *earth* version of (92b) odd, except if we admit that the Earth's glaciation was triggered by a divine action).

- (92) a. *Le dispersage des cendres.* (no 'by themselves' reading)
 'The dispersion of the ashes.'
 b. *Le glaçage du gâteau/#le glaçage de la terre.*
 'The glazing of the cake/the glaciation of the Earth.'
 (intended reading)
 c. *Le perforage du mur/#le perforage de l'intestin.*
 'The perforation of the wall/the perforation of the intestine.'

²⁴ Note that because of the incrementality constraint imposed by *-age* (cf. *P₃*), (90b) in the *-age* version would also require in this agentive context that the Agent acted on different parts of the tribe to get it settled in the region.

²⁵ Dubois only states that *-age* and *-ion* select different readings of the verb. For the same syntactical frame, the only difference he seems to make between *-age* and *-ion* is that *-ion* selects the more technical reading of the verb. This criteria does not apply to (91), where the two meanings are equally technical.

²⁶ Some verbs like *dessaler* nominalise in *-aison* and not in *-(at)ion*, but this suffix *-aison* is the same as the *-ion* one under study here.

- (93) a. *La dispersion des cendres.* ('by themselves' reading OK)
 'The dispersion of the ashes.'
 b. *La glaciation de la terre.* ('by itself' reading OK)
 'The glaciation of the Earth.'
 c. *La perforation de l'intestin.* ('by itself' reading OK)
 'The perforation of the intestin.'

Another related prediction from previous claims is that with underspecified causative/inchoative verbal bases, the *-age* EDNs systematically denote the whole causation, while *-ion* ones can also denote the change of state only. (92) and (93) can be seen as evidence for this claim too. But it also accounts for the following contrast in (95)–(98), once we assume that the object of *aboutir* à 'result in' can denote the last part of the eventive chain described by the subject.²⁷

- (95) *Le °dispersage des cendres a abouti à leur dispersion.*
 'The 'dispers-age' of the ashes resulted in their dispersion.'
 (96) *#La dispersion des cendres a abouti à leur °dispersage.*
 'The dispersion of the ashes resulted in their 'dispers-age'.
 (97) *Le °désinfectage de la plaie a abouti à sa désinfection.*
 'The 'disinfect-age' of the wound resulted in its disinfection.'
 (98) *#La désinfection de la plaie a abouti à son °désinfectage.*
 'The 'disinfect-age' of the wound resulted in its disinfection.'

As expected, (96) and (98) are inappropriate because *-age* necessarily denotes the whole causation. This forces to end up either with an interpretation where a whole causation *C* results in itself (if the *-ion* EDN denotes the whole causation *C* too), or with an interpretation where the result of a causation *C* results in the causation *C* (if the *-ion* EDN denotes the result only).

A last prediction is that *-ion* will be *ceteris paribus* preferred to *-age* when the incremental relation between the event and the Theme imposed by *-age* cannot be satisfied (cf. *P*₃). This is supported by the following contrasts:

²⁷ This is for instance corroborated by the acceptability of a sentence like *La vente d'un objet aboutit au transfert de sa propriété* 'The selling of an object results in the transfer of its property' (since the property transfer corresponds to the last part of the eventive chain denoted by *the selling*).

- (99) *Le codifi**age** d'un texte/ ?d'un nombre.*
'The codifying of a text/ of a number.'
- (100) *La codifi**cation** d'un texte/ d'un nombre.*
'The codification of a text/ a number.'
- (101) *Le numérot**age** d'une rue/ ?d'une voiture.*
'The numbering of a street/ of a car.'
- (102) *La numérotat**ion** d'une rue/ d'une voiture.*
'The numbering of a street/ of a car.'
- (103) *Le modifi**age** d'une image/ ?d'un chiffre.*
'The modifying of an image/ of a figure.'
- (104) *La modifi**cation** d'une image/ d'un chiffre.*
'The modification of an image/ of a figure.'

7. Conclusions

Table 2 below summarizes the differences made in sections 4–6 between the three suffixes under study on their eventive reading.

Table 2. Semantical/aspectual differences between the three eventive suffixes under study

	-age	-ment	-ion
P_1	long reading with underspecified verbal bases	short reading with underspecified verbal bases	long or short readings with underspecified verbal bases
P_2	[+AGENTIVE]	[±AGENTIVE]	[±AGENTIVE]
P_3	incrementality between event and Theme	unmarked	unmarked
P_4	physical domain	all domains	preference for the abstract domain
P_5		[−DISCONTINUITY]	[+DISCONTINUITY]

In sum, I hope to have made clear that these three suffixes are semantically rich and seem to function as aspectual markers similar to verbal ones. However, contrary to verbal markers, nominalizing suffixes often give rise to specific lexicalizations and are not equally productive. Hence, the competition between them is harder to modelize, and diachronical factors arguably

play a bigger role than suggested here. But clearly, the choice of the suffix in the nominalizing process does not only depend on historical accidents, as it is traditionally often assumed.

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Action nominals inside: lexical-semantic issues

Chiara Melloni

1. Introduction

A traditional definition of action nominals is the following: “nouns derived from verbs (verbal nouns) with the general meaning of an action or process” (Comrie 1976: 178). Under this label though, we usually find – alongside nominals expressing dynamic events such as *exploitation* or *attainment* – also state-denoting nouns such as *admiration* or *excitement*, and polysemous nominals such as *building* or *creation*, which not only denote the events but also refer to the results or effects of the events themselves.¹ Nominals of the latter type are the object of this study.

The issue of the semantic ambiguity of action nominals has been touched upon in several studies in the last decades although, in general, the focus has been on their morpho-syntactic features and derivation patterns, rather than on the fine-grained semantics of these derivatives. In general, from a morpho-syntactic perspective, two classes of nominals have been isolated: “Argument Structure” (henceforth, AS) and non-AS or “referential” nominals. Simplifying this intricate matter, the former class includes all those nominals which preserve (or *inherit*) the arguments of the base verb, whereas the latter refers to those which lack (or suppress) them (cf. Grimshaw [1990] for an in-depth analysis of the morpho-syntactic and semantic features distinguishing the two classes). Such partition seems to match the distinction between event/process and result nominals, mainly established on semantic grounds. More specifically, event nominals are mere transpositions of the corresponding base verbs, i.e. they are abstract nouns that give a “name” to the situations (i.e. events or states) expressed by their corresponding predicates.

¹ A note on the terminology adopted in this study: provided that the label *action nominals* should not be taken in its literal meaning, I will use it in the remainder of the paper as a cover term to refer to the deverbal nominals at issue, in particular when I do not wish to emphasize their syntactic-semantic ambiguity. I will use *event* nominals to refer to their eventive semantics and *result* or *referential* nominals to refer to their entity/object denotation.

- (1) The **invention** of the microscope in 1590 has definitely been a turning point in the history of man.

Result nominals, instead, typically refer to the outcome of the event described by the base verb. Hence, they denote referential/non-temporal objects.

- (2) What has intrigued scholars about Da Vinci's **inventions** is that when assembled, many do not work.

As shown in the examples above, event nouns tend to preserve verb argument structure, in particular the internal argument is expressed with a genitive phrase, cf. *invention* in (1) (the external argument can be realized as an optional by-phrase). In a nutshell, deverbal event nouns typically are AS nouns. Result nominals, instead, tend to suppress the arguments of the base verb or to maintain them as optional satellites (in 2, the genitive *Da Vinci's* is arguably amenable to several interpretations, such as "possessor", which are unavailable to the verb external argument).² Since Grimshaw (1990), however, the label "result" applied to this class has gradually lost its semantic motivation, remaining as a cover term for most non-eventive nominals lacking argument structure. The polysemy of these nominals is in fact pervasive and heterogeneous: action nominals can denote, besides events and their results, the means (e.g. *connection*), the source or stimulus of a psychological situation (e.g. *distraction*), the group of agents (e.g. *administration*), the location of the event (e.g. *entrance*), etc. The semantic ambiguity of these deverbal nouns raises several intriguing questions: in general, to what extent is the event/result polysemy a systematic phenomenon in nominalizations? And, if it is regular, what kind of syntactic and/or semantic features determine the result meaning option?

The main aim of the present contribution is to investigate a relevant portion of this pervasive polysemy by focusing on its regular patterns and looking *inside* action nominals, hence paying attention to verbal semantics, rather than examining their behaviour in the syntactic context. The hypothesis I will develop is that it is possible to predict (at least to a certain extent) the potential polysemy of action nominals by exploring the structural and, especially, the conceptual semantics of the base verb. The analysis of several verb classes will allow us to capture the semantic features of the relevant

² In cases such as *description* or *translation*, taken as result nouns, both phrases corresponding to internal and external arguments can be expressed, as in *John's description of his car accident hasn't been published yet*.

argument or semantic participant of the base that semantically corresponds to the referential noun (cf. §§ 3, 3.1). In particular, I will isolate the conceptual-semantic (cf. §3.1.1), thematic (§3.2) and aspectual features (§3.3) of the heterogeneous class of result/referential nouns. I will finally conclude by speculating about the relation between polysemy effects in the simplex and in the complex lexicon domains (cf. §4) and advancing an explanatory hypothesis about the derivational pattern responsible for the event/result polysemy (cf. §5).

Since exploring nominal semantics entails a deep knowledge of the subtle and fine-grained nuances of their meanings, I shall concentrate on Italian data. Nevertheless, on the basis of the data collected in this and other studies, I suggest that my arguments could hold for other Romance languages, and might be extended to Germanic and Slavic.³

2. The data: nominalizing suffixes

The present study takes into account a relevant set of Italian deverbal nouns derived with so-called *transpositional* suffixes (cf. Beard 1995 on this term). I have excluded cases of zero-affixation. In table 1, we find a list of the Italian nominalizing suffixes and related quantitative data based on an survey of the DISC, an Italian dictionary (cf. Gaeta 2004: 322).

Table 1. Italian nominalizing suffixes

suffixes	base verbs	nominalizations	DISC
-zione	<i>costruire</i> ‘to construct’	<i>costruzione</i> ‘construction’	2449
-mento	<i>allevare</i> ‘to breed’	<i>allevamento</i> ‘breeding’	2159
-(t)ura	<i>bruciare</i> ‘to burn’	<i>bruciatura</i> ‘burn’	1362
-aggio	<i>lavare</i> ‘to wash’	<i>lavaggio</i> ‘wash’	153
-ata	<i>camminare</i> ‘to walk’	<i>camminata</i> ‘walk’	585
-a/enza	<i>partire</i> ‘to leave’	<i>partenza</i> ‘departure’	250
-io	<i>gocciolare</i> ‘to drop’	<i>gocciolio</i> ‘sequence of drops’	214

³ Cf. García García Serrano (1998–2000) for Spanish; Zwanenburg (1991) for French, English and Dutch; Fabb (1984), among many others, for English; Schoorlemmer (1995), Sadler, Spencer, Zaretskaya (1996) for Russian; and Rozwadowska (1997) for Polish.

As long as an analysis of the selection properties of these suffixes would exceed the limits of the present analysis, I shall limit myself to point out that the combination base-suffix is not completely idiosyncratic, but the suffix seems to select the verb on the basis of morphotactic, stylistic, and *Aktions-art* properties. For instance, *-aggio* and *-ata* exhibit a strong tendency towards atelic bases (activities or process); *-(an)/(en)-za* suffix productively merges with state verbs only; *-io* tends to select semelfactive base verbs. *-Zione*, *-mento* and *-tura* prefer accomplishments, but can also take states, activities and achievements as base verbs.

The present study will be especially focused on *-zione*, *-mento* and *-tura* nominals, not only because these are the most frequent among action nominals, but also because the derived nouns they head exhibit the polysemy at issue. *-Aggio*, in fact, mostly heads unambiguous event nominals; *-ata* is not a mere nominalizing operator, but has inherent ‘quantitative’ properties, specifically – as a “packaging operator” (cf. Gaeta 2004) – it temporally bounds the situation expressed by the base verb; *-io* mainly heads unambiguous event nominals.

Further, *-mento*, *-zione* and *-tura* are rivals or competitors, because they (roughly) cover the same semantic space and have the same effect on their bases. To say it with Booij and Lieber (2004), these suffixes constitute a single paradigmatic cell of semantic derivation and are therefore semantically interchangeable.

3. Verb semantics

As recently observed by Harley (2009), a.o., “certain types of meaning shift, from event to result readings, seem to be quite productive and predictable, and hence hardly idiomatic”. Such standpoint also leads the spirit of the present research. First of all, I would like to emphasize that, even though the event/result polysemy seems to follow (semi-)regular patterns, there are action nominals that cannot convey a result reading and are instead unambiguous event-denoting. The lack of a result interpretation holds for most nominals derived from stative verbs, but it is a rather frequent phenomenon among nominals denoting dynamic events too, as shown by cases such as *abolizione* ‘abolition’, *asciugatura* ‘drying’, *cessazione* ‘cessation’, *inseguimento* ‘chase’, *sfruttamento* ‘exploitation’, etc. In the remainder of this paper, I will show that the semantics of the base verb plays a crucial role in determining the event / result ambiguity of the corresponding nominal.

Keeping with much previous work on the semantic decomposition of verbal meaning, a fundamental assumption grounding this study is that the semantic representation of verbs is composed of two building blocks: an event structure and a core meaning. The former contains those semantic aspects that are grammatically relevant, such as aspectual properties (or *Aktionsart*), while the latter captures those meaning elements that are idiosyncratic to each verb.⁴ The hypothesis I pursue here is that it is possible to analyze and, to a certain extent, to ‘predict’ the result reading of a nominal on the basis of the aspectual properties, on the one hand, and of the conceptual-semantic properties of the base verb (let us call it “root” with Rappaport Hovav and Levin, or “body”, with Lieber 2004), on the other.

Concerning the latter semantic component, I will assume that root properties are expressed at the Lexical Conceptual Structure (LCS) level (cf. Jackendoff 1990), but are not necessarily reflected at the structural (or syntactic) level. As I will show in the next section, the lack of a compulsory reflex of root properties into the syntax can explain the reason why the referent of a result nominal does not necessarily correspond to an argument structure participant but identifies instead an element that is cognitively salient, viz. relevant at the conceptual level.

3.1. Result or product interpretation

From the aspectual viewpoint, the verbs from which event/result nominals are derived mainly belong to the accomplishment or achievement classes, but also activity verbs, although in a limited number, can be the base of event/result nominalizations (states can yield nominals with other non-temporal, or referential interpretations, cf. *infra*). Therefore, event structure or *Aktionsart* alone cannot be considered as sufficient diagnostics in order to determine the result meaning option of the corresponding nominal.

The meaning elements relevant to allowing the result reading of action nominals, in the narrow sense of products/outputs of a corresponding event, are specified in the idiosyncratic component of verb semantics, the root or body. In particular, I propose that the base verb of a result noun belongs to one of the following subclasses of verbs, essentially defined on the grounds

⁴ Many different labels have been given to the two components: Grammatical Semantic Structure and Conceptual Structure (Mohan and Mohan 1999), Event Structure Template and Constant/Root (Rappaport Hovav and Levin 1998), Skeleton and Body (Lieber 2004).

of their root meaning: “Result-Object Verbs”, “Creation through Representation Verbs” and “Creation through Modification Verbs”.⁵

Result-Object Verbs describe situations bringing into being a new object/entity. Verbs in this class are *comporre* ‘make up’, *coniare* ‘coin’, *costruire* ‘build’, *creare* ‘create’, *edificare* ‘construct’, *formare* ‘form’, *inventare* ‘invent’, *produrre* ‘produce’, *svolgere (un tema)* ‘develop (a composition)’, and the like (see also Image Creation Verbs, Levin 1993: 169–172). These verbs take as internal argument what is traditionally called *effected object* or *object of result* (cf. a.o., Jespersen 1924: 157, Visser 1963: 412). An effected object does not qualify as being affected, changed, or modified in any way by the situation but it is the one whose referent comes into existence as the result of the action described by the verb. It is thus the prototypical manifestation of an incremental Theme (cf. Dowty 1991). Nominals derived from result-object verbs denote the event and the resulting entity of the event itself, syntactically expressed by the verb internal argument.

- (3) a. *La costruzione della chiesa di San Michele ebbe inizio nel 1867.*
‘The construction of San Michele Church started in 1867.’
- b. *La costruzione è crollata inaspettatamente.*
‘The construction collapsed unexpectedly.’

The syntactic projection of the genitival phrase corresponding to the verb internal argument triggers the event reading of these nominals.

- (4) *La costruzione della chiesa di San Michele fu sorprendente.*
‘The construction of San Michele Church was amazing.’

In (4), although the predicative context does not unambiguously select for the event reading of *costruzione*, the presence of the PP *della chiesa* determines that it is the construction event, not the church itself, which is amazing (cf. also the unacceptability of *L’enorme costruzione della chiesa di San Michele* ‘the huge construction of San Michele church’)

Other examples of nominals obtained from verbs of this class are in (5).

- (5) *composizione* ‘composition’, *coniazione* ‘coinage’, *creazione* ‘creation’, *incisione* ‘incision’, *produzione* ‘production’, etc.

In Melloni (2007), it is shown that many other verbs are very likely to yield corresponding nominals with event and result meanings. The verbs at issue

⁵ Cf. Bisetto and Melloni (2007) for a first elaboration of this taxonomy.

are to be found among Verbs of Assembling and Combining, Speech Act and Mental Action Verbs (and in general Verbs with Predicative Complements), Verbs of Sound and Light Emission, Verbs of Appearance, Verbs of Cooking (cf. again Levin 1993), etc. Many among these verbs can be ascribed to the class of Result-Object verbs, although with subtle semantic and syntactic peculiarities that cannot be discussed here because of space limitation (cf. Melloni 2007 for further elaboration on the issue).

Creation by Representation Verbs lexicalize situations expressing the coming into being of an entity, which is a *representation* of the Source argument, typically mapped onto the direct object position. Verbs in this class are *copiare* 'copy', *falsificare* 'falsify', *imitare* 'imitate', *rappresentare* 'represent', *riscrivere* 're-write', *tradurre* 'translate', *trascrivere* 'transcribe', and so forth (cf. also Performance Verbs, Levin 1993: 178). While these verbs project internal arguments corresponding to "Representation Source Themes", RSTs (cf. Dowty 1991), their derived nominals lexicalize the effected object, hence a representation of the RST. Let us consider the case of *traduzione* 'translation':

- (6) *L'editore chiese la revisione di una **traduzione** (del saggio) zeppa di refusi ed imprecisioni.*
 'The editor asked for the revision of a translation (of the essay) full of mistakes and inaccuracies.'

It is worth emphasizing that the nominal lexicalizes a non-syntactic participant, which could suitably be defined as a semantic or *root argument*. This fact has a consequence on the NP syntax, as the presence of the phrase *del saggio* (corresponding to the verb internal argument) does not alter the result interpretation of the nominal *traduzione*; the phrase appears to be optional as typically happens with modifier phrases of result nominals (cf. Grimshaw 1990). Instances of nominals pertaining to this class are the following:

- (7) *citazione* 'quotation', *copiatura* 'copy', *falsificazione* 'falsification', *imitazione* 'imitation', *rappresentazione* 'representation', *registrazione* 'registration', *ricopiatura* '(fair) copy', *ricostruzione* 'reconstruction', *rifacimento* 'remake', *riproduzione* 'reproduction', *riscrittura* 're-writing', *trascrizione* 'transcription', etc.

Finally, Creation by Modification Verbs describe a situation bringing about a modification to the referent of the patient (syntactically, an internal argument); such a modification is conceived of or conceptualized as an effected entity or result. Verbs in this class lexicalize events that bring about a modi-

fication in/onto an existing object, by addition or subtraction of material, breaking or fracturing of the referent of the patient/theme, etc. The class is thus semantically heterogeneous: *correggere* ‘correct’, *modificare* ‘modify’, *argentare* ‘silver-plate’, *forare* ‘have a puncture’, *ricoprire* ‘cover’, *rompere* ‘break’, *tagliare* ‘cut’. The corresponding nominals lexicalize the modification (as the event and the result) itself, like in the case of *foratura* ‘perforation/puncture’ from *forare* below.

- (8) a. *La foratura della gomma è avvenuta a metà gara.*
 ‘The perforation of the tyre happened at mid-race.’
 b. *C’è una foratura in questa gomma.*
 ‘There is a puncture in this tyre.’

Many nominals are derived from the verbs of this class and mainly denote concrete referents:

- (9) *affossamento* ‘ditch’, *alterazione* ‘alteration’, *ammaccatura* ‘dent’, *argentatura* ‘silver-coat’, *cambiamento* ‘change’, *correzione* ‘correction’, *decorazione* ‘decoration’, *deformazione* ‘deformation’, *lacerazione* ‘wound’, *miglioramento* ‘improvement’, *prolungamento* ‘extension’, *riparazione* ‘reparation’, *rivestimento* ‘cover’, *sostituzione* ‘replacement’, *spaccatura* ‘break’, etc.

All the predicates hitherto considered, though different in aspectual and argumental properties, are grouped together because they express a creation value and take an effected object or result, which is named by their corresponding (event/) result nominal.

There are, however, many verb classes that do not express a creation value and accordingly do not give result nominals, but unambiguous event nouns or nouns yielding different, less predictable meaning shifts. These are all state verbs, such as *manicare* ‘miss’, *odiare* ‘hate’, most activity verbs such as *inseguire* ‘pursue’, *cacciare* ‘hunt’, and, among accomplishments and achievements we find, for instance, change of state verbs such as *asciugare* ‘dry’ or *pulire* ‘clean’, verbs of disappearance (e.g. *scompare* ‘disappear’, *svanire* ‘vanish’) and destruction verbs (e.g. *annientare* ‘annihilate’, *cancellare* ‘cancellation’). Verbs in the latter class are clearly the best candidates for yielding unambiguous event nominals since they lexicalize the ontological opposite of creation verbs. Apparent counterexamples are nominals like *distruzioni*, lit. ‘destruction+pl.’ or *annullamento*: the former nominal, especially when in the plural form, expresses the remains

or debris that are in fact the concrete *result* of a destruction event. Therefore, the result meaning of *distruzioni* is again dependent on the conceptual semantics of the base verb (observe that *annientamento*, from *annientare* ‘annihilate’ lacks such a meaning option).⁶ *Annullamento* as the referent of a marriage annulment, for instance, selects a specific meaning of the base verb, i.e. ‘to annul’ in the sense of performing a bureaucratic procedure resulting in a textual object. Therefore, in this case as well, lexical/encyclopaedic knowledge seems to determine the ontological status of the result meaning of the relevant derived nominal. Another apparent counter-example is *consumazione*, lit. ‘consumption’, which can also express the meaning value of ‘refreshment’ (as a drink or snack), hence showing that this nominal selects the food-consumption meaning of the base verb. As we will see in section 4, this reading is triggered by a polysemy pattern independently attested in the simple lexicon domain, i.e. the event/food polysemy displayed by nouns like *pranzo* ‘lunch’, *colazione* ‘breakfast’, *cena* ‘dinner’. I will therefore show that the otherwise unexpected referential meaning of *consumazione* can be explained if we acknowledge that the derived lexicon ought to reproduce the same polysemy patterns we have in the simple lexicon.

3.1.1. Formalizing the effectedness feature

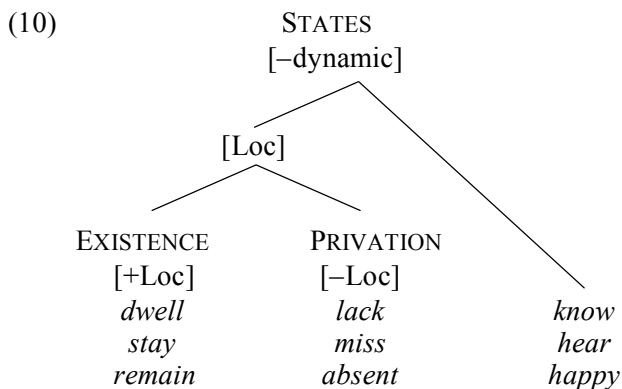
The relevance of *effectedness* as the characterizing semantic property of result nominals should be a rather intuitive, obvious fact if we take the semantic label ‘result’ in its narrow sense, i.e. as the entity that comes into *existence* through a corresponding event. The non-trivial issue, however, is to isolate a semantic feature which is not an *ad-hoc* one in order to express this semantic value.

⁶ The correlation between plurality and result meaning shift seems to support a Mass-to-Count coercion analysis, as the one defended by Harley (to appear), who maintains that it is the presence of NumberP on top of the syntactic structure of an event nominal that forces its result reading. It is not clear, however, what the constraints are that block the result shift associated to coercion in other cases, where number does not yield a result meaning (see the cases of *asciugatura* ‘drying+Pl.’). A coercion analysis, further, cannot be extended to nominals such as *traduzione* (among other *active nominals*), pluralizing in both event and result meaning and appearing in the same syntactic contexts. In general, a Mass-to-Count coercion analysis opens and leaves more questions unsolved than it actually answers.

I would like to suggest that one of the semantic features proposed by the decompositional lexical-semantic model of Lieber (2004) could capture this relevant property. The feature in question is [Loc], and it is introduced by Lieber mainly to define the class of adpositions, in particular, those indicating location in space/time. Let us directly quote Lieber's (2004: 100) explanation of the meaning and use of this feature:

The presence of the feature [Loc] in a skeleton asserts the relevance of position in space to the lexical item. If the feature is absent, position or place is irrelevant to the meaning of the lexical item. If the feature is present, however, the plus value asserts position or place and the minus value denies position in space or time; in effect, it signals lack or privation.

Specifically, Lieber suggests that the equipollent use of [Loc] can be combined with the class of [–dynamic] situations (i.e. state verbs and adjectives), and serves the purpose of isolating, among stative situations, those that indicate existence or privation (the diagram below is again from Lieber 2004: 100):



The categorization in (10) shows that states might lack the feature [Loc] altogether (e.g. *know*, *hear*, *happy*, etc.); however, a subset of states can be found that are characterized by a positive or negative value of this feature. In particular, [+Loc] states are verbs of existence or spatial configuration, since to be located in a certain position means to exist (i.e. a kind of state) in that position. [–Loc] states are verbs (or adjectives) of non-existence or privation of location.⁷

⁷ The reason for adding this feature to the skeleton or LCS of stative situations is based on a syntactic difference displayed by a subset of state verbs. Specifically,

Accordingly, on the basis of this additional function, Italian verbs like *giacere* ‘lay’ or *rimanere* ‘remain’ have the following LCS or *skeleton*, in Lieber’s terms, introduced by the cluster of the relevant functions (taking a non-thematic Event argument and the Experiencer argument).

- (11) *giacere* ‘lay’ / *rimanere* ‘remain’
[–dynamic, +Loc ([]_E, [])]

If [+Loc] can be successfully combined with STATES to indicate the concept of existence, I tentatively suggest that it could be extended to the skeleton of those EVENTS (i.e. [+dynamic] situations) that describe the coming into existence (or effectedness) of an entity.⁸ As a result, creation verbs could be represented as follows, with [+Loc] taking the incremental Theme as its argument to indicate the gradual progression of states of existence of this argument’s referent:⁹

- (12) CREATION VERBS: *costruire* ‘build’
[+dynamic, +IEPS ([]_E, [], [+Loc ([])])]

Observe that such feature could be employed in the LCS of other verb classes, whose corresponding derived nominals are actually ambiguously

as Levin (1993) points out, a restricted subset of English stative verbs differ syntactically from other statives in being able to occur in contexts of “There-Insertion” (the examples below are from Lieber, 2004: 100):

- (i) *There remained three survivors in the city.*
- (ii) **There knew a man three solutions to the problem.*

Crucially, some Italian stative verbs show a similar behaviour in this respect:

- (iii) *Ci sono rimasti tre gelati in freezer.*
‘There remained three ice-creams in the freezer’

Therefore, provided that this conceptual feature can have a syntactic consequence in Italian too, I maintain that the introduction of [Loc] in the featural system is justified in English as well as Italian.

⁸ I gratefully acknowledge R. Lieber for pointing out to me this possibility offered by her framework.

⁹ According to Lieber, [IEPS] implies the addition of a Path component of meaning in a semantic skeleton. [+IEPS] verbs denote a change of state or position along a directed Path (as in the case of inherently directed motion verbs, or other inchoative/unaccusative verbs), while [–IEPS] verbs refer to dynamic situations associated with a random Path (as in the case of manner of motion verbs). Cf. Melloni (2007) for an original interpretation of this feature.

event/result denoting. Among these, appearance verbs (like *apparire* ‘appear’) should take [+Loc], because they describe the (metaphorical) coming into being of the Theme/ Subject. Since they are unaccusative and take just one syntactic argument, the [+Loc] function is directly combined with [+dynamic] and [+IEPS] in the outermost layer of the skeleton.

- (13) APPEARANCE VERBS: *apparire* ‘appear’¹⁰
 [+dynamic, +IEPS, +Loc ([]_E, [])]

Finally, I tentatively propose to extend the [Loc]feature to the LCS of Verbs of Possession and Change of Possession (*assegnare* ‘assign’, *liquidare* ‘liquidate’, *donare* ‘donate’, *contribuire* ‘contribute’ and the like). It is in fact frequently acknowledged among supporters of localism (cf. Jackendoff 1990) that spatial conceptualization can be extended to more abstract conceptual domains, such as attribution of properties and, crucially, possession. Therefore, if we can establish a parallelism between being in a spatial configuration and owning/possession of objects, this parallelism could be expressed by means of the feature [+Loc] in a semantic model such as Lieber’s. As far as nominalizations are concerned, nice evidence of the significance of this feature for nominal polysemy comes from the fact that not only nominals from creation verbs, but also many among the action nominals obtained by the verbs whose LCS contains [+Loc] are actually polysemous. State verbs, for instance, are normally non-ambiguous, but nominals derived from existence verbs tend to have a concrete interpretation, like *giacenza* or *rimanenza* ‘unsold stock’ (lit. ‘laying’) – from *giacere* ‘lay’ and *rimanere* ‘remain’ – expressing the state and the (collection of) objects in that state. Crucially, privation nominals such as *mananza* ‘lack’ only have the state reading and cannot refer to missing objects/people. Possession verbs also can be the bases of ambiguous nominals, like in the case of *possedimento* ‘possession’ from *possedere* ‘own’, indicating the state and the possessed object. Further, verbs of appearance are the base of referential nominals such as *apparizione* ‘apparition’.

¹⁰ On the contrary, verbs that describe the gradual destruction or disappearance of an object could be represented with a minus value of [Loc]:

- (i) DESTRUCTION VERBS: *annientare* ‘annihilate’
 [+dynamic, +IEPS ([]_E, [], [−Loc ([])])]
- (ii) DISAPPEARANCE VERBS: *scomparire* ‘disappear’
 [+dynamic, +IEPS, −Loc ([]_E, [])]

To sum up, given that the presence of [+Loc] in the LCS of a situation signals the creation value specified by verbal root meaning, I propose that result and other referential meanings of the derived nominals are strictly dependent on this conceptual-semantic feature. Conversely, verbs of destruction, disappearance or privation are much less likely to form result or referential nominals since their LCSs are specified as taking a [-Loc] feature signalling the semantic opposite of the effectedness/existence values, and thus excluding the relevant polysemy in their derived nouns.

3.2. Result or referential nouns: a heterogeneous class

The classification portrayed in section 3.1 brings to light a crucial aspect of the ambiguous nominals under investigation: the result/product meaning of a nominal does not necessarily correspond to an argument structure participant. This correspondence only holds in the case of Result-Object verbs (the *costruire* class), but other creation verbs (by representation, e.g. *tradurre*, or modification, e.g. *forare*) clearly show that result nominals identify a participant which is arguably implied at a semantic-conceptual level but is not necessarily projected in syntax. Let us therefore try to isolate other semantic features identifying the result class.

From a semantic viewpoint, the class of result nominals appears extremely non-homogeneous. Result nominals, in fact, denote both concrete, cf. *construction* in (3), and abstract entities. *Costruzione*, for instance, can refer to a linguistic construction (e.g. the ‘What’s X doing Y?’ construction), hence it is also an abstract noun. *Traduzione* is primarily an information object, like a thought or an idea, although it typically requires a concrete manifestation, like the written/typed text in (6). Therefore, it is not a semantic feature such as [concrete] that cuts across event and result nominals. Result nominals, further, are either singulative (e.g. *costruzione* or *traduzione*) or collective: *produzione* ‘production’, for instance, refers to a collection of artefacts (while *prodotto* ‘product’ is typically used as the singulative correspondent of *produzione*). Therefore, neither a quantity feature, such as the [±i] of Jackendoff (1991), i.e. *internal structure* (distinguishing singulative and mass nouns from collectives and plurals), can be used to identify the class.

Further, result nominals can express various semantic/thematic roles of the base predicate. As anticipated in the introduction, not only they refer to the product of the corresponding situation (i.e. an incremental theme in the case of Result-Object verbs), but they can also express the means or causer

(e.g. *argentatura* ‘silver-coat’, *collegamento* ‘link/connection’) and the source or stimulus of the corresponding psychological situation (e.g. *attrazione* ‘attraction’, *intrattenimento* ‘entertainment’), for instance. Other semantic roles are the agentive reading of *amministrazione* ‘administration’ and the locative meaning of *entrata* ‘entrance’. (The latter cases will not be discussed in the present contribution, which is instead focused on the result/product, causer/means and source/stimulus meaning shifts; cf. Melloni 2007 for a thorough analysis of the above-mentioned meaning options).

Furthermore, unlike other affixes such as *-tore*, binding the external argument of the base verb, nouns in *-mento*, *-zione*, etc. do not correspond to a fixed position in the argument structure of the base verb. These nominals can refer to the verb internal argument (we could say they can have an “object-interpretation”), as in the case of *costru-zione* ‘construction’ from *costruire* ‘build’ (cf. 14) and *ritrova-mento* ‘finding’, from *ritrovare* ‘find’ (cf. 15). Let us consider the following (a.) sentences containing the verbs that are the bases of the corresponding nominals (b).

- (14) a. *Hanno costruito un enorme edificio negli ultimi due anni.*
 ‘They have built a huge edifice over the last two years.’
 b. *Questa **costruzione** è stata inaugurata due anni fa.*
 ‘This huge construction has been inaugurated two years ago.’
- (15) a. *I sommozzatori hanno ritrovato un’antica anfora.*
 ‘Divers found an ancient amphora.’
 b. *Il **ritrovamento** è conservato al museo archeologico.*
 ‘The discovery is kept at the archaeological museum.’

In the above sentences, the edifice in (14) and the amphora in (15) can be defined as *costruzione* and *ritrovamento*, respectively.

Referential nouns can also bind the verb external argument, and have a “subject-interpretation”, as in the case of *collega-mento* ‘connection’ derived from *collegare* ‘connect’ (cf. 16), and *distra-zione* ‘distraction’ from *distrarre* ‘distract’ (cf. 17).

- (16) a. *L’“Autostrada del Sole” collega Milano a Napoli.*
 ‘The “Autostrada del Sole” connects Milano with Napoli.’
 b. *L’“Autostrada del Sole” è un **collegamento** molto importante.*
 ‘The “Autostrada del Sole” is a very important connection.’
- (17) a. *Un cartellone pubblicitario distrae la vista per un secondo o due al massimo.*
 ‘A placard distracts the view for one or two seconds at most’

- b. *Ci sono troppe **distrazioni** per le vie della nostra città.*
 ‘There are too many distractions in the streets of our town.’

The nominal *collegamento* can be used to refer to the causer/means of the situation portrayed in (16) (i.e. the highway is a type of connection). In (17), the source or stimulus of the psychological state can be defined as *distrazione* (i.e. placards can cause the state of being distracted).

Referential nouns, however, can also refer to complements, rather than arguments of the base verbs, hence they express participants in the event that are realized optionally, as adjuncts. Such nominals, in particular, can have “adjunct-interpretation” when they refer to the means or instrument employed to perform a certain event (cf. the case of *coper-tura* ‘cover/roof’ or *rivesti-mento* ‘covering’, derived from the near synonyms *coprire* and *rivestire* ‘to cover’ respectively):

- (18) a. *Ha rivestito il divano **con una stoffa di ispirazione bovina**.*
 ‘(She) covered the sofa with a fabric of bovine inspiration.’
 b. *Il rivestimento di questo divano è molto originale*
 ‘The covering of this sofa is extremely original.’

The original fabric in (18) is in fact a type of *rivestimento* ‘covering’, expressing at once the output and the means/material employed to carry out the covering event.

Finally, as we have emphasized in the preceding section, referential nouns might not correspond to syntactic arguments of the base verb and essentially this is the case of most referential nouns expressing the result of the event:

- (19) *Recentemente ha tradotto il libro Paese mio, Amore Mio.*
 ‘Recently, she translated the book *Paese mio, Amore Mio*.’

The translation is a representation of the source theme (the original book, in the example above) but is not syntactically expressed, being only present at the semantic-conceptual level. Therefore, unlike affixes such as the English *-er* and *-ee*, which can be analyzed as the result of a binding operation on the base verb argument structure,¹¹ the affixes of action nominals do not

¹¹ The *-er* suffix binds the base verb external argument (cf. Levin and Rappaport Hovav 1992), while *-ee* links the internal argument (cf. Barker 1998 for a fine-grained semantic analysis of *-ee* nominals, and Lieber 2004 for an in-depth lexical semantic study of both derivatives).

systematically bind a syntactic argument, unless it is the realization of a conceptually relevant (root-)participant. Therefore, provided that we cannot derive referential nouns on the basis of operations on verb argument structure, nor we can describe them using traditional thematic/semantic roles, the question to answer is which semantic features are relevant for a uniform characterization of the class of referential nouns.

A first generalization can be established in negative terms: referential nouns cannot refer to prototypical agents or so-called *intermediary instruments* (usually expressed by *-tore* in It., *-er* in En.). Consider for instance the difference between the two co-radical derivatives below (from *otturare* ‘fill/shut’):

- (20) a. *ottura-zione* ‘(dental) filling’
 b. *ottura-tore* ‘shutter’

Whereas *otturatore* refers to “a mechanical device on a camera that opens and closes to control the time of a photographic exposure” (cf. wordreference.com definition of *shutter*), an *otturazione* as dental filling denotes an entity which is the result of a corresponding *otturare* ‘block/fill’ event. This duplicity in the meaning of the derivatives, as we will see, is possible because the base verb is ambiguous between a stative ([–dynamic]) interpretation and an eventive ([+dynamic]) one. Assuming that agents are necessarily involved in dynamic events (there are no agents in stative situations), we derive that the agentive meaning of (20b) presupposes the selection of the [+dynamic] value of the base verb (another explanation is that the derivation with *-tore* determines the +value of [dynamic], which is underspecified in the base verb). On the other hand, derivation with *-zione* selects for the state interpretation of the base verb (which is, more precisely, a stative causative, cf. § 3.3). In a nutshell, the minimal pair in (20) shows that an agentive interpretation is directly conveyed by the *-tore* derivative but cannot be expressed by the referential nominal instead.

As far as psych verbs are concerned, we observe that referential nominals can never refer to the experiencer, but can only denote the source/stimulus of a corresponding situation. This is the case of *attrazione* ‘(tourist) attraction’, *distrazione* ‘distraction’ (cf. 17), or *divertimento* ‘amusement’, *intrattenimento* ‘entertainment’, etc. All these nouns are derived from Object-Experiencer verbs, and ambiguously denote the state and the individual that causes it.

We can review the main points hitherto discussed by stating that referential nouns can only refer to non-sentient participants/arguments. I take

sentience as a semantic property implying the *grammatical* relevance of a mental state or mental disposition of the participant in a situation. Abstract or concrete objects are non-sentient by definition, but animate entities (humans and animals) can be non-sentient if their mental state is not relevant in the situation described by the verb. For example, human beings can be defined as *distrazioni* ‘distractions’, but the noun *distrazione* implies the irrelevance of a mental state. To appreciate this subtle point consider the difference in meaning between *distrattore* ‘distractor’ and *distrazione*: the former is episodically attested to refer to a person whose specific aim is diverting other people’s attention, while the latter can never be used with this meaning, but only to refer to a person who distracts inadvertently. To conclude, I suggest that a possible codification of (non-)sentience is the binary feature $[\pm m(ental)]$, which along with $[\pm c(ause)]$, are the primitives governing theta selection in the theta-system proposed by Reinhart (2002). As we will see in the next section, the $[-mental]$ feature correlates, in the case of the nominals at issue, with an aspectual feature, expressible in terms of *stativity*.

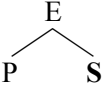
3.3. Aspectual properties

Not only root properties, but also aspectual properties of the base verb seem to play a role in the identification of the *result* participant. Elsewhere (cf. Melloni 2006) I have maintained that referential nominals expressing the product/causer/psych source of the corresponding situation could be referred to as ‘Entities in State’. Elaborating on event structure theories as previously developed by Dowty (1979), Pustejovsky (1991) and Levin and Rappaport Hovav (1998) a.o., I have shown that referential nominals express semantic roles (thematically defined as non-sentient/ $[-m]$) that participate in non-dynamic sub-events in the event structure of the base verb.

Result/product nominals, for instance, are mainly derived from accomplishments or achievements, hence are amenable to a complex event structure analysis (*à la* Pustejovsky 1991) or have a *state* root, as proposed by Rappaport Hovav and Levin (1998) for the achievement class. In such cases, therefore, result nominals (i.e. *costruzione* from an accomplishment, or *rinvenimento* ‘finding’ from an achievement, *rivenire* ‘find’) refer to the participants associated with the stative component in the base verb semantics.

Let us take, for perspicuity, the representation of Event Structure as proposed by Pustejovsky (1991) and Rappaport Hovav and Levin (1998). In (21a), we can see the Event Structure of what Pustejovsky calls a *Transition* event, that is to say, a change of state event (in the example, E stands for

Event, P for Process, S for State). In (21b) we find the Event Structure Template of a causative structure (cf. Levin and Rappaport Hovav [1998] for further explanation).

- (21) a. 
 b. [[x ACT <MANNER>] CAUSE [BECOME [y <STATE>]]]

Crucially, while event nominals like *costruzione* or *rinvenimento* express the whole complex event, corresponding result nominals refer to the participant in the stative sub-event (note that the former noun is derived from an accomplishment event, the latter from an achievement, but the two situation types have the same event structure in Pustejovsky 1991, being differentiated in terms of headedness in the Generative Lexicon, cf. Pustejovsky 1995).

A similar observation also holds in the case of referential nominals expressing the causers / means of a (stative) causative event. Consider the following pairs of verbs and corresponding nominals:

- (22) *collegare* ‘connect’ – *collegamento* ‘connection’
 ostruire ‘obstruct’ – *ostruzione* ‘obstruction’

As observed by Kratzer (2000), the event structures being equally complex (these verbs are always causatives), the non-thematic or Davidsonian arguments of these verbs can range over (dynamic) events as well as states. In the examples below, we see that when a prototypical agent is selected, the event, i.e. [+dynamic], reading of the verb surfaces (cf. 23a), whereas a [-mental] or non-sentient subject triggers the stative reading (cf. 23b).

- (23) a. *Gianni sta volontariamente ostruendo il passaggio.*
 ‘John is willingly blocking the passage.’
 b. *Dei detriti ostruiscono questa valvola.*
 ‘Fragments obstruct this valve.’

In (23a) the causal relation applies between an event and a target state of obstruction. In (23b) the causal relation is between two states, the state of being in a certain spatial configuration for the fragments, and the target state of obstruction of the valve.

The derived nominal *ostruzione* ‘obstruction’ is three-way ambiguous: it can refer to the whole causative event, to the target state and to the non-

sentient causer argument in the stative sub-event that causes the result state, cf. (23b). Specifically, *ostruzione* taken as a referential noun (like in 24) can only convey the causer/means sense of (23b), and cannot be used to refer to the prototypical agent of (23a).

(24) *Occorre rimuovere l'**ostruzione** di questa valvola.*

'It is necessary to remove the obstruction of this valve.'

If speakers of Italian want to refer to a volitional agent or to the instrument employed to perform the corresponding action they have to use a specific agentive suffix, e.g. *ostrut-tore* 'obstructor' or *ostru-ente* 'obstruent' (both words are attested, and lexicalized with highly specific meanings).

Along with these verbs, psych Object-Experiencer (OE) verbs have also a causative structure and can be ambiguously defined as statives or eventives (cf. Grimshaw's [1990] partition of OE verbs in psychological agentives and psychological causatives). These are verbs such as *attrarre* 'attract', *divertire* 'amuse', *intrattenere* 'entertain', *sorprendere* 'surprise', *spaventare* 'frighten', and the like. As we have seen in the preceding section, the corresponding nominals can refer to the involuntary stimulus, which can be projected as the subject (e.g., *attrazione* can refer to the circus in *Il circo Orfei attrae ogni anno migliaia di spettatori* 'Orfei circus attracts thousands spectators every year'). Also in this case, thus, the referential nominals refer to non-sentient participants in stative situations. Observe that this generalization can be extended to the referential senses of nominals derived from verbs of existence like *rimanenza* or *giacenza* in section 3.1.1.

To sum up, I have shown that referential nominals can be characterized in terms of both thematic features (non-sentience, [−m], lack of mental state) and aspectual features ([−dynamic]). The class of result nouns emerges as a subclass of "Entities in State" nominals (causers/means and psych sources). In fact, besides these (grammatically relevant) features, the event/result polysemy is grounded on the conceptual semantics of the base verb, which must specify a situation bringing about a product/outcome (and pertain to one of the classes listed in section 3.1.). As we have seen, this feature corresponds to the concept of existence/effectiveness and can be captured by the feature [+Loc], which characterizes many other classes besides creation verbs.

4. Polysemy in the simplex and complex lexicon

In this section, I am going to tackle an issue largely neglected in the literature on nominals, that is, the relation between the polysemy of the derived lexemes under investigation and the polysemy attested in morphologically simple nouns. A non-recent standpoint on lexical polysemy in word formation is that, quoting Lieber (2004: 11), “the sort of polysemy we find in the simplex lexicon should also be found in derived words”. For instance, Apresjan (1974: 17–18) maintains:

Polysemy which arises as a result of various word formation processes is a by product of these processes [metonymical transfer and semantic analogy] and as a secondary phenomenon does not need an independent characterization [...] the basic semantic relationships which are expressed by word-formation types are characteristic of regular polysemy as well, and *vice-versa*. Regular polysemy is similar to word formation also in the sense that many of its types are productive.

Let us start by examining the semantic correspondents of complex nominals in the simplex lexicon domain. Simple nouns such as *cerimonia* ‘ceremony’, *festa* ‘party’, *guerra* ‘war’, *incidente* ‘accident’, etc. – despite being morphologically simple – refer to events. These lexemes are dubbed as ‘simple event nouns’ in Grimshaw (1990) because they lack a complex event structure analysis, whereas derived nominals do have it. Crucially, many among these nouns are *inherently* or *logically polysemous* and, besides a primary eventive meaning, express other related senses (cf. Pustejovsky 1995, 2005). In this category, we find in fact many instances of *dot objects*, i.e. complex types clustering eventive and physical/abstract object senses.¹² Let us consider *esame* ‘exam’, *pranzo* ‘lunch’ and *concerto* ‘concert’, for instance. *Esame* denotes an event, but also the exam questions (i.e. the information-object sense that can acquire a concrete manifestation, like in 25b) and the result of the exam itself, in (25).

- (25) a. *L’esame di matematica dura due ore.*
 ‘The math exam lasts two hours.’

¹² Pustejovsky (2005) lists several cases of sense alternations conceivable as inherent polysemy (or *dot objects*) and explains that “a dot object is a deeper structure relating the apparently contradictory senses of the word. For each sense pair there is a relation that ‘connects’ the senses in a well-defined way”. Asher (2006: 12) distinguishes inherent polysemy from lexical ambiguity (homonymy) by stating that “• [dot] types encode a kind of overdetermination of the denotation rather than ambiguity between different types”.

- b. *L'esame di matematica è difficile e lungo quasi tre pagine.*
 'The math exam is hard and almost three-page long.'
 c. *Il mio esame di matematica non era nemmeno sufficiente.*
 'My math exam wasn't even sufficient.'

Similarly, *pranzo* does not only refer to an eating-event, but is commonly used to indicate the food eaten at lunch time (e.g. *Il tuo pranzo è in tavola* 'Your lunch is on the table'). *Concerto* 'concert' refers to the event and to the music/sound produced during the corresponding performance (sound-emission) event. As an information-object, it can acquire a concrete manifestation thorough a metonymic transfer: *Il concerto di Bruce Springsteen è fra i CD sullo scaffale di destra* 'Bruce Springsteen's concert is among the CDs on the right-hand shelf'.

More explicitly, what I am suggesting is that, since these simple lexemes are cases of logical or inherent polysemy, the deverbal nominals that are their counterpart in the domain of derived lexemes are also expected to be logically or inherently polysemous. Some of the relevant cases of polysemy in the simple lexicon are given in the following table.

Table 2. Dot types (logical/inherent polysemy)

dot types	simple nouns
Event • Info Object	<i>analisi</i> 'analysis', <i>esame</i> 'exam'
Event • Abstract Object	<i>concerto</i> 'concert', <i>lampo</i> 'lightning'
Event • Food	<i>cena</i> 'dinner', <i>pranzo</i> 'lunch'
Event/State • Physical Object	<i>coda</i> 'line', <i>traffico</i> 'traffic'
Psych State • Psych Source	<i>ansia</i> 'anxiety', <i>paura</i> 'fear'

It is worth emphasizing that comparable cases of polysemy can be found among the deverbal nominals at issue (in table 3. I listed only nominals suffixed with *-zione*).

Table 3. Polysemy in the simplex and complex lexicon

simple nouns	deverbal nouns in <i>-(z)ione</i>
<i>esame</i> 'exam'	<i>disserta-zione</i> 'dissertation'
<i>lampo</i> 'lighting'	<i>emiss-ione</i> 'emission'
<i>pranzo</i> 'lunch'	<i>consuma-zione</i> 'refreshments'
<i>traffico</i> 'traffic'	<i>ostru-zione</i> 'obstruction'
<i>ansia</i> 'anxiety'	<i>attra-zione</i> 'attraction'

Dissertazione and *esame* both refer to events and info-objects; *lampe* refers to a light *emission*, as the event and the emitted light itself; *traffico* refers to the state and to the collection of entities in the state, as well as *ostruzione*, and so forth. Concerning the lack of uniform semantic characterization of the class (i.e. the lack of coherent diacritics, like [$\pm$ concrete] or [$\pm$ i]), such comparison should make the point clear: the denotations of referential nouns do not correspond to a semantically coherent class just because their polysemy will tend to cover the range of polysemy that simple event nouns are likely to display. Further, it is important to emphasize that none of the sense alternations displayed by simple nouns radically contrasts with the senses of referential nouns. Simple event nouns, in fact, cannot shift their meaning to indicate volitional/agentive participants or intermediary instruments, but refer instead to non-sentience entities (the only counterexamples I could think of are *aiuto* ‘help’, referring to the event and to the helper, and *guida* ‘guide’, but both nouns are zero-derived nominals, hence, they seem to have a verbal source).

Derived nominals, however, are not completely equivalent to simple nouns, the crucial distinction lying in simple nouns lacking a base verb, while complex nominals containing it. Such property is crucial in both lexicalist analyses (*à la* Grimshaw 1990) or in structural/syntactic approaches (*à la* Fu, Roeper, Borer 2001, a.o.), since the verb is the source of event structure from which argument structure follows in the former type of analysis, whereas argument structure is derived from the presence of (a functional projection of) a VP embedded under a nominal projection, in the latter type of rationale.

Verbs, in fact, introduce argument structure and complex event structure, both properties crucially missing in (most) simple nouns. More precisely, simple event nouns may take participants which are optionally projected in syntax (e.g. *La guerra di Roma contro Cartagine* ‘The war of Rome against Cartage’). As for the aspectual properties, it is worth observing that simple event nouns only preserve the event-state opposition (there are state and event denoting nouns, cf. *panico* ‘panic’ vs. *cena* ‘dinner’) whereas complex event nouns exhibit all the aspectual properties of the base verb (we therefore find state, activity, accomplishment and achievement nominals). Another crucial property that distinguishes the two classes is expressible in terms of event structure, and more precisely lies in the concept of causation, interpreted in many approaches as a fundamental semantic primitive at the basis of verbal meaning. In fact, the lack of a causative structure in simple event nouns is crucial for the present analysis. The pattern of polysemy we have considered here has revealed that a referential noun can express the

causer (e.g. *ostruzione* in 24) or *causee* – especially in the case of result nouns (e.g. *costruzione*) – of a corresponding causative situation. Clearly, if simple event nouns do not exhibit causative structures, we cannot expect to find identical polysemy effects in the simple lexicon. This observation is indirectly confirmed by Pustejovsky (2005), who – when discussing what he dubs the process / result polysemy – mainly picks instances of derived nominals, rather than simple nouns.

To conclude, concerning the analogy between the polysemy patterns in the simplex and complex lexicon, I wish to emphasize that the morphological structure of derived nominals, i.e. the presence of the base verb, has influence not only at the morpho-syntactic level but also at the semantic level, determining the peculiar event-result polysemy we do not find in the simple lexicon.

5. A two-level operation

I would like to conclude the present study on action nominals polysemy putting forward some speculations on the derivational pattern responsible for their semantic ambiguity. The hypothesis I am going to defend steps from the assumption that, since the morphological make-up of event and referential nouns is exactly the same, no difference in the morpho-syntactic structure can be proposed to explain the different meaning and argumental properties of the two classes, *contra* Borer (2003) and Alexiadou (2001), among others (but see Alexiadou [to appear] for a revised approach to the issue). Essentially, my proposal is that of a parallel derivation which – different from Borer's (1993) Parallel Morphology solution – applies at the (word-)syntax and at the semantic-conceptual levels.

Let us suppose that the derivation of event or AS nominals is a pure morpho-syntactic operation, as proposed by supporters of syntactic approaches to word formation, or the result of a lexical word-formation rule in lexicalist theories. Such an operation is expected to yield compositional semantics, i.e. the corresponding event or state interpretation of action nouns. Argumental properties can be explained through an inheritance mechanism in lexicalist analyses, or licensed by the functional projection of a VP embedded under a nominalizing head (e.g. the suffixal morpheme) in structural approaches.

However, as I have already emphasized in this study (cf. §3.2 in particular), the derivation of referential nominals is not a morpho-syntactic operation, or, more precisely, cannot be expressed in terms of argument structure

operation. I have instead showed that these nominals calls into question features that are not necessarily implied at the syntactic level, as proved by the fact that nominals expressing the result or outcome of an event typically refer to non-syntactic arguments of the base verb.

A possible alternative is to regard the derivation of referential nominals as an operation applying in parallel to the syntactic AS/Event derivation, at a purely semantic-conceptual level. From a formal viewpoint, we could express this operation in terms of semantic co-indexation of the relevant arguments of the suffix and of the base, using a formal apparatus such as Lieber (2004) assuming that affixes and bases take arguments (cf. Melloni 2007 for a formal implementation). Anyway, apart from the technical details of this derivation, I contend that such an operation is highly expected if we consider the general tendency of abstract/event nouns to be polysemous and to express, besides a primary event meaning, a non-temporal object denotation. Moreover, such polysemy fills in a gap of the morpho-syntactic process of nominalization. We know in fact, from previous work on the topic, that nominalizations can be analyzed in terms of argument structure operations. The Italian suffix *-tore*, which is the *quasi*-analogous of the English *-er*, binds (volitional) external arguments; the Italian suffix *-ato* (the *quasi*-correspondent of the English *-ee*) links the internal argument instead (the Italian *-zione*, *-mento* and *-tura* could be said to bind the davidsonian *Event* argument introduced by the verb, so far as the English *-ment*, *-ion*, *-ure*, *-al*, etc.). But, how can the result meaning be expressed, provided that it does not correspond to an argument structure participant in most cases? Crucially, such a meaning option is fulfilled by the polysemy of action nominals, and more precisely, by a polysemy which is highly similar to that of the simplex lexicon, but that arises compositionally through a parallel derivation yielding different semantic outputs when it applies at the syntactic and the conceptual levels. Further, the present study has revealed that such polysemy is not idiomatic or unpredictable, but it is instead strongly influenced by the meaning of the base verb. Result/referential nominals, although constituting a rather heterogeneous class, seem to be characterized by a set of properties specified at the conceptual, thematic and aspectual level (e.g. effectedness or [+Loc], non-sentence or [–mental], stativity or [–dynamic]).

In general, many questions on action nominals polysemy and especially on their derivational pattern are still in need of satisfactory answers, but I hope that this study has shed new light on the issue since – quoting Delfitto (2009) – “understanding the universal principles and constraints governing the relation between conceptual structure and the feature-system underlying

semantic computations is of tremendous importance for any theory of meaning aspiring to explanatory adequacy.”

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Syntactic and semantic constraints on the formation and interpretation of *-ung*-nouns

Antje Roßdeutscher and Hans Kamp

1. Introduction

This paper is devoted to *-ung* nominalization in German. German has many nouns that end on *-ung* and mostly these look like they are derived from *verbs*. Often the meanings of those nouns seem to be systematically related to the meanings of the underlying verbs, but there are also many cases where the semantic relation between noun and verb appears idiosyncratic and unpredictable. The task that these data present to the linguist is two-pronged: Separate the systematic from the idiosyncratic cases and explain why the systematic relations are the way they are. A second question is when *-ung*-nouns can be formed at all. On the one hand *-ung*-nominalization has some of the features of a productive process: given a suitable verb we can form the corresponding *-ung*-noun and know what the word means, even though we have never seen or heard it before. But not all verbs are ‘suitable’. When a verb is not suitable, then there just isn’t any way you can form the corresponding *-ung*-noun; no matter how hard you try it will sound ‘wrong’. And here too there is idiosyncrasy: sometimes an *-ung*-noun exists, although its formation doesn’t appear to fit into any general pattern. So here too we are confronted with a two-pronged task: (i) separate the systematic from the idiosyncratic cases of *-ung*-formation and (ii) explain for the cases where *-ung*-nominalization is systematic what is responsible for its possibility. The two tasks are not independent. Where *-ung*-noun formation is systematic and productive, the meaning of the resulting noun is also systematically determined. This strongly suggests that what accounts for the possibility of *-ung* noun formation should also provide the basis for explaining the resulting semantics. In this paper we will concentrate specifically on the possibility of *-ung* formation. More about the semantics of possible *-ung*-nouns can be found in Roßdeutscher (to appear).

Where *-ung*-nominalization is productive, we said, the meaning of the resulting *-ung*-noun is predictable from that of the verb from which the noun derives. But this dependency proves to be fairly complex. Many *-ung*-nouns are systematically ambiguous. A striking example is the noun *Absperrung*

(from *absperren*, ‘to cordon off’, ‘to make inaccessible by erecting a fence or barricade’). *Absperrung* can denote (i) the event of cordoning off (a building or a street, say), (ii) the state resulting from such an event, and (iii) the fence or barricade erected during the event which is responsible for the state.¹ Other *-ung*-nouns are only two-ways ambiguous: *Mischung* (from *mischen*, ‘to mix’) can either denote the ‘event of mixing’ or the mixture that is produced in the course of such an event. *Schwächung* (from *schwächen*, ‘to weaken’) can denote either weakening events or the corresponding result states, which consists in the theme being in a weakened condition. Lastly, some *-ung*-nouns are unambiguous, (e.g. *Säuberung* (from *säubern*, ‘to clean’), which can only denote cleaning events). A theory of *-ung*-nominalization should ideally be able to predict what denotations are possible for different *-ung*-nouns. That is, the rules which tell us when *-ung*-nominalization is possible should tell us, as far as possible, also how the ‘input’ from which an *-ung*-noun can be derived determines what different readings it can have.

Whether a verb has a corresponding *-ung* noun depends on the properties of the verb. The first and foremost aim of this paper is to discover what these properties are. In the proposal that we are about to present these properties are defined in terms of internal structures that are assigned to the verbs. These internal structures are inspired by, and closely related to, those assumed within the DM (Distributed Morphology) literature, especially in the work of Marantz (1997, 2005). We should emphasize, however, that we do not see the proposals we make as standing or falling with the DM-program as a whole. As we understand that program, its aim is to build all well-formed linguistic structures, in particular sentences, from so-called roots. Roots can be used to build words and, through these words, larger syntactic structures, such as phrases, clauses and complete sentences. Furthermore, the system of formation principles that operates ‘below the word level’ is supposed to be the same one that operates ‘above’ it; and as a consequence the notion of a ‘word’ – and thus the concept of the lexicon of a language as it has been traditionally understood in linguistic theory – loses its central significance for the theory of grammar (compare Williams 2007). The proposals made here are, as far as we know, compatible with this program, and perhaps they can make some contributions to it. But even if the DM program would have to be abandoned because the principles of word formation cannot be made to coincide with those that govern the formation

¹ See Hamm and Kamp (2009) for an investigation of the mechanisms by means of which occurrences of *Absperrung* are disambiguated in context.

of phrases and clauses from words, that should not automatically carry with it the downfall of the proposal we will make. The proposal could still be retained as an account of the internal structure of certain types of words (verbs and deverbal nouns) and thereby of distributional and semantic properties of certain types of word formation, but perhaps as part of a more traditional theory of the lexicon (and thus as part of a 'lexicalist grammar').

One respect in which the account presented here differs from all existing work within the DM framework with which we are familiar is that it comes with a formal semantics, which builds semantic representations compositionally from the 'internal word structures' we will propose. This component of the theory is essential to the predictions it makes about the possibility and the possible readings of *-ung-nouns*. But more generally it conforms to the intuition that, by and large, syntactic structure is the systematic guide to meaning. The semantic formalism we will be using is DRT. The choice of DRT is motivated by the general setting within which the present investigation was undertaken, that of developing a DRT-based lexicon which provides semantic representations for lexical items that can be used in building semantic representations of sentences (and larger discourse units) where these lexical items occur. For all we know, though, the use of DRT is not essential for the particular task that semantically interpreted word-structures are to serve here (that of accounting for the facts connected with *-ung-nominalization*).²

² An anonymous reviewer of this paper has complained about the lack of general mapping principles in the paper. We found it difficult to tell whether these complaints were intended as a criticism of DRT in general, or more specifically of the (cavalier) use that DRT made of it in this particular presentation. As a general criticism we reject it: From the start, DRT has been concerned with giving fully explicit definitions of the syntax-semantics mappings it proposes for particular natural language fragments and to provide a model-theoretic semantics for the representation formalisms ('DRS languages') used. (However, we would agree with one possible objection, viz. that so far DRT has failed to commit itself to a fixed set of principles for translating syntactic structures into DRSs.) If the reviewer meant to complain against the way we proceed in this paper we can understand the criticism: We do not define a 'fragment' in this paper (a fragment of German consisting, as it would have to be in this case) of a substantive part of the German vocabulary, including a range of verbs and corresponding *-ung-nouns*) for which both syntax and a syntax-semantics interface are explicitly defined. To do this would have been quite impossible within the space available for this contribution, and it would have defeated its main purpose: to present the present account of *-ung-nominalization* in a way that should be accessible to an

One of the main difficulties in our present endeavour is to decide which cases should be treated as idiosyncratic and thus must be excluded from the scope of linguistic theory. At the still early stage of development of the theory that we present here it would be premature to make definitive commitments on this point. What we can and will offer in this paper is a set of principles that derive *-ung*-nouns from certain verb structures (and which explain why certain other verbal structures do not yield *-ung*-nouns.) Many existing *-ung*-nouns won't be covered by these principles, but that should not be taken to mean that we consider them to be beyond systematic treatment. This is one respect in which the proposals of this paper are incomplete.³

Since the field of *-ung*-nouns is mined with potential counterexamples to any principles one might want to put forward, it is recommendable to proceed through that field with caution and to start at an end that is comparatively safe. Our explorations were inspired by an intuition where it is safe to start and how it would be best to proceed from there. The order in which we represent our deliberations in this paper by and large retraces this

audience with little previous exposure to DRT, which would find a strictly formal presentation tough going. But we agree that a systematic formal presentation of the theory should be given – especially since the representations and mapping principles we are appealing to here differ in some respects from explicit formulations of DRT (like those in Kamp and Reyle 1993) that are readily accessible at the present time. We will address this matter in a paper that is currently under preparation.

³ Among the *-ung*-nouns we have put aside for the time being are those of which we suspect that they have entered the lexicon as technical terms, e.g. *Kochung* (a way of making paper), *Abschreibung* ('amortization'), *Abtreibung* ('abortion'), *Anhörung* (a session during which the parties to a law suit are being interviewed by a judge). There are also nouns ending on *-ung* which seem to defy systematic treatment altogether, e.g. *Zeitung* ('newspaper'), *Gattung* ('species'), *Böschung* ('embankment'). These are *-ung*-nouns for which there does not exist a verb with the same root. Then there are cases where for all we know noun and verb are built from the same root, but where the meaning of the noun appears to bear no systematic relation to the meaning of the verb. Examples are *Währung* ('currency'), *Spannung* ('tension'). And finally there are *-ung*-nouns which would appear to be counterexamples to the theory we will present. An example is *Meinung*. On the one hand the verb *meinen* should not, according to the theory, permit the derivation of an *-ung*-noun. On the other had, *Meinung* does not have an 'event' reading, a reading that is generally possible for the *-ung*-nouns that are derivable according to our theory.

path. Some motivation for proceeding the way we do will be given in Section 2.3.

The leading hypothesis about the question when *-ung-nominalization* is possible is presented and defended in Section 3. Section 4 illustrates these general principles by looking at the structure of some simple and complex verbs and the corresponding *-ung-nouns* in detail. Section 5 is devoted to the semantics of *-ung-nouns*.

2. Which verbs allow for *-ung-nominalization*?

Our central task is to find out what property or properties of verbs are responsible of *-ung-nominalization*. In this section we will provide examples of types of verbs which do allow for *-ung-nominalization* (Section 2.1) and also of verbs that do not (Section 2.2). Our aim is twofold: (i) to persuade those for whom *-ung-nominalization* is new that there *is* a problem here – both the classes of verbs for which there are *-ung-nouns* and those for which there aren't are essentially open-ended – and (ii) to edge towards a sense of what the relevant property or properties could be.

2.1. Verbs for which there are *-ung* nouns

We start with some groups of verbs for which *-ung-nouns* exist. These are verbs built from roots that denote properties of individuals. We will refer to such roots both as 'property' roots and as 'adjectival' roots.⁴ Among the verbs built from such roots are the ones listed in (1) and (2) below.

- (1) a. *bereiten* ('to prepare'; from *bereit*, 'ready')
 klären ('to clarify'; from *klar*, 'clear')
 säubern ('to clean'; from *sauber*, 'clean')
 schärfen ('to sharpen'; from *scharf*, 'sharp')

⁴ As we proceed, it will become gradually clearer that the present theory requires quite detailed assumptions about the properties of roots. Some of these properties have a distinctive 'grammatical' flavour, which makes it odd to classify them as 'encyclopaedic', i.e. as contributing only contingent non-structural information. In fact, some of the properties that we will be assuming for roots may appear to some DM-theorists to be incompatible with a basic conception of DM according to which all that roots do is to contribute no more than purely 'encyclopaedic' information, which has no bearing on what structures can be built from them.

- | | |
|------------------|---|
| <i>töten</i> | (‘to kill’; from <i>tot</i> , ‘dead’) |
| <i>trocknen</i> | (‘to dry’; from <i>trocken</i> , ‘dry’) |
| <i>weiten</i> | (‘to widen’; from <i>weit</i> , ‘wide’) |
| b. <i>ändern</i> | (‘to change’ from <i>ander</i> , ‘other’, ‘different’) |
| <i>bessern</i> | (‘to improve’; from <i>besser</i> , ‘better’) |
| <i>fördern</i> | (‘to support’; from <i>vor(ne)</i> , ‘before’) |
| <i>hindern</i> | (‘to impede’; from <i>hint(en)</i> , ‘behind’) |
| <i>lindern</i> | (‘to alleviate’, ‘to soothe’; from <i>lind</i> , [no longer used as root of an adjective] ‘gentle’) |
| <i>mindern</i> | (‘to reduce’, from <i>mind(er)</i> , ‘less’, ‘reduced’) |
| <i>schmälern</i> | (‘to narrow’, from <i>schmal</i> , ‘narrow’, ‘to belittle’) |

The ostensive morphological difference between the verbs in (1a) and (1b) is that the verbs from the latter involve a comparative element (the ‘r’ at the end of the verb stem). This suggests that these verbs should be analysed as describing *degree increases*: the result of the described event is that the theme satisfies the root property to a greater extent than at the start. However, while no such morphological element is present in the verbs in (1a), the properties denoted by some of their roots also admit degrees, (e.g. *scharf*, *schwach*, *stark*); the verbs formed from these roots invite the same kind of gloss as those in (1b). Whether there is nevertheless a principled difference between the internal structures and/or logical forms of the verbs in (1a) and (1b) is a matter we cannot say for certain at this point. The analysis we propose in this paper treats all property roots as denoting properties that an entity either has or doesn’t have. This leaves questions of gradation and comparatives to another occasion.

In addition to verbs like those in (1) there are many prefix and particle verbs with adjectival roots; some of these can be found in (2). (That these verbs are built from adjectival roots, and that these enter into some kind of ‘direct’ interaction with the particle or prefix is indicated by the fact that there are no corresponding ‘stem verbs’, e.g. there is no verb *hellen*, etc.).

- (2) *auffrischen* (‘to refresh’; from ‘up’+*frisch*, ‘fresh’)
aufhellen (‘to lighten up’; from ‘up’+*hell*, ‘light’)
aufmuntern (‘to cheer up’; from ‘up’+*munter*, ‘cheerful’)
ermüden (‘to become tired’; from ‘er’+*müde*, ‘tired’)
(sich) verengen (‘to narrow’; from ‘ver’+*eng*, ‘narrow’)

A second general type of verb allowing *-ung*-nominalization is illustrated by the verbs in (3)–(5).

- (3) *bilden* ('to form', 'to constitute' (from *bild*, originally 'example', 'paradigm', nowadays rather 'picture'))
(sich) formen ('to take shape'; from *form*, 'form', 'shape')
messen ('to measure'; from *maß*, 'measure')
schätzen ('to estimate'; from *schatz*, 'value', 'treasure')
werten ('to estimate'; from *wert*, 'value')
zeichnen ('to draw'; from *zeichen*, 'sign')
- (4) *(sich) häufen* ('to accumulate': from *hauf*, 'heap')
sammeln ('to collect'; from *samm*, 'together')
teilen ('to divide'; from *teil*, 'part')
würfeln ('to cut into cubes'; from *würfel*, 'cube')
- (5) *belasten* ('to burden', 'to put weight on sth. '; from *last*, 'load', 'burden')
bemannen ('to equip with a crew' [said of a ship]; from *mann* 'man')
benoten ('to assign a grade to'; from *note*, 'grade')
bestuhlen ('to furnish', 'to equip with seats'; from *stuhl*, 'chair')
bepflastern ('to pave'; from *pflaster*, 'pavement')
(sich) kleiden ('to dress'; from *kleid*, 'dress', 'garment')
mustern ('to imprint a pattern'; from *muster*, 'pattern'⁵)
pflastern ('to pave'; from *pflaster*, 'pavement')
würzen ('to spice'; from *würz*, 'spice')

The roots of these verbs are not adjectival roots, but *nominal* roots. We also call them *sortal* roots. These are roots that denote 'sorts' – ontological categories – of entities. Sortal roots differ from property roots in that they contribute an entity of the denoted sort to the event complex described by the verb, whereas property roots only contribute predicates, whose arguments are introduced by some other part of the verb's structure. We will discuss this in great detail in Section 3.

The semantically most transparent verbs are the *be*-verbs in (5). These verbs all describe processes in which something of the sort described by the root is added to something else. We assume that the prefix *be-* in these verbs is morphologically related to the preposition *bei* ('at', 'near'). (For the role that this prefix plays in the structure and the meaning of these verbs,

⁵ The verb *mustern* is used with a number of other meanings. The perhaps more salient of these is 'observe' or 'inspect'. These other meanings are meanings of a different (though superficially indistinguishable) verb, with a different internal structure.

see Section 4.4 below.) In the verbs in (3) the root contributes an entity that is produced as part of the process that the verb describes. (Note that here too the root contributes an entity rather than just serving as a predicate for an entity that is contributed by some other source.) *Werten*, for instance, is ‘to assign a *Wert* (value)’ to the verb’s direct object; *sich formen* is, as the English translation indicates, ‘to take shape’; the form, contributed by the root, is that which results from the process described by the verb. Something like this is also true for the verbs in (4). With *würfeln* (in the sense indicated here, that of ‘cut into cubes’), the root denotes the sort that is instantiated by the pieces that result from the cutting process, thus the sort ‘cube’.⁶ *Teilen* should be analysed in the same way. The root contributes the pieces (*Teile*) that are the result of the partitionary process described by the verb *teilen*. With the verbs in (5), this property of the root – that its contribution is something that can be seen as resulting from the process described by the event – is less salient.

2.2. Some verbs that do not allow for *-ung*-nominalization

Simple verbal constructions from event-describing roots do not have *-ung*-nominals; this is the case irrespective of whether the verb is unergative (6a), unaccusative (6b) or non-core-transitive in the sense of Levin (1999).

- (6) a. *arbeiten* ('to work'; from *arbeit*, 'work')
 essen ('to eat'; from *ess*, 'eat')
 husten ('to cough'; from *hust*, 'cough')
 kochen ('to cook'; from *koch*, 'cook')
 malen ('to paint'; from *mal*, 'paint')
 wischen ('to wipe'; from *wisch*, 'wipe')
 schießen ('to shoot'; from *schieß*, 'shoot')
 schreiben ('to write'; from *schreib*, 'write')
- b. *fallen* ('to fall'; from *fall*, 'fall')
 gleiten ('to slide'; from *gleit*, 'slide')
 modern ('to rot'; from *moder*, 'rot')
 rieseln ('to trickle'; from *riesel*, 'trickle')
 treiben ('to drift', 'to float'; from *treib*, 'drift')

⁶ The verb *würfeln* exemplifies another general moral. Besides the meaning just considered this verb also has another meaning, viz. to ‘throw dice’. But there is no *-ung*-noun corresponding to this verb. According to the theory we will present this can only mean that there are two structurally distinct verbs *würfeln*.

A natural first pass reaction to the data in (6a,b) is that these verbs do not permit *-ung*-formation because they are intransitive. This reaction is not completely off the mark: By and large *-ung*-nouns are derived from transitive verbs; *-ung* nouns corresponding to intransitive verbs are comparatively rare. But the generalization is far from perfect. There exist a fair number of intransitive verbs with corresponding *-ung* nouns. In fact, one such verb, *ergrauen*, was listed under (2); but there are many more, even if their number doesn't compare with that of the intransitive verbs without *-ung*-nouns. Much more important for us, however, is that there is a large number of transitive verbs for which there are no corresponding *-ung*-nouns. This is true especially for the transitive verbs occurring in (6a). Note that with the exception of *arbeiten* and *husten*, all these verbs have transitive as well as intransitive uses. Whether these verbs are used transitively or intransitively does not have any impact on the derivation of *-ung*-nouns; *-ung*-nouns are unavailable in either case.⁷

Common to the intransitive verbs listed under (6a,b) is that they are naturally classified as activity verbs. This sets them apart from the intransitive verbs that do allow for *-ung*-nominalization. For example, *ermüden* in (2) is a case in point. It is most naturally classified as a 'state changing verb' which is used to describe events as events that lead to a certain change in the theme. (The theme, a person, changes from being not tired to being tired.) Other intransitive verbs with *-ung* nouns are like *ermüden* in this respect.

-
- ⁷ (i) a. *Sie haben um fünf gegessen.*
'They ate at five'.
b. **Ihre Essung fand um fünf statt.*
'Their eating took place at five.'
c. *Sie hat ihre Haferflocken mit Ekel gegessen.*
'She ate her porridge with a sense of disgust.'
d. **Die Essung ihrer Haferflocken war ihr ekelhaft.*
'The eating of her porridge was disgusting to her.'

or also

- (ii) a. *Er hat sich nie verziehen, dass er damals geschossen hat.*
'He never forgave himself that he had used his gun at that occasion'
b. **Er hat sich seine Schießung damals nie verziehen.*
'He never forgave himself his shooting at that occasion.'
c. *Er hatte sogleich einen Hasen geschossen.*
'He had shot a rabbit right away.'
d. **Die Schießung eines Hasens erfolgte sogleich.*
'The shooting of a rabbit took place right away'.

The status of activity verb is especially obvious for the verbs in (6a). These are typical cases of *unergative* verbs. The root-based analysis of such verbs that we will present below follows Levin, Marantz and others in assuming that the roots from which they are constructed are so-called ‘manner’ roots – roots which act as predicates of the events that the verbs describe. In this regard, the verbs in (6a) do not differ essentially from those in (6b). Those verbs too are built from roots that express properties of the events described by the verb. They differ only in not being ‘agentive’. As to the question whether a verb permits *-ung*-nominalization, this distinction is not decisive. (See the discussion of *treiben* towards the end of Section 4; however, as we will see in Section 5, agentivity can be relevant provided that other conditions are satisfied).

The verbs in (6a) can be used as transitive verbs and since as we noted it is by and large transitive verbs for which we find corresponding *-ung*-nouns, an important part of our task is to explain why these verbs do not permit *-ung*-nominalization. Part of the explanation we offer rests on another assumption following Kratzer (2004, 2005), according to which the transitive verbs in (6a) are built from unergative intransitive verbs by adding structure which includes the argument that gets realized as direct object.

The resulting structure differs, as we will see in detail below, crucially from that of ‘core-transitive’ verbs like those in (1). One piece of evidence for this difference is that non-core-transitives can be extended to resultative constructions, e.g. *den Teller sauber wischen* (‘to wipe the plate clean’); *sich die Finger wund schreiben* (‘to write one’s fingers sore’); *einen Hasen tot schießen* (‘to shoot a hare dead’); *das Jagdrevier leer schießen* (‘to shoot the hunting-ground empty’). Moreover, they can also be used felicitously in conjunctive predicates of the type *er arbeitet und arbeitet* (‘he works and works’); *er schießt und schießt* (‘he shoots and shoots’). Core-transitive verbs do not admit resultative constructions, cf. **den Teller rein säubern* / *den Teller sauber reinigen* (‘to clean the plate clean’); **den Hasen wegtöten* (‘to kill the hare away’); **das Jagdrevier leer töten* (‘to kill the hunting-ground empty’). In addition, *und...und* constructions are somewhat marginal with those verbs: ? *sie tötet und tötet*, etc.

Non-core transitives can sometimes alternate with transitive prefix verbs that permit *-ung*-nominalization. Examples are the *be*-verb *be-schreiben* (with two quite different meanings: (i) ‘to describe’ and (ii) ‘to cover with writing or symbols’) or the *er*-verb *erschießen* (‘to shoot dead’). We can observe similar variation in relation to prefix verbs with alternating unergative intransitives that do not have transitive extensions. The verb *arbeiten*, as we already saw, does not have a corresponding *-ung*-noun, but for the

There are verbs with the same aspectual properties (at least according to the semantic classifications and tests with which we set out to work on the problem), but which nevertheless part company when it comes to *-ung*-nominalization: one of them has a corresponding *-ung*-noun, the other does not. Soon, it became clear to us that something else must be involved – not only the aspectual properties which we were working with, but some deeper structure, which might account, or partly account, for aspectual properties, but which also articulates distinctions that cannot be recovered from these aspectual properties.

Our first clue as to what it was missing came from Kratzer's analysis of non-core-transitive verbs as verbs that 'enter syntax as intransitives'. Such transitive verbs may even be 'telic' in the sense that their most prominent uses are telic, but nonetheless they are structurally different from the (telic) transitive verbs that have *-ung*-nouns.

The second clue came from ideas proposed within the framework of DM, in particular the distinction between mono-eventive and bi-eventive verb phrases as it can be found in the work of by Marantz. Bi-eventuality, we realized, can be identified as the licenser of *-ung*-nominalization. An essential part of this change of perspective is that the distinction between bi- and mono-eventive structures offers a means of explicating Levin's distinction between core and non-core-transitives, cf. Levin (1999). Levin represents these two types of transitive verbs with the help of semantic forms in the spirit of Dowty (1979). Core-transitives have a semantic form as in (i) and non-core-transitive the semantic form in (ii).

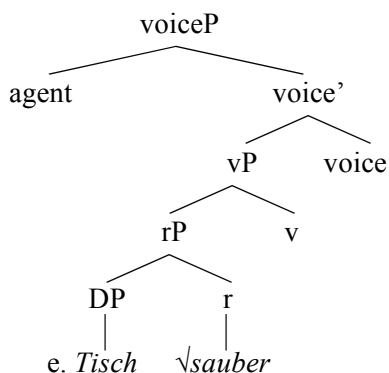
- (i) [[x ACT_{<manner>}][CAUSE [BECOME [y <STATE>]]]]
- (ii) [[x ACT_{<manner>}, y]]

In the terms of Marantz, core-transitive verbs are bi-eventive projections of the verbalizer *v*, non-core-transitive verbs are mono-eventive projections of *v*. To be more precise, the semantic representations determined by verbs with a bi-eventive structure are (roughly) like the semantic forms in (i) and the semantic representations determined by verbs with a mono-eventive structure are (roughly) like the semantic form in (ii).

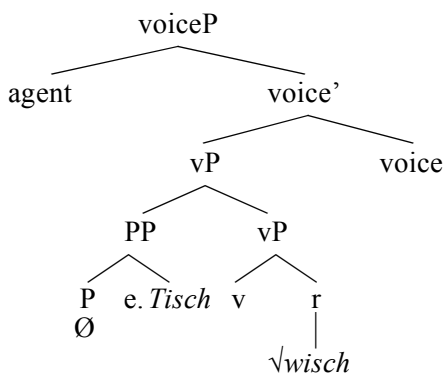
The difference between core- and non-core transitives is neatly demonstrated by the verbs *säubern* (to clean) and *wischen* (to wipe). When these verbs are used with direct object phrases like *einen Tisch* ('a table') the meanings of the two vPs, if perhaps not strictly identical, are certainly quite close. For instance, when used in simple past tense sentences, both invite the inference that at the end of the described event the table was clean. But

nevertheless, in the sense that matters here, *säubern* and *wischen* are very different verbs. *Säubern* is a core-transitive, while *wischen* is non-core-. The difference is shown in the structures (8a,b).

- (8) a. *den Tisch säubern*
the table clean



- b. *den Tisch wischen*
the table wipe



The structure in (8a) is ‘bi-eventive’ in the following sense. The ‘root phrase’ rP has as daughters the DP *einen Tisch* and the root $\sqrt{\text{sauber}}$. Its interpretation is that of a kind of small clause consisting of the saturated predication whose predicate is $\sqrt{\text{sauber}}$ and whose argument is the individual d (some table) denoted by the phrase *einen Tisch*. We take such a predication to describe a state s, and we express the relationship between s and the predication in the form ‘<s | s: $\sqrt{\text{sauber}}$ (d) >’. On the other hand the node v contributes an event e’ – the event described by the verbal structure in (8a). The combination of v and rP now takes the form where the state s is interpreted as result state of e’, thus e’ is the cause of s, something we express with the help of the causal predicate CAUSE. It is the causal relationship ‘e’ CAUSE s’ as it results from the interpretation of vP which renders the vP of *säubern* a suitable building site for the corresponding -ung-noun *Säuberung*.

No -ung-noun can be built from the mono-eventive structure in (8b). The ‘manner’ root $\sqrt{\text{wisch}}$ here acts as a predicate of the event e’ contributed by v, with the effect that the interpretation associated with the vP is simply the predication ‘ $\sqrt{\text{wisch}}$ (e)’’. The assumption that the direct object adjunct enters the structure after the formation of vP, as an adjunct to the vP is also taken from Marantz (2005). (As noted, the same idea is also found in Kratzer (2004).) The silent preposition expresses a relation between the direct object and the event e’. This relation can either have a telic or a non-telic character.

Either way, no causal relation enters into the structure as part of the vP formation. And it is this, we claim, that is responsible for the impossibility of building a corresponding *-ung*-noun.

Since this is the central claim of the paper, we repeat it in the form of an official hypothesis:

Hypothesis 1: Verbs with a bi-eventive structure allow for corresponding *-ung* nouns, verbs with a mono-eventive structure do not.

Note that Hypothesis 1 entails that all the verbs listed under (1)–(5) and prefix verbs like *erschließen*, *beschreiben*, *bearbeiten*, *bekämpfen*, *bemalen* (which have *-ung*-nouns) must have bi-eventive structure and that those listed under (6) and (7) must have mono-eventive structure.

2.4. Syntactic and semantic principles for constructing words from roots

It is the internal structure of a verb that determines whether a corresponding *-ung*-noun can be formed. (8a,b) display the properties of verb structure that are decisive for this question. We will not go into the syntactic principles that convert these structures into grammatical surface strings, with tense and case assignment and either main or subordinate clause word order.⁸ Our focus is on the semantics that such verb structures determine. Crucial in this connection is the semantic difference determined by structures like (8a) and (8b).

⁸ We follow the tradition of Hale and Keyser (2002); Baker (1988); Embick (2004); Embick and Noyer (2001); Embick and Marantz (2008) in assuming that word-formation involves head movement. Larger constituents are built using the operation MERGE as applying to heads and non-heads, with the heads selecting the non-heads. Movement of heads and roots obeys the Head Movement Constraint (HMC), cf. Baker (1988):

(HMC) An X^0 only moves into an Y^0 which properly governs it.

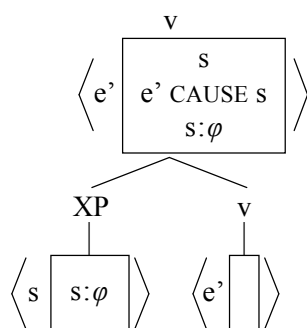
An application of HCM will be shown in (13b), below. For general assumptions in Minimalist Syntax, see Adger (2003). As for case theory we follow Marantz (2000).

3. Syntactic and semantic structure of verbs

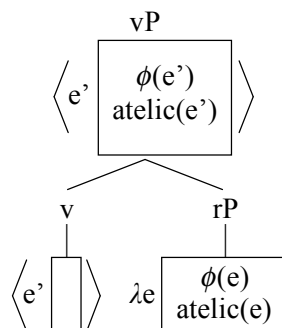
3.1. Some basic structures

We follow the word-syntactic literature in assuming that all verbs have a functional head *v*. *v*'s semantic contribution is to introduce the referential argument *e'* of the verb and of other words derivable from it. As shown in (8a,b), there are two crucially different ways in which *v* can merge with its sister node. These two possibilities are shown in (10).⁹

(10) a.



b.



One possibility, that of (10b), is that *v* selects a root phrase (or root) which denotes an eventuality type. In this case the event type is predicated of the referential argument *e'*. The second possibility, shown in (10a), is for the sister to *v*, which in this case is a maximal projection *XP*, to contribute an entity of its own, which must be construed as standing to *e'* in a certain relation. In all cases relevant in this paper – and as far as we know, in general – the entity described by the sister *XP* is a state and its relation to *e'* that of result state to the event that brings it about.

⁹ The order in which the daughters of *vP* are presented in (10a) and (10b) has no theoretical import. In (10a) we have placed *XP* to the left of *v*. This is consistent with the fact that in the basic word order of the German clause (found in German subordinate clauses) the arguments of the verb occur to the left of the verb itself. (However, the movement principles we assume would lead to this word order also if in (10a) the order of *XP* and *v* had been the reverse.) The order of *v* and *rP* in (10b) has been adopted for reasons of consistency with other work (Roßdeutscher to appear).

It is our conviction that these are the two basic structural patterns according to which verbs are built.¹⁰

3.2. Syntactico-semantic constraints on *-ung*-formation

Towards the end of the previous section we stated our hypothesis that bi-eventive verb structures allow for *-ung*-nominalization and that mono-eventive structures do not. In this section we explore why this should be so. A basic assumption we make and share with existing work on derivational morphology is that *-ung*-nouns are formed by inserting an *-ung*-‘operator’ into a structure that can also be expanded into that of the corresponding verb. Given this assumption the first question we need to settle is *where* in such a verbal structure can *-ung* be inserted (in those cases where it can be asserted at all). To understand and answer this question requires some further background assumptions about the internal structure of verbs. One assumption has already been shown implicitly when we presented the preliminary representations for *säubern* and *wischen* in (8a,b): A verbal structure always involves a v-node and its maximal projection vP. The second assumption we have taken from Kratzer (1996), according to whom agentive subjects are introduced at a projection called VoiceP (see also von Stechow 1996; Alexiadou, Anagnostopoulou and Schäfer 2006). (We leave open the question

¹⁰ This also applies, we believe, to those (fairly exceptional) cases to which we drew attention in Section 2, where a prefix verb has an *-ung*-noun but the verb without the prefix does not. (Examples, we noted on p. 178f., are *beschreiben* and *bearbeiten*.) In such cases the pre-fixation involves, we hypothesise, coercion into the bi-eventive pattern, in which the manner root of the prefix-less verb is reinterpreted as a property root or sortal root. Such root re-interpretations are not all that common, however, and as far as we know, they are rarely possible without morphology that forces or supports it.

There is also a handful of eventive roots (roots that denote properties of the event *e'* contributed by *v*) which yield verbs with corresponding *-ung*-nouns.

These roots seem to characterise the event as one that produces a state of a certain kind, bringing the result state relation into play in that way. Among them we find $\sqrt{\text{wirk}}$ (yielding the verb *wirken* (‘to produce an effect’, ‘to exert an influence’); $\sqrt{\text{füg}}$ (*sich*) *fügen* (‘to adjust’, ‘to give in’); $\sqrt{\text{nutz}}$ *nutzen* (‘to be of use to sth. or so.’); $\sqrt{\text{schaff}}$ *schaffen* (‘to create’). It is noteworthy that these verbs tell us nothing about the manner of the events they describe but only about their effects: that they have an effect of some sort, or have the intended effect, or have an effect of some particular kind.

whether or when there can be other projections between vP and VoiceP.) Given these assumptions we can formulate a preliminary answer about the point at which *-ung* enters into the structure of an *-ung*-noun, it goes as follows: *-ung* is a nominal head that enters above vP and below voiceP. Arguments that *-ung* enters before VoiceP are based on Kratzer's observation of disjoint referent effects which are connected with the (agentive) arguments introduced at the level of Voice. It is at this level that the agent argument enters the structure, and once it has been brought into play, disjoint reference between the agent argument and the theme (or patient) argument becomes an active constraint on interpretation, even in constructions where no agent is explicitly mentioned. On the other hand, if the structure does not contain VoiceP, then no agent argument is represented and no disjoint reference effects involving it and the theme argument can arise.

Illustrations of the presence and absence of the disjoint referent constraint can be found in constructions with past participles in prenominal position, as in (11a,b):

- (11) a. *der angekleidete / angemeldete / geheilte Patient*
 the dressed / registered / cured patient
- b. *der gestern angekleidete / angemeldete / geheilte Patient*
 the yesterday dressed / registered / cured patient
- c. *die gestrige Ankleidung / Anmeldung / Heilung*
 the 'yesterday-ish' dressing / registration / cure
 des Patienten
 of the patient

The participles in (11a) do not carry the implication that the referential argument of the noun (the patient) was dressed / registered / cured by someone else. And if the meaning of the verb forces us to believe that an agent must have been involved, as in the case of *anmelden* (to register), this agent could, for all the grammatical construction tells us, be the referential argument of the noun himself (he himself could have been the one who did the registering). For the examples in (11b) this is not the case. Here, the presence of the adverbial modifier *gestern* (yesterday) forces extra structure on the participle. *Gestern* requires as argument a 'full' event structure, including an agent. This means that the participles in (11b) are true passive participles, which include a voice projection, unlike the participles in (11a). As is generally the case in passive constructions, the agent is present in the structure even if it isn't mentioned explicitly, so that disjoint reference has a purchase even when no agent phrase is present. Thus *der gestern ange-*

kleidete Patient can only be understood as referring to a patient who was dressed by some other person (for further discussion cf. Kratzer 1995; von Stechow 1996; Roßdeutscher 2000).

It is important to note that there are no disjoint reference effects in (11c), and this is the case in spite of the presence of the adjective *gestrig* (derived from *gestern* and acting as eventuality predicate, to the effect that the eventuality occurred yesterday). For instance, *die gestrige Anmeldung* can refer to an event where the person who was registered on the occasion in question did so himself. This indicates that *-ung*-nouns don't contain a voice projection, not even in cases where we might have expected that the presence of an adjective like *gestrig* would force such an analysis upon the noun, in the same way that the adverb *gestern* does this when it modifies a participle.

This argument only gives us reason to assume that *-ung* operates below voiceP. But how far below? One possibility would be that *-ung* is merged even below the point where *v* gets merged into the structure. This might seem like a natural proposal for *-ung*-nominals which have readings that coincide with corresponding root nominals: For instance, *Wertung* (from *werten* ['to judge', 'to evaluate']) has an entity reading which coincides with the meaning of *Wert* ('value'). Such 'narrow circle' nominals, where the nominalizer operates below *vP*, have been suggested for English in Grimshaw (1990). However, data involving adjectival modification speak against such a view. As reported in Alexiadou (2009), even prenominal adjectives that modify nominals denoting material or abstract objects can be interpreted as predicates of the event described by the underlying verbal construction.

Adjectival modification of *-ung*-nouns is a matter that requires further elaboration than what can be given here. For the time being, we confine ourselves to listing some examples where the adjective must be analysed as a predicate of the event even when the nominal is given an entity-reading. (Such examples are very common, see Roßdeutscher 2010.)

- (12) (i) a. *grobe Schätzung* ('rough estimation')
- b. *grob geschätzter Wert* ('roughly estimated value')
- (ii) a. *fehlerhafte Übersetzung* ('wrong translation')
- b. *fehlerhaft übersetzter Text* ('wrongly translated text')
- (iii) a. *großzügige Bepflanzung* ('generous plantation')
- b. *großzügig bepflanztes Beet* ('generously planted border')
- (iv) a. *eilige Meldung* ('urgent message')
- b. *eilig gemeldete Nachricht* ('speedily reported message')

Each of the noun phrase pairs in (12) consists of (a) a phrase whose head is an *-ung*-noun N, modified by an adjective A; (b) a phrase whose head is a root noun whose denotation coincides with the entity reading of N and which is modified by a phrase A'P where A' is the adverbial form of A and P is a past participle derived from the same root as N. The (a) and (b) phrases can be interpreted in ways that render the (a) phrases denotationally equivalent to the (b) phrases. This shows that even when the noun N is interpreted as denoting an entity, the event that is the referential argument of the underlying verb is available as argument for the adjective A. With the corresponding root nouns the event is not denotationally available and has to be made available in some other way, e.g. through addition of the N-related participle P. (For instance, *grober Wert* is not a really acceptable expression; if it should mean anything at all, then it would mean something like *grob geschätzter Wert*, but it cannot really be used to mean that.) This difference between (for instance) *grobe Schätzung* and *grobe Wertung* on the one hand and ??*grober Wert* on the other suggests that the two *-ung*-nominals involve event-like constituents that a root noun like *Wert* does not include. We assume (consistently with standard assumptions in DM and with those structures so far displayed) that this event-like constituent is introduced by the head v. This entails that *Wertung* and *Schätzung* will involve at the very least the maximal projection vP of v.

Before we finalize our hypothesis about the entry point of the *-ung* operator we first turn to the second hypothesis of this section. This hypothesis has already been alluded in much of what we have said, but it is important now to state it in an explicit form. It concerns the admissibility conditions for the inputs to the *-ung* operator – the ‘selection restrictions’, one might say, which come with this operator. The constraint we assume is that the input structure to the *-ung* operator must contain a condition of the form ‘e' CAUSE s’. If and only if this constraint is satisfied can *-ung* be inserted into the structure and an *-ung* noun be constructed.

Given this second hypothesis, we can specify the entry point for *-ung* more precisely than we have so far: in fact, an assumption we have made in Section 2 about the structure of non-core transitives like *wischen* (cf. (8b)) forces us to adopt a more precise hypothesis about the point where *-ung* can enter the structure. Recall that *in einen Tisch wischen* the verb-internal PP is treated as an adjunct to vP, and that we allowed for the possibility that this adjunction brings result state information (involving a condition of the form ‘e' CAUSE s’) into play. If *-ung* could be inserted above the higher vP in (8b), then it is hard to see how we could prevent it from having access to this condition. And if there is no way to prevent this, then given our formu-

lation of the second hypothesis, there would be nothing to prevent the formation of *-ung*-nouns like *Wischung*. Thus, to make sure that our theory predicts the impossibility of *-ung* nominalization in such cases we must assume that *-ung*-always operates *immediately above the lowest vP*.

We are now ready to state our two Hypotheses in their definitive form:

Hypothesis 2: *-ung* must be inserted immediately above a minimal vP node¹¹.

Hypothesis 3: *-ung* requires as input a structure with a semantic representation whose DRS contains a condition of the form ‘e’ CAUSE s’.

Note that Hypothesis 2 and Hypothesis 3 jointly account for Hypothesis 1, according to which bi-eventive structures permit *-ung*-nominalization and mono-eventive structures do not. Even if verbs with a mono-eventive structure have a telic semantics of which a cause-result-relation is a part, this element will enter into the structure at a point that is not accessible to *-ung*, since it won’t be part of the structure that serves *-ung* as input. The condition is accessible only for bi-eventive structures, where the cause-result-relation is present in the representation of the lower vP-node.

Why should Hypothesis 3 be true? As things stand, we do not know. We do not exclude the possibility that further probing into the properties of *-ung*-nominalization may point towards an answer to this question; but neither would we be surprised if it turned out that the explanation of when *-ung*-nominalization is possible cannot be pushed any further.

A similar question can also be raised about Hypothesis 2: Why should this be the correct assumption about where *-ung* can be inserted into the structure? Here we have to distinguish between two sub-questions. The reasons as to why *-ung* should operate between vP and VoiceP are independent of the specific proposals of this paper. Once we accept that *-ung*-nominalization involves a nominalization operator that enters into a verbal structure at some point, the arguments we have given indicate vP and VoiceP clearly as outer boundaries between which the insertion point for the operator must be situated. On the other hand, the claim that *-ung* must attach immediately above the lowest vP is a product of our own assumptions about the structure of non-core transitives. If these assumptions were to be changed – e.g. in that the PP attachment in (8b) involves its own projection level between vP and VoiceP – that might also invite a modification of Hypothesis 2.

¹¹ By a minimal vP node we mean a vP node that does not dominate another vP node.

In the next section we will explore a number of verbs and *-ung-nouns* in order to see how our Hypotheses fare in the face of individual examples.

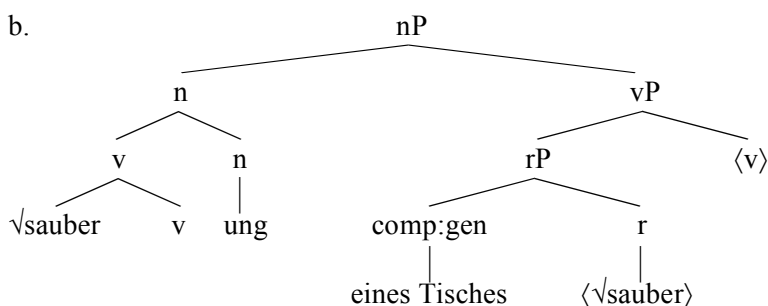
4. More on the construction of verbs from roots

In this section we present the structures of some verb types that permit *-ung-nominalization* and some that don't permit it. In view of the conclusions from the last section, the relevant difference between the verbs that are *-ung-nominalizable* and those that are not must reside in their structure below vP.

4.1. Verbs constructed from property denoting roots

We start with *säubern*, one of the verbs in (1a) of Section 2. The structure, presented in (13b), is for the phrase *Säuberung eines Tisches*, where the *-ung-noun* derived from *sauber* is the head and the genitive DP *eines Tisches* its theme argument. The structure emerges from two operations of head movement (expressions in angled brackets, e.g. $\langle \sqrt{\text{sauber}} \rangle$ indicate traces).

- (13) a. *(die) Säuberung eines Tisches*
(the) cleaning of a table

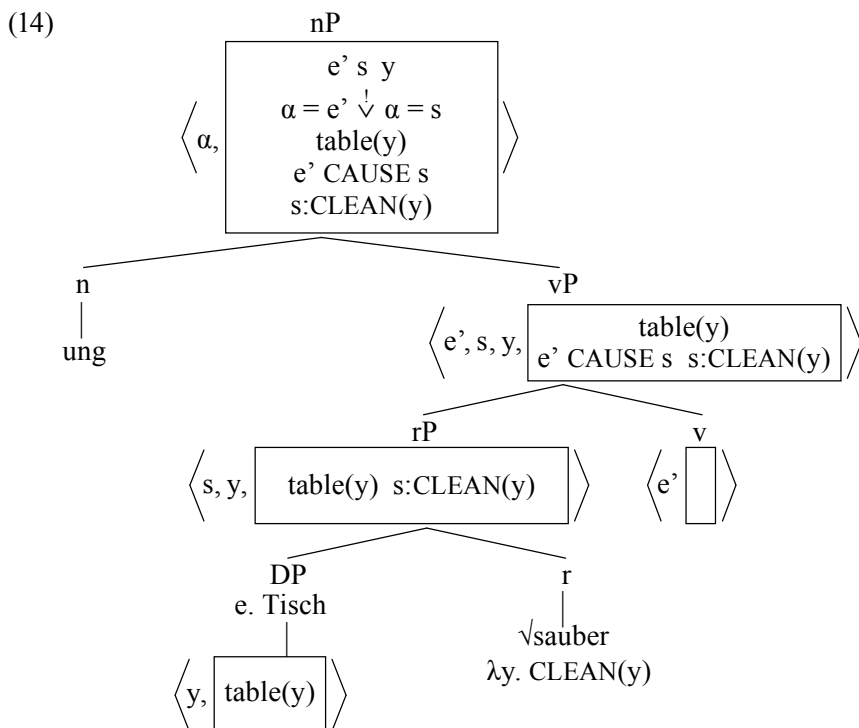


The complement of *r* in (13b) is the argument internal to *rP*, which becomes the internal argument of the verb that can be built from the *vP*.¹² The argument phrase *eines Tisches* has genitive case because it fills the internal ar-

¹² For another view on the relation between the head noun *Säuberung* and the DP *des Tisches* see Solstad (2010).

gument slot of a noun. (We take case assignment to proceed according to widely shared assumptions (e.g. Sternefeld 2007; Marantz 2000). Since this is an issue beyond the focus of this paper we will ignore it in what follows.)

(14) is the semantic representation for (13a) constructed from its syntactic structure in (13b).



The semantic composition presented in (14) goes from bottom to top, with each step indicating how the representation associated with a non-terminal node is built from the representations associated with its daughter-nodes. Note the form of most of these representations: They consist of a DRS preceded by a *store*. A store consists of one or more discourse referents that occur as arguments in conditions of the DRS following it. These discourse referents await binding (either by means of transfer to some DRS-universe or in some other way). The principles that govern binding in DRT cannot be explained here, and we must refer to other work, cf. Kamp and Reyle (to appear); Kamp, Reyle and van Genabith (to appear).

The semantic representation of **vP** is constructed in three compositional operations. Each of these is different. The first one, which combines the rep-

representations of the root $\sqrt{\text{sauber}}$ and the theme argument *einen Tisch*, is one of argument insertion: The referential argument *y* of *einen Tisch* is inserted in the argument slot of CLEAN. This operation is much like λ -conversion in systems that use the λ -calculus to specify the semantic values of expressions. In fact, we have adopted λ -abstraction as a way to indicate that the representation beginning with a λ -operator *must* combine with a sister representative via ‘ λ -conversion’, i.e. via insertion of a discourse referent supplied by the sister into the position or positions bound by the λ -operator. The use of λ ’s in the present context leads to structures that have the form of λ -DRSs (cf. Kamp, Reyle and van Genabith (to appear)).¹³

The operation that combines *r* and DP does more than just argument insertion. It also introduces a new state discourse referent *s* to represent the state characterized by the stative predication ‘*clean(y)*’. This reflects the intuitive idea that predicates involving property roots as predicates act as state descriptions. (This is so, we assume, not only for property roots but also for certain others; see Section 4.4. and Section 5.) The *rP*-representation that results from the combining of *r* and DP plays the part of a state representation with *s* as its ‘referential argument’.¹⁴

The next operation, which combines *rP* and *v*, is the linchpin in our account of *-ung*-nominalisability. Both sisters here have representations with referential arguments. For *rP* this is, as we just saw, *s*, and for *v* it is the event discourse referent *e'*. To combine these two representations a relation must be introduced between these two arguments. In this case, it is the relation we express as ‘CAUSE’ that relates *e'* to *s* as the causing event and the result state.¹⁵

¹³ In the semantic representation of $\sqrt{\text{sauber}}$ in (14) the λ -operator is attached to what looks like a formula. But as we will see below (cf. (15)) in general λ -operators operate here on DRSs. Strictly speaking the operandum in the representation of $\sqrt{\text{sauber}}$ in (14) is a DRS, with empty universe and a condition set consisting of the single condition ‘CLEAN(*y*)’.

¹⁴ We assume that most semantic representations of sentence constituents have referential argument. This is so in particular for nouns and verbs and their projections (NP, DP, VP, TP, CP (and possibly Voice)). The *referential argument* of a head or of a phrase is the entity that the head or phrase is used to describe. For discussion see Kamp and Reyle (to appear).

¹⁵ The operation that we propose here for the semantics of the *v-rP* combination is meant as a (first step towards a) formal representation of an intuition that can be found in a number of recent studies to the argument structure and aspectual properties of verbs (cf. e.g. Marantz 2005; Levin 1999; Alexiadou et al. 2006). We know of only one proposal in the literature that spells out fully explicit for-

The final operation consists of applying the operator *-ung* to the representation of its sister node. The result of this operation, shown underneath the nP node in (14), reflects the special properties of *-ung* as one of several nominalization operators that can be found in English and other languages. What is specific in this operation to the particular operator *-ung* and what the operation has in common with those denoted by other nominalization operators will become clear only as a result of a comparative study of such operators – something we have not yet undertaken.¹⁶

As (14) shows, the nominalizer *-ung* doesn't alter the semantics of the vP as such. The only difference that occurs in the transition from vP to nP concerns the referential argument of the resulting noun or verb. While the referential argument of a verb is always the referential argument e' of the vP from which it is built, for the referential argument of the *-ung*-noun there usually are other options as well. For instance, in the case of *Säuberung*, it can be either e' or the result state s .¹⁷ In (14), this ambiguity of *Säuberung* has been captured by leaving the semantic representation underspecified with regard to the question whether the referential argument α of the noun is e' or s . ($\checkmark$ is an underspecification operator, it is not a normal disjunction as in ' $\alpha=e' \vee \alpha=s$ '). It indicates that whenever an occurrence of the represented word is interpreted, one of the two options must be chosen, cf. Reyle, Roßdeutscher and Kamp (2007).¹⁸

mal conditions for the introduction of causal relations in the semantics of verbs and phases, viz. Bittner (1999) and subsequent work. We do not know for sure at this point whether Bittner's interface architecture could be used for our purposes. Whether 'CAUSE' is always the relation that is introduced when two representations of referential arguments are combined is something we do not know for sure at this point. In the representations given in this paper no other relations arise.

¹⁶ It should be emphasised that the composition operations in (14) are only meant as an illustration of the systematic syntax-semantics interface for sub-lexical structure that we are aiming for in the longer run.

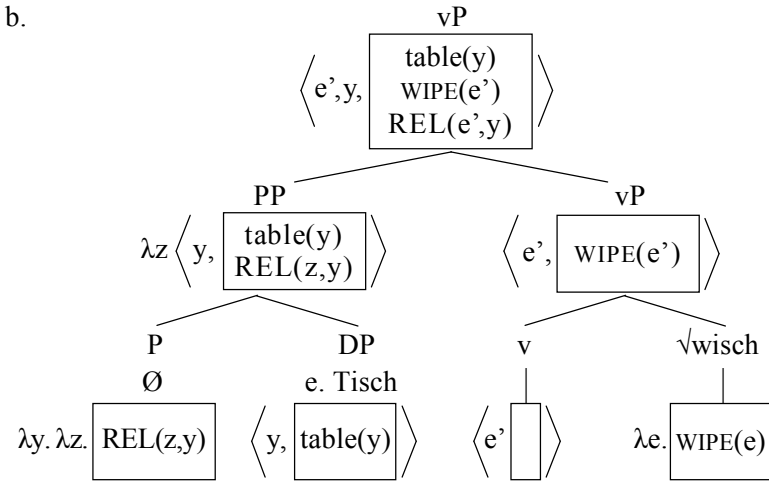
¹⁷ The state reading of *Säuberung* is difficult to obtain. For many other *-ung*-nouns the state reading is easier to get. This is also known from some nouns built from property roots, for instance *Weitung*, *Änderung*, *Besserung*. Why result state readings for *-ung*-nouns are sometimes more and sometimes less prominent, and in some other cases not available at all is a matter we will address in forthcoming work. See also the discussion in Section 5.

¹⁸ We have used the Greek letter α in (14) as a way of indicating its neutrality w.r.t. the sortal specification of what it represents. See the comments on the use of η in the discussion of *Bestuhlung* later in this section.

4.2. Non-core-transitives

We noticed that non-core transitives do not have -ung-nouns. To see in more detail how this follows from their mono-eventive structure, and how the semantic representations of those verbs differ from property-root based verbs like *säubern* and the -ung-nouns (like *Säuberung*) corresponding to them, we present syntax and semantics of the vP-phrase *einen Tisch wischen*.

- (15) a. *einen Tisch wischen*
 a table wipe



The crucial difference between the semantic composition steps in (15) and in (14) is that in (15) no ‘CAUSE’-relation is introduced as part of combining *v* with its sister. The manner root $\sqrt{\text{wisch}}$ denotes a property of events; it combines directly with the event representation provided by *v* and the result is shown under the vP of (15) (cf. ‘direct merge’ in Embick 2004). The step which combines the representations of *r* and *v* is one of several instances in (15) of the operation of argument insertion. We represent argument insertion as λ -conversion.¹⁹ Note that all λ -s in (15) originate in the semantic

¹⁹ It should be clear by now, however, that λ -conversion is only one of a number of distinct semantic operations that enter into the semantic representation constructions presented in this paper. We use λ s only as a way of making explicit that representations beginning with a λ *must* be subjected to argument insertion in the first construction step that applies to them.

representations of its roots ($\sqrt{\text{wisch}}$ and the empty prepositional root that acts as head of the sub-lexical PP). This is a general constraint on the use of λ -s in the interface architecture assumed in this paper.

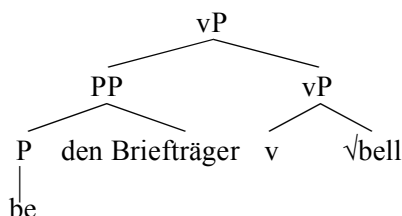
We have specified the semantic contribution of the empty prepositional head as the ‘dummy’-relation ‘REL’. The intention behind this is that the context in which ‘REL’ appears should allow it to be replaced by a relation with genuine semantic content. The details of how this is done – how an interpreter turns REL into a particular relation and what contextual information is used for this purpose – do not concern us here.

4.3. *be*-alternates

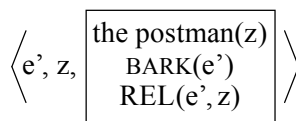
In Section 2 we observed that the verbal prefix *be*- sometimes makes *-ung*-nominalization possible, but that in other cases it does not: There are mono-eventive verbs *V* such that the verb *be*-*V* has an *-ung*-noun, but for other such verbs (indeed for most of them) the *be*- verb is no more *-ung*-nominalizable than the verb without *be*-.

Examples of the first sort are (*eine Akte*) *bearbeiten* (‘to deal with [a file]’) and (*eine Landschaft*) *beschreiben* (‘to describe a scenery’); examples of the second kind are (*den Briefträger*) *bebeln* (‘to bark [at the postman]’) or (*die Komödie*) *belachen* (‘to laugh at [the comedy]’), see (7). In this section we consider cases of the second kind. We assume in these cases that the prefix *be*- expresses a relation between its ‘internal argument’ (the denotation of the DP *der Briefträger*) and the referential argument *e*’ of *vP*. The syntactic structure displayed in (16a) below is quite similar to that in (8b): The *be*-verb *bebeln* shares the internal structure of the simple verb *beln*. This is the *vP* structure that is typical of unergatives and that is unfit for the construction of *-ung*-nouns. The details of the relation contributed by *be*- have to be filled in on the basis of the meaning of the individual manner root $\sqrt{\text{bell}}$ and the context where it is being used. In this respect the interpretation of (16a) is much like that of (15b). There is a slight difference in that the *be*-constructions based on unergative *vPs* does contribute some meaning of its own – e.g. that the direct object (in this case, the postman) is subjected to some kind of process, and perhaps also that the event *e*’ is a purposive action on the part of some agent. Most of the content of such relations must be inferred on the basis of the meaning of the other root (here $\sqrt{\text{bell}}$) and possibly other contextual information. We have indicated this need for inference to supply all or most of the content of the relation by using once more the dummy relation symbol ‘REL’.

(16) a.



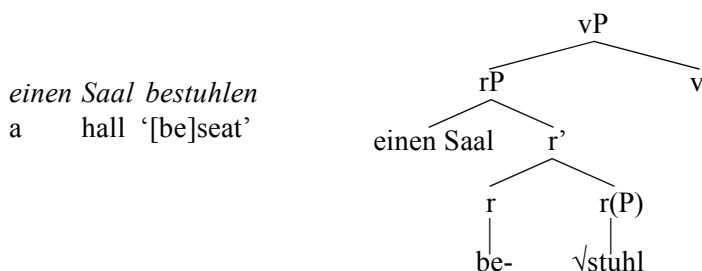
b.



4.4. verbs constructed from ‘nominal’ roots

Many *be*-verbs allow for *-ung*-nominalization. There is a number of different types of such *be*-verbs. Among them are those built from what appears to be manner roots, but these are, as we already suggested, a minority. One type of *-ung*-nominalizable *be*-verbs that we see as paradigmatic is the one where *be-* combines with a sortal root (see (5) in Section 1.2). A telling example is *bestuhlen*. A vP like *einen Saal bestuhlen* ‘to furnish a hall with chairs/seats’ is to be understood as the bringing about of a state that consists in the holding of a certain relation between the direct object (the hall) and entities of the sort contributed by the root $\sqrt{\text{stuhl}}$. For *bestuhlen* and similar verbs we assume the structure in (17).

(17)



In (17) *be-* does not act as the head of a prepositional phrase in the way it does in (16). The rP of which *be-* is the head has some features in common with the PP-constituent of (16) (and with regular PPs like *bei dem Bismarckturm* in *die Bank bei dem Bismarckturm* [‘the bench near the Bismarck tower’]), but there are also important differences; *be-* in (17) and the rP of which it is the head are subject to rather different structural principles. From a syntactic point of view the rP structure of (17) follows the tradition of Hale and Keyser (2002), particularly regarding the principles of word formation via head movement. (Our node labels differ from those used by

Hale and Keyser, but this does not reflect a difference in syntactic assumptions.) The rP of (17) is structured according to the standard assumptions of X-Bar Theory, with a complement to its head *be-* as well as a specifier. Complement and specifier supply the two arguments for the relation that *be-* contributes. In (17), the complement is the root $\sqrt{\text{stuhl}}$ and the specifier is the DP *einen Saal*. The relation *be-* establishes between the denotations of complement and specifier is an instance of the figure-ground schema familiar from the semantics of spatial prepositions. Note however, that with ordinary spatial prepositions – e.g. the German preposition *bei* (‘at’, ‘near’) – the complement is the ground, while the figure is ‘external’. (Thus, in *die Bank bei dem Bismarckturm* the Bismarck tower is the ground and the bench is the figure.) In (17) it is the complement $\sqrt{\text{stuhl}}$ that provides the figure and the specifier *einen Saal* the ground.

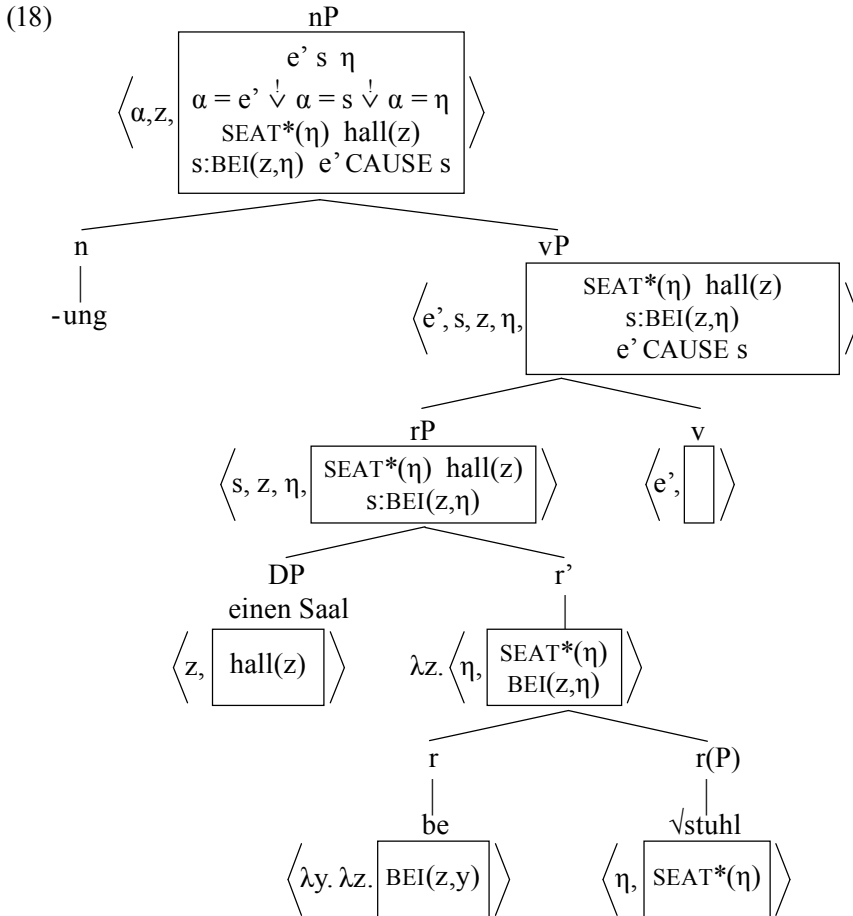
As in the case of *Säuberung* (cf. (14)) the construction of the semantic representation of the rP node involves the introduction of a state discourse referent *s*. For more on the principle behind the introduction of such state discourse referents see page 201.

Combining the semantic representation of the rP in (17) with that of *v* proceeds in the same way as in the case of *Säuberung*: A causal relation is introduced to connect *e'* and *s*. The semantic representation determined by (17) is given in (18) (see next page).

After what has already been said by way of commentary to earlier computations of semantic representations in this section, there is nothing more to say about (18). However, one point that deserves a comment is the difference between sortal roots and property roots. Property roots are mere predicates, but sortal roots bring along their own predicanda. However, the entity or entities a sortal root introduces are always quantificationally bound as part of the semantics of the word that is built from this root. (Binding of the entity variable introduced by a sortal root is a case *par excellence* of incorporation.) When building a sortal root based verb *bestuhlen*, this word-internal binding could be carried out as soon as the root entity is inserted into the argument slot of the prepositional relation BEI. However, when constructing the corresponding *-ung* noun, as in (18), it is preferable to delay this binding operation, since the discourse referent must remain available as a possible referential argument of the noun.²⁰ If the possible readings of *Bestuhlung* are captured by the same device we used in our representation for *Säuberung* in (14), then we can bind the discourse referent introduced

²⁰ That *Bestuhlung* is three-way ambiguous while *Säuberung* only has a two-way ambiguity is discussed in Section 5.

by the root as part of the operation that is denoted by *-ung* – just as *e'* and *s* are existentially bound as part of this operation. Note that the point at which binding should take place is to some extent under-determined; what matters is only that the binding of a discourse referent does not occur before all operations that make use of it have been performed and yet not so late that the discourse referent is assigned the wrong scope. (Particularly, binding of discourse referents that are introduced by sortal roots must occur at a stage that is early enough to be compatible with their ‘incorporation-like’ status.)



Related to the incorporation-like status of discourse referents introduced by sortal roots is their number neutrality: they can either represent single indi-

viduals or collections of them.²¹ We have adopted the convention of Kamp and Reyle (1993) to use lower case Greek letters for number-neutral discourse referents – here ‘ η ’ instead of ‘ y ’.

The $\checkmark$ condition in (18) marks *Bestuhlung* as ambiguous between an event reading, a state reading and an entity reading. For more on the ambiguities of *-ung* nouns, see Section 5.

Many of the verbs that have *-ung* nouns are prefix or particle verbs. This is not surprising by itself, for such verbs constitute the greater part of the German verbal vocabulary. However, once we look more closely into the reasons, we see a number of factors that merit our attention. One of these is that many such verbs are not derived from another verb (one without the prefix or particle) by attaching the prefix or particle to it. *Bestuhlen* is a case in point: there is no verb *stuhlen*. Indeed, there is no reason to assume there should be such a verb, given that $\checkmark$ stuhl is a nominal root. A survey of *be*-verbs is illuminating in this regard (Roßdeutscher to appear). Many of the *be*-verbs that have *-ung* nouns are built from nominal roots. But there are also many *be*-verbs for which there are corresponding verbs without *be*-. Often these verbs are unergatives or non-core transitives (and thus without corresponding *-ung* nouns), and in these cases the *be*-verb is usually without an *-ung* noun as well. These facts support the possibility that was mentioned earlier, that when a verb *V* does not permit *-ung* -nominalization and a corresponding verb *be-V* does, then these verbs may have quite different structures, and their resemblance be only superficial. This, for instance, is what we suggest is the case for *be*-verbs like *bearbeiten*, *beleuchten* and *beenden*. The verbs *arbeiten*, *leuchten* and *enden* do not have *-ung* nouns and also have the other properties that are distinctive of mono-eventive structures. *Bearbeiten*, *beleuchten* or *beenden* on the other hand behave in a way that suggests that they are built from roots that play the part of property roots or sortal roots.²²

²¹ In the case of *bestuhlen* there is a strong presumption that more than one seat is involved, and thus that the discourse referent introduced by $\checkmark$ stuhl represents a collection of seats, rather than a single one. We are unsure whether this is a general structural property of sortal root based *be*-verbs or whether it is inferred (for *bestuhlen* and many other such *be*-verbs) on the basis of what speakers have learned to see as the prototypical events that instantiate the given verb.

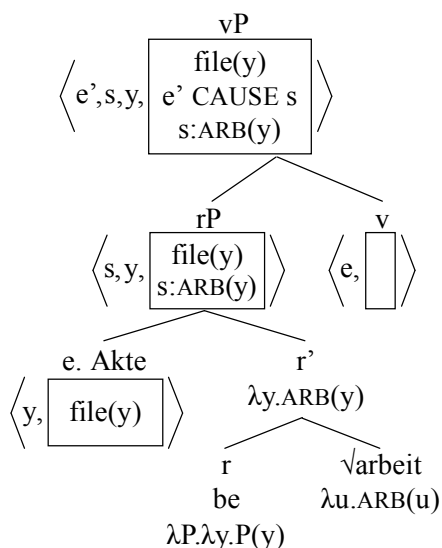
²² We note in passing that these observations make plain that prefixes and particles can not generally be treated as operators which transform verbs into other verbs. This assumption, with which we started the investigations that have led to this paper, and that seems to reflect an impression that is abroad more generally, is unfounded and untenable.

We conclude this section by looking at two further structures, for the verbs *bearbeiten* and *treiben*. *Bearbeiten* is an example of the (comparatively small) class of *be*-verbs which have -*ung* nouns, although the corresponding verbs without *be*- do not. More specifically, the noun *Bearbeitung* exists but there is no noun *Arbeitung*. Given the assumptions we have made, this means that the structures of *arbeiten* and *bearbeiten* must be quite different: the structure of *arbeiten* must be mono-eventive and built from a manner root, while the structure of *bearbeiten* must be bi-eventive, with a root that is either a property root or a sortal root.

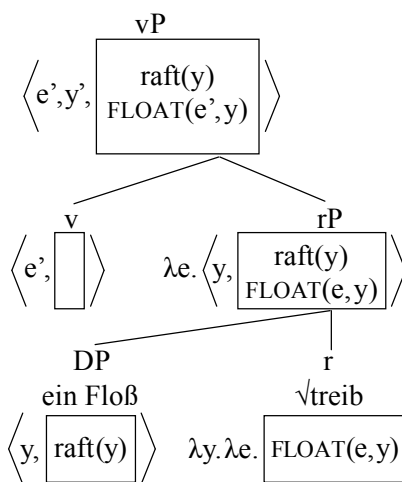
But if verbs whose meanings are evidently related in some systematic fashion are structured so differently, what can be the connection between them? We propose the following answer. The relation between *arbeiten* and *bearbeiten* – and the same goes for other such pairs of an unergative/ non-core transitive verb *V* and an -*ung* nominalizable verb *be-V* – is that the manner root $\sqrt{\text{arbeit}}$ of *arbeiten* can be ‘coerced’ into a root of a different type – for this particular instance, into a property root $\sqrt{\text{arbeit}}$, whose meaning is something like this: it asserts of the theme that it has been subjected to the kind of activity that is described by the manner root from which it is derived by reclassification.

Assuming that such a reinterpretation of $\sqrt{\text{arbeit}}$ is possible and that it can be triggered by the presence of *be*-, we get for *bearbeiten* the structure in (19a):

(19) a. *eine Akte bearbeit(en)*



b. *ein Floß treib(en)*



The syntax and semantics of (19a) differ on the one hand from those of the vP of (14) (the structure for *Säuberung*, a noun that is also built from a property root) and on the other from that of the vP of (18) (the structure of *Bestuhlung*, another *-ung*-noun derived from a *be-* verb, but built from a sortal root). Since according to our assumptions *bearbeiten* and *Bearbeitung* involve a property root, *be-* cannot function in (19a) in the way it has been assumed to in (18). In (19a) there is only one argument, provided by the DP, and it is this argument that must be inserted into the argument position of the root predicate ' $\lambda u, \text{ARBEIT}(u)$ '. *be-* in *bearbeiten* has, as far as we can see, just the function of providing a link between the predicate and its argument (not unlike that of the copula in a copula construction, although the details may differ for the two cases). We have formalized our understanding of the role of *be-* in *bearbeiten* and similar *be-* verbs by assigning it the interpretation ' $\lambda P. \lambda y. P(y)$ '. (This is just the canonical representation of the predication operation within the ' λ -calculus'.)

It should be stressed that P in the semantic representation of *be-* is a variable for properties of *individuals* (as opposed to, in particular, events). This restriction on the possible values of P may be considered as the trigger for the reclassification of $\sqrt{\text{arbeit}}$ as property root. Otherwise *be-* makes no contribution to the semantics of *bearbeiten* and *Bearbeitung*. In such *be-* words its role is purely formal.²³ The structure of *arbeiten*, on the other hand, is the mono-eventive structure found in (8b) (without the PP that makes *wischen* into a non-core transitive).²⁴

²³ Note well: this is the only place in the present paper where a representation beginning with a λ -operator isn't submitted to argument insertion directly, but first serves itself as argument to a sister representation involving λ -abstraction of a higher type.

²⁴ An objection that might be expected to this account of *bearbeiten* and similar verbs is that assuming root reclassification is just an *ad hoc* move to save our central hypothesis which correlates *-ung-* nominalisability with bi-eventuality. We reply that if *arbeiten* is without *-ung-* nominal but *bearbeiten* has one, then *some* kind of reconceptualization of the pieces that go into the analyses of these verbs must take place at *some* level; and unless everything we have been saying so far is beside the point, the crucial piece here is the root. The question is just at which level the necessary reconceptualization of the root takes place (as well as what precise form it takes). Our assumption that it takes the form of reclassifying the root *before* the structure of the *be-*verb is built is of course motivated by our central hypothesis about what renders *-ung* possible. But at this point we do not know of any evidence suggesting that reconceptualization must be assumed to take a different form, or that it occurs at a level after the structure of *bearbeiten* has already been put in place.

Treiben and other unaccusatives illustrate a different twist to our basic account. The roots of unaccusatives, we assume, express properties of themes. (This is an assumption that we see as consistent with widely accepted intuitions about what distinguishes unaccusatives from unergatives and what renders the subjects of unaccusatives ‘internal’ rather than ‘external’.) But if the roots of unaccusatives denote theme properties, how can we explain that verbs like *treiben* do not have *-ung-nominals*, whereas property root-based verbs like *schwächen* do? The difference, we propose, is that the roots of verbs like *schwächen* are property roots in the strict sense of being predicates of the theme *and nothing else*. In this respect the roots of verbs like *schwächen* differ from those of verbs like *treiben*. The roots of unaccusatives like *treiben* do not denote simple theme properties, but relations between events and their themes. Thus the root of *treiben* is a 2-place predicate, with a slot for the event contributed by *v*. This means that when the semantic representation of the rP of *treiben* is combined with the semantic representation of *v*, the effect is simply argument instantiation of the event argument position in the first by the event discourse referent *e'* introduced by the second, and no ‘CAUSE’ relation gets introduced. This is the hallmark of mono-eventive structures which cannot be developed into the structures of *-ung-nouns*.

Implementing this assumption about the root $\sqrt{\text{treib}}$ of *treiben* in analogy with earlier structures we get for its semantic representation the one shown in (19b). This representation then determines, in the same way as (15b), the composition of the (mono-eventive) semantics of the vP.

The discussion leading up to (19b) enables us to clarify a feature of semantic representation construction which was left without comment when it first made its appearance in structure (8a) for the verb *säubern*. This is the introduction of the result state *s* as part of the rP interpretation in bi-eventive structures. It is the combination of such an rP representation with the event *e'* introduced by *v* which leads to the causal relation between *e'* and *s* and therewith to the bi-eventuality that the present theory identifies as the necessary and sufficient condition for *-ung-nominalisability*. The principle that is responsible for the introduction of *s* in (8a) (and likewise in (14) and (19a)) is as follows: (i) every saturated predication is the characterization of an eventuality and must be represented as such. A saturated predication can become an eventuality characterization in one of two ways – either (i) because the eventuality is already a constituent of the given structure, viz. as an argument of the predicate; or, if that is not so, (ii) through introduction as part of the operation that saturates the predicate by filling its last uninstantiated argument position. Mono-eventive and bi-eventive structures differ in that the former exemplify possibility (i) and the latter possibility (ii).

In this way we also obtain an explanation as to why the unergative-unaccusative distinction is orthogonal to that between verbs that permit and verbs that do not permit *-ung* noun formation: A verb is unergative or unaccusative depending on whether its root predicate has a slot for the theme; a verb allows for the formation of an *-ung*-noun depending on whether its root does not or does have an argument slot for an eventuality that can be instantiated by the eventuality contributed by *v*.

5. The different Readings of *-ung*-nominals

So far we have dealt with only one of the two problems on our agenda: when is *-ung*-nominalization possible? We have accounted for the possibility of *-ung*-nominalizations in terms of the internal structure we have proposed for different types of verbs; only when these structures have a certain property – a cause-result relation generated by the structure in a certain way – is nominalization possible. Moreover, when *-ung*-nominalization *is* possible, then the resulting *-ung*-noun shares most of its structure with the underlying verb.

Even if this could be seen as an accomplishment in its own right, it would seem less than optimal. One would expect that the internal structures which the theory ascribes to the different *-ung*-nouns could also account for their possible readings. As a matter of fact, however, this appears to be true only up to a point. The structures for *-ung* we have proposed allow us to state a general hypothesis that provides a kind of outer boundary to the set of possible readings an *-ung* noun can have. But *-ung*-nouns differ in what readings they can have, and that appears to be so even for *-ung*-nouns whose structures are indistinguishable when represented as in this paper. This second part of the readings' problem of *-ung*-nouns – Why do certain *-ung*-nouns not have all the readings that our structural hypotheses allow for? – we will not solve. But we will offer some hints of factors that seem to play a role in eliminating readings that our general hypotheses admit.

First the 'outer boundary' principle, which can be stated within the framework we have so far developed. Consider once more the representation in (18) of *Bestuhlung eines Saals*. The store of the *vP* node in (18) contains the discourse referents *e'*, *s*, *η*, *z*. Three of these – *e'*, *s* and *η* – are available as possible referential arguments for *Bestuhlung*. This illustrates the following general hypothesis about the semantics of *-ung*-nouns.

Hypothesis 4:

- (i) The possible referential arguments for an *-ung-noun* are among the discourse referents in the store of the vP node.
- (ii) From this set the following discourse referents are available:
 - (a) the discourse referent *e'* introduced by *v*;
 - (b) the discourse referent *s* representing the result state of *e'* (and occurring as second argument of the condition '*e'* CAUSE *s*'))
 - (c) the discourse referent (if any) for the entity that is 'created' in the course of *e'* and that is essential to the result state *s*.

We have placed "created" within scare quotes since for many *-ung-* nominalizable verbs the 'creation' of the entity in question has the character of things that already exist being cast into a new form, or of their being assigned a new function. *Bestuhlung* is a good illustration; typically, the 'creation' of the entity that *Bestuhlung* can be used to denote is a seating arrangement (as we have been referring to it) that is made from seats that are brought into the hall and that may already have been in existence for any length of time. But once they have been installed, the seats may be regarded as constituting a new entity – that which makes it possible for an audience to be seated while attending a meeting or a performance.²⁵

According to Hypothesis 4 the discourse referents in the stores of the semantic representations of the vP nodes of *-ung-nouns* set an outer limit to all of the discourse referents that are available in this sense. In fact, we can distinguish four different 'ambiguity profiles' for *-ung-* nouns, where each 'profile' corresponds to a certain subset of the maximal set {*ev*, *st*, *ent* }, consisting of event, result state and entity. In what follows we will give for

²⁵ We leave it as an open question whether Hypothesis 4 covers all cases of systematically available readings of *-ung-* nouns. One type of reading that has a flavour of systematicity to it is that exemplified by nouns like *Regierung*, *Bedienung*, *Verwaltung*. These can be used to denote the people who are in charge of performing the actions that are described by the corresponding verb. It is our impression that this use of *-ung-* nouns is no longer productive in contemporary German (i.e. that currently German does not have any active general principles that permit the formation of *-ung-nouns* with this type of reading). But if one became persuaded that a principle-based account of these readings is wanted, then a fundamental revision of the account presented here would be necessary. The revision would have to be substantial. For the referential arguments of these readings are agents, and it is part of our account that agents are invisible to the *-ung-operator*.

each of these profiles one example of an *-ung*-noun whose possible readings coincide with that profile. (Some additional examples will be briefly discussed in connection with Type 4.) Profiles and examples are given in (20).

(20)	verb	noun	profile
	1. <i>bestuhlen</i> ('to furnish with seats')	<i>Bestuhlung</i>	{ ev, st, ent }
	2. <i>schwächen</i> ('to weaken')	<i>Schwächung</i>	{ ev, st }
	3. <i>mischen</i> ('to mix')	<i>Mischung</i>	{ ev, ent }
	4. <i>säubern</i> ('to clean')	<i>Säuberung</i>	{ ev }

The discussion of the examples in (20) will show to what extent their ambiguity profiles can be explained within the framework we have developed and where new distinctions or new principles are needed.

Type 1. *Bestuhlen* and *Bestuhlung* are built from a sortal root. Moreover, the entity or entities contributed by the root are (or are recast as) the entity that is 'created' in the course of the describe event. Under these conditions, and only under these, this entity is among the possible referential argument of the *-ung*- noun. We state this principle as a further hypothesis:

Hypothesis 5: When an *-ung*-noun refers to an entity, then it has a sortal root and it refers to the entity contributed by this root. Moreover, this entity must be conceptualizable as resulting from the event described by the corresponding verb.

The entity reading of *Bestuhlung* is clearly distinct from its event reading. One way to see this is to consider examples like those in (21). The event reading is the only reading compatible with the constraints in sentence (21a) and only the entity reading is compatible with the constraints in (21b).

- (21) a. *Die Bestuhlung nahm eine ganze Woche in Anspruch.*
 'The installation of the chairs took a whole week'
 b. *Die Bestuhlung war aus Stahl und rotem Plüsch.*
 'The seating was made of steel and red plush'.

Besides the event and the entity reading *Bestuhlung* also allows for a result state reading. This reading may be less prominent than the other two readings, but there are contexts where it is the only one possible. One such context is (22).

- (22) *Wegen seiner langjährigen Bestuhlung konnte keiner sich erinnern, wie der Saal ausgesehen hatte, als er noch leer war.*

‘Because of the fact that it had been filled with seats for so many years, no one could remember what the hall had been like when it was still empty.’

Type 2. *Schwächung*, as in *Schwächung des Organismus* (‘weakening of the organism’) is ambiguous between an event reading and a state reading. The first reading is more prominent in *die plötzliche Schwächung des Organismus* (‘the sudden weakening of the organism’), the second in *die kurzfristige Schwächung des Organismus* (‘the brief weakening of the organism’); here the more prominent reading is that the organism *was* weak, rather than that it *was becoming* weak. *Schwächung* does not have an entity reading. This is what our assumptions predict, given that it is built from a property root rather than a sortal root.²⁶

Type 3. Our example for this type is *Mischung*. We assume that *Mischung* and *mischen* are built from a sortal root $\sqrt{\text{misch}}$ with the meaning ‘mixture’; that is, $\sqrt{\text{misch}}$ denotes what comes about as a result of an event described by the verb *mischen*. (So *mischen* means something like ‘make into a mixture’.) If this assumption is correct, then *Mischung* is like nouns of Type 1 in being built from a sortal root. But what then is the explanation that the state reading is not available in this case? The reason, we conjecture, is this: While both in *Mischung* and in *Bestuhlung* the root can be seen as contributing the entity that is created by the event – or alternatively, as contributing what becomes that entity as a result of the changes that the event produces – the two words differ in the way in which the contribution of the root is related to the contribution made by the argument in the specifier position of the preposition. In *Bestuhlung eines Saales* the ‘location’ argument is the hall and the relation between it and the entity contributed by the root is that the former is provided with the latter (by virtue of the latter being put inside the former). This is a relation between two entities that are unequivocally distinct on any account of identity. The case of *mischen* and *Mischung* is different. Here it is the specifier argument of the (silent) prepo-

²⁶ To forestall a natural objection at this point, we note that *Säuberung*, the noun discussed earlier as our paradigm of the *-ung-nouns* built from property roots, appears to only have an event reading. Why, one might ask, shouldn’t *Säuberung* have a state reading as well? We turn to this question below, in the discussion of Type 4 nouns.

sition that refers to the ingredients which are mixed in the course of the *mischen* event and thereby turned into the mixture. So the relation between the specifier argument and the contribution by the root $\sqrt{\text{misch}}$ is more like the relation of ‘constitution’ known from philosophical discussions about relative identity (Geach 1967), see also work on the mass-count distinction within linguistic (Wiggins 1980; Link 1983).

The arguments of such relations can be seen as two stages or two forms of the same thing. For the case at hand this means that the state *s* which is introduced as the meaning of the prepositional root phrase is a result state of a quite different sort than it is in the case of *Bestuhlung*. Such ‘meta-physical’ relations, which hold between different manifestations of the same thing rather than between two things that are distinct by any standards, do not qualify, we conjecture, as possible denotations of *-ung*-nouns.²⁷

Type 4. The *-ung*-nouns of this type are the most problematic. And they show, even more dramatically than those of Type 3, that in order to explain why an *-ung*-noun belongs to the type more is needed than the theory developed in the preceding sections can deliver. The nature of the problem has already become visible in our discussion of *Mischung*: Our theory identifies as the source of *-ung*-nominalisability that a result state relation ‘*e* CAUSE *s*’ is introduced at a level that is visible to *-ung*. This means that a result state discourse referent *s* will be present in the structure of *any -ung*-noun. Why then can this discourse referent become a referential argument of the noun only in some cases but not in all?

As we have seen for the case of *Mischung* we need more than the tools developed in Sections 2–4 to find answers to this question. In order that the result state can be a referential argument of the *-ung*-noun it must satisfy further conditions which are not captured by our hypotheses and which for all we know cannot be expressed in the terms we have been using.

²⁷ One reason for this may be that with such result state relations the difference between state reading and entity reading isn’t much of a distinction at all. Take *Mischung*. The result state reading in this case is that the entities contributed by the theme stand to the entity that is available as referential argument for *Mischung* in the relation of having *become*. This relation is not easy to distinguish from the coming into existence of the latter entity. So the result state, you might say, is nothing over and above the existence of that entity, of which it is presupposed that it was created in the course of the process represented by the event discourse referent *e*. Since entity and result state are so hard to separate in this case, it is perhaps not surprising that the latter is not available as separate item in the context of *-ung*-nominalization.

The -ung-noun we have chosen as an example of Type 4, *Säuberung*, illustrates this point in a different way than *Mischung*. As a noun built from the property root $\sqrt{\text{sauber}}$ it ought to have a state reading as well as an event reading and belong, like *Schwächung*, to the class of Type 2 nouns. But the state reading is not there. (All the tests familiar to us point in this direction. For instance *die kurzfristige Säuberung des Gebäudes* ('the brief cleaning of the building') cannot refer to a brief period during which the building was clean.) We conjecture that this difference between *Säuberung* and *Schwächung* has to do with the role of agentivity in the words that can be built from the roots $\sqrt{\text{sauber}}$ and $\sqrt{\text{schwach}}$. In the case of $\sqrt{\text{sauber}}$ it is much harder to separate the result property from the agentive part of the event introduced by *v* than it is for $\sqrt{\text{schwach}}$. This can be seen by comparing the sentences in (23), which invite different paraphrases.

- (23) a. *Der Tisch machte einen gesäuberten Eindruck.*
 'The table made a 'cleaned' impression.'
 $\equiv$ *der Tisch machte den Eindruck als sei er von jemandem gesäubert worden.*
 'The table made the impression of having been cleaned by someone.'
- b. *Der Mann machte einen geschwächten Eindruck.*
 'The man made a 'weakened' impression.'
 $\equiv$ *Der Mann machte den Eindruck, als sei er geschwächt.*
 'The man made the impression as if he was weakened.'
 $\neq$ *Der Mann machte den Eindruck, als sei er geschwächt worden.*
 'The man made the impression as if he had been weakened.'

These sentences suggest that in the case of *schwächen* it is possible to use the participial form to refer to just the result state, detached from the agentivity part, whereas in the case of *säubern* this is not possible.

This is not to say, however, that non-detachability of the agentive dimension is always the reason why an -ung-noun is without a state reading. In fact, the explanation we offered for what appears to be lack of a result state reading for *Mischung* was quite a different one.

For yet another case, consider *Beleuchtung*. The verbs *leuchten* and *Beleuchten* are like *arbeiten* and *bearbeiten* in that the *be*-verb has an -ung-noun but the verb without *be*- does not. (There is no *Leuchtung*.) As in the case of *bearbeiten* (see Section 4) we assume that the manner root $\sqrt{\text{leucht}}$ of the mono-eventive *leuchten* undergoes reclassification as a property root in the presence of *be*-. As in the case of *bearbeiten* this accounts for the existence of the corresponding -ung-nominal, and predicts as possible read-

ings for it the event and the result state reading. But *Beleuchtung* is like *Säuberung* and *Mischung* in that only the event reading is clearly attested. In this case the reason why the state reading is not there (or appears not to be there) has to do with the property that the reclassified root $\sqrt{\text{leucht}}$ attributes to its argument (the theme) and with the time at which this property is attributed to its argument. The property, we take it, is nothing more than that the argument is subjected to the kind of process that is expressed by the underlying manner root $\sqrt{\text{leucht}}$ of *leuchten*. And the time at which the theme is said to have this property is not after, but during the event described by the verb *beleuchten*. Independent evidence for this last claim comes once more from the semantics of the corresponding past participle. Consider the following contrast:

- (24) a. *der beleuchtete Tisch*
 ‘the illuminated table’
 b. *der gesäuberte Tisch*
 ‘the cleaned table’

(24b) conveys that the table *has been* cleaned, (24a) that the table *is being* illuminated. Assuming the root predication that is responsible for the existence of *Beleuchtung* to be like the predication expressed by the participle, in that the predication time coincides with the time of the event *e'* rather than following it, we see why a state reading for *Beleuchtung* should be hard to recognize as a reading distinct from the event reading: Not only does the stative predication temporally coincide with the event, but it also contributes nothing that is not already expressed by the root as characterization of the event. This, we believe, is the reason why a separate state reading cannot be made out in this case.

As a final example of a Type 4 noun consider *Bearbeitung*. As we just said in connection with *Beleuchtung*, we assumed *Bearbeitung* and *Beleuchtung* to come about in the same way, through reclassification of a manner root as property root and then building the structure that is characteristic of property root based verbs and their *-ung*-nouns. This might suggest that the explanation as to why *Bearbeitung* has no distinguishable result state reading is the same as for *Beleuchtung*. We do not think, however, that that is right. There is an important difference between *bearbeiten* and *beleuchten* which, like that between *schwächen* and *säubern*, can be brought out by comparing prenominal past participles. Consider the phrases in (25).

- (25) a. *der beleuchtete Tisch*
 ‘the illuminated table’
 b. *die bearbeitete Akte*
 ‘the dealt with file’

As we saw, (25a) (=24a) describes the table as *being* illuminated. In contrast, (25b) describes the file as *having been* dealt with. In other words, while *beleuchtet* expresses a property of the theme that holds during the time that the illuminating takes place, *bearbeitet* expresses a true result state property which holds after the event described by *bearbeiten*. (In this regard *bearbeitet* is like *gesäubert*). This indicates that the result state reading of *Bearbeitung*, if it exists at all, should be clearly distinguishable from the event reading. As no separate state reading can be made out for *Bearbeitung* nonetheless, this must mean that the reading isn’t there at all, not that it coincides with the event reading, as we suggested for *Beleuchtung*.

We conjecture that the reason why *Bearbeitung* doesn’t have a result state reading is that the state *s* that is part of its semantic representation lacks the necessary independent ‘contentual substance’: all that the condition ‘*s*: ARBEIT(*y*)’ tells us about *s* is that *s* results from subjecting *y* to the kind of procedure that is described by *bearbeiten*. Thus *s* is like the ‘formal result states’ that have been distinguished from ‘target states’ in the tense and aspect literature (Parsons 1990). Mere formal result states, we conjecture, are not possible as referential arguments of -ung- nouns.

Säuberung, *Mischung*, *Beleuchtung* and *Bearbeitung* are just four examples of -ung nouns that look like they lack separate state readings. At this point we see no reason why the cases they represent should exhaust the possible reasons for why an -ung-noun might lack such a reading. To arrive at a more comprehensive picture of what may be responsible for such readings more work is needed.

A different challenge to Hypothesis 4 comes from nouns like *Änderung*. In Section 2, it was assumed that *Änderung* is built from a property root. For such -ung-nouns, Hypothesis 4 implies that they can have an event reading and a state reading, but no entity reading. But it might well be thought that *Änderung* does allow for entity readings, and in fact that the entity reading of *Änderung* is often more prominent than a state reading. This impression is particularly strong in cases where the theme of *Änderung* is a text or other kind of representation. In (26) it seems that the speaker is referring to the content of the changes that her co-author has made in their joint paper, not to the events of his making those changes, nor to the different states that consist in the paper having been subjected to them.

- (26) *Bist du mit den Änderungen einverstanden?*
 ‘Do you agree to the changes?’

The existence of such entity readings, according to which the *-ung-* noun refers to a modification of a given representation or part thereof, appears to be quite common for nouns derived from verbs that describe representational acts. It appears to be widely true for verbs with such representation-creating meanings that the events they describe can be re-conceptualized as the contents of the representations that the events create. As far as we can see, this re-conceptualization process is orthogonal to the principles and mechanisms we have tried to track in this paper. But if that is so, then what has been proposed here is only one component of a comprehensive account of the systematic aspects of the semantics of *-ung-*nominalization.

6. Conclusion

The central aim of this paper was to explain when *-ung-*nouns can be formed and what an *-ung-*noun can mean in case it can be formed. Our general approach to these questions has been to develop a theory of the internal, root based structure of verbs, building on the works from within Distributed Morphology. New to our knowledge is the way in which morpho-syntactic structures familiar from DM (or structures closely related to those) are given a formal semantics (specified here in the form of semantic representations cast in a version of DRT).

However, in this paper we have only given illustrations of how this syntax-semantics interface works, at the hand of a small number of examples. A more systematic development, in which all interface principles (for us: all DRS construction principles) are spelled out explicitly for a fragment of German is planned. It will contain a substantial sample of German verbs and corresponding *-ung-*nouns. Accounting for the availability and the possible meanings of *-ung-*nouns will be only one among a number of problems that will have to be addressed simultaneously in this undertaking.

The central aim of such a fully explicit fragment description is to come up with satisfactory syntactic and semantic representations of complete sentences. In this paper there was no need to extend the structures we have presented to full sentence structures. But we could have done so if we had wanted to; and, speaking in more general terms, we do not see any greater obstacles in the way of doing this, than to be faced by formal semantics of any denomination.

A topic closely related to the one of this paper is the internal syntax and semantics of German prefix and particle verbs. We have touched on this topic in a few places, particularly, in our discussions of *be*-verbs. But the question when and how prefixes and particles can be the source of *-ung*-nominalisability is a much more general one, in which all prefixes and particles have to be covered. Moreover, this general question is only one of many that have to be answered by a general account of the syntax and semantics of verbal prefixation. In fact, the central question in this domain is similar to the one that we have made an attempt to address in this paper: What prefix- and particle verbs can be formed from the different prefixes and particles, how do those prefixes and particles combine with other root elements in the structure of those verbs and what does this tell us about the semantics of the resulting complex verbs? What has been proposed here about the structure of certain *be*-verbs is no more than a very small part of a comprehensive answer to this question: there are more types of *be*-verbs than we have considered, *be-* is only one from the set of German verbal prefixes, and nothing has been said here about the much larger class of German particles. Our own investigations of aspects of this so much bigger question are only now moving into higher gear and so far only a few results are generally accessible at this point (Lechler and Roßdeutscher 2009).

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The rivalry of French *-ment* and *-age* from a diachronic perspective

Melanie Uth

1. Introduction

Modern French *-ment* and *-age* may be considered as rival suffixes, since they frequently attach to the same verbal bases.

- | | | |
|-----|---|-----------------------------------|
| (1) | <i>abattement</i> – <i>abattage</i> | (‘exhaustion’ – ‘logging’); |
| | <i>blanchissement</i> – <i>blanchissage</i> | (‘turning white’ – ‘laundrying’); |
| | <i>gonflement</i> – <i>gonflage</i> | (‘inflation – inflating’); etc. |

In the recent literature several criteria have been proposed in order to distinguish the two suffixes, i.e. aspectual differences (Dubois 1962; Bally 1965; Lüdtke 1978; Martin, this volume), differences in the argument-structural properties of the base verbs (Dubois and Dubois-Charlier 1999; Kelling 2004; Martin, this volume), differences concerning the composition and consistence of the eventive chain denoted by the corresponding nominalizations (Martin, this volume), a difference regarding the quantitative composition of the PP-complements representing the internal argument of the base verb (Martin, this volume) as well as differences concerning the ontological domains, the events or states denoted by the *-ment* and *-age* derivatives pertain to (Dubois 1962; Bally 1965; Lüdtke 1978; Dubois and Dubois-Charlier 1999; Kelling 2004; Martin, this volume).

Diachronically, the *-age* suffixation originated from borrowed substantivizations of Latin relational adjectives in *-aticu* that entailed the traditional head noun as a semantic constituent (e.g. *terrage* ‘tax on land’ < *censu* ‘tax’ *terraticu* ‘on land’). Denominal *-aticu* substantivizations partly developed into group nouns, while the deverbal ones were the antecedents of the present-day event nominalization procedure. In Old French, event nominalizations in *-age* were marginal. Out of the 93 *-age* lexemes contained in the *Nouveau Corpus d’Amsterdam* (NCA), only 10 are deverbal.¹

¹ The NCA, edited by Stein and Kunstmann (2006), is composed of 300 text samples reaching from the 12th to 14th century and amounting to about 3 million words. The quantitative diachronic development of deverbal as opposed to denominal *-age* nominals is illustrated in section 4.

By contrast, the *-ment* suffixation was one of the standard procedures for deverbal event nominalization in Old French.² The diachronic development of this nominalization procedure is not entirely clear (cf. Leumann [1926] 1977: 371). An interesting hypothesis among historical philologists is, however, that the suffix is composed of the Latin nominalization suffix *-men* and the suffix *-tum*, stemming from the Latin past participle inflection as in e.g. *factum* ('done').³ According to e.g. Pott (1836), the combination of *-men* and *-tum* resulted in the nominalization suffix *-mentum*, the antecedent of the (Old and) New French *-ment* suffixation. The fact that the interpolation of morphemic material in order to extend existing suffixes is a common phenomenon in the history of the Indo-European language family (cf. e.g. Schleicher 1876: 437–438; Bopp 1886: 34) sustains the above hypothesis concerning the diachrony of *-ment*.

In this paper, I argue that the consideration of the diachronic development of the suffixes calls into question the above-mentioned multi-feature analyses of the competition between *-ment* and *-age* in New French. In particular, the diachronic analysis of the two suffixes presented in sections 3 and 5 suggests that even in New French the several differences exhibited by the *-ment* and *-age* nominalizations should best be traced back to a single underlying semantic difference between the two suffixes, which is rooted in the perspective from which the nominalized forms refer to the event designated by the base verb.

The paper is structured as follows. Section 2 resumes the proposals for differentiating New French *-ment* and *-age* offered by previous analyses. Sections 3 and 4 are devoted to the diachronic development and synchronic behavior of the *-age* suffixation. Relying on the general account for the semantics of nominalization procedures proposed by Chierchia (1988), I propose that, as a result of the diachronic development, deverbal *-age* nominalizations focus on the (reified) properties which their bases ascribe to the corresponding subject referents. Sections 5 and 6 deal with the diachrony and synchrony of the *-ment* nominalization. Based on the above-mentioned historical remarks concerning the origins of this suffix and on its synchronic characteristics, I argue that the *-ment* attachment initiates a shift in the perspective on the event designated by the base predicate. On the basis of

² With 410 lexemes in the NCA, the deverbal event nominalizations in *-ment* even outnumber the nominalizations in *-tion*.

³ The sparseness of the analyses of this development suggests that it took place before the Classical Period. The exact dating of the development is equally unclear, however.

the analysis of German past participles proposed by Roßdeutscher (2000), I propose that the *-ment* nominals denote the reified properties which their bases ascribe to the corresponding Theme argument, if there is any. That is, at least in the realm of transitive and unaccusative verbs, *-ment* nominalizes the property of the Theme argument to take part in the resultant state of the event designated by the base predicate. As to the *-ment* nominalizations from unergative verbs, it will become evident that they are also related to resultant states, referring to e.g. sounds in the case of sound emission verbs. In section 7 it is shown that the several differences between *-ment* and *-age* nominalizations mentioned by the previous analyses may, in one way or the other, all be traced back to the above-mentioned diachronically rooted semantic difference between the two suffixes.

2. Recent contrastive analyses of New French *-ment* and *-age*

As already mentioned, *-ment* and *-age* are generally contrasted with respect to a set of different criteria. Firstly, some authors argue for aspectual differences between *-ment* and *-age*. One example is Dubois (1962: 29–32) who ascribes to the *-ment* nominals a terminative meaning and states that they designate resultant states. As far as the *-age* nominals are concerned, Lüdtke (1978: 147) observes that they are often used to denote durative actions. In the same way, Bally (1965: 181) argues that *-ment* nominals are generally very likely to be punctual or terminative, whereas *-age* nominalizations tend to realize durative and iterative aspectual values.

Martin (this volume) points to two further interesting facts concerning the different aspectual quality of the *-age* and *-ment* nominalizations. The first criterion relates to the “length of the eventive chain” denoted by the *-ment* and *-age* nominals. Martin assumes that certain verb classes are semantically underspecified in that they may denote longer or shorter eventive chains. The first class consists of causative/inchoative alternating verbs of the type *gonfler* (‘to inflate’/‘to swell’). The second class of underspecified verbs consists of iterative/semelfactive verbs of the type *miauler* (‘to meow’). With respect to both verb classes, Martin observes that *-age* selects the longer reading, while *-ment* selects the shorter one. For example, Martin states that, in the case of change-of-state verbs like *gonfler*, the event denoted by the *-age* nominal necessarily implies the causing event, even when the agent of this event is left unexpressed. This is evidenced by the fact that the causing event has to be witnessed for a sentence such as (2a) to be true. Such an implication is not attested for the corresponding *-ment* nominal

(2b), which may, however, receive an agentive interpretation if the sentence includes a PP denoting the Agent (2c):

- (2) a. *Pierre a assisté au **gonflage** des ballons.*
 Pierre witnessed the inflating of the balloons.
 > *Pierre witnessed the whole causation*
- b. *Pierre a assisté au **gonflement** des ballons.*
 Pierre witnessed the inflation of the balloons.
 > *Pierre witnessed the change of state only*
- c. *Pierre a assisté au **gonflement** des ballons par x.*
 Pierre witnessed the inflation of the balloons by X.
 > *Pierre witnessed the whole causation* (Martin, this volume)

Concerning the class of iterative/semelfactive alternating verbs, it is shown that the *-age* nominals exhibit an iterative interpretation (in appropriate contexts), while the corresponding *-ment* nominals are forced to show up with plural inflection in iterative contexts:

- (3) a. *Une séance de °**miaulage**.* ('A meowing session', singular)
 b. vs. * *Une séance de **miaulement**.* (singular)
 c. vs. *Une séance de **miaulements**.* (plural) (Martin, this volume)

The second aspectual difference observed by Martin is that *-age* contrary to *-ment* prefers internal arguments that are incrementally affected by the event denoted by the relevant base verb. Obviously, this is not the case for "eye-closing" events, hence the difference in acceptability of the *-age* nominal between (4a) and (4b):

- (4) a. *Marie a intentionnellement plissé sa jupe.*
 Marie intentionally pleated her skirt.
 > *Le **plissement** / **plissage** de la jupe*
 The pleating of the skirt
- b. *Marie a intentionnellement plissé les yeux.*
 Marie intentionally squinted her eyes.
 > *Le **plissement** / #**plissage** des yeux*
 The squinting of the eyes (Martin, this volume)

Two further criteria are generally mentioned in order to differentiate *-ment* from *-age*. Firstly, it is assumed that the base verbs *-age* attaches to are in some sense more agentive than the *-ment* base verbs. The traditional view,

represented by e.g. Dubois and Dubois-Charlier (1999), is that *-age* generally attaches to transitive base verbs, whereas *-ment* selects intransitive ones. However, Kelling (2004) and Martin (this volume) argue that this generalization does not always hold.⁴ Kelling (2004: 347) proposes that *-age* is selected by base verbs which are characterized by having a prototypical agent in terms of Dowty (1991), whereas this is not the case for *-ment*. Martin (this volume) argues that this principle may not account for the data either, since there are also counter-examples to it. Instead, she proposes that “the difference in agentivity between *-age* and *-ment* is related to the fact that the eventive chain denoted by [an] *-age* [nominalization (MU)] must begin with an action, or must have been triggered by an action (not denoted by the noun itself).” Contrary to that, the *-ment* nominals may, but need not imply any action component. This generalization accounts for the fact that *-age* may not co-occur with non-agentive par-phrases introducing the subject referent of the base verb:

- (5) a. *Le **décollement** des tuiles par le vent / par l'ouvrier*
The unsticking/removal of the tiles by the wind/by the worker
b. *Le **décollage** des tuiles par #le vent / par l'ouvrier*
The unsticking/removing of the tiles by the wind/by the worker
(Martin, this volume)

Secondly, all authors agree on the hypothesis that *-ment* and *-age* nominals may be distinguished according to the ontological domain the events they denote pertain to. The estimations differ as to the exact categorization of the *-ment* and *-age* denotations. A frequently proposed differentiation is that *-age* nominals denote events pertaining to the physical domain (Martin, this volume) or the domain of technical operations (Lüdtke 1978; Dubois 1962), whereas the events denoted by the *-ment* nominals mostly belong to the domain of psychological states or attitudes (Dubois 1962: 31; Lüdtke 1978: 101–102; Dubois and Dubois-Charlier 1999: 20).

3. The origin of the French *-age* nominalization

The French *-age* suffixation developed from the Latin denominal adjectives in *-aticu*, which served to ascribe a sub-classifying property to the individuals denoted by the head nouns. Note that *-aticu* attached to nominal bases

⁴ Pertinent examples are given, e.g. by Martin (this volume).

(e.g. *terraticus* < *terra*, ‘land’) as well as verbal bases (*venaticus* < *venari*, ‘to hound’).

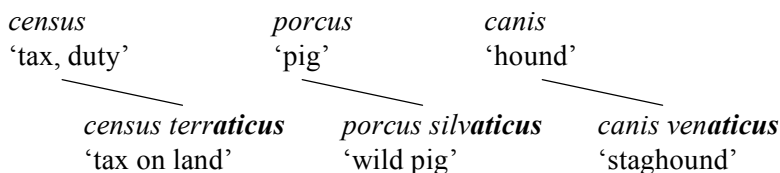


Figure 1. Taxonomic relations of the Latin -aticu derivation

The -aticu adjectives were nominalized in the course of the transition from Latin to Old French. In order to analyze this development, I adopt the hypothesis of Chierchia (1988) that the nominalization of property denoting expressions corresponds to the transformation of predicative expression into singular terms. Predicative expressions such as e.g. *brave* in *John is brave* or *thinks* in *John thinks* are used to ascribe properties to individuals. In truth-conditional semantics the denotation of a predicative expression is defined as the entirety of the individuals the property may truthfully be ascribed to. This set of individuals is the extension of the expression. It is a matter of debate if such terms also have an intension, i.e. a meaning next to their extension (cf. e.g. Künne 2007: 310–352). A prominent proponent of this hypothesis is Frege, who calls this „additional meaning” the *sense* of an expression (Frege [1892] 1994: 24–25). One language philosopher who rejects this view is e.g. Quine (1948). In this paper, I will follow Chierchia (1988) who adopts the Fregean perspective.

Singular terms as *the dog* are referring expressions.⁵ They are used to pick out a certain (amount of) individual(s) fitting to their descriptive content. In the above case, the predicate *dog* establishes the denotational range of the term, i.e. all individuals the properties associated with *dog* may truthfully be asserted to, whereas the determiner serves to single out one individual of this entirety. Obviously, the denotation of the predicate does not change due to the referential usage: *dog* still denotes such entirety of *dog*-individuals. However, contrary to nominal predicates such as *dog*, predicative expressions such as *brave* or *thinks* may not be used as referring expressions. In order to be used that way, they have to be nominalized, yielding

⁵ There is a discussion as to the question if singular terms are always used to refer to individuals (cf. e.g. Donellan 1966). This issue does not directly concern our investigation, however.

e.g. *braveness* as in *Braveness is a virtue*, or *thinking* as in *Thinking is an activity*, respectively. The crucial point for the present investigation is that a singular term like *braveness* may hardly be considered as denoting the set of brave individuals, as is already evidenced by the fact that, unlike *dog*, the term may occur without determiner in referential position in English. Rather, nominalized predicative expressions such as *braveness* denote the (mental construct of a) universal abstract object stemming from the reification of the base predicate's intension.⁶ Therefore, Chierchia (1988) states that nominalized predicative expressions are best to be analyzed as terms denoting individuals:

... the unsaturated structures associated with predicative expressions ... can somehow be "projected" as individuals, or have individual counterparts, which is what nominalized predicative expressions refer to.

(Chierchia 1988: 54)

However, it is not the case that all nominalized predicative expressions denote (reified) properties. Rather, the ontological category of the reified expression depends on the kind of properties the base predicate assigns to the corresponding individuals. For example, unlike adjectival predicative expressions such as *brave*, verbal predicates ascribe to their subject referents the property of participating in the event they designate. Hence, the nominalization of this kind of expressions yields singular terms denoting event types instead of properties.⁷ Nevertheless, in both cases, the properties designated by the base predicates are conceptualized as abstract entities whose existence is to a certain extent independent of the individuals the properties designated by the base predicates are ascribed to.

According to Chierchia (1988), nominal predicates such as *dog* may be subject to the very same reification process, which is lexicalized by means of bare plurals in English and yields kind referring expressions as in (6).

- | | | |
|-----|---|----------------------|
| (6) | extinct
mammals
whales are numerous
in short supply
loved by John | (Chierchia 1988: 17) |
|-----|---|----------------------|

⁶ The notion of *abstract object* is used in the sense of Asher (1993: 15 ff).

⁷ The notion of *event types* I have in mind here goes back to the formal theory of reification proposed by Hamm and van Lambalgen (2002), cf. especially Hamm and van Lambalgen (2002: 13–14).

This analysis of bare plurals combines the account of Carlson (1977), who proposes that bare plurals as in (6) are names of kinds, with the theory of Cochiarella (1976), who proposes that kinds correspond to nominalized properties.⁸ Hence, we may distinguish with Chierchia between three kinds of nominalizations: the nominalization of predicates designating properties (i.e. adjectives as *brave*) yields reified properties, the nominalization of predicates designating eventualities (i.e. verbs as *to think*) yields event types, and the nominalization of predicates designating individuals (i.e. nouns as *dog*) yields kinds.

In order to model the process of property reification in truth conditional semantics, Chierchia (1998: 438) introduces a nominalization function that assigns to every predicative expression denoting a range of individuals the associated reified individual (i.e. a property, an event type or a kind). The denotations are translated into one another by means of up- and down-operators, the crucial point being that Chierchia conceives of the operators as applying to nouns just as well as to verbs (and, by hypothesis, to adjectives):

The individual counterparts of the properties associated with common nouns are kinds (while, e.g., the individual correlates of properties associated with verbs, might be, say, action types). So kinds can be regarded as the ‘nominalization’ of (predicative) common nouns and predicative common nouns as the ‘predicativization’ of kinds. The ‘down’-operator nominalizes, and the ‘up’-operator predicativizes. (Chierchia 1998: 349)

Coming back to our nominalized *-aticu* adjectives, this theory predicts that the corresponding substantivizations denote properties similar to the deadjectival nominalization considered above (i.e. *braveness*). However, the analysis of the borrowed *-aticu* adjectives is complicated by the fact that the *-aticu* terms did not form proper adjectival nominalizations but elliptical expressions which entailed the traditional head noun (as e.g. *census*, ‘tax’ in *census terraticus*, ‘tax on land’) as a semantic constituent. Hence, the *-aticu/-age* derivatives entered the Old French language as lexicalized designations of taxes, rights, status etc. as exemplified by (7).⁹

⁸ Bare plurals may also occur in indefinite contexts as *Dogs* in *Dogs are sitting on my lawn*. Not that I would not like to enter in the discussion of the proper treatment of bare plurals in English. The only relevant point is that the reification of nominal predicates yields a special sort of individuals, which is called “kind” by Chierchia (1988, 1998).

⁹ The Old French examples are mainly taken from the NCA and to a minor extent from the *Godefroy* dictionary, for further information cf. [Gdf.].

- (7) a. TAX (*chevage* = bounty, capitation; from *chief*):
la fud subjecte e rendid chevage...
 There was-3SG subjected and paid-3SG capitation
 'He was subjected and paid capitation.'
- b. RIGHT (*passage* = tax to cross a territory; from *passer*):
si (...) disent..., que il queroient passage...
 PRT. say-3PL that they ask-3PL passing
 'And (they) said that they ask for the right to pass...'
- c. QUALITY (*barnage* = quality of a baron, form *baron*):
Et il resault en piez com hons plain de barnage.
 And he remain-3SG on feet like man full of qualities of a baron.
 'And he remained steady like a man full of honour like a baron.'

Evidently, the bases of these elliptical substantivizations are still predicative expressions. They act as predicates ascribing properties to the eliminated head noun restricting its meaning to a certain sub-category.

The most important step in the development of the -age nominalization is that the semantically incorporated head nouns (such as *census*, 'tax', *ius*, 'right' or *virtus*, 'virtue') were subject to a general process of semantic bleaching, the borrowed -age derivatives developing into terms denoting e.g. kinds, ranks, groups or events:

- (8) a. RANK/KIND (*chevage* = bounty, capitation; from *chief*):
...zz escript k il avoit quanqu estoit a monniage.
 ... a shrine that he got-3SG when was-3SG in monasticism.
 'a shrine that he got when he lived in monasticism'
- b. GROUP (*barnage* = group of barons, from *baron*):
tos li barnages lou prist a esgarder, dist l un
 all the assembly of barons him took to look(inf.), said the one
a l autre: ...
 to the other:
 'The assembly of barons peered at him, said one to the other: ...'
- c. EVENT (*passage* = event of passing, from *(se) marrier*):
ne ne la ...bates car vous n iestes pas ensamble
 and not her ...beat because you not be-2PL NEG together
par mariage
 by marriage'
 'and do not beat her because you are not together by marriage.'

In her enlightening usage based study of the diachronic development of the *-age* nominalization, Fleischman (1990: 71) ascribes a pivotal role to the fiscal terms in *-age*, which were of high frequency because of the “need for a new abstract terminology to designate the series of abstract concepts in the context of feudal society and the changing institutional pattern of medieval France.” According to Fleischman, the meaning shift of the *-age* derivatives most often amounts to a sort of bleaching, in that the terms designating taxes on goods are transformed into terms designating the goods as such (9a), just as terms designating taxes on work activities or services are shifted into expressions designating the activities or services as such (9b).

- (9) a. *cortillage*: ‘tax on garden produce’ > ‘garden produce’
 terrage: ‘tax on land’ > ‘acreage, land’
 pouillage: ‘duty paid to the lord in fowl’ > ‘the fowl’
 b. *tuage*: ‘tax on the slaughter of pork’ > ‘action of slaughtering’
 forage: ‘tax on (bread)baking’ > ‘action of baking’
 charriage: ‘transport duty on goods’ > ‘action of carrying’

The crucial point for our investigation is that, at least in the realm of the derivatives shifted into kind and event denoting terms, the *-age* suffix hence synchronically functions as a true nominalization operator.¹⁰ That is, based on the data exemplified by (9), speakers who are not aware of the suffix’s diachrony ascribe to it a nominalizing function corresponding to the semantic value of Chierchia’s (1998) ‘down’-operator.¹¹ Hence, the metonymic shift resulting in event denoting *-age* derivatives as in (9b) paved the way for *-age* to develop into a true event nominalization suffix.¹²

¹⁰ It is not entirely clear which kind of meaning shift led to the above-mentioned group readings. An attempt to attribute the genesis of the group terms to the quantificational hybridity of the concepts designated by the originally borrowed *-age* nominals is proposed by Uth (2008).

¹¹ This reinterpretation process may be modeled in terms of the reanalysis theory of Eckardt (2006). However, since our aim is to investigate the impact of the diachronic development of *-ment* and *-age* on their synchronic characteristics, we cannot go into the details of this development here.

¹² By definition, the term *true event nominalization suffix* refers to any suffix functioning in the way described by Chierchia (1988).

4. Development and characteristics of the event nominalizing *-age* suffixation

Of course, the mere possibility to reinterpret *-age* as a nominalization suffix does not explain why the reinterpretation actually took place. Fleischman (1990: 166) agrees with Dubois (1962) and other scholars on the hypothesis that the New French *-age* terms are most frequent in the domain of technical operations. Referring to this observation, she proposes that the proliferation of event nominalizations in *-age* was due to the fact that the suffix was borrowed into English in earlier centuries, and “borrowed back” into French in the course of the general borrowing of industrial terminology from the English language during the Industrial Revolution (i.e. in the 19th century). Our recent diachronic study based on six 3 million word corpora ranging from the 12th to the 20th century¹³ shows that the proliferation of event nominalizations in *-age* indeed took place in the 19th century.

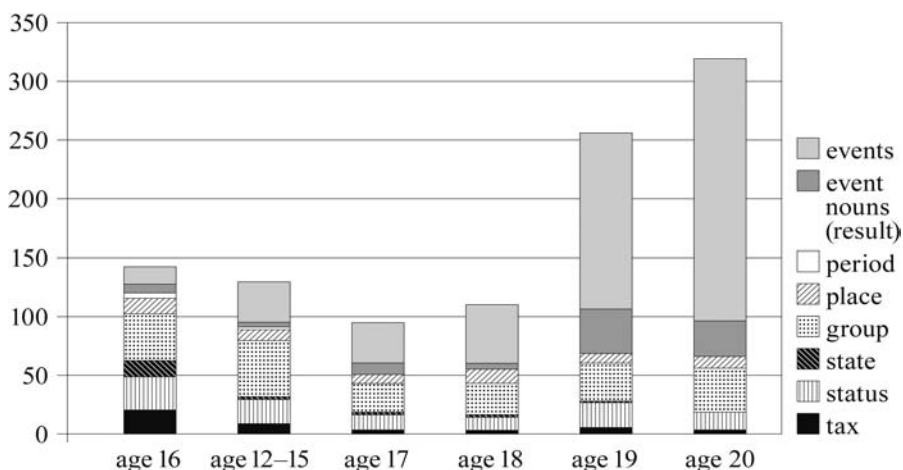


Figure 2. Shares of different *-age* readings from the 12th to 20th century

However, despite of the fact that there may indeed have been an increased need for technical terms during the Industrial Revolution, I would like to argue that in order to account for the diachronic proliferation of the deverbal *-age* derivatives, we do not need to rely on the doubtful hypothesis that the English *-age* suffixation, once borrowed from French, “reanimated” the suffix’s use in the source language seven centuries later. Instead, I would like to

¹³ Next to the NCA we singled out one corpus for each century from the diachronic *Frantext* database, each corpus amounting to about 3 million words.

suggest that the suffix was predestined to take on that role because of two facts. Firstly, the terms required to designate the new techniques and processes had to fulfill the condition to be true event nominalizations in Chierchia's sense.¹⁴ The second important aspect is that, due to the decline of the nominalized infinitive during the 17th century, there did not exist, at the time, any other semantically appropriate nominalization procedure to fulfill the required task. Within the limits of the present paper, we may not get into the issue any further. In any case, the diachronic development of the *-age* nominalization fits nicely into the hypothesis that (Old as well as) New French *-age* represents a true nominalization operator in the sense of Chierchia (1988, 1998).

This hypothesis is further confirmed if we consider the behavior of the New French *-age* nominalizations figuring in the above-mentioned 20th century *Frantext* corpus (henceforth FRA). First of all, the deverbal *-age* nominals show a clear tendency to occur in non-episodic contexts. Due to their intensional character, non-episodic contexts are particularly appropriate for expressions denoting event types in Chierchia's sense:

- (10) a. *canal de drainage*, *poudre d'astiquage*, *séance de pliage*, etc.
 'drainage channel' 'cleaning powder' 'folding session'
 b. *Lavage, repassage, je suis prêt à tout, tellement j'ai faim.*
 'Washing, ironing, I am ready for everything, since I am so hungry.'
 c. *On sait où mène le nettoyage.*
 'It is known where the cleaning leads to.'
 d. *Et le monde est d'abord du linge. Du linge, des lessives, des courses, des commissions, de la cuisine, du ravaudage.*
 'And the world is first of all of laundry. Laundry, washing powder, shopping, commissions, kitchen, mending.'

However, there is a further characteristic of the *-age* nominals strengthening our hypothesis. On the one hand, the few *-age* nominals which are instantiated by means of contextual elements to denote particular episodes (as opposed to general event types) apparently do not have any direct influence on the viewpoint the situation of the base event is presented in. That is, the nominals may show up in imperfective contexts (11a) as well as in perfective contexts (11b,c) in actual discourse:¹⁵

¹⁴ Cf. note 12 for a definition of the term *true event nominalization (suffix)*.

¹⁵ For the present purposes, we adopt the definition of perfective and imperfective viewpoint by Smith (1997: 3) according to which "[p]erfective viewpoints focus a situation in its entirety, including both initial and final endpoints", whereas

- (11) a. *Le moteur hurlait au **freinage**.*
 'The engine roared when braking.'
 b. *Huit oléoducs ont explosé à la suite d'un **sabotage** commis aux premières heures de la matinée de mardi aux environs de Barcelone...*
 'Eight oil pipelines exploded after sabotage committed in the vicinity of Barcelona in the early morning hours of Tuesday.'
 c. *Il fallut le transporter à l'hôpital. **Lavage** d'estomac. Perfusion. Tout le cirque de la technique et de l'humanité.*
 'It had to be brought to the hospital. Gastric lavage. Drip. All the circus of techniques and humanity.'

On the other hand, the *-age* nominals seem to focus on the preparatory phase of accomplishments (cf. 10a–d, 11b,c), and often leave an impression of non-terminativity (cf. section 2).¹⁶ Indeed, the transitive base verbs in (10a–d) and (11b,c) ascribe the property to partake in the corresponding event to both, the subject referent and the object referent of the sentence. However, it is important to bear in mind that the base predicates, *-age* attaches to, are not perspectively modified, and hence designate the corresponding events from an active (as opposed to passive) perspective. Evidently, perspectively unmodified, i.e. active predicates as *saboter* or *laver* equally focus on the properties of the underlying subject referent (which is not to be confused with the Agent, as evidenced by unaccusative active predicates as *épanouir*, 'to flourish'). Accordingly, the process relatedness of the *-age* nominalizations, their focussing on the action component in the realm of complex event predicates, just as well as the defocusing of the resultant state component is due to the mere fact that *-age* does not modify the active base predicates with respect to any Voice-related features. Hence, if the resultative component of a transitive or unaccusative base verb is part of the denotation of the corresponding *-age* nominal at all, it is presented as belonging to the property ascribed to the subject referent.

Furthermore, it has to be noted that the event types denoted by the (very frequent) *-age* nominals in non-episodic contexts may not be temporally located in relation to any evaluation interval.¹⁷ That is, they may not be considered from the perfective perspective. Since the *-age* nominals denote

"[i]mperfective viewpoints focus part of a situation, including neither initial nor final endpoints."

¹⁶ For further elaboration on the *preparatory phase*, the reader is referred to Moens and Steedman (1988). A definition of *accomplishment* is given by Smith (1997: 3).

¹⁷ For elaboration on the *evaluation interval* cf. e.g. Kuhn and Portner (2002).

event properties, the completion of the event, or the achievement of the resultant state, respectively, is undetermined. Hence the strong impression of imperfectivity in the realm of non-episodic contexts.

5. Hypotheses relating to the origin of the *-ment* nominalization

As already alluded to in the introduction, the diachronic development of the *-ment* suffixation is not entirely clear. However, several scholars agree on the hypothesis that the suffix's antecedent *-mentum* is to be conceived of as a composition of *-men*, another Latin nominalization suffix, and the element *-to*, the composed form clearly outnumbering the original *-men*, which, by the period of Late Classical Latin, was restricted to conventionalized registers and was merely used as an alternate to the *-mentum* suffixation (Leumann 1977: 370; Bopp 1886: 41; Schleicher 1876: 396). Interestingly, the *-to* form stems from the Indo-European "verbal adjectives" in *-to* and occurs in three different deverbal environments in Latin (Alsdorf-Bollée 1970: 26–46). Firstly, it is used to form past passive participles, which "introduce a theme related perspective and present the respective eventuality as a resulting property or state":

- | | | |
|--------------------------------|---|---|
| (12) <i>facio</i> | > | <i>opus mihi est factum</i> ¹⁸ |
| ‘to construct, produce’ | | work mine is done |
| ‘my work is done’ | | |
| <i>constituo</i> | > | <i>constitutum enim esse discidium</i> |
| ‘to put, place, set’ | | fixed in fact is the divorce |
| ‘the divorce is in fact fixed’ | | |

Secondly, the *-to* morpheme forms part of nominalized past participles, which denote the "object or result of a completed event":

- | | | |
|--------------------|---|-------------------------------------|
| (13) <i>factum</i> | : | ‘the (work etc.) done’ |
| <i>constitutum</i> | : | ‘the (accord etc.) fixed’ |
| <i>assertum</i> | : | ‘the (sentence etc.) asserted’ etc. |

Finally, the *-to* suffix forms part of different nominalization procedures, most notably of the *-tus* nominalization, which "mainly attaches to intransitive and reflexive verbs" (Alsdorf-Bollée 1970: 44) and "exhibits a perfect

¹⁸ The Latin examples are extracted from the *Perseus Digital Library*, for further information cf. [PER].

sense, designating the result of the action” (Collin 1918: 33). The Latin *-tus* nominals principally denote mental states (e.g. *sensus*, ‘mind’, *spiritus*, ‘sense’), emotional states (e.g. *affectus* ‘emotion’), sounds and noises (e.g. *mugitus* ‘yelling’, *plausus* ‘applause’) and movements (*saltus* ‘jump’, *fluctus* ‘flow, stream’, cf. e.g. Benveniste 1948). This nominalization procedure collapses, however, as a consequence of the reorganization of the Latin declension system (Alsdorf-Bollée 1970: 38–46; Collin 1918).

Evidently, the semantics of the *-tus* nominalization is strikingly similar to the one generally attributed to the New French *-ment* nominalization (cf. section 2).¹⁹ In view of the fact that the *-tus* nominalization did not outlast the reorganization of the Latin declension system, we might be tempted to relate the genesis of the *-mentum* nominalization to the decline of *-tus*, assuming that the traditional *-men* nominalization was composed with the participial *-to* in order to compensate the loss of the *-tus* derivation. Of course, due to the sparse empirical data and the impossibility to exactly date the different developments, this hypothesis is ultimately unsustainable. However, even if it is (for the time being) impossible to precisely retrace the exact course of the development of the *-ment* nominalization, its genesis may quite reliably be attributed to the composition of the Latin *-men* suffix with the Indo-European/Latin *-to* morpheme, a fact which already relates *-ment* to the semantics of past participles. This hypothesis is corroborated by the fact that the Old French *-ment* nominalizations show up in the contexts which generally characterize past participles. That is, most of the *-ment* nominals occurring in the NCA denote resultant states (14a) or properties of individuals (14b). Furthermore, we find *-ment* derivatives denoting events presented in the passive perspective (14c) as well as derivatives denoting completed events (14d).²⁰

- (14) a. *ne rait entr eus adoucement e concorde e ajostement.*
and prevails among them blandness and harmony and agreement.
‘And among them prevails blandness, harmony and agreement.’
b. *mult fu de grant acointement [et] se fist amer a ...*
much was of great intelligence and himself made popular among...
‘He was of high intelligence and endeared himself to...’

¹⁹ Note that *-ment* nominals (from unergative verbs) are likewise very frequent in the domain of noises, sounds and movements. Cf. the several remarks on this issue below (sections 6–7).

²⁰ A thorough analysis of the *-ment* nominals figuring in the NCA remains to be accomplished, however.

- c. *et soi meisme resuscitai il des morz lou tierz jor de son*
 and himself rise-1SG he from the dead the third day of his
crucefiemant.
 crucifixion.
 ‘And he rose from the dead on the third day after his crucifixion.’
- d. *tresik apras l’ajornement qu ils embuschierent en uns*
 until after daybreak that they lie-3PL in ambush in a
vals, ...
 valley, ...
 ‘After daybreak they lied down in ambush in a valley, ...’

6. The semantic characteristics of New French *-ment*

The New French *-ment* nominalizations likewise predominantly show up in the contexts mentioned above. In (15a), the *-ment* nominal denotes a resultant state, whereas in (15b), it denotes a property of an individual. *Rétablissement* in (15c) denotes a passive event, and *amaigrissement* in (15d) denotes a completed event.

- (15) a. *Voilà un demi-siècle que cette langue vit dans l’isolement complet,...*
 ‘For half a century this language has been living in complete isolation’
- b. *Il a l’entêtement du policier qui croit tenir un criminel.*
 ‘He is as stubborn as a policeman who believes having caught a criminal.’
- c. *... le rétablissement du dimanche [a] une première conséquence: ...*
 ‘The reintroduction of the Sunday has a first consequence: ...’
- d. *J’avais récupéré mon poids d’avant l’amaigrissement par le zona, ...*
 ‘I had regained my weight which I had before the loss of weight caused by the zoster.’

Relying on the monosemantic analysis of (German) past participles proposed by Roßdeutscher (2000), I would like to suggest that the (Old as well as New) French *-ment* suffixation is indeed comparable to the past participle morphology as far as the aspectual influence on the verbal base is concerned.²¹ Contrary to recent analyses of past participles as e.g. Kratzer

²¹ Note that this is not to say that *-ment* nominals correspond to nominalized past participles, which still display a different semantics.

(2000) or Maienborn (2009), Roßdeutscher suggests that the participle morphology (i.e. *ge—t* in German) represents one single meaning in all the different constructions it occurs in, the meaning differences between e.g. process passives as *Der Patient wird (vom Arzt) geheilt* ('the patient is cured by the physician') and state passives as *Der Patient ist geheilt* ('the patient is cured') being attributable to the co-occurring elements, as e.g. the auxiliary and the copula in the above examples.²² Similarly to Chierchia (1988), Roßdeutscher (2000) argues that the main function of verbs is to ascribe properties to individuals. However, the different forms and constructions a verb may appear in (e.g. *x cures y* versus *y is cured by x*) play a crucial role when it comes to determine what property is ascribed to which participant.

A context-free participle as *geheilt* ('cured') ascribes to its Theme argument the property of being in the state which results from a preceding curing process. In the 'state passive' construction, the function of the copula is to establish an explicit relation between the property and its Theme argument.²³ By contrast, if we are confronted with a 'process passive' construction, we conceive of the Theme argument as (equally) participating in the event designated by the base verb (e.g. *heilen*), which is, however, supposed to result in the state designated by the corresponding participle. Hence, in both constructions, the participial morphology introduces the state, the event designated by the base verb is supposed to result in. More precisely, the participle introduces the property of the Theme argument to participate in that state – the difference in conceptualization being due to the auxiliary or the copula, respectively. For this reason, Roßdeutscher (2000: 12) distinguishes between formal and conceptual 'participation properties' ('Mitspielereigenschaften'): In copula sentences, formal and conceptual

²² The terms *state passive* and *process passive* are used in the sense of Kratzer (2000: 385).

²³ There is a controversy as to the question whether state passive participles have a uniform semantics (e.g. Maienborn 2009) or not (e.g. Kratzer 2000), since there are pieces of evidence pointing to a difference between resultant state readings (*Die Kinder sind schlampig (*un-)gekämmt* 'the children are sloppily (un-)combed') and property readings (*Die Kinder sind ungekämmt* 'the children are uncombed'). Theoretically, we diverge from the two above-mentioned accounts in that both do not ascribe any meaning to the participle morphology but operate with zero suffixes. Descriptively, we may, for the present purposes, consider the difference between the resultant state reading and the property reading as pragmatically motivated, along the lines of Maienborn's approach.

participation properties coincide, whereas in *werden* passives the auxiliary introduces a shift from the resultant state to the process preceding that state. However, in any case, the participle ascribes to the Theme argument the formal property to participate in the resultant state (Roßdeutscher 2000: 97).

The most important difference between ‘process passives’ and ‘state passives’ is that whereas a state passive construction as *Die Kinder sind gekämmt* (‘the children are combed’) is ambiguous as to the question if the Theme is co-referent with the Agent (i.e. the children combed themselves) or not (i.e. someone combed the children), the ‘process passive’ only has the disjoint reference reading (i.e. someone combed the children, cf. e.g. Rapp 1997: 197). Note that, according to Roßdeutscher (2000), this effect is likewise to be attributed to the shift of conceptualization introduced by the *werden* auxiliary. With this, Roßdeutscher relies on the following two observations. First of all, the auxiliary shifts the perspective from the resultant state to the preceding process as elaborated above. In the context of verbs like ‘to comb’ this process may not be conceptualized without attributing it to an Agent. The second crucial point is that in the case of event (as opposed to state) reference, the co-reference of Agent and Theme has to be explicitly signaled by means of a reflexive pronoun in German. Since there is no explicit hint to reflexivity in sentences as *Die Kinder werden/wurden gekämmt*, we conceive of the Agent as not being co-referent with the Theme. Most importantly, according to this approach, the disjoint reference interpretation has no bearing on the meaning of the participle, but results from the focusing of the process component introduced by the *werden* auxiliary. The verb arguments are ‘carried by events’ (‘von Ereignissen getragen’), as Roßdeutscher (2000: 86) puts it.

In perfect constructions (*Der Arzt hat den Patienten geheilt*, cf. above), the *haben* auxiliary introduces a state which is identified with the formal resultant state introduced by the participle, and attributes to the subject referent the property to take part in this state (Roßdeutscher 2000: 54). Notwithstanding the state introduced by the auxiliary, the function of the past participle still is to attribute to the Theme the property to participate in the state resulting from the preceding process.²⁴ Finally, past participles may

²⁴ The semantics of the (German) present perfect is complicated by the fact that the state introduced by the auxiliary may either be conceived of as contemporaneous to the speech time, or as slightly preceding it (cf. e.g. Roßdeutscher 2000: 74–76). A discussion of present perfect constructions would largely exceed the scope of the present paper. A comprehensive overview of the issue is given by Kuhn and Portner (2002: 310–313). For further elaboration cf. e.g. the contributions to Alexiadou et al. (2003).

also be used attributively, as in *der geheilte Patient* ('the cured patient'). As far as this usage is concerned, I suggest that these participles denote resulting properties as such, similar to the participles exhibiting the property reading in 'state passives' (cf. note 23). Due to space restrictions, we can not discuss the difference between resultant state readings and property readings of past participles here. For the present purposes, we will adopt the proposal by Maienborn (2009) that the participles may be pragmatically shifted to the "true property" reading. However, even in this case, the perspective may be shifted to the preceding event due to e.g. appropriate adverbials as *soeben* ('just now') in *die soeben geschminkten Schauspieler* (literally: 'the just rouged performers', cf. Roßdeutscher 2000: 46–48).

To summarize, the basic hypothesis of Roßdeutscher (2000) is that in all the above-mentioned constructions, the past participle uniformly ascribes to the Theme argument the property to participate in the state resulting from the event designated by the base verb. Depending on the semantics of the co-occurring constituents, the relevant constructions are interpreted as designating 'process passive' events, perfective events, resultant states or properties of individuals. Obviously, this monosemantic analysis of the (German) past participles provides a coherent way to account for the different readings exhibited by the Old and New French *-ment* nominalizations, which equally denote resultant states (15a), properties of individuals (15b), 'process passive' events (15c) and completed events (15d). According to this analysis, the reification process introduced by *-ment* yields expressions denoting resultant states because *-ment* introduces a shift of perspective similar to past participles. That is, genuine resultant state readings as (15a) and true property readings as (15b) may be accounted for by assuming that the reification of 'resultant state properties' results in states (just as the reification of 'event properties' results in event types), which are at the same time properties of Theme arguments. Due to the fact that, just as past participles, *-ment* nominals are derived from (event-designating) verbs, they may, in appropriate contexts, also interpreted as denoting passive events (cf. 15c) or completed events (15d). All in all, we may generalize that *-ment* nominalizes the property of the Theme argument to participate in the resultant state of the event denoted by the base verb, the different interpretations being due to contextual information.

Note that this approach does not yet account for *-ment* nominalizations from unergative bases, since the events designated by unergative verbs do not have any Theme argument. In order to investigate the *-ment* nominals from unergative bases contained in our 20th century Frantext corpus, we singled out several sub-groups, as e.g. sound emissions (e.g. *grincement*,

‘squeaking’), animal sounds (cf. above), human speech emissions (e.g. *balbutiement* ‘stuttering’), activities being accompanied by a sound emission (*raclement*, ‘scraping’) etc.. Interestingly, the corresponding *-ment* nominals uniformly refer to the sounds or noises, which equally result, in a sense, from the activities designated by the base verbs:

- (16) a. *On entendait le **grincement** du chariot.*
 ‘We heard the squeaking of the cart / wagon.’
 b. *... le tarpan fit entendre un **hennissement**.*
 ‘...the [tarpan] let hear a whinny.’
 c. *... j’émis un **balbutiement** hésitant.*
 ‘... I uttered a hesitating stammering.’
 d. *J’entends encore le **raclement** brefs sur la croûte.*
 ‘I still hear the short scraping on the crust.’

An exhaustive analysis of the *-ment* nominals from unergative verbs would exceed the scope of the present paper. Nevertheless, the above-mentioned evidence suggests that the *-ment* nominals from unergative verbs seem to equally denote properties resulting from the process designated by the base verbs, the only difference being that, due to the lack of a Theme argument, the *-ment* nominals from unergative verbs denote what we might call (resultant) properties of situations, instead of properties of Theme arguments.

7. The basic semantic difference between *-ment* and *-age* and the several differences between *-ment* and *-age* nominals

Having figured out the basic semantic difference between *-ment* and *-age*, the aim of this section is to show how the different behavior of *-ment* and *-age* nominals as described by the analyses presented in section 2 might be traced back to this underlying difference.

As concerns the aspectual differences, the relation is straightforward. The terminativity of the *-ment* nominals follows from fact that the suffix nominalizes resultant state properties. Contrary to that, the non-terminativity of the *-age* nominals may be attributed to the fact that *-age* focuses on the properties which the perspectively unmodified base verbs ascribe to their subject referents. The non-terminative effect is still strengthened in non-episodic contexts, since in non-episodic contexts, the event denoted by the *-age* nominal cannot be considered from a perfective perspective.²⁵

The tendency of *-age* to select for agentive events (in the sense explained in section 2) follows from the fact that the subject referents, the property focused on by *-age* is ascribed to, are mostly agents (cf. e.g. Järventausta 2003). However, the subject referent does by no means necessarily need to be an agent, as exemplified by the two following examples from the 20th century FRA corpus:

- (17) a. *Vingt minutes après le **décollage**, l'avion fut abattu par un ...*
 'Twenty minutes after the take-off, the plain was brought down by a'
 b. *... la voix interne est comme le cri du silence, une force atomique liant les cellules entre elles, l'esquisse d'un autre corps échappant au **découpage** cadavre.*
 '... the inner voice is like the cry of the silence, an atomic force tying together the cells, the sketch of another body escaping the decay of the corpse'

However, inchoative change-of-state verbs as *découper*_(inch) (as opposed to movement verbs as *décoller*) are only very rarely nominalized by *-age*, because the speakers do generally not refer to the corresponding events from the perspective introduced by the *-age* nominalization, completely defocusing the resultant state component.²⁶

The observation by Martin (this volume), that *-age* nominals in "transitive contexts" may not co-occur with non-agentive subject referents (cf. *le décollage des tuiles par *le vent* 'the removal of the tiles by the wind'), may equally be attributed to the fact that *-age* nominals focus on the property which the base verb ascribes to the *subject* referent. Interestingly, *décollage* may easily co-occur with non-agentive subject referents in inchoative contexts such as e.g. *le décollage de l'avion* (cf. 17a), the crucial point being that planes may easily be conceptualized as subject referents of take-off events. Based on this observation, I would like to suggest that the unacceptability of the co-occurrence of the transitive *décollage* with a subject referent like

²⁵ The iterativity/punctuality contrast mentioned by Bally (1965) relates to the domain of unergative base verbs. We will come to this point shortly.

²⁶ Note that this account provides a simple explanation for the difference in productivity between *-age* nominals from change-of-state verbs and *-age* nominals from movement verbs – at least if one is willing to agree on the fact that, in the latter case, the defocusing of the resultant state component is much more convenient than in the former case.

le vent is due to the fact that any corresponding base structure (as e.g. *le vent décolle les tuiles*, ‘the wind removes the tiles’) may only be interpreted if we accommodate the meaning of one of the constituents. Within the limits of the present paper, we may not research into this (presumptive) meaning shift. The crucial point is that, by hypothesis, a subject referent as *le vent* is not really part of the extension of *décoller* in its transitive use. In other words, there isn’t any referent designated by *le vent* the property to participate in a *décoller* event may truthfully be ascribed to, hence the unacceptability of the co-occurrence of *le vent* with *décollage*.

A further interesting observation of Martin cited in section 2 is that in the domain of causative/inchoative as well as iterative/semelfactive alternating verbs, *-age* nominals select the verbal alternate designating the longer eventive chain, whereas *-ment* attaches to the verbs designating the shorter event chain, cf. example (2), repeated below as (18).

- (18) a. *Pierre a assisté au **gonflage** des ballons.*
 Pierre witnessed the inflating of the balloons.
 >*Pierre witnessed the whole causation*
- b. *Pierre a assisté au **gonflement** des ballons.*
 Pierre witnessed the inflation of the balloons.
 >*Pierre witnessed the change of state only*
- c. *Pierre a assisté au **gonflement** des ballons par x.*
 Pierre witnessed the inflation of the balloons by X.
 >*Pierre witnessed the whole causation* (Martin, this volume)

The phenomenon attested in the realm of causative/inchoative alternating verbs of the *gonfler* type is intimately linked to the ones we considered above in the context of inchoative change-of-state verbs (cf. 17b). First of all, I would like to stress once again that inchoative change-of-state verbs may indeed be nominalized by *-age*, albeit being extremely rare. Above, we suggested to attribute the rarity of these coinings to the fact that (reified) events of the type designated by inchoative change-of-state verbs are only vary rarely considered from the perspective which is introduced by *-age*. Based on this generalization, I would like to suggest that the “partitioning” of the eventive chain designated by verbs of the *gonfler* type results from the fact that (the reifications of) the inchoative events are mostly considered from the perspective introduced by *-ment* (cf. 18b), whereas (the reifications of) the causative events are mostly considered from the perspective introduced by *-age* (18a) – at least as long as they are not considered from the passive perspective, in which case speakers would use constructions as (18c).²⁷

Still, the case of iterative/semelfactive alternating verbs of the *miauler*-type is different. The relevant example (3) is repeated below as (19).

- (19) a. *Une séance de °miaulage*. ('A meowing session', singular)
 b. vs. * *Une séance de miaulement*. (singular)
 c. vs. *Une séance de miaulements*. (plural) (Martin, this volume)

Under the present account, the iterativity of the *-age* nominal is traced back to the fact that it shows up in a non-episodic context, the temporal extent of events/processes denoted by *-age* nominals being completely undetermined in non-episodic contexts (cf. section 3). As far as the *-ment* nominal is concerned, I suggest that its obligation to pluralize follows from the fact that it in all likelihood denotes a sound instead of an event (cf. section 6). Hence, I propose that the obligatory pluralization of *miaulement* in contexts such as (19) is to be attributed to the fact that, just as in English, French determinerless count nouns may not appear in the singular in non-referential contexts (cf. again section 3).

The third of Martin's observations cited in section 2 is that *-age*, contrary to *-ment*, prefers internal arguments that are incrementally affected by the corresponding base event, cf. (4b) repeated below as (20).

- (20) *Marie a intentionnellement plissé les yeux*.
 Marie intentionally squinted her eyes.
 > *Le plissement/ #plissage des yeux*
 The squinting of the eyes (Martin, this volume)

This phenomenon is again closely connected with the ones we considered above in the context of inchoative change-of-state verbs. Just as inchoative change-of-state verbs, body action verbs like *plisser* (in its body action reading) denote events which are characterized by the fact that the discernability between the change-of-state event and the resultant state is very low (cf. on this point e.g. Kemmer 1993: 68). However, as already stressed, *-age* focuses on the event property of the base predicate's subject referent, i.e., in the case of *plisser*, on the property to be among the folding individuals. By hypothesis, this perspective is only rarely adopted by French speakers when referring to a *plisser* event in the body action domain. Interestingly, there are indeed rare cases of *-age* nominals in this context. As predicted by

²⁷ It may be suspected that this (pragmatic) effect is most discernible if the causative/inchoative *-ment/age* pair is lexicalized, as is arguably the case for *gonflage/gonflement*.

the present approach, these examples are characterized by a focusing of the process preceding the resultant state:

- (21) a. *Kas, fais attention qd même car le **plissage** des yeux à cause du soleil, on le paie avec les rides!*
 ‘Kas, pay attention nevertheless because the pleating of the eyes because of the sun, we pay/one pays it with wrinkles!’
 (http://forum.doctissimo.fr/grossesse-bebe/bebes_annee/...html)
- b. *Après quelques secondes de **plissage** de yeux et de massage de front, Elrohir était réveillé.*
 ‘After screwing up his eyes and massaging/rubbing his front for some seconds, Elrohir woke up.’
 (<http://naheulbeuk.kanak.fr/l-entre-f135/arrive-de-baboum-t806-30.html>)
- c. *[C. Lambert] reprend le rôle de raiden ds « mortal kombat 3 » – j’aime beaucoup son **plissage** des yeux pour paraître asiatik.*
 ‘C. Lambert takes again the part of Raiden in « Mortal combat » – I like a lot the way he screws up his eyes in order to look like an Asian.’
 (<http://forum.hardware.fr/hfr/Discussions/Cinema/...html>)

Such cases are rare, however, because body action events as “eye-closing” are mostly referred to from the perspective introduced by *-ment*.

Finally, the observation that *-age* nominals primarily denote events pertaining to the physical domain (Martin, this volume) or to the domain of technical operations (Lüdtke 1978; Dubois 1962), whereas the referents of the *-ment* nominals tend to belong to the domain of psychological states or attitudes, relates in an obvious way to the underlying semantics of the suffixes as elaborated in the present paper. Since names for technical operations correspond to event property nominalizations, whereas names for psychological states or attitudes come up to resultant state property nominalizations, I suggest that the manner the *-ment* and *-age* nominals are distributed to the above-mentioned ontological domains is likewise determined by the underlying semantic difference between the two suffixes.

It has to be noted that, within the limits of this paper, the analysis had to be delimited to the most basic differences between *-ment* and *-age* nominalizations. It may be suspected that a more thorough analysis will lead to a still better understanding of the functioning of the two suffixes, and will hence most probably lead to a further refinement of the present proposal. However, the synchronic and diachronic evidence presented in the present paper

suggests that it might be worthwhile to further pursue the idea that *-ment* and *-age* may be distinguished with respect to a single underlying semantic difference.

8. Conclusions

In this paper I investigated the rivalry between the French nominalization suffixes *-age* and *-ment* from a diachronic perspective. I argued that the diachronic development of the suffixes calls into question the multi-feature analyses of the *-ment/-age* competition proposed by previous papers dealing with this issue. By contrast, I maintained that even in New French, the several differences exhibited by the *-ment* and *-age* nominalizations should best be traced back to a single underlying semantic difference, relating to the perspective from which the nominalized forms refer to the event designated by the base verb. More precisely, I argued that *-age* nominals focus on the property of subject referents to take part in the event designated by the base verb, whereas *-ment* nominalizes the property of Theme arguments to participate in the state resulting from the base event. It follows that, in the case of *-ment*, the exact meaning of the nominals will highly depend on the Aktionsart-related characteristics of the base verb – a prediction which indeed turned out to be true: Whereas *-ment* nominals from transitive unaccusative change-of-state verbs denote true resultant state properties, in the sense defined above, *-ment* nominals from unergative activity verbs denote sounds, noises or movements etc.. The attempt to trace back the several phenomena distinguishing *-ment* from *-age* nominals to the above-mentioned semantic difference between the suffixes turned out to be promising. All in all, the present paper clearly supports the hypothesis that *-ment* and *-age* may indeed be distinguished with respect to a single underlying semantic difference.

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