Rochelle Lieber, *English nouns: The ecology of nominalization*. Cambridge: Cambridge University Press, 2016. Pp. ix + 197. ISBN 9781107161375.

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Rochelle Lieber's *English nouns: The ecology of nominalization* makes a groundbreaking empirical and theoretical contribution to the study of nominalization. On the empirical side, Lieber uses data drawn from the *Corpus of Contemporary English* (COCA), which challenge previous theoretical analyses. In particular, Lieber demonstrates that English nominalizations exhibit a more varied behaviour than predicted in the literature. Thus, the study raises questions as to the role of intuitions in derivational morphology of the type that have been raised in other work for syntactic phenomena. Importantly, it is shown that the empirical picture is far more complicated than intuitions would suggest. On the theoretical side, Lieber shows that the key to understanding the variable behaviour of nominals is underspecification. This is then modelled within the Lexical Semantic Framework (LSF), which is argued to capture the available readings of nominalizations. According to Lieber, the behaviour of nominalizations is best captured if one assumes that their semantic representation is underspecified and their interpretation is fixed in context by processes that are available within LSF. While Lieber makes a strong claim in favour of LSF, I believe the empirical picture that emerges from this study provides food for thought for syntacticians and morphologists working in this area, irrespective of framework. In addition, it sets off a discussion in the area of derivational morphology that has been taking place in syntax for some time now which questions introspection as the sole source for acceptability. The book focuses on English, the reason being, as stated by Lieber, that the origins of the claims made in the literature are to be found in Lees (1960), Chomsky (1970) and Grimshaw (1990), who all focus on English. Nevertheless, the questions raised here can easily be asked for other languages, enriching thus our understanding of nominalization from a comparative perspective.

Chapter 1 is the introduction to the study, which outlines the aims and goals as well as the structure of the book. In chapter 2, Lieber goes into some depth with respect to the terminology that she uses as well as the methodology employed in collecting examples. Ever since Grimshaw (1990), several researchers have made use of the terms *complex event nominals* to refer to derived nominals that inherit the argument structure of their corresponding verbs, *simple event nominals* to refer to nouns that lack argument structure but still have event implications and *result nominals* to refer to nouns that lack both argument structure and event implications. Other researchers use the terms *process* vs *result*, while Lieber (as well as Borer 2013 and Alexiadou, Iordachioaia & Soare 2010) uses the term *Event* (E) vs *Referential* (R) to refer to the

readings nominalizations may have. The term event refers to processes and events as well as states. Referential, on the other hand, refers to a wide variety of readings that are not eventive, and not only the result interpretation. E and R nominals correspond to three morphological types, which Lieber (p. 16) takes to be those in (1):

(1) Types of E/R nominals
 -*ing*: writing, spelling
 ATK (-*ation* and kin): destruction, refusal, amusement
 conversion N: kick, climb, attack

(2) exemplifies the two readings associated with the different types (all examples from Lieber pp. 38–9, 43):

(2) (a) E reading
   the abandoning of everyday habits
   the activation of rear-window defroster grid
   the frequent arrest of Iowa college football players
 (b) R reading
   that cold carving
   the sticky sweet concoction
   to clear the clog

The point Lieber makes is that the interpretation of the nominalization is shown to depend heavily on the context it appears in, specifically on the syntactic configuration it surfaces in. For example, the appearance of subject and object together with a nominalization affects its interpretation. Note here that Lieber does not use the term *Argument Structure* as this is understood in Grimshaw, but rather argument in this study refers loosely to a participant. With respect to methodology, Lieber bases her analysis on data taken from corpora, COCA in particular. She goes to great length to explain that if a particular data set is found in a corpus then this is seen as a sign of acceptability. This type of methodology is justified in Bauer, Lieber & Plag (2013) and avoids relying on intuition.

 In chapter 3, Lieber raises 19 questions that have emerged from the previous theoretical literature on nominalization. She demonstrates that the vast majority of these claims can be called into question on the basis of data extracted from COCA. This chapter together with chapter 8 constitute the core of the empirical contribution of the study. Importantly, irrespective of form, -*ing* nouns, -*ation* as well as conversion nominals can have both E and R readings and appear together with arguments as well as pluralize among other things. In addition, there is no thematic restriction on possessor DPs, and all Vendler verb classes feed nominalization. These findings present a different picture from the one given in Grimshaw (1990), where -*ing* nominals are always eventive, -*ation* nominals are ambiguous between E and R readings, and conversion nouns have only the R reading.

 In chapter 4, Lieber presents nominalizations as a derivational ecosystem. As was extensively shown in chapter 3, the relationship between form and meaning is certainly not one-to-one. In fact, there are very few readings that seem to be linked to one particular affix. Some types might have a dominant reading, but almost always a

secondary reading is allowed. The chapter includes a detailed study of -*able* and -*ive* derivatives, which also adopts a historical perspective.

In chapter 5, Lieber addresses the core theoretical question that is raised in chapter 4, namely how speakers represent the lexical semantics of nominalizations. The chapter introduces the basics of LSF and sketches how E and R readings come about. LSF assumes that the semantic representation of morphemes consists of a semantic skeleton and the semantic/pragmatic body. Specifically, the skeleton contains semantic features such as ±material, ±dynamic, ±B(ounded), ±Scalar, ±CI (Composed of Individuals), ±IEPS (Inferable Eventual Position or State), ±Loc(ation). These features are of relevance to the syntax in English. Affixes are assumed to have skeletons, just like simplex lexemes. Affixes combine with their bases to form a single unit, and this integration is done via the Principle of Coindexation, which matches an affixal argument to the base argument. For the cases discussed in the present study, Lieber assumes that for each reading, there is a skeleton, as in (3) (p. 100). For instance, the nominalization in -*ation* can be described as in (4) (p. 101):

(3) (a) schema for E skeleton [α material, β dynamic (<base>)]
    (b) schema for R skeleton [α material, β dynamic ([$_R$], <base>)]
(4) (a) -*ation* (E reading) [-material, α dynamic (<base>)]
    (b) -*ation* (R reading) [α material, β dynamic ([$_R$], <base>)]

Crucially, in the R reading the material feature is underspecified, and thus R nominals can be abstract or concrete. The feature dynamic, by contrast, will always depend on the value of the feature of the base.

With this system in place, in chapter 6, Lieber concentrates on the E reading, by looking at different morphological types, while in chapter 7, she turns to the R reading.

In chapter 8, Lieber discusses compounding in LSF, the focus being on synthetic/argumental compounds, for instance *truck driver*. As was the case with nominalization, Lieber shows that several previous theoretical claims on synthetic compounds can be called into question, for example the fact that there is no subject argument in the compound or that these lack *by*-phrases, fail event diagnostics, obligatorily have a dispositional reading, and resist pluralization. Within LSF, compounds differ from other nominalizations in that they involve concatenation of two lexical representations (skeletons and bodies). Lieber admits that there are a couple of loose ends. For instance, it is not clear what predicts the strong preference for the dispositional reading. Presumably, she notes, this can be related to the fact that the first element of the compound is generic itself; see also Alexiadou (2017) for some discussion on this issue.

Finally, chapter 9 concludes the study and reiterates the methodological and empirical claims made, which raise questions for all approaches to nominalization and compounding.

The study makes several important contributions to the study of nominalization that will certainly further our understanding of this process. Lieber demonstrates that a careful examination of corpus-based examples seems important for grasping the complexity of nominal meaning. The reason for this is that such studies provide

contexts which favour one or the other interpretation of the nominal form. Thus, an investigation of words in context is certainly beneficial for theory building and the construction of models of word meaning. Let me give a concrete example. In Grimshaw (1990), it is claimed that zero derived/conversion nouns do not license E readings, that is, *attack* is claimed to only have the R reading. While some of the subsequent literature has mentioned counterexamples, for example Alexiadou & Grimshaw (2008), Newmeyer (2009) and Harley (2009), Lieber shows that zero derived nouns systematically license E readings in English. This is something that is not expected by, for instance, Borer (2013), but could be accommodated in other syntactic approaches, such as Distributed Morphology and Nanosyntax. Another case involves compounding: most researchers argue that compounds certainly lack argument structure, but Lieber shows that the tests that can be used to disambiguate between E and R readings in Grimshaw (1990) also apply to compounds, contra Borer (2013). If compounds have argument structure, then syntactic models must revisit their accounts thereof; see Iordachioaia, Alexiadou & Pairamidis (2017) for such an attempt.

Lieber argues forcefully that this type of variability in nominal behaviour is best captured within the LSF model. As far as I can tell, most syntactic treatments of nominalization that adopt an underspecification view (e.g. most work within Distributed Morphology and nanosyntactic approaches as in Fabregas 2014) could also deal with this empirical picture, and thus the discussion in the book is extremely valuable, and it would be interesting to compare where the models diverge and whether they make different predictions. Importantly, the empirical domain tests the predictions models make and can directly feed morphological theory.

While I agree with the view that in order to fully understand the complexity of nominal meaning context is instrumental, it is not clear to me whether corpora searches should be the only source for this. A difficulty that one faces with corpora is that minimal pairs are not always found, i.e. different affixes that combine with the same base, although Lieber tries to offer as many minimal pairs as possible. Carefully constructed experimental studies could also serve this aim, although, as has been shown, these are closer to speakers' intuitions. Moreover, while there is a lot of flexibility, sometimes we observe restrictions, for example strong preference for a dispositional interpretation in compounds such as *truck driver*. Patterns like these suggest that obviously not everything goes and even though corpora provide us with rich information about linguistic behaviour, ultimately it is the grammar that makes these options available, a point made by Lieber. Thus, as Lieber stresses, underspecification becomes an important tool for capturing nominal meaning and various formalisms thereof can be pursued.

The questions that emerge for cross-linguistic research are exciting and it is hoped that work in this area will address them more systematically than has been the case until now. Perhaps the claim that has been scrutinized the most involves pluralization under the E reading, which has been shown to be possible in English and across languages; see for example Alexiadou, Iordachioaia & Soare (2010) for discussion and references. Some recent work turns to the behaviour of zero derived nouns in languages other than

English; see for instance Fabregas (2014). An important question that Lieber asks is, in my view, whether there is a correlation between the number of nominalizing affixes a language has and polysemy. That is, does it hold that the more nominalizing affixes there are, the more transparent the relationship is between form and meaning? This clearly awaits further research.

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