<center>**Proposal for a Master's thesis**</center>

Quantitative typology of valency classes

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Abstract

1 Introduction

Argument structure is widely studied and debated in linguistics. The nature of the relationship between verbs and their arguments as well as the syntatic expression of underlying lexical semantics.

2 Background and Motivation

2.1 Valency and valency phenomena

In chemistry, *valency*, or *valence*, refers to the combining power of an atom or radical. The valency of any atom can be measured by the number of hydrogen atoms that it can combine with or displace in a chemical compound (Law and Rennie, 2020). This same term has been used in linguistics to similar effect and refers to the combining power of a word, primarily a verb or other predicate, with other words or elements of the sentence.

Lucien Tesnière is generally credited with introducing the term valency to linguistics with his syntactic theory of valency and dependence, as presented in the posthumuously published *Éléments de syntaxe structurale* (1959; English translation 2015).[1] In another of Tesnière's metaphors, each verbal node, being the center of sentence structure, is not unlike a "theatrical performance" with the verb expressing the process and the nouns being the *actants* (what we would now call *arguments*) in this performance. Just like atoms of different elements allow for a greater or lesser number of bonds, different verbs can combine with a greater or lesser number of actants, i.e., their valency.

While the term valency is borrowed into linguistics from chemistry, the study of the phenomena which are covered by or otherwise overlap with valency has a much longer tradition, dating to the early beginnings of linguistics from the kāraka concept of semantic relation between verb and noun (Ganeri, 2011) in Pāṇinian grammar to modern case grammar (Fillmore, 1967).

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[1]It should be noted that while Tesnière is rightly credited with the introduction of a theory of linguistic valency, the metaphor of valency itself has made appearances as early as in Peirce (1897), among others (Przepiórkowski, 2018).

Most linguistic theories assert the centrality of the verb in determining either or both the syntactic and semantic structure of a sentence, coorborated also by psycholinguistic evidence (Healy and Miller, 1970). This places valency and the issues of *argument encoding* squarely at the center of the inquiry into the interaction between leixcal semantics and sentence structure.

In generative grammar, syntactic valency of a verb is studied in terms of "subcategorization frames" as encoded in the lexicon.

Levin (1993)'s seminal work provides much more fine-grained categorization of verbs based on their syntactic behavior.

(Fillmore, 1967, 1970)

CxG would consider valency frame as a level of construction. Whether or not this construction is autonomous will depend on whether the unpredictability condition is satified - in so far that the properties of valency frame cannot be predicted from other grammatical units.

Croft (2012) takes a CxG approach.

2.2 Cross-lingual and contrastive studies of valency

Typological interest in valency is primarily focused on cross-linguistic mismatches.

Already Tesnière (1959) describes the process of *metataxis*, by which syntactic structures of one language is translated to those of another.

Levin and Rappaport Hovav (2005) identifies five major questions that are necessary for a compelte theory of argument realization.

One of the key question is also whether this valency frame are syntactically defined or semantically so. Since in the study of argument structure, we're dealing with the syntactic expression of lexical and non-lexical semantics, this question is particularly difficult to answer.

Tsunoda (1981, 1985) proposes an hierarchy of verbs

2.3 Dependency grammars

3 Data and methodology

3.1 Data sources

UD Treebanks   Zeman et al., 2022

ValPaL   (Hartmann et al., 2013) is a database

3.2 Methodology

Clustering   non trivial problem to distinguish between complement vs adjuncts

Alignment

Information Theory

4 Work plan

5 Conclusion

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