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MORPHOLOGICAL PRODUCTIVITY IN ENGLISH LANGUAGE

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ABSTRACT

Morphology as a linguistic discipline, which deals with the internal structure of word forms can be divided into two main branches, namely: lexical morphology (word formation) and inflectional morphology (grammar, conjugations/declensions). The language is dynamic and constantly changing. One of the characteristic properties in human language is productivity. It implies the ability to create and for understanding new forms of language by the speaker. In this paper will be presented the most common word-formation processes in English through which they are regularly form new words. The more new words used, the words are more productive. The more new word-formation processes are applied in one language the more productive that language is.

Keywords: morphology, language, English, word- formation, grammar

INTRODUCTION

Morphological productivity has long been the subject of research in theoretical morphology in authors such as Schultink, Aronov, Van Marle, Plag (Schultink, 1961; Aronoff, 1976; Van Marle, 1985; Plag, 1999). It is defined on more ways. In the following definition according to Schultink (Schultink, 1961: 113) are represented three important aspects:

Productivity as a morphological phenomenon is an opportunity for speakers of a language to inadvertently create new and in principle an unlimited number of words, using the morphological procedures behind the conformity of form with meaning in some already known words.

According to Evert & Lüdeling (Evert & Lüdeling, 2005), the three important aspects of productivity are: unintentionality, unlimitedness and regularity and they represent interdependent factors.

The first aspect, inadvertence, helps to differentiate productivity (notion based on linguistic rules) of creativity (general cognitive ability which cannot be considered only from a morphological point of view), so that the words formed in productivity processes are not recognized or noticed as new words (this applies to speakers and listeners), while words formed in other (creative) processes are carefully created and perceived as new words.

The second aspect is unlimited, so if the word formation processes are unlimited, it is impossible to give a limited list of words (below discusses related implications).

Inadvertence and unlimitedness require the words formed in a given process to be regular from a morph-syntactic and semantic point of view.

Theoretical and descriptive papers related to word formation are mainly concentrated on the qualitative aspect of productivity, so that they explore morphological, phonological, syntactic, semantic and other limitations of a particular word formation process.

In addition to the qualitative, Baayen and Lieber also recommend the quantitative approach to research (Baayen, 1992; Baayen and Lieber, 1991; Baayen, 2001).

The quantitative aspect of the research aims at calculating the probability of a word formed in a certain morphological process was found in a given researched text.

The qualitative aspect of productivity is completely different from quantitative, so that a particular word formation pattern can be very productive in qualitative analysis, because it can be applied to any basis, but it can be unproductive in quantitative analysis, if there is a limited number of grounds after examining all the words that can be formed from that word formation pattern.

In that case, the likelihood of meeting new words formed from such a pattern does not exist. But qualitative and quantitative approaches are very much in line with each other and others. First of all, quantitative approaches cannot be applied without previous thorough linguistic interpretation. On the other hand, quantitative analysis helps to reveal more details that relate to word formation processes. For example, according to Baayen and Neijt, (1997), words formed by certain word formation processes, in fact, belong to two different divisions, and so that lexicalized words are statistically behave differently from productive words. This can be seen through researching the form of the division itself and analyzing its irregularities.

In addition to being an important aspect of the linguistic research of productivity, quantitative approaches in particular contribute to computer morphology. Many applications (such as machine translation, systems for dialogue, systems for pronouncing written content) work with text that not seen. This includes not only analyzing invisible sentences, but also analysis of new words. Due to productivity, the existence of a limited lexicon contains all the words in one language.

Quantitative productivity analyzes help in the selection of word formation schemes which may also be specified in determining which one they should be for formulated rules.

For a quantitative approach to productivity, mathematics is needed definition of the degree of productivity, based on perceived quantities. According to the definition of Schultink morphological productivity, the vocabulary of a particular morphological process is a set of word forms that can be formed in the process. Productive schemes are theoretically characterized by unlimited vocabulary, in accordance with the notion of infinity in the definition Schultink, while for completely unproductive schemes are expected to have limited and often relatively small vocabulary.

PRODUCTION MEASUREMENT

If we start from the fact that productivity is defined as an opportunity for forming a new word, it should be possible to evaluate or measure the probability of the appearance of newly formed words of a certain morphological category. This is the initial understanding of Bolinger's definition according to which productivity is the "statistical readiness with which the elements fit into new combinations" (1948:18). According to this understanding, formulated more than half a century ago, several

measurements of productivity is done. There is a quantitative measurement that is perhaps the most used, and at the same time and the most discarded. According to this measurement, the productivity of a particular affix can be recognized by counting different established words with the same affix in a given time period. This is also called the representation of the affix by species. Problem in this measurement is that there can be many words with a certain affix, but without in contrast, speakers will not use that affix to create new words.

An example of such an affix is the suffix *-ment* (suffix for forming nouns), which through hundreds of new words have been created over the centuries. Many of them are still used, but today's speakers rarely use this suffix to form new words and, therefore, it can be considered quite unproductive (Bauer, 2001:196).

The large number of word forms that contain a certain affix does not indicate whether its productivity refers to that in the past or current potential on the affix for forming new words.

Counting derivatives in any case can be a fruitful way to determine on the productivity of an affix, but only if not all derivatives are counted with it affix used in a certain period of time, but only newly created words with that affix in a certain period, or the so-called neologisms. Thus, it can be shown that a certain affix participated in the formation of many neologisms in the 18th, but not in 20th century. The methodological problem with this measurement is the reliable determination of the number of neologisms in a given period.

For example, for the period of the 20th century, 284 verbs with the suffix were found *-ize* (Plag, 1999: chapter 5) in the Oxford English Dictionary, which shows that it is a productive extension. There are measurements that very literally it follows Bolinger's idea of probability in an attempt to estimate how much it is probably a speaker or listener will come across a newly formed word from certain morphological category. But it is practically impossible to explore all utterances (oral or written) in one language over a period of time.

However, it is conceivable to examine a representative sample of language, available today in the form of a large written corpus.

One way to use such a corpus is to simply count them word forms (different words) that contain a certain affix. But here they are occurs the aforementioned shortcoming, namely in this way it can be assessed productivity from the past, not the present.

Unproductive morphological categories are characterized by a large number commonly used words and a small number of words that are rarely used. Having them given productivity processes, the opposite is expected: many rarely common words and a small number of commonly used words.

There is theoretical explanation. We will concentrate on the rarest elements, so called hapax legume words that appear only once in a given body.

An important point now is that the number of hapax words from a given morphological category should be commensurate with the number of neologisms in the same category so that the number of hapax words will be an indicator of productivity. However, no there is a claim that hapax words are also neologisms. Such words are define in relation to a given corpus and therefore, can only be rare

words from language (not newly formed derivatives) or unusual words invented from creative speakers of the language sometimes encountered in poetry or advertisements.

The size of the hull is of particular importance in determining the nature of hapax legume words. When the corpus is small, most of such words will be well-known words from the language. However, as the body grows, so do increases the scale of neologisms between the hapax words, and exactly between them and everything occurs most neologisms.

QUALITATIVE AND QUANTITATIVE ASPECTS OF MORPHOLOGY PRODUCTIVITY

In the last twenty-four years, that is, after the work of Baayen (Baayen, 1992), there are also quantitative studies of morphological productivity corpus-based, based on a simple statistical model of text creation (The model has been used in many studies of quantitative linguistics since the 1950s year, and a complete mathematical definition and overview of its most important properties can be found in Bayen's work from 2001, (Baayen, 2001).

Usually in such research, productivity is defined as probability of finding a new species (created by a given word formation process) after examining a particular text. In Bayen's statistical model like this probability, called the productivity index P , can be estimated from the number of hapax legomena (a type of word that occurs only once in a specimen). It should be point out that P is not a direct operationalization of the aforementioned intuitive concept of productivity (the simplicity with which new words are formed), but should be understood as an independent quantitative measure of the degree of productivity.

Plag and Bauer (Plag, 1999; Bauer, 2001) formulated understandable theories for productivity in which qualitative and quantitative aspects are integrated.

Baayen's approach should not be treated as a statistical approach alone. He can also be seen as a cognitive model in which speakers are assumed somehow they "know" that they can use the X process to form new forms, exactly due to the fact that they encountered many such formed by the same X process, i.e. know that other speakers have formed new words using the process X . In attached to a number of assumptions related to the storage of complex words in mental lexicon, which cannot be discussed here, this approach is based on the concept of the corpus as a model of linguistic experience.

Bayen's statistical model (Baayen, 1992, 2001) describes the language production of the speaker (or the collective production of homogeneous group speakers) as a result of a simple stochastic process, where the words from the speaker's vocabulary are random. Every kind of word in the vocabulary is related to the characteristic probability of the species which corresponds to the average representation of its use (by the speaker). It is assumed that the subsequent features of the words created by this stochastic process are independent, which is why Bayen's model is completely isolated from syntax. Although it works for a rough assessment of natural language, this model provides satisfactory explanation of word representation distributions, which can be observed from the examples in his work (Baayen, 2001).

When using this model to describe morphological productivity, vocabulary is usually limited to species formed by a particular process, so that the production of the stochastic process will consist

only of such formations.

It is important to understand that even for productive processes, the statistical model uses a fixed vocabulary, which should not be seen as a kind of “mental lexicon”.

On the contrary, this vocabulary contains all the types that the speaker can form by productivity, in addition to lexicalized forms.

Mathematically, the rules of productivity equate to very large or unlimited vocabulary *S* (just as any productivity rule should produce an unlimited number of forms) and a large number of forms with low representation in the vocabulary. This type of probability distribution is known as LNRE (Large Number of Rare Events) distribution. According to that, as the text created by the model increases, so does the number of species represented in production will grow indefinitely in order to present the intuition that different processes show different degrees of productivity.

BASIC METHODS FOR MEASURING PRODUCTIVITY

There are three main ways to measure productivity in the literature. These measurements are based on dictionaries, corpus analysis or psychological tests for the intuition of the speakers whose mother tongue is the researched language, the so-called extortion tests, as stated in the works of Boloski and Plag, related to different types of productivity measurements (Bolozky, 1999; Plag, 1999).

VOCABULARY APPROACHES

There are numerous ways to use dictionaries in order to determine the productivity of a morphological process. Dictionaries can be searched all neologisms created recently on the basis of a given rule. Besides that, can compare the number of neologisms created in a particular process of word formation through different time periods, and thus to determine the different degrees of productivity of the same process in different time periods.

However, one of the biggest drawbacks of productivity research based on vocabulary is that the quality of the results obtained from them, in fact, depends on the quality of lexicography. In addition, dictionaries do not represent it in its entirety the practical use of the words in them and in them the linguistic ones have a stronger influence norms rather than the language system (Bauer, 2000: 838). “The morphological productivity is best seen in complex words that have never reached be listed in dictionaries” (Booij (2005: 69). But most importantly, in dictionaries only the already established words of the language can stand. Accordingly, the approaches

Vocabulary-based do not include the potential aspect of morphological productivity, which is the main focus of the definition of productivity. The same shortcoming is also associated with the second type of databases or with large ones computer cases.

BUILDING BASED APPROACHES

The popularity of using corpus-based approaches to measuring morphological productivity is increased. Baayen and Lieber point out three advantages of using corpus instead of dictionaries: first, corpus, mainly, contains transparent words that are usually absent from dictionaries; second, the

corpus contains only words that appear naturally in the speech of the language, while the dictionaries also contain words that are not specified in it; third, the corpus contains information on the representation of words. There are numerous ways to using a corpus in order to determine the productivity of a morphological process.

The simplest way is to determine the presence of a particular species or trait. According to Bayen and Lieber “the greater the number of words with a certain affix, the greater the productivity of the affix itself” (Baayen and Lieber 1991: 802).

However, such rough measurements are best used as preliminary indicators of current use; as such a simple count can often be a reflection of former use. In this sense, the use of the corpus, similar to with dictionaries, can contain only “existing” words and therefore, theoretically, will show results from past productivity of word formation schemes.

However, there are several statistical methods according to Baayen and his collaborators that allow the use of corpora in order to calculate “The probability of encountering a newly formed word from the appropriate morphological category” (Plag, 2000: 65). It is worth noting that all of Bayen’s formulas were subject to serious criticism, especially by Van Marle (Van Marle, 1992), though he himself admits that “no one who is seriously engaged in the study of “morphological productivity must not be left out of reading Bayen’s works.” Marle, 1992: 152).

TESTS

Finally, extortion tests can examine the aspect of potential of word formation and are therefore described as a useful addition to other types of productivity measurement (Schröder, 2008a: 41).

There are two types of tests: Respondents can be asked to rate it the acceptability of existing or non-existent complex forms, or of them may be asked to create words according to given word formation rules. In the second type of tests, respondents are asked to list all the words that fall to them by heart, and are formed according to a certain word formation pattern. Given that that response extortion tests are the only established measurements of productivity that can examine the potential aspect of word formation, it is surprising that they are rare, surprising is the fact that they are rarely implemented in research related to morphological productivity.

CONCLUSION

It is common knowledge that there are always differences in the ways in which speakers use morphological and grammatical constructions in their language, depending on their origin and different communication purposes. Bieber (Biber, 1988), believes that the linguistic means used in speech are different from those that apply to writing and that within each of these communication modalities there are other systematic differences that separate them styles of more specific types of texts. Contemporary stylometry, with authors as Burrows (Burrows, 1992) shows that some writers develop their own characteristic speech habits, not only in their chosen fields but also within grammatical devices that are part of the language they usually use.

There has been no research in the field of linguistics dealing with corpora particularly impact on productivity research in theoretical morphology. Bauer’s monograph (Bauer, 2001) does not suggest

the possibility that some morphological categories may be more productive in some registers than in others and the possible consequences of such stylistics increase the weight of the structural limitations in explanations of productivity. However, the research from this area is also unequivocally, and much awaited, shows that different genres involve different morphological categories at very different levels.

Another complication in productivity research is that needs of speech communities and experts in such groups change over time (Clark, 1998). In modern societies, the constant scientific and technological progress leads to the proliferation of techniques, concepts and products to be named. How productive affixes are used and the representation rate of new words over the years will depend on whether the analyzed discourse will be from an area with rapid progress or from an area with a low degree of innovation.

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