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DEVELOPING AN ENGLISH MORPHOTACTIC RULER: A TESTING TOOL BASED ON THE CONSTRAINTS OF AFFIXATION IN COMPLEX WORD FORMATION

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Abstract:-Morphology is the study of internal structure of words - Katamba, Francis. (1993). A word is a meaningful linguistic unit which can be simplex or complex. A simplex word consists of only one part such as *happy, man, child*, etc., which is able to 'stand alone' as a word on its own. Such a part is linguistically called *free morpheme*. A complex word consists of at least two parts: a *base* and an *additional part*. The additional parts such as *re- in rewrite, im- in impossible, dis- in disappear*, etc. can be added in front of the base, and then called *prefixes*; or can be added at the end of the base like *-ish in boyish, -ness in happiness, -ity in purity*, etc. and then called *suffixes*. Here, the base is the free morpheme; and the *prefixes* and *suffixes* are called *affixes* which are known as *bound morphemes* because they 'cannot function' as words on their own, and must combine with some other morpheme, constituting part of a complex word.

Morphology's chief interest is in complex words which have a very rich articulating structure. It is noted that there are constraints on the way in which the morphemes can be combined to derive the complex words. Thus, *undesirable* is a complex word with the correct combination of the morphemes *un-, desire, and -able*; but **desirableun, *abledesireun, *ableundesire, *desireunable, and *unabledesire* are not. Therefore, the study of the constraints, i.e. the study of the rules, by which morphemes can combine to form complex words, is called *morphotactics*.

In this paper, we focus our attention to develop a language supporting tool, i.e. *Morphotactic Ruler* for helping the students of English linguistics while studying Morphology, to come to know the nature of affixes and how they can be combined to form an English complex word.

Keywords: *free morpheme, complex words, constraints, morphotactics, Morphotactic Ruler.*

INTRODUCTION

Morphology deals with the study of the internal structure of a complex word. In order to analyze or decompose the complex word, we need to identify the morphemes in the word, i.e. the smallest meaningful units or the building blocks of the word, and the patterns or constraints that determine how these morphemes should be arranged or stuck together to form the word. For instance, the word *usefulness* consists of the *morphemes* such as *use, ful, and ness*. These morphemes are undoubtedly combined like *use + ful + ness*. But, when these morphemes are combined like *use + ness + less*, the word convicts the ungrammaticality which is marked by an asterisk like **usenessful*. Why is the form *usenessful* incorrect? and then what accounts for it? The answer for both questions can be found in the study of morphotactics, i.e. the rules which help to glue the morphemes together found in the word. To study morphotactics profoundly, the terms *word-formation, morphemes, complex word, and affixation* (i.e. *prefixation and suffixation*), should be thoroughly learnt.

WORD FORMATION:

As the term 'word-formation' suggests, it is dealt with the formation of words. It can be seen that the words *employee, inventor, unkind, greenhouse, team leader, and bus driver* are obviously composed by putting together smaller elements to

form larger words with more complex meanings; and we can say that we are dealing with morphologically *complex words*. For example, the word *employee* can be analyzed as being composed of the verb *employ* and the ending part *-ee*, and the adjective *unkind* can be analyzed as being derived from the adjective *kind* by affixing the element *un-* at the beginning of the word. Thus, the complex words can be analyzed or decomposed into their smallest meaningful units which are called *morphemes*.

MORPHEME:

Morphemes are the smallest individually meaningful elements in the utterances of a language - Charles Hockett (1958). For instance, the elements *de-*, *center*, *-al*, *-ize*, and *-ation* are the morphemes of the word *decentralization*. Some morphemes can occur only if attached to some other *morpheme(s)* to have clear meaning. Such morphemes are called bound *morphemes* in contrast to free morphemes, which occur on their own with meaning. Examples of bound morphemes are *un-*, *dis-*, *im-*, *anti-*, *en-*, *-ment*, *-ing*, *-ed*, *-ness*, *-ful*, and *-less* in the words *unhappy*, *disappear*, *impossible*, *antidemocratic*, *encouragement*, *government*, *dancing*, *accepted*, *kindness*, *beautiful*, and *hopeless* respectively. Some bound morphemes, for example *im-* (in *impossible*), must always be attached before the central meaningful element of the word, (in this case *possible*), the so called root, stem, or base, whereas other bound morphemes, such as *-ity* (in *unity*), *-less* (in *useless*), *-ness* (in *happiness*) must follow the root. Using Latin-influenced terminology, *im-* is called a *prefix*, *-ity* a *suffix*, with *affix* (sometimes called the *marked form* – Adams, 1973) being the cover term for all bound morphemes that attach to roots or bases (sometimes called the *unmarked base form* – Adams, 1973).

COMPLEX WORD:

A complex word in English is the outcome of the morphological processes which are *concatenative* and *non-concatenative*. While concatenative process is considered, it consists of compounding, *incorporation*, and *affixation*. As far as the process of affixation stated in the title of this paper is concerned, a complex word formed by the process of affixation reflects the constant or stable internal structures, i.e. *prefix – root or root – suffix or prefix – root – suffix*. The affixation, here, refers to *prefixation* and *suffixation*. For instance, in the word *reactivation* (*re-act-iv-at-ion*), *re-* is a prefix and; *-iv(e)-*, *-at(e)-*, and *-ion* are suffixes. Whether it is a prefix or suffix, it is called an affix, a common name for the parts that are not really words by themselves, but get glued onto words in some way. Further, affixes are linguistically, especially morphologically termed as bound morphemes.

AFFIXATION:

The term 'affixation' can be defined as a morphological word-formation process of attaching an affix to the root or base of a word. Affixation is a very common and productive morphological process in synthetic languages like English. Affixes are classified based on two criteria. The first criterion is the position in which the affix occurs relative to the location or position of the root or base of the word, while the second is the function an affix performs when it is attached to the root or base of the word.

Classification of affixes based on position:

As far as the positions of the English affixes in the word are concerned, they are mostly of two types in English: *prefixes* and *suffixes*.

Prefix:

A prefix is a bound morpheme that is added to the beginning of a word in order to form a new word with a different meaning. For example, if we look at the word *prefix* itself, we will see that it is made up from two morphemes: *pre-* and *fix*. Here, *pre-* is the *prefix* (bound morpheme) and *fix* is the root/ base (free morpheme) in the word *prefix*. And further, '*pre*', means before, and '*fix*' means attached. A *prefix* as a bound morpheme has its own meaning, and when it is added to the beginning of the root or base, it changes the meaning of that word. *Prefixes* are very useful, because when they are identified and semanticized only, we can learn the meaning of the new word and improve our vocabulary. It is also to be noted that *prefixes* are represented by the morphemes followed by a hyphen (-) as *un-* in *unnoticed*, *a-* in *amoral*, and *sub-* in *subway*.

Suffix:

A *suffix* is a bound morpheme which is attached to the end of a word. For example, *-able* in *noticeable*, *-less* in *careless*, *-s* in *plays*, and *-en* in *sharpen*. It is to be noted that suffixes are represented by the morphemes preceded by a hyphen (-) as *-al* in *natural*, *-ful* in *beautiful*, and *-er* in *worker*.

Classification of affixes based on function:

Based on the function which the affixes perform when attached to a word, they are divided into two categories: *Derivational function* and *Inflectional function*. Affixes reflecting derivational function are known as derivational affixes, and affixes reflecting inflectional function, inflectional affixes.

Inflectional affixes:

An inflectional affix is a morpheme which performs a grammatical function without changing the part of speech of the word to which it is attached. Inflectional affixes are not used to create new words. All the inflectional affixes in English are suffixes; and they are only eight in number. Look at the following:

- | | | |
|--|--------|--------------------------------|
| 1.Regular plural marker | - (e)s | as in <i>books, mangoes</i> |
| 2.Comparative marker | - er | as in <i>shorter, cleverer</i> |
| 3.Superlative marker | - est | as in <i>fastest, happiest</i> |
| 4.Possessive marker | - ' | as in <i>Saranya's book</i> |
| 5.3 rd person singular marker of verbs in present tense | - (e)s | as in <i>speaks, teaches</i> |
| 6.Present participle marker | - ing | as in <i>eating, studying</i> |
| 7.Regular past tense marker | - (e)d | as in <i>played, helped</i> |
| 8.Past participle marker | - en | as in <i>taken, eaten</i> |

Derivational affixes:

Derivational affixes are morphemes that create or derive new words, usually by either changing the meaning and/or the part of speech, i.e. the syntactic category, or both, of the words they are attached to (Godby et al., 1982). In English, derivational morphemes can be either prefixes or suffixes. For example:

un- + *happy* (adj) = *unhappy* (adj) *re-* + *write* (v) = *rewrite* (v)
by- + *product* (n) = *by-product* (n) *re-* + *forest* (n) = *reforest* (v)
king (n) + *-dom* = *kingdom* (n) *child* (n) + *-hood* = *childhood* (n)
happy (adj) + *-ness* = *happiness* (n) *beauty* (n) + *-fy* = *beautify* (v)

The prefixes *un-* in *unhappy*, *by-* in *by-product*, and *re-* in *rewrite* derive new words; and they maintain the same word class; and these are called *class maintaining derivational prefixes*. In contrast, the prefix *re-* in *reforest* gives new meaning, but changes its grammatical category. Thus, prefix such as *re-* is called *class changing derivational prefix*. Like this, the suffixes *-dom* in *kingdom*, and *-hood* in *childhood* are *class maintaining derivational suffixes* and *-ness* in *happiness* and *-fy* in *beautify* are known as *class changing derivational suffixes*, but both create new lexical items.

Morphotactics:

Morphotactics is concerned with ordering of morphemes (Chomsky & Halle, 1968). English language reflects the morpheme-based morphological system. As far as the syntax of morphemes in a complex word is concerned, there is a set of principles for combining morphemes into words. As stated above, morphemes, the morphological building blocks of words, are defined as the minimal linguistic units with a lexical or grammatical meaning. The word *tranquilizer* has three morphemes like *tranquil*, *-ize*, and *-er*. The formation of this word is not a mere matter of concatenating these three morphemes. Instead, it is a two-steps operation. First, the bound morpheme *-ize* has been added to the simplex (or simple) adjective *tranquil*, and resulting the verb *tranquilize*. Subsequently, the bound morpheme *-er* has been added to this verb. It is obvious that the combination of *tranquil* + *-er* + *-ize* (= **tranquilerize*) is ill-formed and, therefore ungrammatical marked by ostrich mark (*). Thus, the morphological structure of a complex word is a layered one. In short, morphology might be seen as morpheme syntax, as the set of principles that tell us how to combine free and bound morphemes into well-formed words.

Stratum or affix ordering:

Knowledge of word structure includes knowledge of affix sequences. Morphs or affixes representing morphemes must be arranged in a sequence allowed by the word formation rules. The order of morphemes in a word is usually fixed - unlike in sentences. Affixes are added at different *classes or levels or layers* or *strata*, i.e. according to stratum theory of morphology, different classes of affixes are added to bases in such a way that all the affixes from one class or stratum have to be added before affixes from the next class or stratum can be added. This is referred to as level ordering since each stratum or level is ordered with respect to all others. Each level has associated with it a set of morphological rules that do the word-building. English

affixes can be grouped in two broad classes on the basis of their phonological behaviour: neutral (secondary) and non-neutral (primary). The neutral/ non-neutral distinction corresponds to the classic distinction of weak boundary ('#') between neutral suffix and base vs. strong boundary ('+') between non-neutral suffix and base in Sound Patterns of English.

Neutral affix (secondary affix): There is no phonological effect, i.e. stress pattern on the base to which it is attached (Chomsky & Halle, 1968). Neutral or secondary affixes are attached at level 2. Level 2 suffixes are #ness, #less, #ly, #ful, #wise, etc. For instance:

abstract [æbstrækt] #ness [nəs] – abstractness [æbstræktnəs]
serious [sɪəriəs] #ness [nəs] – seriousness [sɪəriəsənəs]
help [help] #less [ləs] – helpless [helpləs]
use [ju:s] #less [ləs] – useless [ju:sləs]

Non-neutral affix (primary affix): There is effect on segmental or suprasegmental structure of the base. Non-neutral or primary affixes are attached at level 1. Level 1 suffixes are +ic, +ee, +ity, +ory, +acy, etc. For example:

photograph [fəʊtəgrɑ:f] +ic [ɪk] – photographic [fəʊtəgræfɪk]
strategy [strætɪdʒɪ] +ic [ɪk] – strategic [strætɪ:dʒɪk]

The levels of the affixes can be represented in the following way.

[root]
[level 1 affix – root – level 1 affix]
[level 2 affix – level 1 affix – root – level 1 affix – level 2 affix]

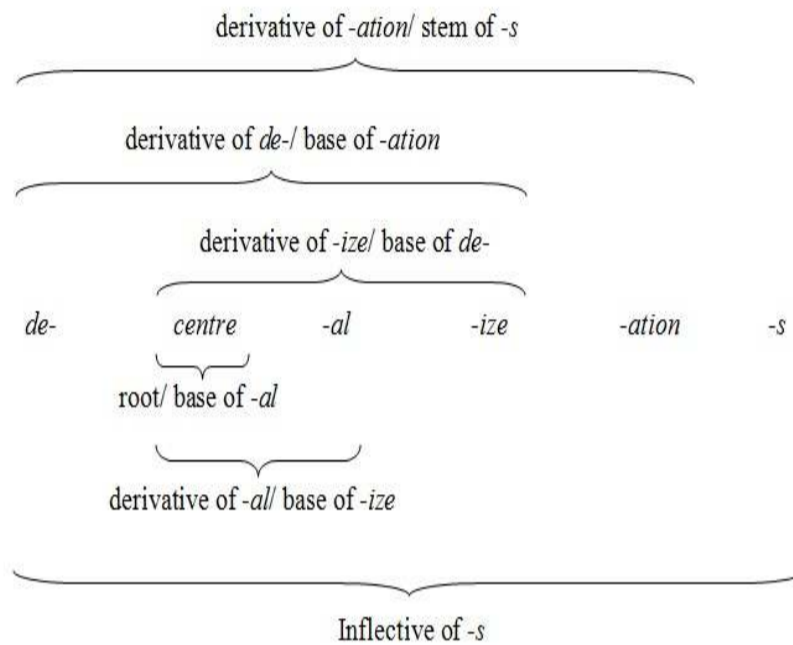
According to the level-ordering concept, English prefixes and suffixes belong to the following levels or classes or strata (Spencer, 1991):

Level 1 prefixes: re+, con+, de+, sub+, pre+, in+, en+, be+
Level 1 suffixes: +ion, +ity, +y, +al, +ic, +ate, +ous, +ive, +able, +ize

Level 2 prefixes: re#, sub#, un#, non#, de#, semi#, anti#
Level 2 suffixes: #ness, #less, #hood, #ful, #ly, #y, #like, #ist, #able, #ize

Typically (there are exceptions) stratum 1 affixes, i.e. primary affixes (non-neutral affixes) tend to be of foreign origin (Greek or Latinate) whereas stratum 2 affixes, i.e. secondary affixes (neutral affixes) are mostly Germanic (affixes tend to combine with bases from the same source.)

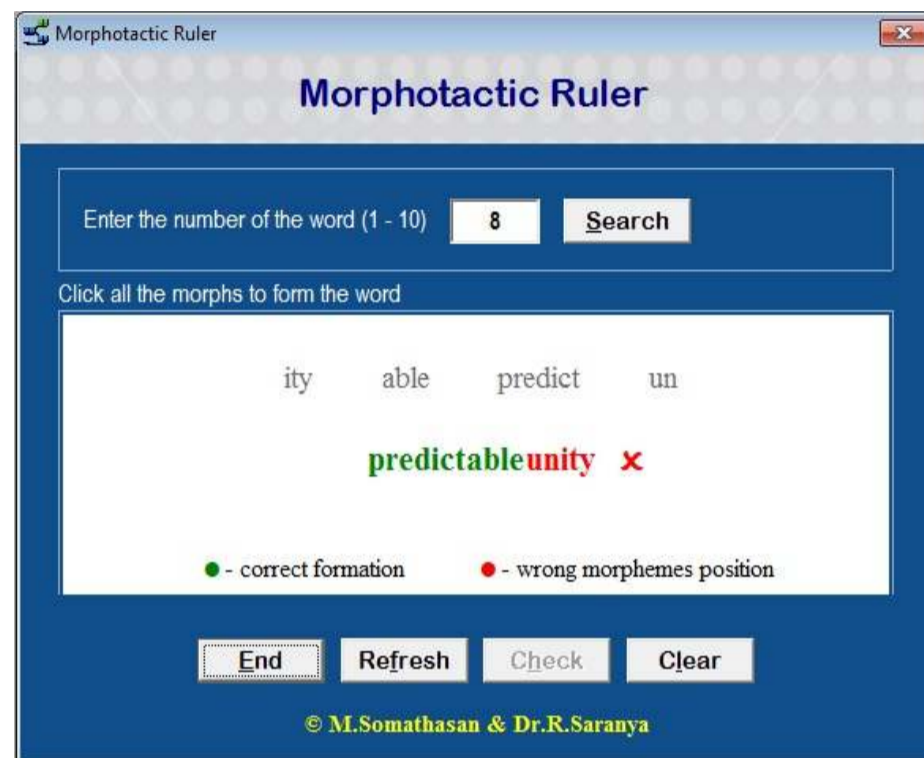
Level 1 or strong (+) boundary affixes (which are all derivational affixes) are always closer to the root; and level 2 affixes, i.e. neutral affixes are on the outside. It was also pointed out by Bloomfield (1933/1935) who referred to the inflection as the outer layer of the morphology of word forms, and derivation as the inner layer, i.e. the derivational affixes in English are *morphemes of the inner layer*, as it is possible to have another suffix after a derivational affix, but the inflectional affixes in English are *morphemes of the outer layer*, because it is not possible to have another suffix after an inflectional affix. Thus, it can be said that stratum 1 affixes do not occur outside of stratum 2 affixes in the morphologically complex word. It is represented through the following diagram.



METHODOLOGY:

A word has the internal stability, i.e. a word has an internal cohesion and is indivisible by other units; it may be modified only externally by the addition of prefixes and suffixes, generally termed as affixes. Thus, modification of a word depends on the addition of affixes. The process of modification using affixes is called affixation which is a fixed process at all. To test the knowledge in affixation based on the level or stratum ordering of affixes in English complex word formation process, a tool named as *Morphotactic Ruler*, has been developed. Further, while testing the knowledge in affixation by this tool, it has the programming techniques to disseminate the required knowledge of the ordering of affixes based on levels or layers by pointing out the learners' strengths and weaknesses by green and red colours respectively; and further, when a learner fails in stratum ordering, it shows the right places where the level 1 and 2 affixes should be attached. For instance, the morphs *happy*, *ness*, and *un* are given to a student to properly arrange in order to get a meaningful word. To arrange these morphs correctly, the student should have the knowledge of affixes and their ordering levels. As far as the affix level or stratum is considered, *un#* and *#ness* are prefix and suffix respectively, and they are the level 2 affixes as they show the weak boundaries. Now which morph, i.e. *un#* or *#ness*, should be added to the root *happy* depends on the knowledge of affixes. It is obvious that the prefix *un#* always goes with adjective not with noun. Thus, the student has to take the morph *happy* as the root, and then he adds the level 2 prefix *un#* [ʔn] to the root *happy* [hæpʔ] and it becomes *unhappy* [ʔnhæpʔ]. Then, he adds the level 2 suffix *#ness* to the base *unhappy* [ʔnhæpʔ] to get the final word *unhappiness* [ʔnhæpʔnʔs]. Like that the developed tool clearly shows the position of affixes in the word *unpredictability* in the sample visual.

SAMPLE VISUAL OF THE DEVELOPED TOOL:



CONCLUSION:

In conclusion, morphology is about the syntax of a complex word which has morphs or affixes that can be said to be the building blocks of complex word formation process. To maintain the internal stability of a word, the knowledge of affixes and their ordering is important, i.e. the description of morphemes and their patterns of occurrence within the word (Allerton 1979). According to stratum theory of morphology, affixes are added to the root and base and stem based on the layers or levels or strata. This is called stratum ordering or affixation which is a word formation process. It is reasonable to state that by getting the knowledge in affixation and its constraints, i.e. getting different words by arranging the affixes on levels, or in other words by recycling the language, a person's vocabulary can develop to great extent gradually.

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