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## Affixations and Allomorphs in Verbs and Nouns in a Research Abstract: A Morphemic and Morphophonemic Analysis

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### ABSTRACT

This study aims to analyze and describe the morphemic and phonemic structures of verbs and nouns in a research abstract as source of data. The morphemic structure analysis focuses on the free-bound morphemic affixations of English verbs and nouns while the morphophonemic analysis focuses on the allomorph variations of the inflectional morphemes in English verbs and nouns. Findings of the study reveal that majority of the verbs used in the research abstract have inflectional type of affixations where a bound morpheme is added to the stem as suffix. These morphemes mark tense and number of verbs. The nouns, on the other hand, generally have derivational affixation that involves appending of suffixes to the verb form to derive the noun form. This study affirms that English verbs and nouns generally have inflectional suffixes to mark grammatical categories such as tense and number. In another note, both of the verbs and nouns with inflectional morphemes undergo phonological modifications in terms of their allomorphic variants. The allomorphs [s], [z] and [iz] of the morpheme {s} are used to mark number in nouns and tense in verbs while the allomorphs [d], [əd] and [t] of the morpheme {d} mark the tense in regular verbs with inflectional morphemes. The allomorphs in both verbs and nouns involve voicing assimilation and dissimilation as phonological processes. The implications of the findings of the study would be that second language learners of English need to familiarize the morphemic structure of words as they can be very helpful in understanding the meanings of words. Moreover, they have to familiarize the environments where the allomorphic variants of inflectional morphemes are realized so that they would be able to pronounce the words correctly. Such interaction of morphology and phonology can cause learning difficulty for second language learners of English whose first language, like the Cebuano Visayan, is sounded as spelled and is contrary to English which has allophonic and allomorphic variants occurring in words. The analysis can therefore be helpful to teachers in identifying areas of difficulty in learning a second language.

### Introduction

Studies on the structure of words, also known as morphology, involve knowing the component parts of words and determining the rules by which words are formed (Hayes, 2009). The components of words can be analyzed by its morphemes, the “minimal meaningful units that are used to form words” (Katamba, 1993; Lieber, 2009). A morpheme can be attached or inserted into another morpheme in order to expand the word or change its meaning. Often, there are many interactions between the phonological form (sound) and the morphological structure of words (Hayes, 2009). Josiah & Udoudom (2012) points out that this interaction between the word and the phonological structures can ultimately affect the grammar of language which can be illustrated through a morphophonemic study. Morphophonemics is the interaction between morphology and phonology (Ampa, Basri, & Ramdayani, 2019), which according to David Crystal (2008) involves

the “analysis and classification of the phonological factors which affect the appearance of morphemes, or, correspondingly, the grammatical factors which affect the appearance of phonemes”.

While majority of second language learners experience difficulty in learning the target language in a nonnative environment (Josiah & Udoudom, 2012; Wold, 2006), knowing how affixes is used can be very helpful in understanding the meanings of words. The researcher believes that second language learners will be better at understanding and predicting the meanings of words once they know the morphemic and phonemic structures of words, in this case, the English verbs and nouns. With this in mind, this present study aims to analyze and describe the morphemic and phonemic structures of nouns and verbs in Binoy Barman’s research abstract on “The Linguistic Philosophy of Noam Chomsky” (2012). The morphemic structure analysis focuses on the free-bound morphemic affixations of English verbs and nouns while the morphophonemic analysis focuses on the allomorphs of inflectional morphemes in English verbs and nouns as used in Barman’s research abstract.

### Theoretical Background

The goal of this present study is to describe and analyze the morphemic and phonemic structures of verbs and nouns in a research abstract. The study is anchored on the theory of Lexical Phonology and Morphology (LPM) (Kiparsky, 1982). Lexical Phonology and Morphology assumes that the lexicon which undergoes derivational and inflectional processes, is arranged in several layers or levels, called strata (Anderwald, 2009; Kiparsky, 1982). According to Kiparsky (1982), each level is associated with a set of phonological rules for which it defines the domain of application. The ordering of levels moreover defines the possible ordering of morphological processes in word formation. In the words of Anderwald, he explains that:

... the lexical roots are stored at the base, and are then moved through the different strata to form words. Morphological (and their concomitant phonological) rules are stored at different strata, which serves to explain some very distinctive differences that obtain between otherwise quite similar processes, e.g. of derivation” (2009, p. 21).

While many theorists have conflicting numbers of levels or strata for LPM (Anderwald, 2009), this present study adapts Katamba’s (1993) two-stratum model. In this model, the inflectional and/or derivational processes are not confined to a particular stratum. Some of them maybe stored at stratum 1 while others can be stored at stratum 2. However, compounding as morphological process is confined to stratum 2 only. Furthermore, stratum 1 contains the rules about non-neutral affixes – those that change the stress pattern or affect the base phonologically in other ways. Stratum 2 contains neutral or regular affixes. This is different from Kiparsky’s 3- stratum model where stratum 1 contains the irregular inflection and derivation, stratum 2 has regular derivation and compounding while stratum 3 has regular inflection.

### Review of Related Literature and Studies

Katamba (1993) defines morphology as the study of the internal structure of words or lexemes; simply put, morphology deals with word formation (Crystal, 2008; Haspelmath & Sims, 2010; Spencer & Zwicky, 2007). Considered as the conceptual center of linguistics, morphology is divided into two domains – the derivational morphology and the inflectional morphology (Lieber, 2009; Spencer & Zwicky, 2007). The former is a type of word formation that creates new words while the latter is a type of word formation that does not change category nor create new lexemes, but rather changes the form of lexemes so that they fit into different grammatical contexts (Lieber, 2009).

In the English language, many words are morphologically complex (Katamba, 1993). They are complex in the sense that they can be broken down into smaller meaningful units just like in the word RESEARCH where *re* means again and *search* means to find. These meaningful units of a word are called morphemes (Crystal, 2008). A morpheme cannot be decomposed into smaller units which are either meaningful by themselves or mark a grammatical function like singular or plural number in the noun (Katamba, 1993) as it is the smallest meaningful unit in a word. Thus, an analysis of words begins with the isolation of morphs. A morph is a physical form representing some morpheme in a language. It is a recurrent distinctive sound (phoneme) or sequence of sounds (phonemes). If different morphs represent the same morpheme, they are grouped together and they are called allomorphs of that morpheme (Katamba, 1993).

Lieber (2009) defines allomorphs as “phonologically distinct variants of the same morpheme”. This means that allomorphs have different-sounding sets of forms, but they have the same meaning or function. Haspelmath & Sims (2010) argue that allomorphs occur when morphemes have different phonological shapes under different circumstances. Lieber (2009) exemplified the case of the negative prefix *in-* in English. The prefix *in-* is often pronounced *in-* like in the word “intolerable”,

but it is also sometimes pronounced im- or il- like in the words “impossible” and “illegal”. Since all of these forms still mean ‘negative’, and they all attach to adjectives in the same way, im- and il- are considered as allomorphs of the negative prefix in-. The same is true to the regular past tense in English which is spelled –ed, but is sometimes pronounced as [t] in “packed”, sometimes [d] in “bagged”, and sometimes [əd] in “waited” (Lieber, 2009).

### **Types of Morphemes**

A root is the irreducible core of a word, with absolutely nothing else attached to it. It is the part that is always present, possibly with some modification, in the various manifestations of a lexeme (Katamba, 1993). In the same way, Crystal (2008) defines a root as the base form of a word which cannot be further analyzed without total loss of identity. In other words, it is that part of the word left when all the affixes are removed. For example, walk is a root and it appears in the set of word-forms that instantiate the lexeme WALK such as walk, walks, walking and walked. Many words contain a root standing on its own. Roots which are capable of standing independently are called free morphemes (Katamba, 1993). While only roots can be free morphemes, not all roots are free. Many roots are incapable of occurring in isolation, and they always occur with some other word-building element attached to them. Such roots are called bound morphemes. Examples of bound morphemes are –mit in remit and -ceive in receive.

Bound morphemes can be a prefix or a suffix (Lieber, 2009); the former are bound morphemes that come before the base of the word, and the latter bound morphemes that come after the base. Together, prefixes and suffixes can be grouped together as affixes. New lexemes that are formed with prefixes and suffixes on a base are often referred to as derived words, and the process by which they are formed as derivation. The base is the semantic core of the word to which the prefixes and suffixes attach (Lieber, 2009).

### **Morphophonemics**

A morphophonemic analysis aims to “discover a set of underlying forms and ordered rules that is consistent with the data” (Hayes, 2009). In doing this, Hayes laid out the following procedures in doing a morphophonemic analysis:

1. Examine the data, consulting the glosses, and make a provisional division of the forms into morphemes.
2. Find each morpheme that alternates, and locate its allomorphs.
3. Within each allomorph, locate the particular segment or segments that alternate.
4. Considering the logical possibilities, set up the underlying representations so that all the allomorphs of each morpheme can be derived from a single underlying representation by general phonological rules (Hayes, 2009, p. 162).

The present study follows the steps provided by Hayes (2009) in analyzing the allomorph variants of inflectional morphemes in verbs and nouns used in Binoy Barman’s Research Abstract on “The Linguistic Philosophy of Noam Chomsky”. The morphophonemic analysis in this study focuses on describing the phonemic differences among allomorphs of the same morpheme in verbs and nouns found in the text.

### **Related Studies**

Ampa, Basri, & Ramdayani (2019) explored the morphological and morphophonemic processes found in the Indonesian language using statements containing affixes from newspapers. Using verbal analysis, the researchers identified and classified the affixes into various types. Their findings reveal that the affixation process transformed the word classes where the use of confix me-kan changed the roots of adjectives and nouns into verbs and pe-an changed the roots into nouns. Besides, the morphophonemic rules were also discussed from the variation of prefixes me- and pe-. The findings concluded that the affixation processes were very unique and interesting to learn. And, the implication of the research indicated that the Indonesian learners might compare their native language and the other world languages. Meanwhile, a case study made by Saranza (2014) on the morphophonemic variation among Kinamayo dialects, a language use in the eight municipalities of Surigao del Sur, Philippines, found affixation as the most productive morphological process in Kinamayo. Variation in the dialects involve both phonological and morphological processes and voicing or phonation.

Abushunar & Mahadin (2020) investigated the acquisition of the morphophonemics of Jordanian Arabic triconsonantal verbs with speech samples obtained from a picture/action naming task as data. Their study sampled 64 children who are acquiring spoken Jordanian Arabic as their mother tongue. Results of the study revealed that children overcome the morphological

complexity of Arabic verbs by applying a number of processes, including: cluster simplification, glottalization, and truncation. The OT analysis indicates that these processes are associated with highly-ranked markedness constraints and lower-ranked faithfulness constraints in child grammar. In addition, the root/affix asymmetry triggers unmarked patterns to emerge in the affix.

Another study by Assefa (2019) describes the various phonological/ morphophonemic processes resulting from segmental co-occurrence within words which constitute a single morpheme and at morpheme junctures of complex words in the Ezha language. The language is found to be rich in such operations. The morphophonemic processes that were identified and described in this study include assimilation, labialization, palatalization, depalatalization, vowel fronting, vowel deletion, deletion of a glide and a vowel, epenthesis and spirantization. Among these operations, assimilation is found to be by far the most prominent.

### Research Problem

This study focuses on the morphemic structure and morphophonemic analysis of verbs and nouns in Binoy Barman's Research Abstract on "The Linguistic Philosophy of Noam Chomsky". The study aims to answer the following:

1. What type of affixation is commonly used in forming lexemes classified as verbs and nouns?
2. In what environments do allomorphs of inflectional morphemes occur?
3. What phonological process is involved in the allomorphic variations?

### Methodology

The present study is a qualitative research using morphemic and morphophonemic analysis in Binoy Barman's Research Abstract on "The Linguistic Philosophy of Noam Chomsky". In generating the research data, two phases are involved. The first phase covers the morphemic structure of nouns and verbs. In this phase, the lexical morphemes in verbs and nouns in the text were identified and analyzed in terms of form and affixations. This includes the breaking down of lexemes into their free-bound morphemic structures. The second phase covers the morphophonemic analysis of the inflectional morphemes in verbs and nouns. In this phase, all lexemes having inflectional morphemes were identified and grouped together based on their grammatical functions. Then the allomorphic variation of the inflectional morphemes in verbs and nouns were analyzed and described in terms of the phonemic structure of morphemes and phonological processes involved.

### Results and Discussion

#### *Morphemic Structure of Verbs with Affixations*

All verbs with affixations are shown in Table 1. The bound morpheme [s] is affixed to the verbs becomes, considers, holds, opposes, puts and works as an inflectional morpheme to mark a third person singular verb in the present tense. The past tense form of the verbs based, called, dubbed, founded, and identified have the morpheme [d] and [ed] as an inflectional morpheme to mark the past tense form of the regular verbs. The irregular verb *brought* undergoes a mutation process in its past tense form.

The verb *becomes* has both a prefix and a suffix as affixes added to its stem. The bound morpheme [be] plus the free morpheme [come], meaning to move toward something, gave a derivational affixation that results to the verb become which means to undergo change or development. From the derivational structure of the word, another bound morpheme [s] is affixed to the verb as an inflectional morpheme that marks a singular third person present tense form of the verb. On the other hand, the verb *identified* has two layers of suffixation with -ify and -ed added to the root word ident.

The data illustrate that majority of the verbs in the text have an inflectional type of affixation. The bound morphemes affixed to the free morphemes (roots) are morpheme markers of tense and number.

#### *Morphemic Structure of Nouns with Affixations*

Table 2 shows a list of eighteen nouns with affixations. Fourteen of these nouns have derivational morphemes appended to the stem while five have inflectional morphemes added as suffixes to the stem. The noun elaborations [elaborate + ion + s] contain two types of affixations. The first affixation is derivational where the bound morpheme [-ion], is added to the verb *elaborate* thus a noun form [elaboration] is derived from the verb form [elaborate]. The second affixation is inflectional in nature where the bound morpheme [s] is added as a plural marker morpheme to the derived word [elaboration].

The data show that majority of the nouns used in the text are morphologically complex with a derivational type of affixation where words can be broken down into morphemes. The derived nouns generally have a verb form as their bases (free morpheme). The suffixes –tion, -ial, -ist, -ism, -ion are affixed to the verb forms to derive the noun forms. The word essentialist, however, has two layers of suffixes (tial + ist) attached to the base form essence.

#### *Morphophonemic Analysis of Verbs with Inflectional Morphemes*

The past tense marker of regular verbs in English {-d, -ed} is phonologically conditioned and it has three allomorphs, the [d], [əd] and [t]. These allomorphs are illustrated in the data as shown in Table 3. The first allomorph of the past tense marker {d} is [t], a voiceless alveolar stop in the word “based”. In this example, the past tense marker {d} comes after a voiceless alveolar sibilant fricative /s/ such as in the word “based”. The second allomorph of the past tense marker [d] can be found in the words “called”, “dubbed” and “identified”. In these words, {d} is a voiced alveolar stop; it follows a voiced alveolar approximant /l/ in the word *called*; it comes after a voiced bilabial stop /b/ in the word “dubbed” while in the word “identified”, the past tense marker {d} comes after the unrounded vowel /a/. The third allomorph is [əd] as used in the words “founded” in which the morpheme {d} comes after a voiced alveolar stop /d/.

Table 3 shows that the stem of the verb “based” of which the past tense marker {d} is pronounced as /t/ ends in /s/, a voiceless alveolar sibilant fricative; the stem of the verbs called, dubbed, and identified end with /l/, /b/, and /a/ which are voiced consonants and a vowel respectively. The first and second allomorphy are results of a process called voicing assimilation. This process occurs when sounds become voiced or voiceless depending on the voicing of the neighboring sounds (Lieber, 2009). In the third allomorphy where {d} is pronounced as /əd/, the stem of the verb “founded” is /d/, which is a voiced consonant. This allomorphy involves a process of dissimilation. Lieber (2009) defines dissimilation as a phonological process which makes sounds less like each other where a schwa separates the {d} of the past tense from the matching consonant of the end of the verb.

The present tense singular marker morpheme {s} in English verbs has three allomorphs – the [s], [z] and [ɪz] respectively as shown in Table 4. The first allomorph of {s} can be found in the word “works” where the plural marker morpheme {s} is pronounced as a voiceless alveolar sibilant fricative /s/ as it comes after the voiceless velar stop /k/ in the word “works”. The second allomorph of {s} is found in the words “becomes”, “considers” and “holds” where the plural marker morpheme {s} is pronounced as a voiced alveolar sibilant fricative /z/. In “becomes”, the morpheme {s} comes after a voiced bilabial nasal /m/, while in “considers”, the morpheme {s} comes after /r/ and after a voiced alveolar stop /d/ in the word “holds”. The third allomorph is [ɪz] such as in the word “opposes” where {s} comes after a voiced alveolar sibilant fricative /z/. The first two allomorphy of the present tense singular marker morpheme {s} is a result of voicing assimilation process while the third allomorphy is a result of dissimilation process which makes sounds less like each other where a vowel separates the [z] of the present tense from the matching consonant of the end of the noun.

#### *Morphophonemic Analysis of Nouns with Inflectional Morphemes*

English nouns are inflected to form their plural. The plural nouns in the text as shown in Table 5 reveal a composition of the stem plus the plural morpheme {s}. The data show that majority of the nouns with inflectional morphemes are regular types of nouns which form their plural by adding s to the stem. Out of the five plural nouns in Table 5, the allomorph of {s} in the words “aspects” and “linguists” is a voiceless alveolar sibilant fricative [s]. This is because the phoneme that comes before the plural marker morpheme {s} in the words “aspects” and “linguists” is a voiceless alveolar stop /t/. On the other hand, the words “doctrines”, “elaborations” and “ideas” have the [z] allomorph of the plural morpheme {s}. Each stem of the three nouns ends with a voiced consonant /n/ and a schwa sound. The phonological process in the allomorph variants of the plural marker morpheme is voicing assimilation.

### **Conclusion**

In this paper, the researcher has described the morphemic structure of verbs and nouns in terms of affixation. Findings of the study reveal that majority of the verbs have inflectional type of affixation where a bound morpheme is added to the stem. These morphemes mark tense and number of verbs. The nouns, on the other hand, generally have derivational affixation that involves adding suffixes to the verb forms to derive the noun forms. The study affirms that English verbs and nouns generally have inflectional suffixes to mark grammatical categories such as tense and number. In another note, this study has shown that both verbs and nouns with inflectional morphemes undergo phonological modifications in terms of their allomorphic

variants. The allomorphs [s], [z] and [ɪz] are used to mark number in nouns and tense in verbs, respectively while the allomorphs [d], [ɪd] and [t] of the morpheme {d} marks the tense in regular verbs with inflectional morpheme.

The implications of the findings of the study would be that second language learners need to familiarize the morphemic structure of words as they can be very helpful in understanding the meanings of words. Knowing the meanings of affixes can help second language learners in understanding and predicting the meanings of words. Moreover, second language learners of English should familiarize the allomorphic variants of inflectional morphemes so that they would be able to pronounce the words correctly. Such interaction of morphology and phonology can cause learning difficulty for second language learners of English whose first language, like Cebuano Visayan, is sounded as spelled, contrary to English which has allophonic and allomorphic variants occurring in words. The analysis made in this study can therefore be helpful to teachers in identifying areas of difficulty in learning a second language.

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## Appendices

Table 1. Morphemic Structure of Verbs with Affixations

Verbs	Morphemes		Type of Affixation
	Free	Bound	
Based	Base	-d	Inflectional
Becomes	come	Be- ; -s	Derivational; Inflectional
Brought	bring	-ought	Inflectional
Called	Call	-ed	Inflectional
Considers	consider	-s	Inflectional
Dubbed	dub	-b; -ed	Inflectional
Founded	Found	-ed	Inflectional
Holds	Hold	-s	Inflectional
Identified	Ident	-if(y)i, -ed	Inflectional
Opposes	Oppose	-s	Inflectional
Puts	Put	-s	Inflectional
Works	Work	-s	Inflectional

Table 2. Morphemic Structure of Nouns (Free bound Morphemic Affixations)

NOUNS	Morphemes		Type of Affixation
	Free	Bound	
Acquisition	Acquire	-si, -tion	Derivational
Aspects	Aspect	-s	Inflectional
Continuation	Continue	-tion	Derivational
Contribution	contribute	-ion	Derivational
Doctrines	doctrine	-s	Inflectional
elaborations	elaborate	-ion; -s	Derivational; Inflectional
Essentialist	essence	-tial, -ist	Derivational
Exercise	exert	-cise	Derivational
Foundation	found	-ation	Derivational
Ideas	idea	-s	Inflectional
Innatism	innate	-ism	Derivational
Investigation	Investigate	-ion	Derivational
Linguistics	linguist	-ics	Derivational
Linguists	Linguist	-s	Inflectional
Mentalist	Mental	-ist	Derivational
Propensity	Propense	-ity	Derivational
Rationalism	rational	-ism	Derivational
Revolution	revolve	-ution	Derivational

Table 3. Allomorphs of the Past Tense Marker Morpheme

Verbs	Phonetic Transcription	Component Morphemes	Phonemic Structure	Description of the {d} allomorph
Based	/beɪst/	Base + -d	{beɪs} + {t}	/d/ → [t] Voiceless alveolar stop
Called	/kɔld/	Call + -ed	{kɔl} + {d}	/ed/ → [d] Voiced alveolar stop
Dubbed	/dʌbd/	Dub + b + -ed	{dʌb} + {d}	/ed/ → [d] Voiced alveolar stop
Founded	/faʊndəd/	Found + -ed	{faʊnd} + {əd}	/ed/ → [əd]

				Voiced alveolar stop
Identified	/aɪdɛntɪfaɪd/	Identify + -d	{aɪdɛntɪfaɪ} + {d}	/d/ → [d] Voiced alveolar stop

Table 4. Allomorphs of the Singular Present Tense Marker Morpheme in Verbs

Verbs	Phonetic Transcription	Component Morphemes	Phonemic Structure	Description of the allomorphs of {s}
becomes	/bɪkʌmz/	Be + come + -d	{bi}+ {kʌm}+ {z}	/s/ → [z] Voiced alveolar sibilant fricative
considers	/kənsɪdəz/	Consider + -s	{kənsɪdər}+ {z}	/s/ → [z] Voiced alveolar sibilant fricative
holds	/hɔldz/	Hold + -s	{hold} + {z}	/s/ → [z] Voiced alveolar sibilant fricative
opposes	/əpəʊzɪz/	oppose + -ed	{əpəʊz} + {lɪz}	/s/ → [lɪz] Voiced alveolar sibilant fricative
works	/wɜ:kz/	work + -s	{wɜ:k} + {s}	/s/ → [s] Voiceless alveolar sibilant fricative

Table 5. Allomorphs of the Plural Marker Morpheme in English Nouns

Plural Nouns	Phonetic Transcription	Component Morphemes	Phonemic Structure	Description of the allomorphs of {s}
Aspects	/æspɛkts/	Aspect + s	{ æspɛkt } + {s}	/s/ → [s] Voiceless alveolar sibilant fricative
Doctrines	/dɔktrɪnz/	Doctrine + s	{dɔktrɪn} + {z}	/s/ → [z] Voiced alveolar sibilant fricative
Elaborations	/ɪləbərəɪʃənz/	Elaborate + ion +s	{ɪləbərəɪt} + {ʃən} + {z}	/s/ → [z]

				Voiced alveolar sibilant fricative
Ideas	/aɪdɪəz/	Idea + s	{aɪdɪə} + {z}	/s/ → [z] Voiced alveolar sibilant fricative
linguists	/lɪŋgwɪsts/	Linguist + s	{lɪŋgwɪst} + {s}	/s/ → [s] Voiceless alveolar sibilant fricative