
The Morphological Tapestry: A Linguistic Exploration

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Abstract: *This article introduces morphological typology, exploring the patterns and structures underlying word formation and grammatical encoding across languages. A systematic literature review examines fundamental concepts, including distinctions between analytic and synthetic languages, features of agglutinating, fusional, and inflectional morphologies, and phenomena like suppletion and polysynthetic structures. Readers gain insights into language classification based on morphological characteristics, challenging strict categorical distinctions and emphasizing the continuum across types. The study highlights the diversity and complexity of morphological systems. Suppletion, where stems are irregularly replaced in inflectional patterns, and polysynthetic languages, encoding entire sentences within single complex words, are explored in depth. This work offers a concise overview of morphological typology by synthesizing reputable sources, including books, journals, and online resources. It is an accessible resource for language learners, linguists, and anyone interested in understanding the intricate morphological underpinnings of human language.*

Keywords: *Morphological Typology, Word Formation, Morphology, Inflection, Polysynthetic Structures.*

1. INTRODUCTION

The concept of "morphological typology" represents a fundamental linguistic analysis and classification aspect. "Morphological typology studies the patterns and structures that languages exhibit in their formation of words and how grammatical information is encoded within these constructions" [1, p. 12]. This field explores the interplay between the basic units of language, morphemes, and their combination and arrangement to convey meaning.

Morphological typology is a linguistic typology branch that examines the structural and functional similarities and differences across the world's languages [2]. By classifying languages based on morphological characteristics, linguists can uncover insights into the



principles governing language development, evolution, and diversity. “This approach transcends individual language families, allowing for cross-linguistic comparisons and the identification of universal tendencies as well as unique anomalies” [3, p. 67]

Through the lens of morphological typology, languages are often classified into two broad categories: analytic and synthetic. Analytic languages, such as Chinese and Vietnamese, rely heavily on word order and function words to convey grammatical information [4], while synthetic languages employ processes like affixation, compounding, and stem modification to encode information within words. Within the synthetic category, various subtypes emerge with distinct characteristics. Inflectional (or fusional) languages, like Spanish and German, exhibit fusion between stems and affixes, making morpheme boundaries less discernible [5]. Agglutinating languages, such as Turkish and Swahili, display a more systematic, segmentable approach, with each affix representing a distinct category [6]. Polysynthetic languages in certain indigenous communities take complexity further, encoding entire sentences within single complex words through noun incorporation and extensive affixation [7].

This article aims to help readers understand their native language's morphology, its relationships to other languages, and the structural and genetic features grouping languages into families based on diachronic relationships. By incorporating recent sources, this study provides an inclusive yet concise overview of language morphologies as an accessible resource. To be more specific, the study aims to:

1. To provide a clear and concise introduction to the concept of morphological typology.
2. To explore the distinction between analytical and synthetic languages, highlighting their essential characteristics and differences.
3. To examine the various sub-types of synthetic languages, including inflectional (fusional), agglutinating, and polysynthetic, and their unique morphological features.
4. To analyze the phenomenon of suppletion and its role in irregular inflectional patterns across languages.
5. To foster an understanding of the continuum between morphological typologies and the limitations of strict categorical distinctions.

2. RELATED WORKS

At the core of linguistic analysis lies the concept of morphological typology, which classifies languages based on their structural characteristics, particularly in terms of word formation, combination, and inflection [8, p. 163]. Languages employ two primary types of morphologies: analytic and synthetic. This classification system is rooted in how languages construct words and convey meaning through morphological processes.

Typology, distinct from being a grammatical theory itself, aims to identify cross-linguistic patterns and their interrelationships [9]. Consequently, typological studies' research methodology and results are inherently aligned with various grammatical theories, such as functional grammar, cognitive grammar, and relational grammar. This interdisciplinary approach allows typological research to draw insights from multiple theoretical frameworks, enriching our understanding of the elaborate patterns that underlie language structures.

Lindsay elaborates on three main aspects related to the description of typology: (a) typology facilitates cross-linguistic comparison, (b) categorizes languages and their features, and (c)



evaluates the formal characteristics of languages. Through cross-linguistic comparison, typological studies uncover similarities and differences among languages, enabling researchers to identify patterns and formulate generalizations about linguistic phenomena. The categorization of languages and their features provides a systematic framework for organizing and analyzing the diversity of linguistic structures. At the same time, the evaluation of formal characteristics explores the details that shape the unique properties of each language. Unlike some linguists, Lindsay employs somewhat discrete terms for classifying language types, such as affixial languages, inflectional languages, and no-structure languages [10]. This terminological distinction highlights the nuances and variations within the broader categories of analytic and synthetic morphologies, acknowledging the complexity and diversity of linguistic systems. However, the living languages spoken worldwide are classified into two categories: the first relates to the typological classification, which groups languages based on their structural features, and the second is associated with the genetic (genealogical) classification of languages [11]. Genetic classification aims to group languages into families according to their degree of diachronic relationship, tracing their historical connections and evolutionary trajectories. For instance, within the Indo-European family, documenting the classification of sub-families such as Germanic or Celtic commenced in the 18th century, reflecting the longstanding efforts to understand the intricate web of linguistic relationships. Although attempts at genetic classification can be challenging due to many languages, linguists, based on etymological, grammatical, and structural similarities, have developed a new way of grouping languages known as genetic classification, which relates to language families. By examining the shared roots, word origins, and grammatical structures, researchers can unravel the intricate connections between languages and trace their historical lineages [12]. Languages are divided into three sub-categories in typological classification: inflectional, agglutinative, and analytic. This tripartite classification system reflects the different morphological strategies languages employ to convey grammatical information and construct complex words [11].

1. **Inflectional languages:** In these languages, morphological processes involve changes within the word stem itself, often through vowel alternations or consonant changes. Inflectional affixes are fused with the stem, making it difficult to separate the individual morphemes. Examples of inflectional languages include Latin, Greek, and Russian.
2. **Agglutinative languages:** These languages rely on the sequential addition of affixes to the word stem, each with a distinct grammatical meaning. The individual morphemes remain easily identifiable and separable. Turkish, Finnish, and Japanese are examples of agglutinative languages.
3. **Analytic languages:** In analytic languages, grammatical relationships are primarily expressed through word order and separate function words rather than morphological inflection or agglutination. Chinese, English, and Vietnamese are considered analytic languages.

This classification system acknowledges the diverse morphological strategies employed by languages and provides a framework for understanding their structural differences and similarities [9], [12].



3. METHODOLOGY

This study employs a systematic review design, a rigorous and transparent approach to synthesizing existing research and literature on a specific topic [13, p. 184]. A comprehensive literature search was conducted following the guidelines outlined by [14] for conducting effective and systematic literature searches across relevant databases and library catalogs to identify books, journal articles, and online resources related to morphological typology, language typology, and associated topics. The source materials were carefully evaluated based on criteria such as relevance, credibility, and their contribution to understanding morphological typology, prioritizing authoritative sources from renowned linguists and researchers, in line with the recommendations by [15] for ensuring quality and reliability in academic literature reviews. Key information, examples, and insights were systematically extracted and organized from the selected sources using the data extraction guidelines proposed by [16] for systematic reviews in international development. The extracted data were then synthesized and analyzed following the approach outlined by [17] to identify central themes, patterns, and contrasting perspectives within the literature on morphological typology. Connections were established between different facets of morphological typology, incorporating illustrative examples from diverse languages, adhering to the principles advocated by [9] for presenting linguistic data coherently. The synthesized information was interpreted and discussed comprehensively yet accessibly, emphasizing the diversity and complexity of morphological systems while acknowledging the limitations of strict categorical distinctions, as underscored by recent works on linguistic typology [2], [3].

4. RESULTS AND DISCUSSION

By examining the fundamental distinctions between analytic, synthetic, agglutinating, fusional, and polysynthetic language types, the results section aims to explain how languages structure and encode grammatical information within their words. The examples and insights derived from various language families illustrate the remarkable diversity of morphological systems while highlighting the intricate patterns and processes underlying word formation across different linguistic traditions. Through a detailed exploration of these topics, this section offers a comprehensive understanding of the complex tapestry of morphological typology, shedding light on the fascinating mechanisms through which human languages convey meaning and construct complex linguistic structures.

4.2. Analytic Languages

In analytic languages, sentences are entirely free morphemes, where each word consists of individual morphemes with meaning and function unchanged. Languages that are exclusively analytic are also called isolating languages because there is no need for affixation (inflectional or derivational) at all. Occasionally, analytic languages allow some derivational morphemes, for instance, compounds as (dual free roots in a single word) [8, p. 163]

While English is not entirely analytic, as many linguists claim there are agreement markers like tenses, it does exhibit some analytic features. For example, in English, the pronoun 'we' is transformed to 'us' when it functions as the object of the verb, but no affixation is required to



determine the functions of nouns in sentences. For better understanding and clarification, notice how the following two sentences change in meaning by subject and object replacement:

Mice hate cats.

Cats hate mice.

Mice see the cats.

The cats see the mice.

In the first sentence, the word 'mice' is the subject of the sentence, and the word 'cats' is the object, while in the second sentence, by replacing the subject and object, you perceive the opposite meaning of that sentence. The third and fourth statements have the same grammatical word order as the first and second sentences.

In English, it's also possible to replace a noun subject with a noun complement to indicate the analytical feature of the language, as in the following example [18]: Billiards is my favorite game. My favorite game is Billiards. To a great extent, the Vietnamese language also contains analytical features, although most linguists believe Vietnamese is more isolating than analytic. If you analyze the following four sentences in Vietnamese, you notice the analytical nature:

1. Chuột ghét gián.
Mouse hate cockroach.
'Mice hate cockroaches.'
2. Gián ghét chuột.
Cockroach hate mouse.
'Cockroaches hate mice.'
3. Anh ấy thích em gái của mình.
He like younger.sister of him.
'He likes his younger sister.'
4. Em gái của anh ấy thích anh ấy.
Younger.sister of him like him.
'His younger sister likes him.'

In these Vietnamese sentences, the order of words determines the subject, object, and other grammatical relationships, exhibiting an analytical structure similar to English.

One important thing to remember is that what a language lacks in inflection (or morphology) should build up in syntax or the order of words in sentences. Thus, technically, both syntax and morphology, in concert, are considered to form grammar. Some writers use the word 'periphrasis' to substitute for analytic languages, so there is no difference between the two terms in a morphological typology of linguistics [19]. In addition, linguists focus on two comparison patterns with adjectives and verbs: 'the inflected and the periphrastic' forms [18]. Commonly, the inflected forms take the inflectional morpheme '-er' in comparatives and '-est' in superlative forms, and the addition of periphrastic light verb alternations distinguishes verbs.

Examples of inflected forms in English:

Bright brighter

Fast faster

Examples of periphrastic forms of light verbs in English:

Take a shower

Do a trick



The periphrastic pattern applies the adverbial intensifiers such as 'more' and 'most' to indicate the comparative and superlative forms of multi-syllable adjectives:

Intelligent, more intelligent most intelligent

Flabbergasted more flabbergasted most flabbergasted

For many speakers, both the simple and periphrastic forms in the following table are possible in English:

Inflected form (-er) Periphrastic equivalent

loveli-er more lovely

friendli-er more friendly

happier more happy

Inflected (-Est) Periphrastic equivalent

Loveliest most lovely

Friendliest most friendly

Happiest most happy

The distinction is also discerned across complete verbs and the light verb (delexical verb) structures in English:

Complete verb Periphrastic light verb alternative

(To) present (to) give a presentation

(To) shower (to) take/have a shower

(To) converse (to) have a conversation

(To) smoke (to) have a smoke

The simple verb form the emphatic verb form

Study did study

This phenomenon of periphrasis, where grammatical concepts are expressed through separate words rather than inflection, is a hallmark of analytic languages like English. It allows for greater flexibility and clarity in conveying various shades of meaning without relying on complex morphological changes within individual words.

4.3.Synthetic Languages

Synthetic languages are those that make extensive use of inflectional morphology to convey grammatical information. They are divided into three sub-branches: agglutinating languages, fusional languages, and polysynthetic languages [8, p. 164].

4.3.1. Agglutinating Languages

Agglutinating languages are synthetic languages that combine morphemes to allow the boundaries between free and bound morphemes to be easily distinguished. This process is commonly productive, meaning new words can be formed predictably [8, p. 164].

One of the key features of agglutinating languages is their transparency and productivity in word formation. Unlike inflectional languages, where morphemes can fuse and undergo complex changes, agglutinating languages follow a more straightforward and predictable pattern. This predictability enables the formation of new words by systematically combining morphemes, resulting in a highly productive morphological system.

While few languages strictly adhere to a single typological category, several languages are widely recognized for their agglutinating tendencies. Turkish, Hungarian, and many Uralic and



Altaic languages are often cited as exemplars of the agglutinating typology, exhibiting a high degree of agglutination in their word formation processes.

Agglutinating languages exhibit a range of morphological operations, including derivation and compounding. Derivational processes involve the addition of affixes to a root or stem to create new words with modified meanings or grammatical functions. For instance, in Turkish, the suffix "-li" can be added to nouns to form adjectives, as in "ev" (house) becoming "evli" (having a house, married). Compounding is another prevalent phenomenon in agglutinating languages, where two or more free morphemes are combined to form a single word. This process allows for the creation of complex concepts by concatenating meaningful units. For example, in Finnish, the word "tietokone" (computer) is a compound formed from "tieto" (data, information) and "kone" (machine).

Furthermore, agglutinating languages often exhibit high morphological complexity, with words potentially containing multiple affixes, each conveying a distinct grammatical or semantic function. This layering of affixes can result in remarkably long and intricate words, a phenomenon known as polysynthesis, particularly prevalent in certain indigenous languages of the Americas.

4.3.2. Fusional Languages

Fusional languages, also known as inflecting or inflectional languages, are another type of synthetic language. A single inflectional morpheme can represent multiple grammatical meanings or functions in these languages. The boundaries between morphemes are often less clear than in agglutinating languages, as the affixes tend to be more tightly fused or "blended" with the stem. Examples of fusional languages include Latin, Greek, Russian, and many other Slavic languages, as well as several indigenous languages of the Americas, such as Náhuatl and Quechua. In fusional languages, a single affix can convey multiple grammatical categories simultaneously, such as number, case, and gender. For example, in Latin, the word "rosārum" (of the roses) contains a single inflectional ending "-ārum" that encodes both the plural number and the genitive case.

4.3.3. Polysynthetic Languages

Polysynthetic languages, also known as highly synthetic or incorporating languages, are characterized by remarkable morphologies in which most words consist of numerous affixes that convey the meaning of an entire sentence. Languages such as Mohawk, Cherokee, and Menominee are polysynthetic languages that predominantly employ this type of morphology [20].

The following are some examples of polysynthetic languages:

Menominee language: Worpaehtawaewesew

Translation: "Higher powers hear him."

German Language: Rindfleischetikettierungsüberwachungsaufgabenübertragung

Translation: "The Supervisory Board of Scotch Beef."

Chin-kuki Language: Ipaludam

Translation: "I came to give him this."

Yupik language: tuntu-ssur-Qatar-ni-ksaite-ngqigqte-uq

Translation: "He had not yet said again that he was going to hunt reindeer."



Aztec language: Ninakakva

Translation: "I eat meat."

Polysynthetic languages construct extremely complex words by combining numerous stems and affixes. In their morphological construction, these languages incorporate nouns (subjects, objects, etc.) into verb formations. Sora, a language spoken in the Indian subcontinent, is another example of objects (subjects, instruments, etc.) incorporated into verbs [8, p. 166].

Example:

[aninjamjɔten] - word in Sora

[anin - jam - jɔ - te - n] - the same word divided into morphemes

He catch fish non-past do

'He is fish-catching'

i.e., 'He is catching fish.'

Polysynthetic languages are characterized by their ability to convey significant information within a single word, using extensive affixation and incorporation processes [7]. These languages often exhibit a high degree of morphological complexity, with words consisting of multiple stems and affixes that encode various grammatical and semantic information, such as subjects, objects, tenses, aspects, and modalities. The study of polysynthetic languages has contributed to our understanding of the diversity of language structures and the potential for morphological complexity. These languages challenge traditional notions of word boundaries and highlight the intricate relationships between morphology, syntax, and semantics.

Research on polysynthetic languages has implications for various areas of linguistics, including typology, morphological theory, language processing, and language acquisition. The intricate morphological structures of these languages raise questions about the cognitive processes involved in their production, comprehension, and acquisition.

Furthermore, the study of polysynthetic languages has also informed discussions on language universals and the potential limits of morphological complexity. While some linguists have argued that there are constraints on the degree of polysynthesis a language can exhibit, others have proposed that polysynthetic languages represent a different conceptualization of linguistic structure, challenging traditional notions of what constitutes a "word."

It is important to note that polysynthetic languages are not a homogeneous group, and there is considerable variation in the degree of polysynthesis and the specific morphological processes employed across different languages [7]. Some polysynthetic languages may exhibit a higher degree of incorporation or affixation than others, and the types of grammatical and semantic information encoded within words can also vary.

4.4. Inflectional Languages

Inflectional languages, also referred to as fusional languages, belong to synthetic languages. Morphemes fuse in these languages to form a single entity, making the boundaries between individual morphemes often indiscernible. Many Indo-European languages, such as Spanish, German, Latin, and Greek, are considered fusional languages because their affixes combine in a way that can obscure their original forms [20].

The rules of morphology are employed to establish correct tenses and cases in inflectional languages. To form words with the appropriate gender, tense, case, number, etc., free morphemes (stems) and bound morphemes (affixes) are combined. The marker ' to ' is a



common morpheme utilized as an infinitive marker to generate syntactically correct sentences based on language rules. This highlights the close relationship between the disciplines of morphology and syntax [21, p. 44]. Inflectional languages often exhibit complex systems of affixation, with multiple grammatical categories represented by a single affix. For instance, in Latin, the word "rosārum" (of the roses) contains the single inflectional ending "-ārum" that encodes both the plural number and the genitive case.

This fusion of multiple grammatical meanings into a single morpheme is a defining characteristic of inflectional languages, distinguishing them from agglutinating languages, where each affix typically represents a single grammatical category. Moreover, inflectional languages frequently exhibit irregularities and exceptions in their inflectional patterns, reflecting the historical development and evolution of the language. For example, in English, the past tense of the verb "go" is formed irregularly as "went," deviating from the regular pattern of adding "-ed" to the base form. Research in linguistic typology has demonstrated that languages can exhibit varying degrees of inflection, ranging from highly inflectional to predominantly analytic. This spectrum is often called the inflectional-analytic continuum [12]. Languages may occupy different positions along this continuum, with some exhibiting a greater degree of inflectional morphology while others display more analytical tendencies. Furthermore, inflectional languages may differ using inflectional morphology for different grammatical categories. For instance, a language may exhibit a highly inflectional system for verbal morphology but a more analytical approach to nominal inflection, or vice versa.

Studying inflectional morphology in languages has significant implications for various fields, including language acquisition, processing, and historical linguistics. For instance, children's acquisition of inflectional systems has been the subject of extensive research, shedding light on the cognitive processes involved in language development [22]. Additionally, the processing of inflectional morphology has been investigated in psycholinguistics and neurolinguistics, exploring how the human brain processes and represents inflected word forms [9].

4.5. Suppletion

Generally, suppletion is considered a type of irregular inflection. It occurs when one stem is replaced with another stem, forming an allomorph of a morpheme that is quite different from other allomorphs, as illustrated in the following examples:

Non-suppletive stem: work - worked

large - larger

Suppletive stem: go-went

good - better - best

In the non-suppletive examples, the simple form of the verb 'work' requires a final '-ed' suffix in its past tense form, following a regular pattern. However, in the suppletive examples, the simple form of the stem 'go' becomes the suppletive morpheme 'went' to function as the past tense form of that verb, deviating from the regular pattern and displaying irregular inflection. Similarly, the positive adjective stem 'large' is transformed to a non-suppletive form 'larger' in the comparative form by adding the regular '-er' suffix. In contrast, the adjective 'good' is an exceptional case excluded from this formula. Instead, another free morpheme, 'better,' is supplied as its suppletive comparative form. This morpheme suppletion process also applies the morpheme 'best' as its superlative form. Suppletion is a widespread phenomenon observed



in many languages, particularly in high-frequency words and grammatical categories such as verb tenses, numbers, and pronouns [24], [25], [26]. It is often attributed to the effects of language change and irregular sound shifts that have occurred over time, resulting in replacing one stem with another. While suppletion may seem arbitrary and unpredictable, it can also exhibit patterns and regularities within a language [26]. For example, in some languages, suppletive forms may follow specific phonological or semantic patterns or be influenced by factors such as frequency of use or historical developments.

5. CONCLUSION

The study of morphological typology reveals that languages exhibit a remarkable diversity in their structural properties, challenging the notion of strict categorical distinctions [27] and [28]. No language entirely fits into an exclusive class, as they often exhibit a combination of features from different morphological types [22]. While some languages like Chinese and Vietnamese are generally considered analytic, employing word order and function words rather than inflectional morphology [29], they may still incorporate fusional or derivational elements. Conversely, languages commonly regarded as inflectional or fusional, such as Spanish or German, may exhibit analytical tendencies in specific domains [30].

Even languages like English, widely considered more analytic than synthetic, incorporate elements of both types. While English sentences can be constructed entirely from free morphemes, the language also employs inflectional and derivational processes in its morphology [31]. This highlights the continuum that exists across morphological typologies. Furthermore, polysynthetic languages, characterized by their ability to convey complex meanings within single words, challenge traditional notions of word boundaries and the relationships between morphology, syntax, and semantics [32]. Studying these languages has broadened our understanding of the potential for morphological complexity and the varying conceptualizations of linguistic structure across the world's languages [33].

The phenomenon of suppletion, where another stem replaces one to form an irregular inflectional pattern, further demonstrates morphological systems' intricate and sometimes unpredictable nature. While suppletion may seem arbitrary, it often follows specific patterns and regularities within a language, reflecting the effects of language change and historical developments [26]. In essence, the morphological typology of languages is not a rigid classification but rather a continuum, with languages exhibiting varying degrees of analytical, fusional, agglutinating, and polysynthetic tendencies [12]. By comparing languages across this spectrum, it becomes evident that no exclusive morphological category can fully encompass the diversity of linguistic structures.

The study of morphological typology broadens our understanding of language diversity and challenges existing theories and models, driving further research and exploration in linguistics [2]. It is a testament to the remarkable complexity and adaptability of human language systems, which defy simplistic classifications and continue to reveal new insights into the nature of language and communication [34].



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