Part III – Morphology – analysis of word structure

This document is the third part of a five part series of the 'Introduction to contemporary linguistics – English'.

I - Phonetic: the sound of language

II – Phonology: the function and patterning of sound

III – Morphology: the analysis of word structure

IV – Syntax: the analysis of sentence structure
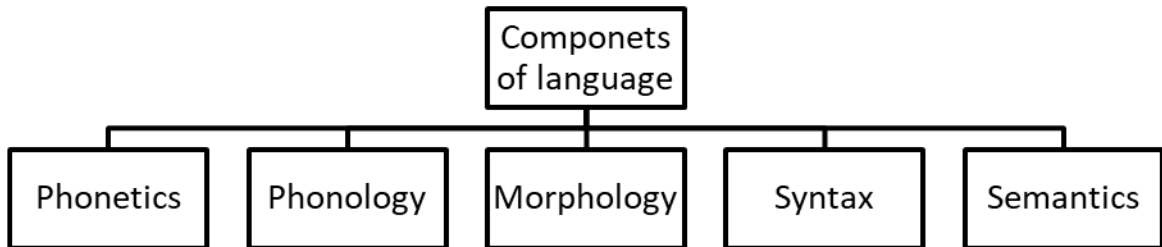
V – Semantics – the analysis of meaning

Summary

1. Language is a vehicle (tool) for communications among humans. We use it when we're talking, listening, reading, writing, and thinking.
2. Linguistics is the study of language: how it is used, how it is acquired, how it changes over time, how it is represented in the brain, and so on. It is concerned with the properties of the language. There are over 7000 living languages in the world today. They are called natural languages (NL).
   a) Linguistic evolution – human have evolved anatomically to create a special capacity for language that is not found in any other species.
      i)   Early humans were anatomically like us-they had large brains and vocal tracts capable of producing speech. Archaeological evidence (such as tools, carvings, and cave paintings) suggests that they also had the type of intellect that could accompany language.
      ii) Our speech organs (the lungs, larynx, tongue, teeth, lips, soft palate, and nasal passages) were-and still are-primarily concerned with breathing and eating. However, they have also all become highly specialized for use in language. Their structure and shape is unique to our species, as is the highly developed network of neural pathways that controls them during speech production.
      iii) Human beings are also specially equipped for the perception of speech. New-born respond differently to human voices than to other types of sounds, and six- month-old infants can perceive subtle differences among sounds in languages that they have never heard before.
   b) Linguistic creativity - all human languages are creative. The breadth and diversity of human thought and experience places a demand for languages to be creative, that is,

enable us to produce and understand new words and sentences to accommodate new thoughts, experiences, and situations.

c) Linguistic competence – The above creative is balanced by the presence of systematic constraints that establish the boundaries within which the innovation can occur. This linguistic competence is called Grammar.

3. Grammar is a set of rules for generating meaningful communication, using the components of language.

a) Components of Grammar – grammar is not limited to the forms and structure of words and sentences but include the sound of words and meaning of words and sentences. Therefore, the different components of language are associated with a domain of grammar. The mapping of language components with domain of grammar; and components of language; are shown below in the chart and table respectively.

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Component of language	Domain of Grammar
Phonetics	Articulation and perception of speech sounds
Phonology	Patterning of speech sounds
Morphology	Word formation
Syntax	Sentence formation
Semantics	Interpretation (meaning) of word and sentence

Now we will discuss the rules of grammar associated with each component of language. Before doing so, let us list Some common properties shared by all grammar of different languages.

b) Common properties of Grammar of languages:

i) Generality – a fundamental claim of linguistic analysis is that all languages have grammar.

(1) Language is spoken => it must have a phonetic and phonological system.

(2) Language has words and sentences => it must have morphology and syntax.

(3) Words and Sentences have systematic meaning => it must have semantic principles

(4) It is not necessary that all languages have a grammar like English

ii) Parity – all grammars are equal.

    (1) There is popular belief that there are primitive languages. On the contrary, some of the most complex languages are found in places untouched by modern science and technology.

    (2) There is no good or bad grammar. All grammar essentially do the same thing: they tell speaker how to form the words and interpret words and sentences of their language. The form and meaning vary from language to language, and even from community to community. However, each language works for its speakers.

iii) Universality – grammars are alike in basic ways.

    (1) There are principles and properties shared by all human languages.

    (2) Sounds:

        (a) There is a set of human speech sounds, independent of any language

        (b) All spoken languages use a sub-set of human speech sounds. The contrastive sounds within the sub-set help to distinguish word from each other (like the *t* and *d* sound that allows us to recognize *to* and *do* as different words).

        (c) All spoken languages do not use the same sub-set of human sounds. There are language specific constraints on which the sub-set is selected.

        (d) All spoken languages have more consonant sounds than vowel sounds.

    (2) Words:

        (a) There are universal constraints on how words can be arranged to form a sentence. Example: a) Mary lost her purse; b) She lost Mary's purse; No language will allow the use of sentence b) in situation where *She* refers to *Mary*.

        (b) No language, uniformly places question word at the end of a sentence.

        (c) All languages have constraints on the order of words to form a sentence by strong tendencies rather than absolute prohibition. Example: A three word sentence '*Indian like cricket'* can have six possible order of words.

            (i) Indians like cricket,

            (ii) Indians cricket like,

            (iii) Like Indians cricket,

            (iv) Like cricket Indians,

            (v) Cricket like Indians,

            (vi) Cricket Indians like.

        (d) All other things being equal, we would expect to find each order employed in about one- sixth of the world's languages.

        (e) In fact, more than 95 percent of the world's languages adopt one of the first three orders for basic statements (and the vast majority of those use one or the

other of the first two orders). Only a small handful of languages use any of the last three orders as basic.

ii) Mutability – Grammar change over time.

(1) The features of language that are not universal and fixed. They are subject to change over time. Indeed, the grammars of all languages are constantly changing. Some of these changes are relatively minor and occur very quickly (for example, the recent addition of new words such as *bitcoin, twerk, selfie, unfriend,* and *carbon footprint* to the vocabulary of English). Other changes have a more dramatic effect on the overall form of the language and typically take place over a long period of time. One such change involves the way sentences were negated in English. Prior to 1200AD, English formed negative constructions by placing *ne* before the verb and a variant of *not* after it. Example: He *ne* speketh *nawt*; Now changed to – He does not speak.

iii) Inaccessibility – Grammatical knowledge is subconscious.

(1) Knowledge of a grammar differs in important ways from knowledge of arithmetic, traffic rules, and other subjects that are taught at home or in school: it is largely subconscious and not accessible to introspection—you can't figure out how it works just by thinking about it. Example: consider your pronunciation of the past tense suffix, written as *ed*, in the following words: a) hunted, b) slipped, c) buzzed; You probably didn't notice it before, but the *ed* ending has three different pronunciations in these words. Whereas you say *id* in *hunted*, you say *t* in *slipped* and *d* in *buzzed*. Moreover, if you heard the new verb *flib*, you would form the past tense as *flibbed* and pronounce the ending as *d*. If you are a native speaker of English, you acquired the grammatical subsystem regulating this aspect of speech when you were a child, and it now exists subconsciously in your mind, allowing you to automatically make the relevant contrasts.

(2) The same is true for virtually everything else about language. Once we go beyond the most obvious things (such as whether words like *the* and *a* come before or after a noun), the average person can't say much about how language works.

(a) Example 1: Sentence - Aisha drank tea or coffee – means 'Either Aisha drank tea, or she drank coffee—I don't know which.'

(b) Example 2: Sentence – Aisha didn't drink tea or coffee – means 'Aisha didn't drink tea **and** she didn't drink coffee,' not 'Aisha didn't drink tea **or** she didn't drink coffee—I don't know which.' The 'or' seems to mean 'and' in this example.

(3) As you can see, being able to interpret these sentences is not the same thing as knowing *why* they have the particular meanings that they do. Speakers of a language know what sounds right and what doesn't sound right, but they are almost never able to say how they know. Because most of what we know about our language is subconscious, the analysis of human linguistic systems requires

considerable effort and ingenuity. As is the case in all scientific endeavors, observable facts (about the pronunciation of words, the interpretation of sentences, and so on) must be used to draw inferences about the sometimes invisible mechanisms (atoms, cells, or grammars, as the case may be) that are ultimately responsible for these phenomena.

Relevance

What is the relevance of this entry for Advaita Vedanta Study?

Our main objective is the study of Advaita Vedanta philosophy. How is this entry relevant to the Advaita Study? Advaita uses ten principle upanisads, gita, and brahma-sutra scriptures for the study. The study is mostly initiated with a goal for removing the sufferings in one's life. This goal is slowly and systematically transformed into the ultimate goal of life (moksa), that is, to acquire self-knowledge: the essence (atma) of all individuals (thinker, doer, and experiencer) in the empirical world has an IDENTITY relationship with absolute and ultimate reality (brahman). This self-knowledge culminates in self-realization (experience – different from all other empirical experiences) of IDENTITY relation, depending on the clarity, intensity, and absence of any other obstruction.

All human knowledge and experiences occur in empirical world. Advaita Vedanta philosophy, that is, self-knowledge and self-realization also occur in empirical world. However, the subject matter of advaita philosophy is the essence of human beings (atma) and the absolute and ultimate essence (brahman). The subject matter does not belong to empirical world, it belongs in the transcendental world.

Now, we have a basic issue? The issue: how can the knowledge and experiences of entities belonging to transcendental world be acquired and validated based on the knowledge and experiences of the empirical world? The resolution to the issue involve language This can be explained as follows.

1. The texts for acquisition of self-knowledge are ten principle (foundational) upanisads, gita, and brahma-sutra. The foundational texts, that is, upanisads have no established authorship, they are based on the utterances of teachers, who had successfully acquired the self-knowledge and self-realization, passed on to their students and then from those students to their students and finally transcribed in Sanskrit language. Upanisads, thus, contains the description of self-knowledge and self-experiences, based on the consistency and validity available in empirical world over the many thousands of years. Upanisads are recognized at the maximum level as the description of transcendental world entities, and at a minimum level as the most authentic description of transcendental world entities possible in empirical world. Gita and brahma-sutra are authored by Ved Vyasa. They are respectively the practical and logical interpretation of upanisads.

2. Based on the above narrative, the study of advaita vedanta philosophy, using the texts of upanisads, gita, and brahma-sutra, can lead to two results,
   a) As per the maximal recognition, the results will be direct self-knowledge and self-experience of atma and brahman.
   b) As per the minimal recognition, the results will be indirect self-knowledge and self-experience of atma and brahman.

3. Let us now focus on the three steps of study process for self-knowledge: listening or reading the texts (sravanam); rational analysis of texts to remove all doubts and confusions(mananam); and finally, internalization of acquired self-knowledge, possibly resulting in self-realization(nididhyasanam). Listening/reading and rational analysis activity are relevant to our discussion here. They belong to language and logic.
   a) Listening/Reading (sravanam)
      i) Practically, we read these texts as translation or as translation/commentary in English or Hindi. The objective of reading is twofold:
         (1) Recognition of proper words and sentences
         (2) Acquisition of intended meaning of the words and sentences etc.
      ii) The recognition of proper words and sentences in the text, requires the knowledge and understanding of the following components of language:
         (1) Phonetics – recognition of occurrence of proper sound of consonants and vowels of the word. Phonetics used is the phonetics of the language in play: Sanskrit, or Hindi, or English.
         (2) Phonology – recognition of proper pronunciation sound of consonants and vowels of the word. Phonology used is the phonology of the language in play: Sanskrit, or Hindi, or English.
         (3) Syntax – recognition of proper word and sentence. Syntax used is the syntax of the language in play: Sanskrit, or Hindi, or English.
      iii) The acquisition of intended meaning of words and sentences requires the knowledge and understanding of semantic of the language in play: Sanskrit, or Hindi, or English.
   b) Rational analysis (mananam)
      i) The purpose of rational analysis is to remove any doubts and confusions, remaining post sravanam. Indian logical systems are used for this purpose.
      ii) There are three Indian logical systems: advaita, mimamsa, nyaya.
      iii) Indian logic systems are extension of the semantic of Sanskrit language.
      iv) Indian logic rules are specific to the philosophy: Advaita, Mimamsa, Nyaya. Advaita has incorporated selected rules from Mimamsa and Nyaya in its logic.
      v) Traditionally, advaita logic is used to remove the doubts and confusions remaining after sravanam.
      vi) Traditionally, the use of non-advaita logic like nyaya logic is recommended to invalidate the doubts of other philosophies or thinkers.

Why is this entry focused on Western language?

The underlying objective of Western and Indian languages is same. All Natural languages like Sanskrit, Hindi, English etc. deal with word and sentences; their structure (syntax); and their meaning (semantics). Similarly, Western (Propositional and Predicate), and Indian (Advaita and Nyaya) logic deal with rules and conditions for valid arguments: reach an inference based on a set of logical sentences (derived from the sentences of natural language). Each logical system has its own logical language to accomplish this objective. Further, logical languages have their own syntax and semantics.

Western linguistic (study of language) has made major advanced in recent past. Therefore, it is necessary to have separate entry for Western linguistic. This will complement our knowledge base of Indian Natural languages (Sanskrit and Hindi) and Indian logic (Advaita and Nyaya). There will be a separate entry for linguistic of Sanskrit and Indian logic (advaita and nyaya). In addition, there will be a separate entry for Western logic (Propositional and Predicate).

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References

1. Contemporary Linguistics – An Introduction, of William O'Grady et al. (all numbered tables and figures in this entry are from this source)
2. Exploring Language Structure – A student guide, of Thomas E. Payne.
3. Introducing Phonetics and Phonology – of Mike Davenport and S.J. Hannahs
4. The Study of Language – of George Yule
5. The Grammar of Words – of Geert Booij
6. Introducing Linguistic Morphology – of Laurie Bauer
7. Understanding Morphology – of Martin Haspelmath and Andrea D. Sims

Morphology

Introduction

1. Linguistics in general and grammar consists of phonetics, phonology, morphology, syntax, and semantics. We have covered phonetics and phonology in the two documents out of the series of five documents covering all components. Phonetics and phonology deal with the process of production of sound in human vocal organs: lungs, larynx, mouth, and nasal cavity; and the systematic organization of sounds in a particular language. The key elements of phonology - phonemes and syllables are related to sound. In contrast to this, Morphology deals with word structure and word formation. Words are independent unit of meaning. Further. unlike sentences, which are created as needed and then discarded, words are permanently stored in a speakers mental dictionary, or **lexicon**. Words are the fundamental building blocks of communication. The average high school student knows about sixty thousand basic words—items such as *read, language, cold*, and *near* whose meaning cannot be predicted from their component parts. Countless other words can be constructed and comprehended by the application of general rules to these items. For example, any speaker of English who knows the verb *phish* (fraudulently obtain sensitive information via email) recognizes *phished* as its past tense form and can construct and interpret words such as *phisher, phishing*, and *unphishable.* Study of morphology offers

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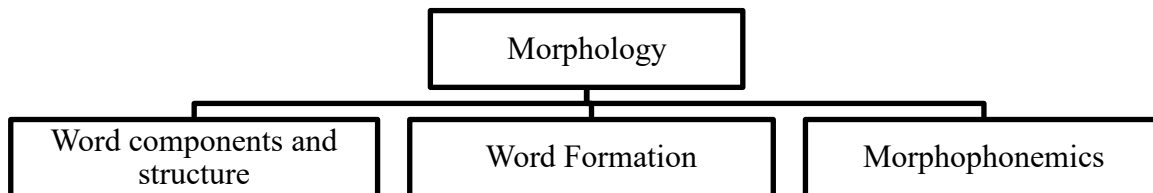
important insights into how language works, revealing the need for different categories of words, the presence of word-internal structure, and the existence of operations that create and modify words in various ways. As we saw earlier, a words pronunciation is often sensitive to a particular phonetic context in which phonemes occur. For example – an /æ/ that occurs before a nasal consonant will be nasalized ([kɑ̃nt] 'can't' vs. [kæt] 'cat'). Pronunciations can be sensitive to morphological factors including words internal structures. The study of this phenomenon is known as morphophonology. Therefore, the study of morphology is divided into different parts as per the chart below.

Word Components and Structure

Introduction

1. What is word? Linguists define the **word** as the smallest **free form** found in language. A free form is simply an element that does not have to occur in a fixed position with respect to neighboring elements; in many cases, it can even appear in isolation. Consider, for instance, the following sentence.
    a) Example 1 - Dinosaurs are extinct.
        i) We all share the intuition that *dinosaurs* is a word
        ii) and that the plural marker -*s* is not.
        iii) But why?
            (1) The key observation is that -*s* is not a free form: it never occurs in isolation and cannot be separated from the noun to which it belongs. (Elements that must be attached to something else are written here with a hyphen; an asterisk indicates unacceptability.)
2. Word components consists of morphemes and allomorphs. Morphemes are divided into two types: free morphemes and bound morphemes. Free morphemes are further divided into two sub-types: lexical morphemes and derivational morphemes. Likewise, bound morphemes are divided into two sub-types: derivational morphemes and inflectional morphemes.
3. Word structure consists of roots, stems, and affixes.
4. The word components and structure are shown in the following chart.
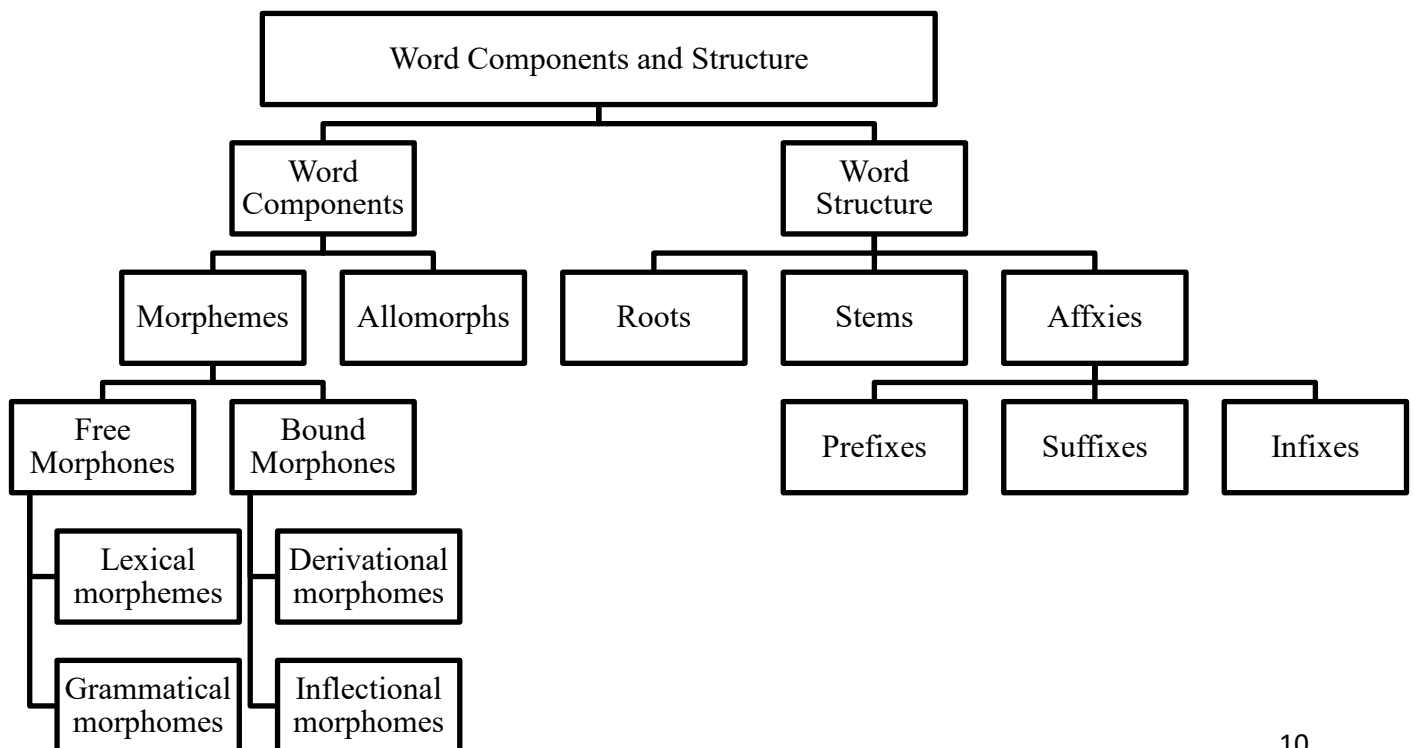
5. We will now discuss all the components in some detail.

Word components

1. Morphemes
   a) Definition of morpheme: The most important component of word structure in morpheme. It is the smallest unit of language that carries information about meaning or function.
   b) Example of morphemes:
      i) The word *builder*, for example, consists of two morphemes: *build* (with the meaning 'construct) and *-er* (which indicates that the entire word functions as a noun with the meaning one who builds).
      ii) Similarly, the word *houses* is made up of the morphemes *house* (with the meaning 'dwelling') and *-s* (with the meaning 'more than one').
      iii) Some words consist of a single morpheme. For example, the word *train* cannot be divided into smaller parts (say, *tr* and *ain* or *t* and *rain*) that carry information about the word's meaning or function. Such words are said to be **simple** and are distinguished from **complex** words, which contain two or more morphemes (see table 4.1).

TABLE 4.1	Words consisting of one or more morphemes		
One	**Two**	**Three**	**More than three**
and			
couple	couple-s		
hunt	hunt-er	hunt-er-s	
act	act-ive	act-iv-ate	re-act-iv-ate

   c) Morphemes are language specific, that is, the types of same morpheme may be different in two languages.
   d) Morphemes should not be confused with individual sounds or sound sequences. ('cats' = [cat -s])
   e) Tips:
      i) does the sum of the parts equal the meaning of the whole? If yes, probably more than 1 morpheme. If no, probably 1 morpheme
      ii) forget about how a word is spelled! Concentrate on what parts are of the word you say carry meaning.

2. Types of Morphemes
   a) Morphemes are the smallest units in a language that have meaning. They can be classified as free morphemes, which can stand alone as words, or bound morphemes, which must be combined with another morpheme to form a complete word. Bound morphemes typically appear as affixes in the English language.
   b) Free Morphemes
      i) Definition: free morphemes can stand alone as individual word.
      ii) Free morphemes are base words in linguistics. Base words that can stand alone ('book') are known as free bases, while bound based (Latin root like 'ject') are not individual words in English. Combining two free morphemes creates compound words ('mailbox'), while free morphemes modified by affixes are complex words ('runner'). There are two sub-types of free morphemes based on what they do in a sentence: lexical morphemes (content words) and grammatical morphemes (function words)
         (1) Lexical morphemes
             (a) Definition: free morphemes that carry the contents (meaning) of our utterances.
             (b) include nouns, verbs, adjectives, and adverbs.
             (c) they are an open class – you can add new members
             (d) examples
                 (i) Nouns: girl, hat, house, fire
                 (ii) Verbs: walk, sleep, say, eat
                 (iii) Adjectives: quick, nice, fun, big

         (2) Grammatical morphemes.
             (a) Definition: free morphemes that serve a more grammatical role, connecting words together within and across sentences (do not provide contents or meaning to our utterances)
             (b) includes prepositions, conjunctions, articles, pronouns
             (c) they are closed class – you cannot add new members
             (d) Examples
                 (i) Propositions: under, over, to, by
                 (ii) Conjunctions: for, and, but, or
                 (iii) Articles: the, a, an
                 (iv)Pronouns: he, she, his, her

   c) Bound Morphemes
      i) Definition: cannot stand alone as individual words; therefore, they are affixes.
      ii) Bound morphemes have no linguistic meaning unless they are connected to a root or base word, or in some cases, another bound morpheme. Prefixes and suffixes are two

types of bound morphemes. Depending on how they modify a root word, bound morphemes can be grouped into two categories: inflectional morphemes and derivational morphemes.

(1) Derivational morphemes

    (a) Definition: derivational morphemes are bound morphemes that help to create new words and can change the lexical category of a word.

        (i)   all prefixes in English are derivational morphemes, but not all derivational morphemes in English are prefixes. Some of them are suffixes.

    (b) A morpheme is derivational when it changes the semantic meaning of a word. Most derivational morphemes have roots in Greek or Latin. Unlike inflectional morphemes, derivational morphemes can change a word's part of speech.

    (c) Examples of Prefixes:

        (i) pre-

        (ii) un-

        (iii) non-

        (iv) anti-

        (v) dis-

    (d) Examples of Suffixes:

        (i) -ize

        (ii) -ine

        (iii) -ary

        (iv) -ate

        (v) -ion

    (e) How you use morphemes also depends on the sentence context. Inflectional morphemes can be used in derivational contexts (e.g., using -er to create teach-er), which could change their classification. Here are some examples of the ways derivational morphemes can modify base words.

        (i) re- + start = restart (to start again)

        (ii) un- + happy = unhappy (not happy)

        (iii) register + -ion = registration (the act of registering)

        (iv)kind + ness = kindness (the condition of being kind)

(2) Inflectional morphemes.

    (a) Definition: inflectional morphemes are bound morphemes that serve a grammatical role in language. (More like functional morphemes in open category)

        (i) cannot create new words in a language or change the lexical category of a word in a language

(ii) There are only eight inflectional morphemes in English.

(b) This type of morpheme alters the grammatical function of a word, whether it be the verb tense, number, mood, or another language inflection. The eight inflectional morphemes are organized by which part of speech they modify:

(i) Modify a Noun: -s (or -es), -'s (or s')

(ii) Modify an Adjective: -er, -est

(iii) Modify a Verb: -ed, -ing, -en

(c) These morphemes are suffixes that change a word's condition, but not its meaning. When they modify a base word, the rest of the sentence may need to change for proper subject-verb agreement. Some examples of these changes are:

(i) *girl* to *girls*

(ii) *large* to *larger*

(iii) *smart* to *smartest*

(iv) *walk* to *walking*

(v) *eat* to *eaten*

3. Allomorphs

a) The variant pronunciations of a morpheme are called its **allomorphs**. The morpheme used to express indefiniteness in English has two allomorphs - *an* before a word that begins with a vowel sound and *a* before a word that begins with a consonant sound.

an orange   a building
an accent   a car
an eel   a girl

Note that the choice of *an* or *a* is determined on the basis of pronunciation, not spelling, which is why we say *an M.A. degree* and *a U.S. dollar*.

b) Another example of allomorphic variation is found in the pronunciation of the plural morpheme -*s* in the following words.

cats
dogs
judges

Whereas the plural is /s/ in *cats*, it is /z/ in *dogs*, and /əz/ in *judges*. Here again, selection of the proper allomorph is dependent on phonological facts.

c) Another case of allomorphic variation is found in the pronunciation of the prefix in-, with the meaning 'not'.

i) The final consonant is pronounced as /n/ in most cases - *indirect, inactive* etc.,

ii) it is pronounced as /m/ in front of another labial consonant (*impossible, immodest*),

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iii) it is pronounced as /l/ in front of another /l/ (*illegal*),

iv) and it is pronounced as /r/ in front of another /r/ (*irregular*).

v) These changes are easy to spot because of the spelling but remember that allomorphic variation involves pronunciation. In some cases, this is reflected in the spelling, but in other cases (such as plural -*s*), it is not.

Word Structure

To represent the internal structure of words, it is necessary not only to identify each of the component morphemes but also to classify them in terms of their contribution to the meaning and function of the larger word. We have covered some of these points in the *word component* section, but this section is focused on the structure issues.

1) Roots and affixes

   a) Complex words typically consist of a **root** morpheme and one or more **affixes**. The root constitutes the core of the word and carries the major component of its meaning. Roots typically belong to a **lexical category**, such as noun (N), verb (V), adjective (A), or preposition (P).

   b) Unlike roots, affixes do not belong to a lexical category and are always bound morphemes. For example, the affix -*er* is a bound morpheme that combines with a verb such as *teach*, giving a noun with the meaning 'one who teaches'. The internal structure of this word can be represented as in figure 4.1. ('Af' stands for affix.)

FIGURE 4.1
The internal structure of the word *teacher*

Figure 4.2 provides some additional examples of word structure.

FIGURE 4.2
Some other words with an internal structure consisting of a root and an affix

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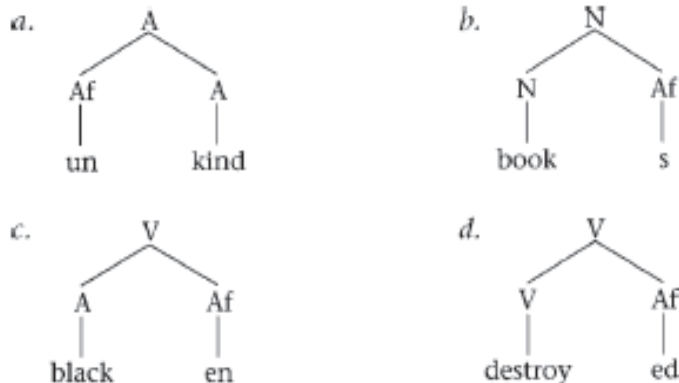
The structural diagrams in figures 4.1 and 4.2 are often called **tree structures**. The information they depict can also be represented by using labelled bracketing—e.g., [A [Af un] [A kind]] for *unkind* and [N [N book] [Af s]] for *books*. Where the details of a word's structure are irrelevant to the point being considered, it is traditional to use a much simpler system of representation that indicates only the location of the morpheme boundaries: *un-kind, book-s*, and so on.

2) Bases or stems
   a) A **base** is the form to which an affix is added. In many cases, the base is also the root. In *books*, for example, the element to which the affix *-s* is added corresponds to the word' s root. In other cases, however, the base can be larger than a root, which is always just a single morpheme. This happens in words such as *blackened*, in which the past tense affix *-ed* is added to the verbal base *blacken* - a unit consisting of the root morpheme *black* and the suffix *-en*.

| FIGURE 4.3 A tree diagram illustrating the difference between a root and a base |
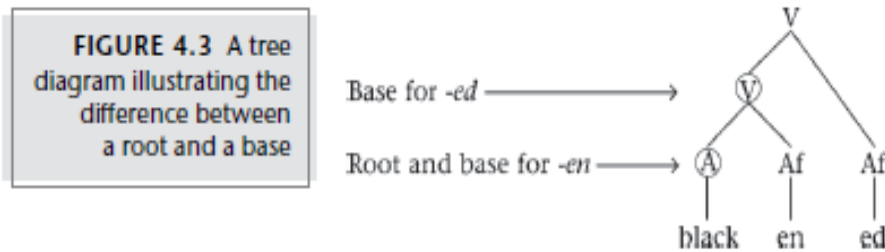
In this case, *black* is not only the root for the entire word but also the base for *-en*. The unit *blacken*, however, is simply the base for *-ed*.

3) Types of affixes
   a) Prefix and suffix
      i)   An affix that is attached to the front of its base is called a **prefix**,
      ii) An affix that is attached to the end of its base is termed a **suffix**.
      iii) Both types of affix occur in English, as shown in table 4.3.

TABLE 4.3 Some English prefixes and suffixes	
Prefixes	**Suffixes**
de-activate	faith-*ful*
re-play	govern-*ment*
il-legal	hunt-*er*
in-accurate	kind-*ness*

b) Infixes

   i) Far less common than prefixes and suffixes are **infixes**, a type of affix that occurs within another morpheme. The data in table 4.4 from the Philippine language Tagalog contains examples of the infix -*in*-, which is inserted after the first consonant of the root to mark a completed event.

TABLE 4.4	Examples of the Tagalog infix -*in*-		
Base		**Infixed form**	
bili	'buy'	b-*in*-ili	'bought'
basa	'read'	b-*in*-asa	'read' (past tense)
sulat	'write'	s-*in*-ulat	'wrote'

We should not confuse that a morpheme such as -*en* in *black-en-ed* is an infix since it occurs between two other morphemes (*black* and -*ed*), but this is not right: -*en* is a suffix that combines with the adjective *black* to give the verb *blacken*, to which the suffix -*ed* is then added (see figure 4.3). To be an infix, an affix must occur *inside* another morpheme (as when Tagalog -*in*- appears inside *sulat* 'write'). Nothing of this sort happens in the case of -*en*.

   ii) A very special type of infixing system is found in Arabic and other Semitic languages, in which a typical root consists simply of three consonants. Various combinations of vowels are then inserted among the consonants to express a range of grammatical contrasts. (In the examples that follow, the segments of the root are written in boldface.)

kataba	kutib	aktub
'wrote'	'has been written'	'am writing'

One way to represent the structure of such words is as follows, with the root and affixal vowels assigned to different **tiers**, or levels of structure, that combine with each other to give the word's pronunciation (see figure 4.4).

FIGURE 4.4
Two tiers used to represent the structure of the infixed word meaning 'has been written' in Arabic

iii) Tagalog and Arabic offer examples of non-concatenative morphology, in which word building does not proceed in a linear, sequential manner, as happens in English words such as *travel-er-s* and *creat-iv-ity*.
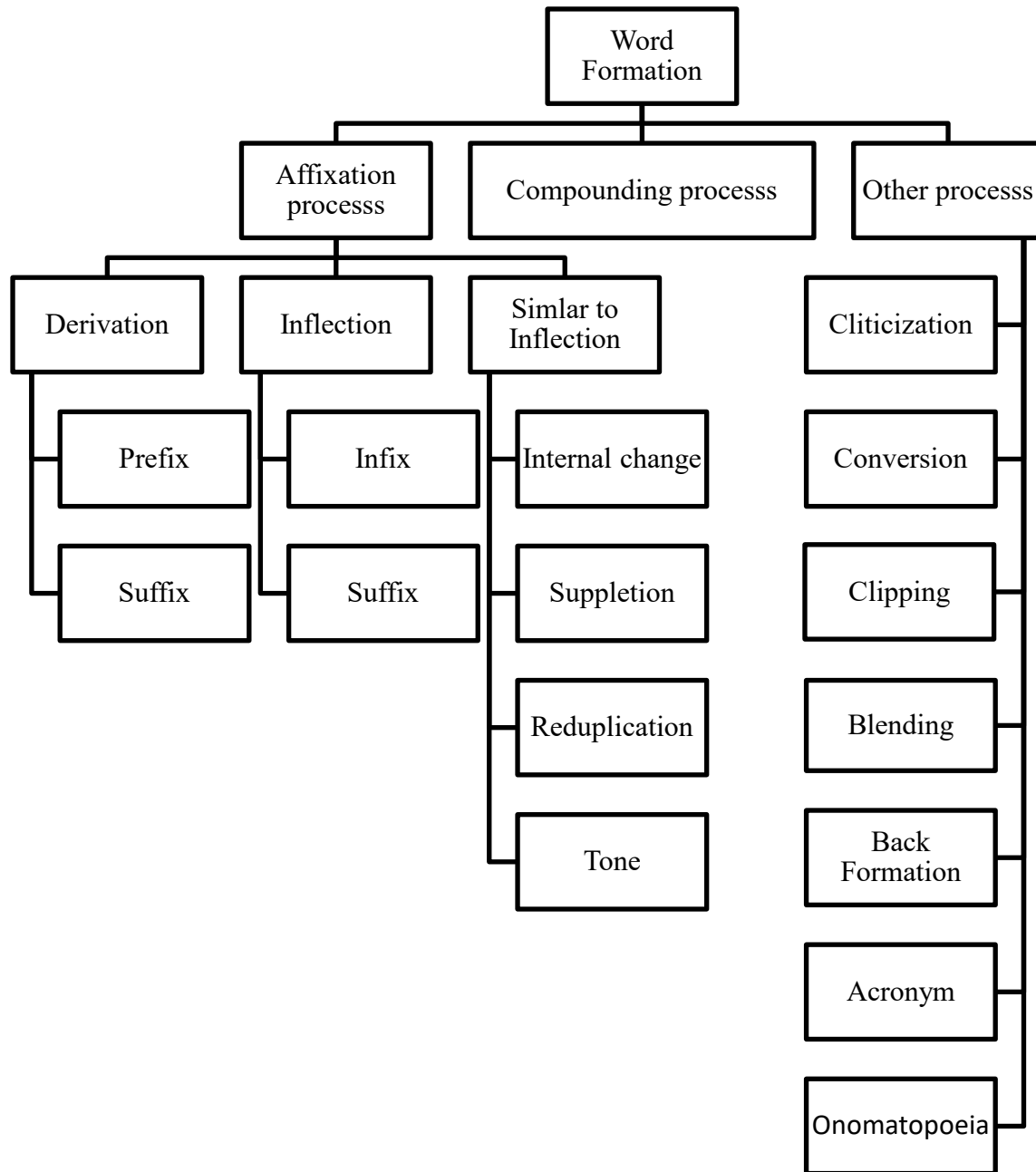
Word Formation

Introduction

There are many morphological processes which are used for formation of the words. These processes can be categorized into three main classes: affixes, compounding, and others. We will study them in detail as per the following chart.

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                        ┌──────────────────┐
                        │      Word        │
                        │    Formation     │
                        └──────────────────┘
          ┌───────────────────┬───────────────────────┐
  ┌───────────────┐  ┌──────────────────┐   ┌──────────────────┐
  │   Affixation  │  │   Compounding    │   │  Other processs  │
  │   processs    │  │    processs      │   │                  │
  └───────────────┘  └──────────────────┘   └──────────────────┘
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┌──────────┐ ┌───────────┐ ┌──────────────┐  ┌──────────────┐
│Derivation│ │ Inflection│ │  Simlar to   │  │ Cliticization│
└──────────┘ └───────────┘ │  Inflection  │  └──────────────┘
    │             │        └──────────────┘
 ┌────────┐   ┌────────┐   ┌──────────────┐  ┌──────────────┐
 │ Prefix │   │  Infix │   │Internal change│  │  Conversion  │
 └────────┘   └────────┘   └──────────────┘  └──────────────┘
 ┌────────┐   ┌────────┐   ┌──────────────┐  ┌──────────────┐
 │ Suffix │   │ Suffix │   │  Suppletion  │  │   Clipping   │
 └────────┘   └────────┘   └──────────────┘  └──────────────┘
                          ┌──────────────┐  ┌──────────────┐
                          │ Reduplication│  │   Blending   │
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                          ┌──────────────┐  ┌──────────────┐
                          │     Tone     │  │     Back     │
                          └──────────────┘  │   Formation  │
                                            └──────────────┘
                                            ┌──────────────┐
                                            │   Acronym    │
                                            └──────────────┘
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                                            │ Onomatopoeia │
                                            └──────────────┘
```

Word formation by Affixation

1. We have already discussed the three processes of Affixation – prefixes, suffixes, and infixes under the section - structure of words. These processes are used in the formation of words. There two major classes of affixation based word formation - derivation and inflection. Let us discuss them in detail now.

Derivation

1. Derivation uses an affix to build a word with a meaning and/or category distinct from that of its base. One of the most common derivational affixes in English is the suffix -*er*, which combines with a verb to form a noun with the meaning 'one who *V*s', as shown in table 4.5. (Do not confuse this suffix with the -*er* that applies to a noun in cases such as *Quebecer* and *islander*, or the -*er* that combines with an adjective in cases such as *taller* and *smarter*.)

TABLE 4.5 The derivational affix -*er*	
Verb base	**Derived noun**
sell	sell-er (one who sells)
write	writ-er (one who writes)
teach	teach-er (one who teaches)
sing	sing-er (one who sings)
think	think-er (one who thinks)

2. Other examples of derivation include *treatment*, in which the suffix -*ment* combines with the verb *treat* to give the noun *treatment*; *unkind*, in which the prefix *un*- combines with the adjective *kind* to give a new adjective with a different meaning; and the other derived words illustrated in figure 4.5.

FIGURE 4.5
Some words formed by derivation
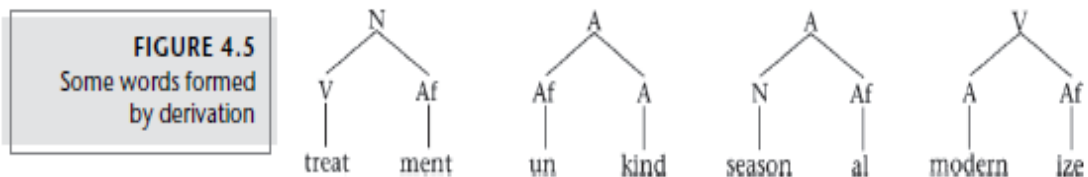
3. Once formed, derived words become independent lexical items that receive their own entry in a speaker's mental dictionary. As time goes by, they often take on special senses that are not predictable from the component morphemes. The word *writer*, for example, is generally used not simply for someone who can write but rather for someone who writes for a living

(e.g., *She's a writer*); *comparable* (with stress on the first syllable) means 'similar' rather than 'able to be compared'; *profession* usually denotes a career rather than the act of professing; and so on.

4. English derivational affixes - Table 4.6 provides a partial list of English derivational affixes, along with information about the category of their usual base (ignoring bound roots) and of the resulting derived word. The entry for *-able* (line 7) states that it applies to a verb base and converts it into an adjective. Thus, if we add the affix *-able* to the verb *fix*, we get an adjective (with the meaning 'able to be fixed').

TABLE 4.6   Some English derivational affixes

Affix	Change	Examples
Suffixes		
-al	V → N	refus-al, dispos-al, recit-al
-ant	V → N	claim-ant, defend-ant
-(at)ion	V → N	realiz-ation, assert-ion, protect-ion
-er	V → N	teach-er, work-er
-ing$_1$	V → N	the shoot-ing, the danc-ing
-ment	V → N	adjourn-ment, treat-ment, amaze-ment
-able	V → A	fix-able, do-able, understand-able
-ing$_2$	V → A	the sleep-ing giant, a blaz-ing fire
-ive	V → A	assert-ive, impress-ive, restrict-ive
-dom	N → N	king-dom, fief-dom
-ful	N → A	faith-ful, hope-ful, dread-ful
-(i)al	N → A	president-ial, nation-al
-(i)an	N → A	Arab-ian, Einstein-ian, Albert-an
-ic	N → A	cub-ic, optimist-ic, moron-ic
-ize$_1$	N → V	hospital-ize, crystall-ize
-less	N → A	penni-less, brain-less
-ous	N → A	poison-ous, lecher-ous
-ish	A → A	green-ish, tall-ish
-ate	A → V	activ-ate, captiv-ate
-en	A → V	dead-en, black-en, hard-en
-ize$_2$	A → V	modern-ize, national-ize
-ity	A → N	stupid-ity, prior-ity
-ness	A → N	happi-ness, kind-ness
Prefixes		
anti-	N → N	anti-abortion, anti-pollution
ex-	N → N	ex-president, ex-wife, ex-friend
de-	V → V	de-activate, de-mystify
dis-	V → V	dis-continue, dis-obey
mis-	V → V	mis-identify, mis-place
re-	V → V	re-think, re-do, re-state
un$_1$-	V → V	un-tie, un-lock, un-do
in-	A → A	in-competent, in-complete
un$_2$-	A → A	un-happy, un-fair, un-intelligible

Note: Unlike suffixes, English prefixes typically do not change the category of the base.

5. The category of the base to which an affix attaches is sometimes not obvious. In the case of *worker*, for instance, the base (*work*) is sometimes used as a verb (as in *They work hard*) and some- times as a noun (as in *The work is time-consuming*). How then can we know the category of the base for *-er*? The key is to find words such as *teacher* and *writer*, in which the category of the base can be unequivocally determined. Because *teach* and *write* can only be verbs, we can infer that the base with which *-er* combines in the word *worker* is also a verb.

6. Complex derivation –

   a) since derivation can apply to a word more than once, it is possible to create words with multiple layers of internal structure, as in the following example.

FIGURE 4.6
A word with a multilayered internal structure
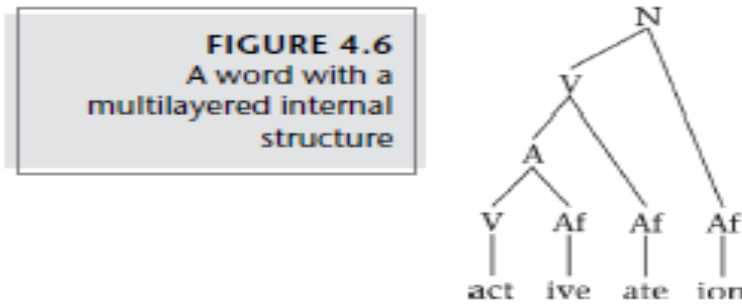
   As can be seen here, each layer of structure reflects the attachment of an affix to a base of the appropriate type. In the deepest layer, the affix *-ive* attaches to the verbal base *act* to give an adjective. In the next layer, *-ate* attaches to the adjective and converts it into a verb (*activate*). Finally, the affix *-ion* is added, converting the verb into the noun *activation*.

   b) In some cases, the internal structure of a complex word may not be so transparent. How do we know, for instance, which of the two structures in figure 4.7 is the right one for the word *unhappiness*?


FIGURE 4.7
Two possible structures for the word *unhappiness*

   The key observation is that the prefix *un-* combines quite freely with adjectives but not with nouns, as shown in table 4.7.

TABLE 4.7 The prefix *un-*	
un+ A	***un + N***
unable	*unknowledge
unkind	*unhealth
unhurt	*uninjury

This suggests that *un-* must combine with the adjective *happy* before it is converted into noun by the suffix *-ness*, as depicted in figure 4.7a.

By contrast, in a word such as *unhealthy*, the prefix *un-* can be attached only AFTER the suffix has been added to the root. That is because *-y* turns nouns into adjectives (as in *wealthy* and *cloudy*), creating the category of word with which *un-* can combine (see figure 4.8).

FIGURE 4.8
The internal structure
of the word *unhealthy*
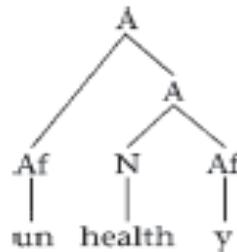
Inflection

Many languages have contrasts such as singular versus plural and present versus past. Such contrasts are often marked with the help of **inflection**, the modification of a words form to indicate grammatical information of various sorts.

1. Inflection in English - Inflection is most often expressed via **affixation**, the process of adding an affix to a base (The base to which an inflectional affix is added is sometimes called a **stem**.). Many languages (e.g., Japanese, Swahili, Inuktitut, and Finnish) have dozens of inflectional affixes. With only eight inflectional affixes (all suffixes), English is not a highly inflected language. Table 4.15 lists the inflectional affixes of English.

TABLE 4.15	The English inflectional affixes
Nouns	
Plural -*s*	the book<u>s</u>
Possessive (genitive) -*'s*	John<u>'s</u> book
Verbs	
3rd person singular non-past -*s*	He read<u>s</u> well.
Progressive -*ing*	He is work<u>ing</u>.
Past tense -*ed*	He work<u>ed</u>.
Past participle -*en*/-*ed*	He has eat<u>en</u> /stud<u>ied</u>.
Adjectives	
Comparative -*er*	the small<u>er</u> one
Superlative -*est*	the small<u>est</u> one

Although most inflection in English involves affixation, some words mark inflectional contrasts in other ways. This is most obvious in the case of verbs, a number of which indicate past tense by substituting one form with another (as in *am-was* or *go-went*) or by internal changes of various sorts (e.g., *come-came*, *see-saw*, *fall-fell*, *eat-ate*).

2. Inflections in other languages
   a) Number - number is the morphological category that expresses contrasts involving countable quantities. The simplest number contrast consists of a two-way distinction between singular (one) and plural (more than one). This is the contrast found in English, where a noun usually takes the suffix -s if it refers to two or more entities. Even this basic distinction is not found in all languages, however.
   i) In Nancowry (spoken in India's Nicobar Islands), for example, number is not marked on nouns at all. A sentence such as 21) is therefore ambiguous since nɔ́t 'pig' can refer to one or more pigs.

21)

sák   nɔ́t ʔin tsiʔə́j.
spear pig the we
'We speared the pig(s).'

ii) In Inuktitut (spoken in northern Canada), on the other hand, there is a three-way number contrast involving singular, dual (two and only two), and plural (more than

22)

iglu	'a house'
igluk	'two houses'
iglut	'three or more houses'

two). (See example 22 below)

b) Noun Class

   i) Some languages divide nouns into two or more inflectional classes, based on shared phonological and/or semantic properties. The Bantu language SiSwati, for instance, makes use of prefixes to distinguish among more than a dozen noun classes, some of which are given in Table 4.29. (Tone is not represented in these examples.)

Table 4.29   Some noun classes in SiSwati

Prefix	Description of class	Example	
um(u)-	persons	um-fana	'boy'
li-	body parts, fruit	li-dvolo	'knee'
s(i)-	instruments	si-tja	'plate'
in-	animals	in-ja	'dog'
bu-	abstract properties	bu-bi	'evil'
pha-	locations	pha-ndle	'outside'

   ii) The gender contrasts of modern French also make up a type of noun classification system. Although the term gender is used by linguists to mean 'kind' rather than 'sex', there is a partial correlation between the French gender classes and the sex of the objects to which nouns can refer. Thus *frère* 'brother' is masculine while *soeur* 'sister' is feminine. However, most inanimate nouns are classified more or less arbitrarily: *lune* 'moon' is feminine, but *monde* 'world' is masculine. Even some nouns referring to animate entities seem to be classified arbitrarily: French *victime* 'victim' is feminine regardless of whether the person referred to is male or female and all German words ending in the suffix *-chen*, including *Mädchen* 'young girl', are neuter.

   iii) Noun class can be marked in a variety of ways. In some languages, the determiner is inflected to indicate the class of the noun. For example, singular nouns in French take the definite determiner *le* if masculine but *la* if feminine. In other languages, inflectional affixes rather than determiners can be used to indicate the gender class of the noun. Russian, for instance, uses one set of suffixes for nouns in the feminine, animate class and another set for nouns in the masculine, animate class. The

25

following examples (see table 4.30) show the gender endings for nouns that function as subject of a sentence.

Table 4.30 Gender distinctions in Russian

Class	Suffix	Example	
Masculine	-Ø	dom	'house'
Feminine	-a	ulits-a	'street'
Neuter	-o	tʃuvstv-o	'sensation'

c) Case

i) Another type of inflectional contrast associated with nouns in many languages involves case-a category that encodes information about an element's grammatical role (subject, direct object, and so on). In Modern English, this information is expressed largely through word order and the use of prepositions. (See example 23)

23)
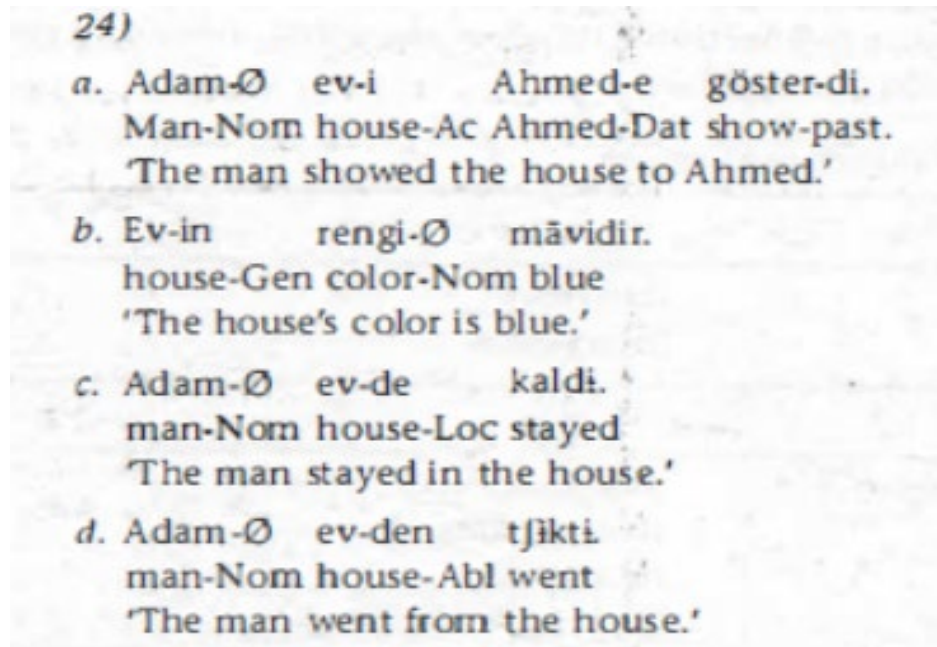
Bette composed a song on the bus.

In this sentence, the subject *Bette* precedes the verb and the direct object a *song* follows, while the element expressing location (*the bus*) is preceded by the preposition *on*.

ii) In many languages, however, these distinctions are marked by inflectional affixes. As an illustration of this, consider the following set of related nominal forms (called a nominal paradigm or declension) for the Turkish word *ev* 'house'.

Table 4.31 Turkish case

Case	Form	Type of element that it marks
Nominative	ev-Ø	the subject
Accusative	ev-i	the direct object
Dative	ev-e	the recipient
Genitive	ev-in	the possessor
Locative	ev-de	a place or location
Ablative	ev-den	direction away from somewhere

The following sentences illustrate the use of these case suffixes. (See example 24)

24)

a. Adam-Ø   ev-i   Ahmed-e   göster-di.
   Man-Nom house-Ac Ahmed-Dat show-past.
   'The man showed the house to Ahmed.'

b. Ev-in   rengi-Ø   māvidir.
   house-Gen color-Nom blue
   'The house's color is blue.'

c. Adam-Ø   ev-de   kaldɨ.
   man-Nom house-Loc stayed
   'The man stayed in the house.'

d. Adam-Ø   ev-den   tʃɨktɨ
   man-Nom house-Abl went
   'The man went from the house.'

Notice how in the final sentence, for example, Adam 'man' bears the zero ending of the nominative to indicate that it Is subject while ev 'house' bears the ablative suffix indicating the place from which the man went.

The contrasts represented in the Turkish case system are intermediate in complexity compared to Finnish, which has fifteen distinct case categories, and Rumanian, which has only two.

d) Person and Number agreement
   i) A widely attested type of verbal inflection in human language involves person – a category that typically distinguishes among the first person (the speaker), the second person (the addressee), and the third person (anyone else). In many languages, the verb is marked for both the person and number (singular or plural) of the subject. When one category is inflected for properties (such as person and number) of another, the first category is said to agree with the second.

ii) Agreement is found in Italian, which exhibits the following contrasts in the present tense. (The set of inflected forms associated with a verb is called a verbal paradigm or a conjugation.)

Table 4.32   The Italian present tense paradigm

	Singular		Plural	
1st person	pari-o	'I speak'	parl-iamo	'we speak'
2nd person	pari-i	'you speak'	parl-ate	'you speak'
3rd person	parl-a	'she, he speaks'	parl-ano	'they speak'

Because the inflectional affixes provide so much information about the person and number of the subject phrase, this element need not be overtly present in Italian. Thus, *para italiano* 'speaks Italian' can make up a complete sentence. The permissibility of such 'understood subjects' is a common feature of languages with rich verbal inflection.

iii) Modern English has a much more impoverished system of person and number agreement in the verb, and an inflectional affix is used only for the third person singular in the nonpast tense

Table 4.33   The English verbal paradigm (nonpast forms)

	Singular	Plural
1st person	I speak	we speak
2nd person	you speak	you speak
3rd person	she, he, or it speaks	they speak

Except for commands, formal English differs from Italian and other languages with rich verbal inflection in requiring a complete sentence to have an overtly expressed subject.
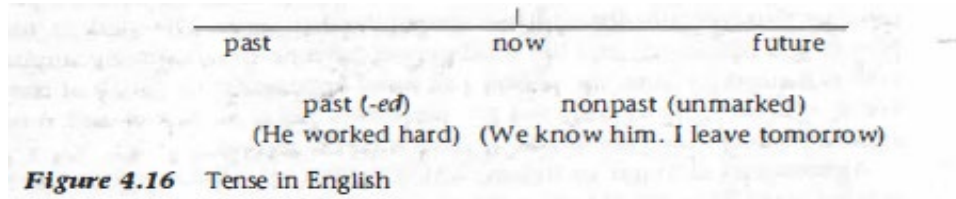
28)

*Speaks English.

e) Tense

   i) Tense is the category that encodes the time of an event with reference to the moment of speaking. Thus, the past tense is used with verbs denoting an event that occurs prior to the moment of speaking.

past	now	future

past (-ed)   nonpast (unmarked)
(He worked hard)   (We know him. I leave tomorrow)

Figure 4.16 Tense in English

   ii) There are many different types of tense systems in the languages of the world. In terms of inflection, for example, English makes a two-way contrast between past (marked by the inflectional suffix -ed in regular verbs) and the nonpast (unmarked). Notice that the nonpast form of the verb can be used for both present and future events.

   iii) In the Australian language Dyirbal, in contrast, there is a two-way distinction between future and nonfuture. As the following examples show, the nonfuture can be used for both present and past events.

29)

a. future: b. nonfuture:
   bani-ɲ   bani-ɲu
   'will come'   'came, is coming'

   iv) In Spanish and Lithuanian, on the other hand, inflectional endings are used to express a three-way contrast involving past, present, and future.

30)

Spanish	Lithuanian
a. Juan habl-ó bien.	Dirb-au.
'John spoke well.'	'I worked.'
b. Juan habl-a bien.	Dirb-u.
'John speaks well.'	'I work.'
c. Juan habl-ar-á bien.	Dirb-siu.
'John will speak well.'	'I will work.'

v) A still richer system of contrasts is found in the Bantu language ChiBemba, which uses its inflectional system to distinguish degrees of pastness and futurity. (In the following examples, the diacritics mark tone; affixes expressing tense contrasts are underlined.)

Table 4.34 Tense in ChiBemba

Past	Future
Remote past (before yesterday)	Remote future (after tomorrow)
ba-àlí-bomb-ele	ba-ká-bomba
'They worked.'	'They'll work.'
Removed past (yesterday)	Removed future (tomorrow)
ba-àlíí-bomba	ba-kà-bomba
'They worked.'	'They'll work.'
Near past (earlier today)	Near future (later today)
ba-àcí-bomba	ba-léé-bomba
'They worked.'	'They'll work.'
Immediate past (just happened)	Immediate future (very soon)
ba-á-bomba	ba-áláá-bomba
'They worked.'	'They'll work.'

3. Processes related to Inflection

a) Internal change
   i) Internal change is a process that substitutes one non-morphemic segment for another to mark a grammatical contrast, as illustrated in the pairs of words in table 4.17.

TABLE 4.17 Internal change in English

sing (present)	sang (past)
sink (present)	sank (past)
drive (present)	drove (past)
foot (singular)	feet (plural)
goose (singular)	geese (plural)

Verbs such as *sing, sink*, and *drive* form their past tense by changing the vowel (e.g., from *i* to *a* in the first two examples). The term **ablaut** is often used for vowel alternations that mark grammatical contrasts in this way.

ii) Some internal changes reflect phonologically conditioned alternations from an earlier stage in the language's history. The irregular plurals *geese* and *feet* came about in this way: the original back vowel /o/ in the words *goose* and *foot* was fronted under the influence of the front vowel in the old plural suffix /i/, which was subsequently dropped. This type of change in English and other Germanic languages is known as **umlaut**.

> **(17)** Old singular form of *goose*: /gos/
> Old plural form: /gos-i/
> Umlaut: /gœs-i/ (/œ/ is a front version of the vowel /o/)
> Loss of the plural suffix: /gœs/
> Later changes: /ges/ and then /gis/ 'geese'

iii) Internal change differs from infixing in important ways. As shown by the Tagalog examples in the table 4.4 below, the base into which an infix is inserted typically

TABLE 4.4   Examples of the Tagalog infix -*in*-

Base		Infixed form	
bili	'buy'	b-*in*-ili	'bought'
basa	'read'	b-*in*-asa	'read' (past tense)
sulat	'write'	s-*in*-ulat	'wrote'

exists as a separate form elsewhere in the language (compare *sulat* 'write' with *s-in ulat* 'wrote'). Matters are quite different in the case of alternations such as *foot/feet* or *sing/sang* in English, since we have no form **ft* meaning 'lower extremity of the leg' or **sng* meaning 'produce words in a musical tone' . Moreover, in contrast to the situation in Tagalog, the segments that alternate when there is internal change are not systematically associated with a particular meaning and therefore do not count as morphemes: the *a* of *ran* and the *o* of *drove* do not in general carry the meaning 'past' in English any more than the *ee* of *geese* normally carries the meaning 'plural'.

b) Suppletion
   i) Suppletion replaces a morpheme with an entirely different morpheme to indicate a grammatical contrast. Examples of this phenomenon in English include the use of *went* as the past tense form of the verb *go*, and *was* and *were* as the past tense forms of *be*. Table 4.18 provides examples of suppletion in some other European languages.

TABLE 4.18	Suppletion in some European languages	
Language	**Basic form**	**Suppletive form**
French	*avoir* 'to have'	*eu* 'had'
Spanish	*ir* 'to go'	*fue* '(s/he) went'
German	*ist* 'is'	*sind* 'are'
Russian	*xorošij* 'good'	*lučše* 'better'

   ii) In some cases, it is hard to distinguish between suppletion and internal change. For example, are the past tense forms of *think* (*thought*) and *seek* (*sought*) instances of suppletion or internal change? This type of alternation is sometimes treated as an extreme form of internal change, but the term **partial suppletion** is also used by some linguists.

c) Reduplication
   i) A common morphological process in some languages involves **reduplication**, which marks a grammatical or semantic contrast by repeating all or part of the base to which it applies. Repetition of the entire base yield's **full reduplication**, as shown in the Turkish and Indonesian examples in table 4.19.

TABLE 4.19	Examples of full reduplication		
Base		**Reduplicated form**	
Turkish			
çabuk	'quick'	çabuk çabuk	'quickly'
yavaş	'slow'	yavaş yavaş	'slowly'
güzel	'beautiful'	güzel güzel	'beautifully'
Indonesian			
orang	'man'	orang orang	'men'
anak	'child'	anak anak	'children'
mangga	'mango'	mangga mangga	'mangoes'

ii) In contrast, **partial reduplication** copies only part of the base. In the Tagalog examples in table 4.20, for instance, reduplication affects only the first consonant-vowel sequence rather than the entire word.

TABLE 4.20	Examples of partial reduplication in Tagalog		
Base		**Reduplicated form**	
takbo	'run'	tatakbo	'will run'
lakad	'walk'	lalakad	'will walk'
pili	'choose'	pipili	'will choose'

iii) English makes limited use of partial reduplication in various semi-idiomatic expressions such as *hocus pocus, razzle dazzle*, and *nitty gritty*, but this process does not mark grammatical information and is not productive

d) Tone
   i) In Mono-Bili (spoken in the Congo), **tone** is used to make the distinction between past and future tense, a process called **tone placement**. (A high tone is marked by ´ and a low tone by ` in table 4.21.)

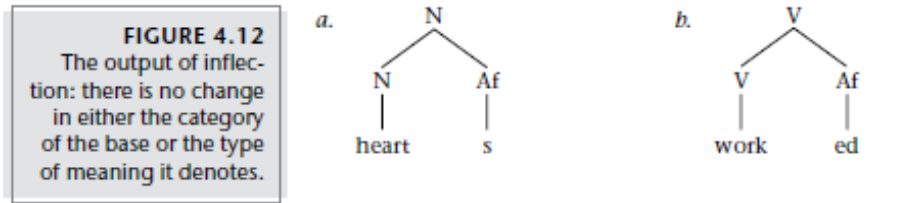| TABLE 4.21	Past and future tense in Mono-Bili		
Past		**Future**	
dá	'spanked'	dà	'will spank'
zí	'ate'	zì	'will eat'
wó	'killed'	wò	'will kill'

4. Derivation vs Inflection

Because inflection and derivation are both commonly marked by affixation, the distinction between the two can be subtle. Four criteria are commonly used to help distinguish between inflectional and derivational affixes.
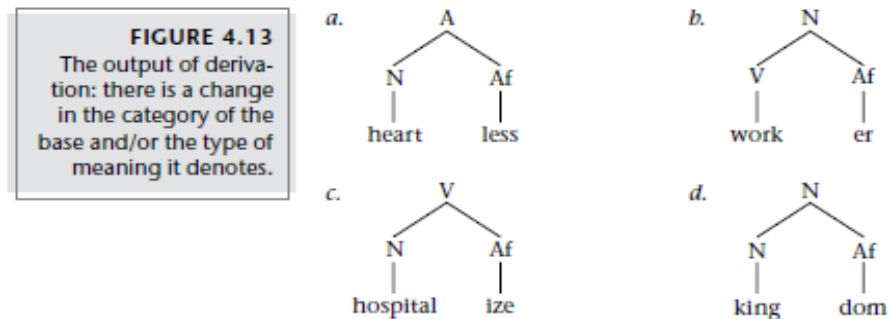
a) Category change
   i) Inflection does not change either the syntactic category or the type of meaning found in the word to which it applies

FIGURE 4.12
The output of inflec-
tion: there is no change
in either the category
of the base or the type
of meaning it denotes.

a.

```
        N
       / \
      N   Af
      |   |
    heart  s
```

b.

```
        V
       / \
      V   Af
      |   |
    work  ed
```

The form produced by adding the plural suffix -*s* in figure 4.12a is still a noun and has the same type of meaning as the base. Even though *hearts* differ from *heart* in referring to several things rather than just one, the type of thing(s) to which it refers remains the same. Similarly, a past tense suffix such as the one in figure 4.12b indicates that the action took place in the past, but the word remains a verb and it continues to denote the same type of action.

ii) In contrast, derivational suffixes usually change the category and/or the type of meaning of the form to which they apply. Consider the examples of derivation given in figure 4.13.

FIGURE 4.13
The output of deriva-
tion: there is a change
in the category of the
base and/or the type of
meaning it denotes.

a.

```
        A
       / \
      N   Af
      |   |
    heart less
```

b.

```
        N
       / \
      V   Af
      |   |
    work  er
```

c.

```
        V
       / \
      N   Af
      |   |
   hospital ize
```

d.

```
        N
       / \
      N   Af
      |   |
    king  dom
```

As figure 4.13a shows, -*less* makes an adjective out of a noun, changing the type of meaning it expresses from a thing (*heart*) to a property (*heartless*). Parallel changes in category and type of meaning are brought about by -*er* (V to N) and -*ize* (N to V). Matters are a little different in the case of -*dom*, which does not bring about a category change in the word *kingdom* since both the base and the resulting word are nouns. However, -*dom* does modify the type of meaning from a person (*king*) to a place (*kingdom*).

b) Order

i) A second property of inflectional affixes has to do with the order in which they are combined with a base relative to derivational affixes. As figure 4.14 illustrates, derivational affixes must be closer to the base than inflectional affixes (IA = inflectional affix; DA = derivational affix).

FIGURE 4.14
The relative positioning of derivational and inflectional affixes: the derivational affix must be closer to the root.
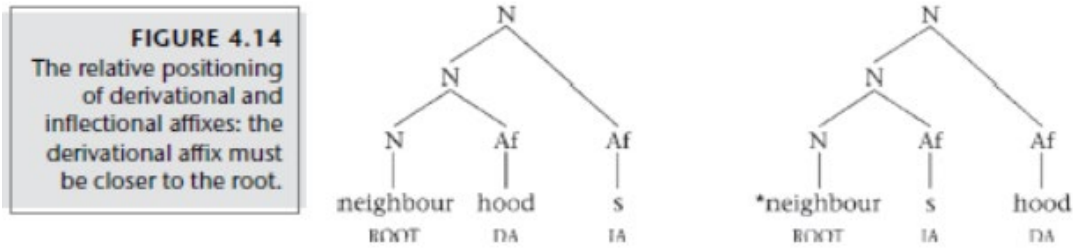
The positioning of inflectional affixes outside derivational affixes in these examples reflects the fact that inflection applies to the output of derivation.

c) Productivity
   i) A third criterion for distinguishing between inflectional and derivational affixes has to do with productivity, the relative freedom with which they can combine with bases of the appropriate category. Inflectional affixes are typically more productive than derivational affixes. The suffix -s, for example, can combine with virtually any noun that allows a plural form (aside from a few exceptions such as *oxen* and *feet*). In contrast, derivational affixes characteristically apply to restricted classes of bases. Thus, -ize can combine with only certain adjectives to form a verb.

(14)   modern-ize   *new-ize
       legal-ize   *lawful-ize
       final-ize   *last-ize

   ii) In the case of verbs, matters are somewhat more complicated, since many English verbs have irregular past tense forms (*saw, left, went,* and so on). Nonetheless, the inflectional affix -ed is much more generally applicable than a derivational affix such as -ment. All the verbs in table 4.16 can take the regular past tense ending, but only the first three are able to take the -ment suffix.
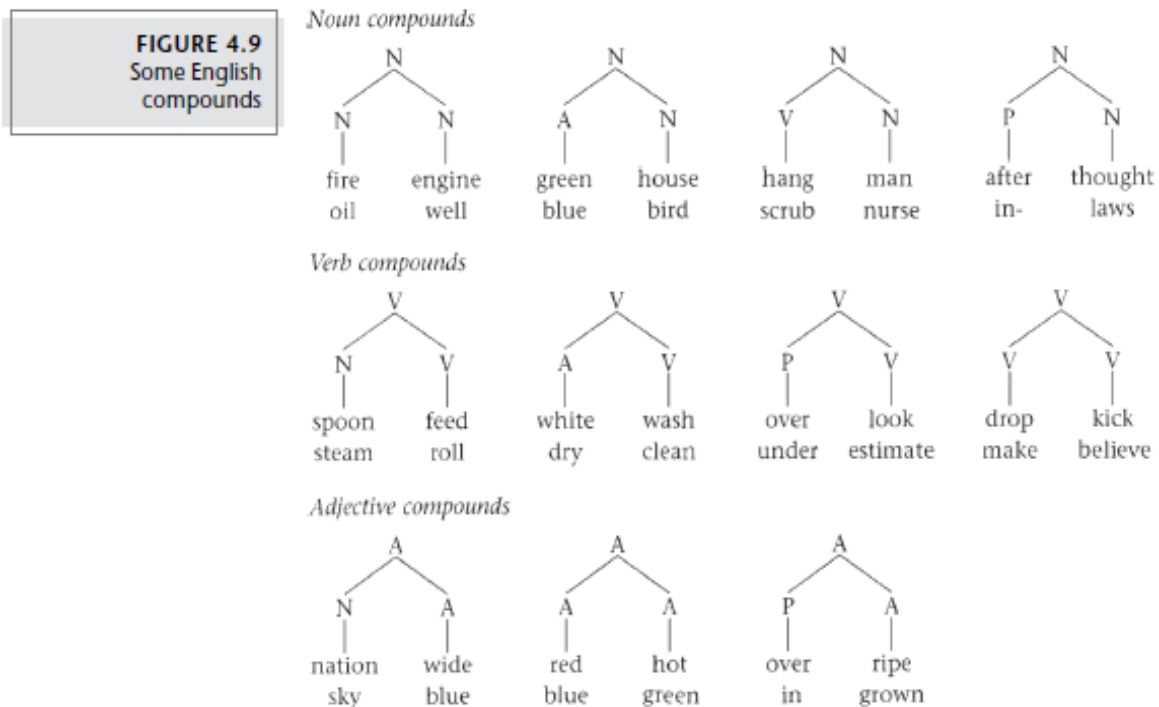
TABLE 4.16 Compatibility of verb bases with inflectional -ed and derivational -ment

Verb	With -ed	With -ment
confine	confined	confinement
align	aligned	alignment
treat	treated	treatment
arrest	arrested	*arrestment
straighten	straightened	*straightenment
cure	cured	*curement

d) Segment transparency

  i) Finally, the contribution of an inflectional affix to the word's meaning is usually completely transparent and consistent. Adding a plural suffix gives the meaning 'more than one' (*cat-cats, tree-trees*), adding a past tense suffix gives the meaning 'prior to the present' (walk -walked, *play-played*), and so forth.

  ii) Things are not always so straightforward in the case of derivation, where it is often not possible to predict the word's meaning from its parts. An *actor* is someone who acts, but a *professor* is not someone who professes. The word *teacher* often refers to someone who holds a teaching job, but no such implication is associated with *walker*. *Government* can be used to refer either to an institution (as in 'the government's agenda') or the act of governing (as in 'government by the people'), but *abandonment* lacks the first type of meaning.

Word formation by Compounding

1. Compounding processes

  a) A common technique for word building in English involves **compounding**, the combination of two already existing words (see figure 4.9). With very few exceptions, the

FIGURE 4.9
Some English compounds

Noun compounds

N		N		N		N	
N	N	A	N	V	N	P	N
fire	engine	green	house	hang	man	after	thought
oil	well	blue	bird	scrub	nurse	in-	laws

Verb compounds

V		V		V		V	
N	V	A	V	P	V	V	V
spoon	feed	white	wash	over	look	drop	kick
steam	roll	dry	clean	under	estimate	make	believe

Adjective compounds

| A		A		A	
N	A	A	A	P	A
nation	wide	red	hot	over	ripe
sky	blue	blue	green	in	grown

resulting compound word is a noun, a verb, or an adjective. (Possible examples of compound prepositions include the words *into* and *onto*.)

In the most common type of English compound, the rightmost morpheme determines the category of the entire word. Thus, *bluebird* is a noun because its rightmost component is a noun, *spoonfeed* is a verb because *feed* also belongs to this category, and *nationwide* is an adjective just as *wide* is. The morpheme that determines the category of the entire word is called the **head**.

b) Once formed, compounds can be combined with other words to create still larger compounds, as the examples in figure 4.10 show.

FIGURE 4.10
Compounds formed from smaller compounds
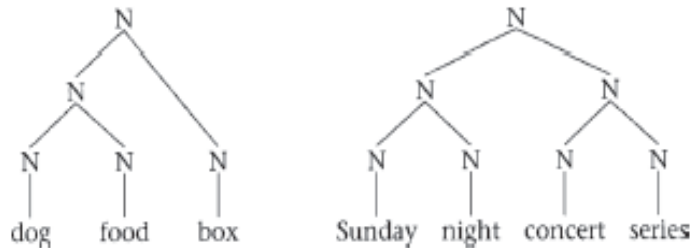
c) In addition, compounding can interact with derivation, yielding forms such as *election date,* in which the first word in the compound is the result of derivation, as shown in figure 4.11.

FIGURE 4.11
The interaction of derivation with compounding
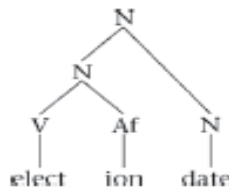
d) Compounding is an inexhaustible source of new words in English, as can easily be seen by perusing the new-word updates offered by Oxford Dictionaries Online. Recent additions include the following items, among many others.

TABLE 4.11 Some new compounds added to Oxford Dictionaries Online in the last several years	
New compound	**Meaning**
bitcoin	a digital currency
buzzworthy	likely to arouse public interest and attention
binge-watch	watch multiple episodes of a TV program in rapid succession
digital detox	refraining from using electronic devices
hackerspace	a community-operated workspace where people with common interests can socialize and collaborate
sit ski	a ski with a seat fitted on top, designed to be used by skiers with limited or no mobility

2. Properties of compounds

a) English orthography is not consistent in representing compounds, which are sometimes written as single words, sometimes with a hyphen, and sometimes as separate words. In terms of pronunciation, however, an important generalization can be made (see table 4.12): adjective - noun compounds are characterized by more prominent stress on their first component. In non-compounds consisting of an adjective and a noun, in contrast, the second element is generally stressed.

TABLE 4.12	Compounds versus non-compounds		
Compound word		**Non-compound expressions**	
greénhouse	'a glass-enclosed garden'	green hoúse	'a house painted green'
bláckboard	'a chalkboard'	black boárd	'a board that is black'
wét suit	'a diver's costume'	wet suít	'a suit that is wet'

b) A second distinguishing feature of compounds in English is that tense and plural markers can typically not be attached to the first element, although they can be added to the compound as a whole. (There are some exceptions, however, such as *craftsman* and *parks supervisor*.)

(12) *a.* Compound verb with internal tense:
*The player [drop<u>ped</u> kick] the ball through the goal post.
b. Compound verb with external tense:
The player [drop kick<u>ed</u> the ball through the goal post.

(13) *a.* Compound noun with internal plural:
*The [duck<u>s</u> hunter] didn't have a licence.
b. Compound noun with external plural (different meaning):
The [duck hunter]<u>s</u> didn't have a licence.

3. Compounds in other languages
a) The practice of combining words (especially nouns) to build a more complex word is very widespread in the languages of the world. With the exception of Tagalog, in which compounds are left-headed, the languages exemplified in table 4.14, all have compounds in which the rightmost element is the head. In right-headed Korean, for example, the head of *kot elum* 'icicle' is *elum* 'ice' since icicles are a type of ice, and the head of *nwun mwul* 'tears' is *mwul* 'water' since tears are a type of water. In left-headed Tagalog, in contrast, the head of *tubig-alat* 'sea water' is *tubig* 'water' since sea water is a type of

water, and in *bayad-utang* 'debt payment', the head is *bayad* 'payment' since a debt payment is a type of payment.

TABLE 4.14 Noun compounds in various languages		
Korean		
kot elum	isul pi	nwun mwul
straight ice	dew rain	eye water
'icicle'	'drizzle'	'tears'
Tagalog		
tubig-alat	isip-lamok	bayad-utang
water salt	mind mosquito	payment debt
'sea water'	'weak mind'	'debt payment'
German		
Gast haus	Wort bedeutungs lehre	Fern seher
guest house	word meaning theory	far seer
'inn'	'semantics'	'television'
Finnish		
lammas nahka turkki	elin keino tulo vero laki	
sheep skin coat	life's means income tax law	
'sheepskin coat'	'income tax law'	
Cree		
mishtikw naapeu	piyesuu upiiwiih	ishkuteu utaapan
wood man	duck feather	fire vehicle
'carpenter'	'duck feather'	'train'

Source: "Compound Nouns," *East Cree Language Resources*, www.eastcree.org.

Word formation by other processes

1. Cliticization
   a) Some morphemes behave like words in terms of their meaning and function but are unable to stand alone as independent forms for phonological reasons. Called **clitics**, these elements must always be pronounced with another word (known as a **host**). A good example of this can be found in English, where certain verb forms have reduced variants

(*'m* for *am*, *'s* for *is*, and *'re* for *are*) that cannot stand alone. Cliticization occurs, attaching these elements to the preceding word.

(18) *a.* I*'m* leaving now.
   b. Mary*'s* going to succeed.
   c. They*'re* here now.

b) Cliticization is also common in French, which has a set of unstressed clitic object pronouns that must be attached to the verb. The two are then pronounced as if they formed a single word (despite the way the second

(19) Jean *t'*aime.   Suzanne *les* voit.
    John you-likes   Suzanne them-sees
    'John likes you.'   'Suzanne sees them.'

example is written).

c) Clitics that attach to the end of their host (as in the English examples) are called **enclitics**; those that attach to the beginning of their host (as in the French examples) are known as **proclitics**.

d) The effects of cliticization can bear a superficial resemblance to affixation: in both cases, a morpheme that cannot stand alone is attached to a word belonging to a syntactic category, such as a noun or a verb.

2. Conversion
   a) **Conversion** is a process that assigns an already existing word to a new syntactic category. Even though it does not add an affix, conversion is often considered to be a type of derivation because of the change in category and meaning that it brings about. For this reason, it is sometimes called **zero derivation**. Table 4.22 contains examples of the three most common types of conversion in English. Less common types of conversion can yield a noun from an adjective (*the poor, millennials*) and

TABLE 4.22   Examples of conversion

V derived from N	N derived from V	V derived from A
ink (a contract)	(a long) run	dirty (a shirt)
butter (the bread)	(a hot) drink	empty (the box)
ship (the package)	(a pleasant) drive	better (the old score)
nail (the door shut)	(a brief) report	right (a wrong)
button (the shirt)	(an important) call	total (a car)
medal (in the Olympics)	(a big) ask	weird (someone out)

even a verb from a preposition (*down a beer, up the price*)

b) A notorious recent example of conversion involves the use of the noun *friend* as a verb to mean 'add someone as a friend on a social networking website' , making it distinct from the already existent word *befriend*, which refers to a more conventional social relationship. The transition to verbhood in this case is confirmed by the appearance of derived words such as *unfriend* and *defriend*, created with the help of prefixes used for other verbs in the language (*untie, deactivate*).

c) Conversion is usually restricted to words containing a single morpheme, although there are some exceptions, such as *e-mail* (noun to verb) and *dirt-y* (adjective to verb). In addition, it is common in English to form nouns from verb + preposition combinations—a *toss-up*, a *slowdown*, a *dropout*, and so on. The result is a headless compound—the category of the entire word (noun) cannot be traced to either of its component parts, one of which is a verb and the other a preposition.

d) Stress placement provides a useful clue to the category of related bisyllabic words in English, regardless of which one is more basic. As the examples in table 4.23 show, the verb has stress on the final syllable while the corresponding noun is stressed on the first syllable. (Stress is

TABLE 4.23   Stress shift and conversion of two-syllable words

Verb	Noun
implánt	ímplant
impórt	ímport
presént	présent
subjéct	súbject
contést	cóntest
slow dówn	slówdown

represented here by ´.)

3. Clipping
   a) **Clipping** is a process that shortens a polysyllabic word by deleting one or more syllables. Some of the most common products of clipping are names —*Liz, Ron, Rob, Sue*, and so on. Clipping is especially popular in casual speech, where it has yielded forms like *prof* for *professor, psych* for *psychology, bot* for *robot, doc* for *doctor*, and *burger* for *hamburger*. However, clipped forms often become accepted in general usage: *app, ad, auto, lab, sub, deli, demo*, and *condo*.
   b) A popular twenty-first-century clip is *blog*, from *Web log*—a personal website-based log of events, comments, and links. Once coined (in the spring of 1999), *blog* quickly appeared in compounds (*blog archive, blog post*) and has undergone conversion to a verb (as in 'things to blog

about'). The verb, in turn, has undergone derivation, resulting in the noun *blogger*. No wonder *blog* was voted the new word most likely to succeed at the 2003 meeting of the American Dialect Society!

4. Blending
   a) **Blending** creates words from non-morphemic parts of two already existing items, usually the first part of one and the final part of the other. Innovations of this type include *froyo* from *frozen yogurt, wi-fi* from *wireless* and *hi-fi*, *bromance* from *brother* and *romance*, *sexting* from *sex* and *texting*, and *jeggings* from *jeans* and *leggings*. Older examples include *brunch* from *breakfast* and *lunch, smog* from *smoke* and *fog, motel* from *motor* and *hotel, instagram* from *instant camera* and *telegram, aerobicise* from *aerobics* and *exercise, chunnel* (for the underwater link between Britain and mainland Europe) from *channel* and *tunnel*, and *infomercial* from *information* and *commercial*. And where would we be without the word *toonie*, the affectionate name for Canada's two-dollar coin—a blend of *two* and *loonie*?
   b) Another type of blend, common in languages of Asia, is strongly syllable-oriented: two or more words each contribute a syllable to the blend.

   > (20) a. Tagalog
   >   tap-si-log < tapa sinangag itlog
   >   breakfast combination (from 'dried meat – fried rice – egg')
   >   b. Malay
   >   pulada < pusat latihan darat
   >   army training camp (from 'centre – training – army')

   c) In Japanese, Korean, and Mandarin, nicknames for universities (among other words) are often created in this way.

   > (21) a. Korea Tayhakkyo > Kotay
   >   Korea University
   >   b. Tokyo Daigakku > Todai
   >   Tokyo University
   >   c. Beijing Da Xue > Beida
   >   Beijing University

   d) Sometimes, a word is formed by a process that is on the borderline between compounding and blending in that it combines all of one word with part of another. Examples of this in English include *perma-press, workaholic, medicare, guesstimate*, and *mansplain*. A productive strategy of this type involves the creation of words that begin with *e*, from *electronic*: *e-mail, e-banking, e-waste, e-business, e-cigarette*, and so on.

5. Backformation
   a) **Backformation** is a process that creates a new word by removing a real or supposed affix from another word in the language. *Resurrect* was originally formed in this way from *resurrection*. Other backformations in English include *enthuse* from *enthusiasm, donate* from *donation*, *liposuct* from *liposuction, liaise* from *liaison*, and *self-destruct* from *self-destruction*.
   b) Sometimes, backformation involves an incorrect assumption about a word's form: for example, the word *pea* was derived from the singular noun *pease*, whose final /z/ was incorrectly interpreted as the plural suffix.
   c) Words that end in *-or* or *-er* have proven very susceptible to backformation in English. Because hundreds of such words are the result of affixation (*runner, walker, collector,* etc.), any word with this shape is

TABLE 4.24 Some examples of backformation		
Original word	**Perceived structure**	**Verb formed by backformation**
editor	edit + or	edit
peddler	peddle + er	peddle
swindler	swindle + er	swindle
vapor	vap + or	vape

likely to be perceived as a verb + *-er* combination. The words *editor, peddler*, *swindler*, and, more recently, *vapor* have all been (mis)analyzed in this way, with the results summarized in table 4.24.

6. Acronyms and initialisms
   a) **Acronyms** are formed by taking the initial letters of (some or all) the words in a phrase or title and pronouncing them as a word. This type of word formation is especially common in names of organizations and in military and scientific terminology. Common examples include *UNICEF* for *United Nations International Children's Emergency Fund, CIDA* for *Canadian International Development Agency, NATO* for *North Atlantic Treaty Organization*, and *AIDS* for *acquired immune deficiency syndrome*. More recent innovations include *ASAP* 'as soon as possible', *YOLO* 'you only live once', *FOMO* 'fear of missing out', and *BOGO* 'buy one, get one (free)'.
   b) Acronyms are to be distinguished from **initialisms** such as *PEI* for *Prince Edward Island* or *USA* for *United States of America*, not to mention *DIY* for *do it yourself, LOL* for *laugh out loud*, and *BYOB* for *bring your own booze*, all of which are pronounced as a series of letters rather than as a

word. An intermediate case is *CD-ROM*, a compound consisting of the initialism *CD* (*compact disc*) and the acronym *ROM* (*read-only memory*).

c) Over time, acronyms can turn into ordinary lexical items as speakers become unaware of their origin. Four commonly used words of this type are *radar* (from *radio detecting and ranging*), *scuba* (*self-contained underwater breathing apparatus*), *laser* (*light amplification by stimulated emission of radiation*), and *taser* (named by its inventor after his hero, Tom Swift: *Thomas A. Swift's electrical rifle*)!

7. Onomatopoeia

a) All languages have some words that have been created to sound like the thing that they name. Examples of such **onomatopoeic words** in English include *buzz, hiss, sizzle*, and *cuckoo*. Since onomatopoeic words are not exact phonetic copies of noises, their form can differ from language to language, as shown in table 4.25.

TABLE 4.25   Onomatopoeia across languages

English	Japanese	Tagalog
cock-a-doodle-doo	kokekokko	kuk-kukaok
meow	nyaa	ngiyaw
chirp	pii-pii	tiririt
bow-wow	wan-wan	aw-aw

b) English does not always have an equivalent for the onomatopoeic words found in other languages. The Athabaskan language Slavey, for instance, has the onomatopoeic word [sah sah sah] for 'the sound of a bear walking unseen not far from camp', [ðik]for 'the sound of a knife hitting a tree', and [tɬóòtʃ] for 'the sound of an egg splattering'.

Summary table of word formation morphological processes

Process		Structure	Derived Word
Affixation	Prefix	Re + write	Rewrite
	Suffix	Write + able	Writeable
	Infix	Man + plural	Men
Like Inflection	Internal change	Sing (present)	Sang (past)
	Suppletion	Go	Went (past)
	Reduplication	Orang (man) [Indonesian]	Orang Orang (children)
	Tone	Zí (ate) [Mono-Bili]	Zì (will eat)
Compounding		Text + book	Textbook
Other Processes	Cliticization	I am	I'm
	Conversion	Attack (Noun)	Attack (Verb)
	Clipping	Gasoline	Gas
	Blending	Smoke + fog	Smog
	Back Formation	Edit – or	Edit
	Acronym	Compact Disk	CD
	Onomatopoeia	Meow (same as it sounds)	Meow

Morphophonemics

Introduction

1. In phonology, we saw that the word's pronunciation is often sensitive to a particular phonetic context in which phonemes occur. For example,
   a) an /æ/ that occurs before a nasal consonant will nasalized – [kænt] can't vs [kæt] cat
   b) an /æ/ that occurs before a voiced consonant will be longer than one that occurs before a voiceless consonant – [hæ:d] had vs [hæt] hat

2. Similarly, a word's pronunciation can be affected by morphological factors, including its internal structure. The study of these effects is known as morphophonemics (or morphophonology).
3. Difference between morphological process (and corresponding rules) and morphophonology rules.
   a) Morphological rules express patterns that express conceptual categories e.g., "add -*ed* to form the past tense of a verb". They are grammatical rules.
   b) Morphophonology rules specify the various pronunciations of morphemes as they are used in different contexts or environments.
   c) In the example of English plural morpheme,
      i) we are talking about one grammatical rule, namely "add something to a noun in order to make the noun plural". The "something" is the idealized underlying form of the pluralized morpheme.

      ii) morphophonemic rule then specifies the actual pronunciation of various morphemes in various contexts.

    d) Morphophonemic rules in some sense come after morphological rules.

4. Difference between phonological rules and morphophonology rules.

    a) Phonological rules specify the pronunciation of sounds in particular environments. They refer to sequence of sounds, and not to whether those sequences involve particular morphemes or not.

    b) Morphophonemic rules in most cases are just phonological patterns that come into play when morphemes come together in words.

Example

1. A well-known example of a morphophonemic phenomenon in English involves the plural suffix -*s*, which can be /s/, /z/, or /əz/, depending on the context.

> **(22)** lip/s/
> pill/z/
> judg/əz/

    a) This alternation is, in part, the result of phonetic factors: voiceless /-s/ occurs after voiceless sounds (such as /p/), voiced /-z/ occurs after voiced sounds (such as /l/), and the /-əz/ form shows up only when a vowel is needed to break up a non-English consonant cluster (no English syllable ends with the coda /dʒz/). What makes the alternation morphophonemic is its interaction with two additional factors.

    b) First, the alternation involves separate phonemes−/s/ and /z/. In this, it differs from a purely phonetic alternation, such as aspiration of the /t/ in *top* but not *stop*, a variation that involves allophones of the same phoneme.

    c) Second, morphological structure matters. It is perfectly possible to have /s/ after /l/ in English when they are both in the same morpheme, as in the word *pulse*. But when the 's' represents the plural as it does in *pills*, and is therefore a separate morpheme, only /z/ is permitted. Alternations like this that occur specifically at morpheme boundaries are sometimes referred to as **sandhi**, a Sanskrit word used to describe similar phenomena in the languages of India, where morphophonological analysis was being done in the 4th century BC.

2. Another example of morphophonemic alternation can be seen in the contrast illustrated in table 4.27.

TABLE 4.27 A contrast between two negative prefixes		
Context	The prefix *in-*	The prefix *un-*
in front of a vowel	in-active	un-announced
in front of /p/	im-possible	un-proven
in front of /l/	il-legal	un-lawful
in front of /r/	ir-regular	un-readable

Here *in-* (but not *un-*) manifests a morphophonemic alternation involving the phonemes /n/, /m/, /l/, and /r/ at the boundary between the prefix and the root