

1a. Creativity of English & obstacles in its pathway

The diversity of human thought and experience places great demands on language. Because there are always new things to say, language has to be creative, giving us the freedom to produce and understand new words and sentences as the need arises. This doesn't mean that all new utterances will be acceptable because languages evolve within known systematic boundaries. In other words, each language's grammar — its system used to form and interpret the sounds, words, and structures of the language — sets the boundaries for creativity.

English grammar, for example, allows for almost any word to be used as a verb, even proper nouns. When I taught World History, I often said, "Europeans Deboed Africa," and my students understood that "to Deboe" something meant "to bully and take over." We understood that we were comparing how European nations carved up Africa to how the character Deboe from the *Friday* movies dominated his neighborhood.

Despite English's great flexibility, the language typically does not allow new verbs to be formed

from nouns if the new word would be too similar to an existing, widely-used verb. A native speaker might misspeak and say, "He was hospitalled for three days," but the verb "to hospital" would not become widespread because most native speakers would use the verb "to hospitalize."

English speakers are able to use words referring to periods of time as verbs. However, these time phrases must refer to an extended period of time, not just a single moment. It is acceptable to say, "We spring breaked in Cancun," meaning we spent the week of spring break in Mexico, but a native speaker would never say, "I three o'clocked at the dentist today." When a native speaker says, "We wintered in Tahiti," it's understood that he/she spent the winter overseas, not that he/she made the weather turn cold in the South Pacific.

Finally, native English speakers, like native speakers of any language, have an innate linguistic competence. They know what sounds are allowed in their language and whether word order or morphology is more important to determining meaning.

1b. Constraints governing English linguistic creativity

All languages are creative and allow for changes over time. These changes, however, must fit within that language's grammar — its rules governing the formation and interpretation of sounds, words, and structures. Native speakers intuitively know the rules of their language and have linguistic competence. They are aware that certain sound patterns "look" like they could become possible words. In English, sound constraints enable a native speaker to know that "prasp" or "traf" could be new words, but he/she would not accept "psapr" or "ftra" because they do not fit English's normal phonemic patterns.

Other constraints provide rules for creating new verbs. Almost any English word can become a verb, but it must not be too similar to a pre-existing verb. "To prison" a criminal, for example, would not be widely acceptable because the verb "to imprison" is already in usage. New verbs that deal with a period of time must also fit within constraints. Time verbs must express an extended period, not just a single moment. A native speaker would talk of

"weekending in the mountains" but not "nooning at the office."

Other constraints provide rules for creating new words by adding pre-existing suffixes. If a new word "platem" was created, for example, an English speaker would know that something with the properties of "platem" could be called "platemic." To make something "platemic" is "to platemicize," and this process would be called "platemicization." Because most English speakers have encountered these word endings before, they would know to pronounce the c in platemic as [k] and the c in platemicize as [s]. They would also know to stress the second syllable in platemicize.

Languages need these and other constraints because without them, languages would degenerate into babble. Grammar helps protect a language's core, preventing rapid changes that would make understanding meaning impossible. Since we encounter countless new structures daily, constraints help us keep new words and phrases mentally organized.

1c. Assimilation and subcategories thereof

Assimilation is an articulatory process that is a change in the quality of one segment due to the influence of a neighboring segment. There are five subcategories of assimilation: regressive assimilation, progressive assimilation, voicing assimilation, devoicing assimilation, and flapping.

Regressive assimilation is caused by the following segment and often involves a neighboring nasal (regressive nasalization). In the English word [k^hɪŋ] ‘king,’ the vowel [ɪ] becomes more nasal because of the ending [ŋ], a nasalized sound.

In comparison, progressive assimilation is caused by the preceding segment; it can also involve a neighboring nasal (progressive nasalization). However, English does not have this articulatory process.

Voicing assimilation occurs when a typically unvoiced segment is voiced because of the prox-

imity of a neighboring voiced segment. In English, the voiceless stop [p] becomes voiced in [plɪz] ‘please’ because of the voiced vowel.

Devoicing assimilation is the opposite process. This occurs when a typically voiced segment is devoiced because of the influence of a neighboring voiceless segment. In English, the voiced nasal [ŋ] is slightly devoiced in [æ'ŋkəɪ] due to the effect of the voiceless stop [k].

The final form of assimilation is flapping. This is the process by which a dental or alveolar stop is flapped. In English, either or both prevoicative (preceding a vowel) /t/ and /d/ are flapped after sonorants other than /ŋ/, /m/, and sometimes /l/. Flapping is common in North American English and is represented in the International Phonetic Alphabet as [ɾ]. For example, flapping occurs in [bʌɾəɪ] ‘butter,’ [bʌɾəɪ] ‘barter’ and [fækʌɾɪ] ‘faculty.’

1d. Syllables and main characteristics thereof

Syllables are phonological units involving a syllabic element (i.e., a sonorous element) and any preceding and/or postceding element(s) associated with it. Vowels, glides, liquids, and nasals are sonorant or syllabic in nature, but most of the time, the sonorous element is a vowel.

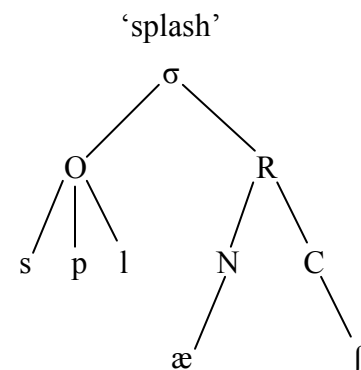
A syllable — represented by the symbol σ — can be broken down into three parts: onset and rhyme (also spelled rime). The onset (O) includes the segments preceding the rhyme (R). English words can have up to three segments in an onset, but English phonotactics involve three rules for creating a three-consonant onset. The first consonant must be an s. The second consonant must be a voiceless stop (either [p], [t], or [k]), and the third consonant must be a liquid ([l] or [r]) or a glide ([y] or [w]).

A syllable’s rhyme has two parts: nucleus and coda. The nucleus (N) is the sonorous element that is the syllabic core of the word. The coda (C) includes the segments that follow the nucleus in the same syllable.

There are four universal tendencies of syllables. First, a syllable nucleus tends to be a vowel sound. Second, syllables usually involve onsets. Third, syl-

lables sometimes involve codas. Finally, both an onset and a coda tend to each have one consonant. Exceptions may occur when a language borrows words from another language. Foreign loanwords tend to change pronunciation to fit the borrowing language’s sounds, so they do not always fit into that language’s syllable rules or tendencies. In English, the French word [fiãs'e] ‘fiancée’ becomes [fiansej].

Example of a syllable diagram:



1e. Setting up syllables: Steps involved

Regardless of the language being studied, there are four basic steps to setting up a syllable.

1. Nucleus formation — Find the syllable's sonorant core. Vowels, glides, liquids, and nasals are sonorant or syllabic in nature, but most of the time, the sonorous element is a vowel. Each sonorous element forms the nucleus of a separate syllable.

2. Onset formation — Determine if the syllable has an onset, the elements that precede the nucleus. Always define onsets before looking for codas, the elements that precede the nucleus. It is far more common for nuclei to have onsets than codas.

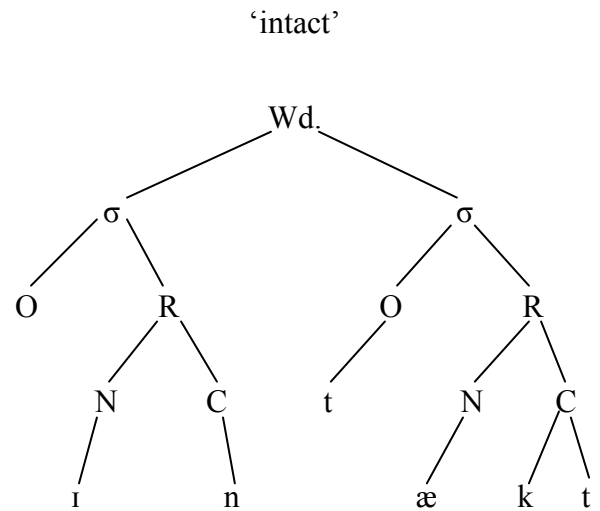
In a vowel-consonant-vowel sequence, for example, the consonant would be an onset to the second vowel, not a coda to the first vowel. For example, 'leather' is divided into two syllables as [leðə], not [lɛð-ə].

The onset will have the longest sequence of consonants phonotactically allowed in that language. In English, the maximum is three. The first consonant must be an s. The second consonant must be a voiceless stop (either [p], [t], or [k]), and the third consonant must be a liquid ([l] or [r]) or a glide ([y] or [w]).

3. Coda formation — Determine if the syllable has a coda, the elements following the nucleus. Any consonant to the right of a nucleus that is not associated with a potential next-syllable nucleus is a coda. If a syllable does not have a coda, it's called an open syllable. If a syllable does have a coda, it's a closed syllable.

4. Word level formation — Finally, ensure that the syllable is part of a word-level unit. The symbol for this level of syllable diagram is Wd, but it's often omitted.

Example of a syllable diagram:



2a. Vowels, consonants, and glides: Production differences

Vowels, consonants, and glides are the three basic groupings of speech sounds.

Vowels are usually the most sonorous sounds. They are more acoustically powerful than consonants or glides, and they involve little (if any) obstruction of airflow. Vowels are always voiced, meaning they are produced with a constriction of the glottis. Some examples include the monophthong [i] and the diphthong [ej].

Consonants involve either a complete or partial closure of the vocal tract. This causes the air flow to be obstructed. Sound is produced as air flows past the constriction. In consonant articulation, the air

flow is modified by the positioning of the tongue and lips. Consonant sounds can either be voiced like vowels or voiceless. Examples of consonants include [m], [t], and [z].

Glides (also called semivowels) are midway between vowels and consonants. The articulation is like that of a vowel, but glides are patterned like most consonants since glides cannot form the nucleus of a syllable. Glides may be thought of as rapidly articulated vowels since this is the auditory impression they produce. However, they move quickly to another articulation. Some examples include [y] as in 'yet' and 'boy' and [w] as in 'wet' and 'now.'

2b. Monophthongs vs. diphthongs

Monophthong is another term for a simple vowel — a vowel that produces a single sound. They do not show a noticeable change in quality during their articulation. Some examples of monophthongs include [i] as in ‘feet,’ [ɛ] as in ‘red,’ and [ə] as in ‘banana.’

In comparison, diphthongs are vowel sounds that do exhibit a change in quality within a single syllable. In English, this is due to tongue movement away from the initial vowel towards a glide position. Diphthongs also have a somewhat longer

sound than monophthongs. Some examples of diphthongs include [ej] as in ‘play,’ [aj] as in ‘sigh,’ and [ow] as in ‘beau.’

Diphthongs are more complex than monophthongs in an articulatory sense and are transcribed phonetically as a vowel and a glide. In some respects, though, they still act as a single vowel sound. For example, ‘mit’ and ‘might’ are both single-syllable words even though ‘mit’ has the monophthong [ɪ] and ‘might’ has the diphthong [aj].

2c. Vowels: Tense vs. lax

Vowel sounds are considered tense or lax based on the degree of vocal cord constriction needed to produce the sound. They can be either monophthongs or diphthongs.

Tense vowels are produced with a placement of the tongue that results in greater vocal tract constriction than in lax vowels. This causes tense

vowels to sound longer. In English, the tense vowels are [i], [ej], [u], [ow], [aj], [aw], and [ɑ].

Lax vowels are made with roughly the same tongue position as tense vowels but with a less constricted articulation. There is little or no vocal tract constriction. The English lax vowels are [ɪ], [ɛ], [æ], [ə], [ʌ], [ʊ], and [ɔ].

2d. Intonation vs. tone

Intonation and tone are both part of the suprasegmental category of pitch. Pitch is the auditory property of a sound that enables us to place it on a scale that ranges from low to high.

Intonation is pitch movement that is not related to differences in word meaning. In English, intonation helps convey emotion. A falling intonation — a terminal (intonation) contour — indicates that an utterance is complete. A rising or level intonation — nonterminal (intonation) contour — signals a question. English speakers tend to perceive a rising intonation as more polite because it sounds less like a command than a falling

intonation.

Tone is pitch differences that indicate differences in meaning or grammatical function. In English, tone differences have no effect on word meaning, so English is considered a nontone language. Some languages, like Mandarin, are tonal. For example, changes in pitch change the meaning of the word pronounced [ma] into four different words.

Tone and intonation are not mutually exclusive. Tonal languages can also show intonation because tones are relative pitches, not absolute.

2e. Phonology: Tasks and units

Phonology investigates how sound and meaning are connected. Phonology is the part of grammar that determines the selection of speech sounds. It governs both the sound patterns and the systematic phonetic variation found in language.

The task of phonologists is twofold. First, they try to discover and describe the systematic phonetic patterns found in individual languages. Second, phonologists seek to discover the general principles that underlie the patterning of sounds across all human languages.

There are three major phonological units: the feature, the segment, and the syllable. The feature is the smallest unit of analysis of phonological structure. Features correspond to articulatory or acoustic categories such as [nasal] or [voice]. Combinations of features make up segments.

A segment is an individual speech sound char-

acterized by specific phonetic features. Segments are the smallest actual phonological sound units. When the use of a different segment indicates a different word meaning, the segments are said to be phonemes because they are in a contrastive relationship. For example, in English, [b] and [p] are contrasting segments because there is a difference in meaning between [bɪg] and [pɪg].

Finally, a syllable is a unit of linguistic structure that consists of a syllabic element — a nucleus consisting of a vowel, liquid, or nasal — and any segments that are associated with it, such as an onset and/or coda.

Examining similarities and differences among features, segments, and syllables help phonologists with the tasks of describing both individual languages and human language in general.

2f. Minimal pairs vs. near-minimal pairs

A minimal pair consists of two word forms with distinct meanings that differ by only one segment found in the same position in both forms. Finding a minimal pair in a sample set of language data helps determine if two segments in that language are distinct phonemes or if they are allophones of the same phoneme.

Minimal pairs can have differing segments initially (e.g., [lɑ:k] ‘lark’ and [ʃɑ:k] ‘shark’), medially (e.g., [kejm] ‘came’ and [kɔwm] ‘comb’), or finally (e.g., [paj] ‘pie’ and [pej] ‘pay’).

If a minimal pair cannot be found, a near-

minimal pair will also work when looking for two segments’ possible contrastive relationship. A near-minimal pair involves two word forms with segments in nearly identical environments. For example, the English words [ʃʌvəl] ‘shovel’ and [hɔvəl] ‘hovel’ are spelled similarly but differ in the two initial sounds, making them a near-minimal pair.

The important thing to remember while looking for minimal or non-minimal pairs is that they are established based on sound, not spelling. The sound difference must also indicate a change in word meaning.

2g. Aspiration

Aspiration is the delay in the onset of vocalic voicing accompanied by the release of air that is heard after the release of certain stops in English. For example, the first sound of [tʰap] ‘top’ is aspirated. The superscript “h” represents aspiration using the International Phonetic Alphabet.

In English, the voiceless stops [p], [t], and [k]

are aspirated syllable-initially. They are unaspirated in a syllable onset preceded by [s] and are unaspirated in a coda. For example, [p] is aspirated in [pʰæn] ‘pan’ and in [əpʰɔn] ‘upon’ since it is syllable-initial. However, [p] is not aspirated in neither [spæn] ‘span’ nor [slæp] ‘slap’ because it follows an [s].

3a. Generality

Generality is one of the five principles of all languages. It refers to the fact that **all languages have a grammar — a system used to form and interpret the sounds, words, and structures of a language**. Although no two languages have exactly the same grammar, there are no languages without a grammar.

3c. Universality

Universality is one of the five principles of all languages. **All grammars have some characteristics that are universal (they all have them)**. For example, all languages have a set of tools for differentiating words, phrases, and structures that are otherwise alike, such as [big] and [pig], horse-race vs. racehorse, and “the baby’s cat” vs. “the cat’s baby.”

Another universal feature of all languages is the existence of constraints on how much variation is possible.

3e. Inaccessibility

Inaccessibility is one of the five principles of all languages. It refers to **how native speakers of a language have a subconscious knowledge of their language’s grammar (linguistic competence)**. This knowledge is not subject to introspection. Native speakers know what sounds right in their language and what doesn’t, but they are not sure how they know this. They cannot figure out how they know about their language’s grammar without consciously studying their language’s grammar rules.

3b. Parity

Parity is one of the five principles of all languages. It refers to the fact that **all grammars are equal**. One language’s grammar is no better or worse than another’s. Therefore, analysis of a language should reflect how the language is actually used (descriptivism) rather than an idealized version of how it should be used (prescriptivism).

3d. Mutability

Mutability is one of the five principles of all languages. It refers to **how grammars change, or mutate, over time**. The features of a language that are not widely used or fixed are subject to change over time.

Major changes take years or even centuries to occur, such as how English has gradually reduced the number of irregular verbs over the past thousand years. Minor changes, such as the addition of new words — especially those dealing with technology — can occur very rapidly.

3f. Phonetics

Phonetics is the part of grammar that **studies the inventory of the sounds of language (phones)**. Articulatory phonetics studies the physiological mechanisms of speech (how the body physically produces sounds). Acoustic phonetics measures and analyzes the physical properties of sound waves produced while speaking. Phonetics examines the distinct sounds of language (phonemes) and represents them using symbols from the International Phonetic Alphabet (IPA).

3g. Phonology

Phonology is the component of grammar comprised of **the elements and principles that determine how sounds pattern in a language**. Native speakers have a subconscious knowledge of their language's phonological system (linguistic competence). They know whether certain sounds can be ground in their language or not. In English, for example, the [ŋ] sound can only be found word finally.

3i. Syntax

Syntax is the part of grammar dealing with sentence formation. It is **the system of rules and categories that underlies sentence formation in human language**.

Contemporary linguistic analysts believe that the syntactic component of any grammar must include at least two subcomponents. The first is a lexicon, or mental dictionary, that provides a list of the language's words along with information about their pronunciation, their category, and their meaning. The second subcomponent is a computational system, which refers to the operations that combine and arrange words in particular ways.

3h. Morphology

Morphology is the part of grammar that deals with word formation. It is **the system of categories and rules involved in creating words and interpreting them**.

The study of morphology offers 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.

3j. Semantics

Semantics is the part of a language's grammar that deals with the interpretation of words, structures, and sentences. It is **the study of meaning in human language**.

3k. Voicedness vs. Voicelessness

Voice is a laryngeal feature that distinguishes between voiced and voiceless sounds. Voiced sounds are produced when the vocal folds are brought close together but are not tightly closed, causing air passing through them to vibrate. For example, [ej], [z], and [m] are voiced. In comparison, voiceless sounds are produced when the vocal folds are pulled apart, allowing air to pass directly through the glottis. For example, [t], [s], and [f] are voiceless.

To determine if a sound is voiced or voiceless, lightly press your fingers against your throat while producing extended versions of sounds. If you feel vibrations, the sound is voiced. Another way to test for voice is to make the same extended sounds with your fingers in your ears. You will feel much greater resonance from the sounds that are voiced.

3l. Retroflex

Retroflex sounds are produced by curling the tongue tip back into the mouth. In American English, it's the /r/ sound as in *ride* and *car*. The IPA symbol is [ɻ]. The retroflex sound is a voiced, lateral liquid.

3m. Stress

Stress is an umbrella term for the combined effects of pitch, loudness, and length — the result of which is perceived as prominence. Stress can be classified as primary and secondary (or even tertiary in multi-syllable words).

The IPA uses an acute accent to indicate primary stress and a grave accent for nonprimary stress.

In English, stressed syllables tend to be higher pitch, louder, and longer than unstressed syllables.

3o. Deletion

Deletion is an articulatory process whereby **a segment is eliminated from a phonetic environment.** It is the opposite of epenthesis.

The deleted segment can be a consonant or vowel.

The goal of deletion is to facilitate articulation. In English, some examples of deletion are the change from [pəlis] ‘police’ to [plis], which omits the [ə], and the change in ‘sentence’ from [sɛntəns] to [sɛnəns], which omits the medial [t].

3q. Metathesis

Metathesis is an articulatory process whereby **a sequence of segments is rearranged with the goal of facilitating articulation.** It is common to hear metathesis in the speech of children, who often cannot pronounce all the consonant sequences that adults can.

For example, English-speaking children sometimes reorder the word [spəgəri] ‘spaghetti’ to [pəgəri] or [pəskəri]. Adult English speakers sometimes exhibit a metathesis in the mispronunciation of ‘ask’ [æsk] as [æks].

3n. Dissimilation

Dissimilation is an articulatory process by which **one segment becomes less like another segment in its environment.** The similar-sounding neighboring segments become more distinct, making the resulting sequence of sounds easier to articulate and distinguish.

One commonly heard example of dissimilation in English occurs in words ending with three consecutive fricatives, such as ‘fifths.’ Many speakers dissimilate the final [fθs] sequence to [fts], apparently to break up the sequence of fricatives with a stop.

3p. Epenthesis

Epenthesis is an articulatory process whereby **a segment is inserted into a phonetic environment.** It is the opposite of deletion.

The added segment can be syllabic or non-syllabic in nature.

Two English examples of epenthesis are the addition of [ɹ] to change ‘wash’ [wɑʃ] to [wɑɹʃ], and the addition of [j] in ‘coupon,’ which changes [kupən] to [kjupən].

3r. Vowel Reduction

Vowel reduction is the articulatory process whereby **unstressed vowels become more central in nature,** shifting toward the centralmost vowel in the language. In English, this vowel is [ə]. For example, the [ɪ] in [bɪlɪv] is usually reduced to [bəliv].

3s. Contrastive Relationships

Segments are said to contrast or be in a contrastive relationship in a particular language when their presence alone may result in a change of meaning in a word. For example, the phonetically distinct segments [t] and [d] contrast in the English words [tɪp] ‘tip’ and [dɪp] ‘dip.’ When the sound is changed, so is the meaning.

In order to establish contrasts, examine the distribution of sounds in words and compare word meanings. This is usually accomplished using the minimal pair test.

3u. Phoneme vs. Allophone

Phonemes are the smallest contrastive phonological unit capable of differentiating linguistic forms that are otherwise alike. In English, for example, the phonetically distinct segments [t] and [d] contrast in the English words [tɪp] ‘tip’ and [dɪp] ‘dip.’

Allophones are predictable variants of one and the same phoneme. They are phonetically distinct (pronounced differently) but phonologically the same. For example, /l/ in English can be either voiced /l/, as in [blu] ‘blue,’ or voiceless /l̥/, as in [plaw] ‘plow.’

Phonemes represent the ideal sounds in a language. Allophones represent the actual ways these phonemes are pronounced.

All languages have phonemes and allophones, but their patterning is language specific. A sound distribution valid in one language is probably not valid in another.

3t. Complementary Distribution

When two sounds always occur in different environments and never occur in the same environment, they are in complementary distribution. We can predict where each sound will occur by examining segment environments and determining which sound occurs in that environment.

Phonemes in complementary distribution are not distinct sounds and are not contrastive; they are allophones of the same sound. They are perceived by native speakers to be phonologically the same.

Example: voiced /l/ in [blu] ‘blue’
voiceless /l̥/ in [plaw] ‘plow’

3v. Phonotactics

Phonotactics is **a language’s set of constraints on how sequences of segments pattern.** Phonotactics forms part of a speaker’s knowledge about the phonology of his/her language. Native speakers of a language intuitively know that certain words sound like they belong to their language while words from other languages sound unusual.

Certain phonotactical constraints are universal while others are language specific. An onset like [pl] is found in many languages other than English (e.g., Russian, Thai, and French), but an onset like [lp] is never found in any language.