

## Applied Phonetics & Phonology

### Suprasegmentals: Stress, Rhythm & Intonation Part I

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## Suprasegmentals

**Suprasegmentals** (or **suprasegmental features**) are features of an utterance which don't depend on any single segment. The following are usually considered to be suprasegmentals:

- stress
- tone
- intonation

## Suprasegmentals

There are two major types of languages in the area of suprasegmentals:

- Tone languages
  - Relative pitch is phonemic at the word level.
  - The meaning of words may be distinguished by relative pitch or pitch contours.
- Stress languages
  - Relative pitch does not determine word meaning.
  - Pitch is used to control rhythm, and pragmatic information rather than lexical meaning.

## Suprasegmentals

An example of a tone language:

- Mandarin Chinese:
  - 妈 (mā) 'mother'
  - 吗(ma) Question particle
  - 骂(mà) 'scold'
  - 马(mǎ) 'horse'
  - 麻(má) 'hemp'
  - " 妈妈骂马的麻吗?"  
"Is mother scolding the horse's hemp?"

## Suprasegmentals

English is can be thought of as a "stress language," for a number of reasons:

- In general, meanings of words are not distinguished by pitch alone
- Each word has its own characteristic stress, or "prominence" pattern.
- There is no more than one highly stressed syllable per word.  
(more reasons on next slide)

## Suprasegmentals

English is known as a "stress language," for a number of reasons:

- The rhythm of speech in English is dependent on the stress patterns of the words.
- Stress is relatively "free." There is no easy way of predicting where the stress will fall in a word. Learners just have to memorize the stress patterns as they memorize other phonological characteristics of vocabulary items.

## Suprasegmentals

Why do languages have variations in prominence?

- Think how boring speech would be if all syllables were equally as prominent.
- Understanding utterances depends on understanding figure and ground relationships.
- The rhythm of speech is partially dependent on varying anatomical facts, such as the amount and pressure of air passing through the vocal tract.

## Suprasegmentals

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## The Phonetics of Stress

- **Stress involves a combination of**
  - *pitch*
  - *vowel length*
  - *loudness*



## Different ways of Indicating Stress

- WAtEr aGAIN
- /fáðəˈr/ /æptətùd/
- /'fɑðəˈr/ /'æptəˌtʊd/
- FA ther AP ti tude

## The Typology of Stress

- Parameter 1:
  - Free stress languages.
  - Fixed stress languages.
- Parameter 2:
  - Syllable-timed languages.
  - Stress-timed languages.

## The Typology of Stress

### Free stress languages

- No purely phonological constraints on where the stress falls.
- Depends on the word class or type of affix.
- Note: “free” does not mean that stress is random. That is, it is not the case that you can place stress wherever you want in “free” stress languages.

## The Typology of Stress

In fixed stress languages, either:

- Stress is “predictable” based on phonological factors

OR

- Stress always falls on a particular syllable.
  - First syllable of a word: Czech, Hungarian, Finnish, Scots Gaelic.
  - Penultimate Syllable: Polish, Swahili.
  - Final syllable: French, Turkish.

## The Typology of Stress

Syllable-timed languages

- Timing of speech can be measured in syllables, quite apart from stress.
- Each syllable has approximately the same duration.
- Spanish, French, Japanese, Turkish.

## The Typology of Stress

Stress-timed languages

- Timing of speech can be measured in “feet.”
- Each “foot” is a rhythmic unit consisting of one stressed syllable and optionally one or more unstressed syllables.
- German, Russian.

## The Typology of Stress

English is a (weakly) free stress language  
- all “minimal pairs” for stress are related verb-noun couplets.

- convert (v) vs. convert (n). She converts word files into pdf files. They are converts.
- record (v) vs. record (n). We record quality music. The record company called.
- produce (v) vs. produce (n). Italy and France produce great wine. We sell organic produce.

## The Typology of Stress

In the following sense, English can be thought of as a “fixed stress” language:

- About 95% of the time, if you know the **phonological segments**, the **word class** and the **morphological structure** (i.e., presence or absence of affixes) of a word, you can determine its stress pattern.
- However, the rules are very complex (examples to follow).

## The Typology of Stress

- Unfortunately, there are also several “exceptions” to the complicated stress rules.
- Therefore it makes sense for ESL learners to just think of English stress as being “free.”
- This means, you must learn the stress pattern of each word, just as you learn other phonological characteristics of the word.

## The Typology of Stress

English is a (strongly) stress-timed language.

- (a) Which cats chase mice?
- (b) Many voters wanted freedom.
- (c) Competent managers readily innovate...
- Phonetic duration: a=b=c (English)
- Phonetic duration: c>b>a (if you read these in the way you speak French, Japanese, Turkish or Spanish)

## The Typology of Stress

Each of the following phrases has two “feet” (2 main stresses):

- Ken’s hat
- Kenny’s hat
- Kennedy’s hat
- the cat in the hat
- cat nip
- a storm in a teapot

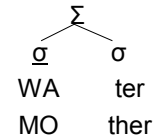
## The Typology of Stress



- A foot has one prominent (stressed) syllable.
- Depending on which part of the foot the stress falls, we give feet a different name (following Greek poetic tradition).

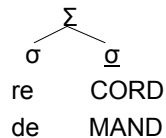
## The Typology of Stress

- In a “Trochaic” foot, the heavy, or stressed syllable comes first:



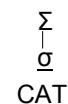
## The Typology of Stress

- In an “Iambic” foot, the heavy, or stressed syllable comes second:



## The Typology of Stress

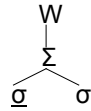
- You can also have a neutral foot, in which there is only one syllable. This syllable must be stressed:



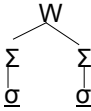
## The Typology of Stress

- Feet help us to graphically represent the difference between primary and secondary stress:

- “raider” has 1 foot:



- “radar” has 2 feet:



## The Typology of Stress

Exercise: How many “feet” do the following phrases have?:

- The cat sat on the mat.
- Visiting relatives can be boring.
- Happiness is a warm puppy.
- Colorless green ideas sleep furiously.
- Fourscore and seven years ago.
- Raider.
- Radar.

## Related Concepts

- A **diphthong** is a syllable nucleus that contains two vowels, e.g. The /ɔy/ in “oyster,” the /ay/ in “aisle,” or the /aw/ in “loud.”
- A **closed syllable** is a syllable that has a coda – i.e., one or more consonants after the nucleus.
- A **heavy syllable** is one that contains a complex coda, and/or a complex nucleus (a diphthong, or a tense vowel).

## Related Concepts

- The **ultimate syllable** is the last syllable in a word: reCORD
- The **penultimate syllable** is the next-to-the-last syllable in a word: REcord.
- The **antepenultimate syllable** is the third to the last syllable in a word: ULtimate

## The English Stress Rule for Verbs

- Stress the ultimate syllable if it is HEAVY.
- If the ultimate syllable is not heavy, stress the penultimate syllable.

## Predictable Cases: Verbs

Light	Heavy	Heavy
astónish	maintáin	collápsé
édit	eróde	tormént
consíder	applý	exháust
imáginé	appéar	eléct
intérpret	obéy	convínce
embárrass	eráse	obsérve
prómise	surmíse	adápt

### Predictable Cases: Verbs

Light	Heavy	Heavy
/əstáɪnɪʃ/	/mentéyn/	/kəlæps/
/édɪt/	/irówd/	/tɔ̃r'mént/
/kənsídəʀ/	/əpláy/	/eksást/
/ɪmáɟɪn/	/əpíyʀ/	/əlékt/
/ɪntɔ̃r'pɹət/	/obéy/	/kənvíns/
/embæ̀rəs/	/əréys/	/əbsɔ̃'v/
/práɪmɪs/	/sə'r máyz/	/ədæpt/

### Predictable Cases: Verbs

Light	Heavy	Heavy
/əstáɪnɪ -ʃ/	/mentéy -n/	/kəlæp -s/
/édɪ -t/	/irów -d/	/tɔ̃r'mén -t
/kənsídə -ʀ/	/əpláy -0/	/eksás -t/
/ɪmáɟɪ -n/	/əpíy -ʀ/	/əlék -t/
/ɪntɔ̃r'pɹə -t/	/obéy -0/	/kənvín -s/
/embæ̀rə -s/	/əréy -s/	/əbsɔ̃ʀ -v/
/práɪmɪ -s/	/sə'r máy -z/	/ədæp -t/

### Caveat #1: Verbs with Prefixes

Two-syllable verbs with “stress neutral” prefixes are stressed on the ultimate syllable, even if it is “light”:

permit	/pə'r mít/
rebel	/rəbəl/
condemn	/kəndə'mn/

### Caveat #2: Three-syllable Verbs

Verbs with three (or more) syllables follow the basic rule -- twice:

First, the basic rule assigns stress to the ultimate syllable, if it is heavy.

Then, the basic rule applies again, but at the level of “feet.”

### Caveat #2: Three+-syllable Verbs

Rule applies cyclically:

stimulate	/stímyulèt/	accomplish	/əkámpləʃ/
stupidify	/stúwpəfây	determine	/dətɔ̃'r mən/
advertise	/əd'və'tàyz/	abolish	/əbələʃ/
alleviate	/əlívvièt/	abandon	/əbændən/

If the ultimate syllable of a 3+ syllable verb is stressed, the rule applies again, placing primary stress on the antepenultimate, reducing stress on the ultimate syllable to secondary status.

### Conclusion

We have discussed only one-half of the rules needed to determine how to stress English words based only on segmental phonology, word class and affixation patterns. We are not going to discuss any more patterns, because, as mentioned earlier, these rules are really too complicated to be of much use to second language learners of English. Therefore, it is advisable to just teach the stress patterns of words individually, as though English were a “free stress” language.