Assimilation
A sound becomes more similar to a sound in its environment.

- A sound can become more similar in place of articulation.
  *Example 1:* Latin *in-* ‘not’ → *possibilis* ‘possible’ = *impossibilis* ‘impossible’
  *Example 2:* English /n/ → [ŋ] before /θ/, as in tenth /tɛnθ/

- A sound can become more similar in manner of articulation
  (including change from oral to nasal, or nasal to oral).
  *Example:* Early Old English /steθn/ ‘stem’ > Later Old English /stemn/

- A sound can become more similar in terms of voicing.
  *Example:* English plural morpheme {-s} → /z/ after voiced stops
  - {bag} + {-s} → bags [bægz]
  - {load} + {-s} → loads [lɔwdz]

- A sound can fully assimilate, becoming identical to a sound before or after it.
  *Example 1:* Sound changes from Latin to Italian.
    - *octo* ‘eight’ > *otto*
    - *septem* ‘seven’ > *sette*
    - *noctem* ‘night’ > *notte*
    - *somnus* ‘sleep, dream’ > *sonno*
  *Example 2:* Korean /kʰal/ ‘knife’ + /nal/ ‘edge’ → /kʰallal/ ‘knife blade’

Palatalization (may result from assimilation)
Non-palatal sounds (dental, alveolar, velar, etc.) become (alveo)-palatal.
- Usually happens in the environment of a front vowel or glide /j/.
- Stops often become affricates when they palatalize.

*Example 1:* did /dɪd/ + you /jʊ/ → /dɪdʒ ju/
*Example 2:* Old Mandarin ‘seven’ [tʂʰi] > Modern Mandarin [tʃʰi]
Nasalization (may result from assimilation)
The change of an oral vowel to a nasal vowel.
- This usually happens when an oral vowel occurs next to a nasal consonant.
  Example: Taiwanese ‘walk’ /kian/ > /kîan/ > /kîa/

Deletion - loss of a sound
Example: Loss of i vowel in family > /fæmlı/

Epenthesis - sound insertion
Example 1: English /fæmlı/ > /fæmbli/ for some speakers
Example 2: English else /ɛls/ > /ɛlts/ in some dialects
Example 3: English tense /tɛns/ > /tɛnts/ (pronounced identically to tents)
Example 4: English triathlon /təjæθlən/ > /təjæθələn/

Metathesis - change in the order of sounds
Example 1: Kids’ joke word psghetti for spaghetti
Example 2: nuclear /nukliər/ > nucular /nukjələr/
Example 3: Early Old English /wæps/ > wasp
Example 4: Italian formaggio ‘cheese’ from formed (milk).
  French formage > fromage
Example 5: English comfortable > /kʌmfɪrtəbl/ 

Weakening
  Vowels - become short and centralized (vowel reduction);
  - disappear (deletion)
In English, vowel reduction usually means a change to schwa [ə].
Example 1: English the /ði/ > /ðə/
Example 2: English decide /dɪsajd/ > /dısajd/ > /dəsajd/

  Consonants - voiceless become voiced, stops become fricatives
  - disappear (deletion)
  - usually happens between vowels or at edge of word
Example 1: Middle English /fəder/ > Modern English father /faðər/
Example 2: English butter /bʌtə/ > /bʌtə/
Other types of vowel change:
fronting - a vowel becomes more front (e.g. \( a > æ \))
backing - a vowel becomes more back (e.g. \( æ > a \))
raising - a vowel becomes higher (e.g. \( e > i \))
lowering - a vowel becomes lower (e.g. \( u > o \))
rounding - a vowel becomes rounded (e.g. \( æ > ɔ \))
monophthongization - a diphthong becomes a monophthong
diphthongization - a monophthong becomes a diphthong
e etc.

*Example 1*: English *dude* [dud] > [dʊd] > [dyd]

*Example 2*: Middle Korean [taj] > Modern Korean [tɛ] ‘great’

**Notation**

Two types of sound change.

One is a change related to the realization of a phoneme or morpheme of a language at a particular point in time. Rules for such changes are written with an arrow, like this: \(/s/ \rightarrow [ʃ]\).

These are *synchronic rules* (i.e. apply to a language at one stage of time)

The other is a change that has occurred in a language over a period of time. Rules for such changes are written with an angle bracket, like this: \( s > ʃ, /s/ > /ʃ/, \) or \([s] > [ʃ]\).

These are *historical rules* (i.e. they apply to a language over a span of time)