Chapter 3 : The consonant of English language :-

(1) Stop consonants: /p, b, t, d, k, g/, [ʔ]

1	2	3	4	5	6
pie	buy	a buy	spy	nap	nab
tie	dye	a dye	sty	mat	mad
kye	guy	a guy	sky	knack	nag

1- pie → [pʰaI], tie → [tʰaI], kye → [kʰaI]

↳ They are voiceless

when voicless stop are beginning of words and they are followed by vowel → we Add (aspiration) to them.

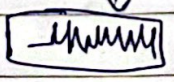
note : The aspiration is only in → /p, t, k/ → [pʰ, tʰ, kʰ]

Example : two → [tʰu], can → [kʰæn], people → [pʰipəl]

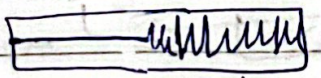
2- buy, dye, guy → voiced stops

if we have this sounds at the beginning of any english word (phrase) and then we are preced by voicless stops → these sounds become devoiced (devoicing).

Example : bad guys., smart boys.



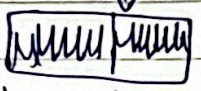
the acustics like



* The major difference between voicless and voiced (devoiced) is (aspiration).

3_ a buy , a dye , a guy → voiced

↳ d̬ b̬aɪ → fully voiced aspects.

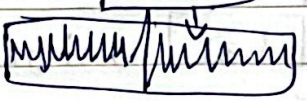


when these sounds preceded vowels → all vowels are voiced so we have voicing and the voicing continue.

Example: good boy → gʊd̬ b̬ɔɪ

d̬ → voiced

b̬ → voiced



fully voiced.

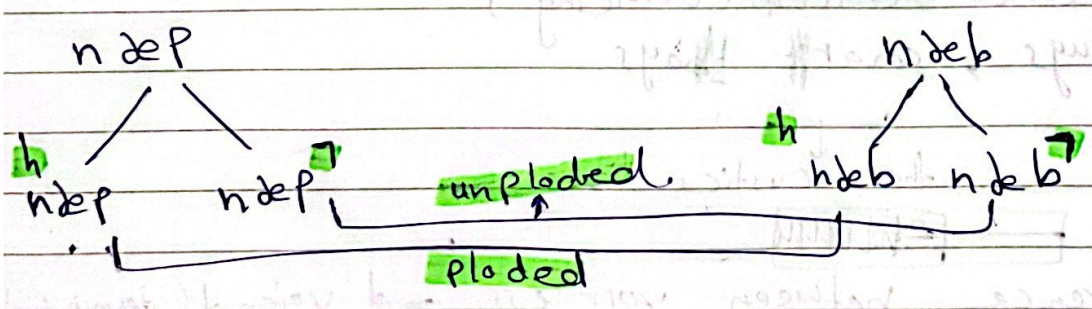
4_ spy , sky , sty → voiceless and these sounds are preceded by consonant

spy → spaɪ , sky → skaɪ , sty → staɪ → these are not aspirated because the sound /s/ preced /p,t,k/ → no aspiration.

2, 4 → are closest in Pronunciation.

5_ nap , mat , knack.

6_ nab, maid, nag



stop sounds at the end of the word can be ploded or unploded it depending on the speaker but meaning does not change.

these sounds are preceded by vowels.

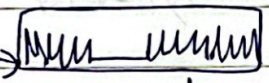
if the vowel occurs before voiceless stop → næp so it is shorter than vowels which occurs before voiced → næb.

Example: 1) That is said → at the end of phrase.

2) A Bad Cold → or followed by voiceless sounds → become (devoiced).

d k

3) add two

set tu →  devoiced.

*note: the voiced are longer than voicesless and vowels are longer before voiced.

Some native speakers produce words such as

kitten → /kɪtən/ → [kɪ̚tn]

sudden → /sʌdən/ → [sʌ̚dn]

↳ what is the difference between them?

/kɪtən/ }
/sʌdn/ } → ploded/released because in these words we have d and the vowels (d) need free air passage and because they need free air passage → we mush plod/release /t, d, k/

[kɪ̚tn] }
[sʌ̚dn] } → unploded/unreleased.

↳ The tongue stays on the alveolar ridge as we produce the sequence of t and n so the air is trapped (unploded) and goes out from the nose

Example: open my door

/ˈoʊpən maɪ dɔː/ → ploded/released.

↳ stop sound

However native → ˈoʊpə̚mmaɪ → the n becomes m because of (assimalation) → unreleased (unploded.

↳ become one.

Syllabic: 1) vowels all the time syllabic = we cannot form a syllable without a vowel.

/kɪtən/ }
/sʌdən/ } 2 syllables because we have 2 vowels.

another Example: unreleased: /ˈʌnˌnɪlɪst/ → 3 syllables = 3 vowels

2) nasal sounds may or may not be syllabic depending on the accent.

if speakers released the stop sounds like t, d as in /kɪtən/ or /sʌdən/ → No syllabic nasals.

However if they don't released the stop sounds as in [sʌ̀dn̩] or [kɪ̀tn̩] → the nasal sounds are syllabic.

Example: əʊpən maɪ → 2 syllables

əʊp̚m maɪ → unreleased so the m and n become syllabic → we used diacratic symbol. [̩]

and syllabic means the nasal sounds occupies the position of ə.

as a result → the air which is supposed to be released with /t/ → we delay the release and we released it with the nasal sounds → (nasal plosion)

nasal plosion → means the plosion of sounds is released with nasal sounds

syllabic nasals; when the nasal sounds occupies the position of preceding vowel.

* Homorganic articulation is when there are two sounds with the same place of articulation following each other.

Example: little /lɪtl̩/ → [lɪtl̩] → these stop sound are
middle /mɪdl̩/ → [mɪdl̩] followed by ə

In /mɪdl̩/ → we don't have delay plosion because we have a vowel (ə) and the vowel have free air passage. However some native speakers produce these words as [lɪtl̩], [mɪdl̩] → we have a delay plosion. because the /l/ in litte occupies the position of the(ə). so there is no shwa that requiers free air passage. and we have a syllabic/l/ → (Lateral plosion)

Lateral sounds may or may not be syllabic. depending on the accent.

[lɪtl̩] and [mɪdl̩] → both of them are alveolar so we have (Homorganic articulation).

* syllabic consonant:

Example: computer /kəmpjutəɹ/ or [kəmpjutn̩]
under /ʌndəɹ/ → [ʌndn̩]

[kəmpjutn̩] and [ʌndn̩] → have a delay plosion because /n/ occupies position of ə and there is no ə

[ʌndɹ̩] → we dont have Homorgenic articulation because the place of articulation of /d/ is alveola and the place of articulation of /ɹ/ is retro flex.

* retroflex may or may not syllabic depending on acc

Another Example: /ɡəʊtəl/ or [ɡəʊtl̩]

/fəɡəɹ/ or [fəɡ̩ɹ̩] → delay plosion. and syllabic /l/.

delay plosion. and syllabic /ɹ/

(2) fricative Sounds /f, v, θ, ð, s, z, ʃ, ʒ, h/.

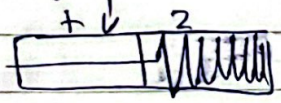
* the similarities between stop sounds and fricatives :-

1) Both of them can be voiceless. or voiced, exi. f, v or s, z

2) Both of them are obstruent = means that in the production there is some kind of (air constriction). so we ostruct the air as we produce these sounds, Ex: in the production of /f/.

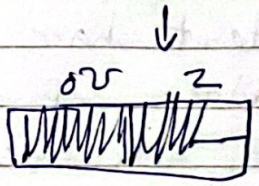
3) when fricative sounds are at the beginnig of phrase like : very /vɛri/

or → Ex: right 200

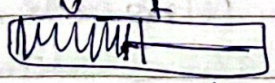


* So fricative sounds are not fully voiced when they are at the beginnig of phrase or when they preced by voiceless sound.

4) fricative sounds are not fully voiced when they are at the end of phrase or when they followed by voiceless sounds. Ex: nose /noʊz/.



Ex: have two → /hæf tʊ/



so the /v/ becomes /f/ (Devoiced).

5) vowel Lengths.

→ vowels are longer before voiced stops. and vowels are longer before voiced fricatives.

Ex: Safe /seɪf/ → shorter than seɪv because it is voiceless

save /seɪv/ → voiced so this is longer.

Example: mɛt mæd

the vowel shorter than mæd because it is voiceless but /t/ is longer than /d/.

seɪf seɪv

The vowel in voiceless is shorter than voiced. but /f/ longer than /v/.

3) Affricates /tʃ, dʒ/

1) Can be voiceless and voiced!
2) obstruents (there is air constriction as we produce)
3) /dʒ/ is not fully voiced t the beginning and when preceded by voiceless sound.
Example: nice judge → naɪs dʒʌdʒ
voicless → so it becomes devoiced.

4) vowel length
Ex: rich /ɹɪtʃ/
ridge /ɹɪdʒ/
↳ /ɪ/ in /ɹɪtʃ/ is shorter than /ɪ/ in /ɹɪdʒ/ bt /tʃ/ is longer than /dʒ/

4) nasals /m, n, ŋ/

1) All of the nasal sounds are voiced
2) They can be syllabic
Ex: sʌdn → sʌdn̩
ɔɹpdm maɪ → ɔɹpm̩

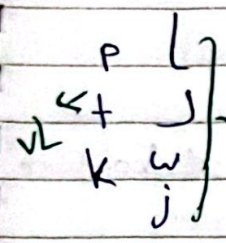
3.) /m, n/ occuring in the all positions, but /ŋ/ doesn't occur at the beginning of any english word
/ŋ/ = n+g ← end of words
suffix addition
Ex: ring → /ɹɪŋ/ or ringer /ɹɪŋəɹ/

4) not all vowels occur befor /ŋ/ → so the vowels that occurs before /ŋ/ are /ɪ, e, ɛ, ʌ, ɑ/
Ex: /ɔɪŋ → this is not english word because /ɔɪ/ doesnt occur before /ŋ/

5) Approximants: 1) liquids /l, ɹ/ → (semi-vowels)
2) glides /w, j/
3) glottal /h/.

1) all of them have a relitivly free air passage in the production → this why we called them semi-vowel
2) liquids and glides are voiced, expect /h/ → voicless.
→ Liquids /l, ɹ/
Ex: little /lɪtəl/ → [lɪɾl̩]
/hɛməɹ/ → [hɛmɹ̩]
3) so lateral sounds can be syllabic and retroflex can be syllabic.
4) we have 2 kinds of /l/ ↗ clear/light
↘ velarized/dark [ɫ]
clear light /l/ → is the actual /l/
↳ 1) At the beginning of words, Ex: light → /laɪt/
2) or between 2 front vowels, Ex: feel it → /fil̪ɪt/
velarized/dark /l/
↳ 1) At the end of words, Ex: feel → [fiɫ]
2) or Before Consonat, Ex: field → [fiɫd]
* /laɪt/ and [faɪl] → they are allophones of the same sound.

3) approximant devoicing



when they preceded by /p, t, k/ → They become (devoiced)

Example:- pleɪ klin
pɹeɪ kɹorn
tʃɹaɪ kjut
twɪn kwin
tjub ↳ Diacritic symbol

Some native speakers when /w/ occurs at the beginning or (wh). like; were /ʍɛɹ/
where /ʍɛɹ/
↓
hw (we don't use it when we speak).

* /h/ → voiceless (semi vowel).
note: in some accents of english especially british english /h/ is deleted, Ex: where is he? → the /h/ deleted.
and it produced ofen between two vowels
↳ Example: rehearsal → /ɹɪhɛɹsəl/

page 73:- /h/ is the voiceless counterpart of the following vowel.
↳ cans opposite.
↳ Example: art hɑrt → low front vowel.
art hɑːɹt
eat hit
when I add /h/ to /ɛt/ → /hɛt/ → VD.
VL ← both /h/ and /ɛ/ take the same tongue Postion & tongue heigh; lips shape

* overlapping gestures !_

overlappe means → to come together.

→ Anticipatory coarticulation

Anticpate means → to predict someting to happen before it actually happens.

Example: tɛ̃n tɛnθ

the vowel /ɛ/ becomes nasalized (we have vowel nasalization because the following sound is nasal sound → so nasal sound affects /ɛ/

* All vowels are oral but tɛn → the /ɛ/ is nasal because the different articulations anticcipate (predict) that the next sound is nasal, so the different articulators taked a target position for the following sound

tɛ̃n → the different articulators take a target position for the nasal sound while the vowel is being produced.

tɛ̃nθ → we have dental articulation + vowel nasalization because the different articulators predicted that the next sound is dental so the dental aspects starts with /n/ → so we have (Anticipatory Coarticulation) where the the /n/ and the vowel have something in common which is the nasal aspects, and in the same time the /n/ and the dental also have something in common
↳ as a result of this we have overlapping gestures
so in such a case → /tɛnθ/ → the same feature is usually shared two sounds, so in /tɛnθ/ → nasal aspects and the same time we have the dental aspec

in /tɛn/ → the first sound predicts the features of the second sound and the features of the second sound start to appear on the first sound.
So the features on the nasal sound is umpused in the vowel and the features of the dental sounds are umpused on the nasal sounds.
As a result of Anticipatory and overlapping → we get coarticulation
Coarticulation → Co means together so the articulation of the different sounds becomes one.

another Example of Anticipatory Coarticulation :-
do → /du/ → roundness.
↓
is not rounded sound but the vowel /u/ is rounded sound
so before we started produced the word (du/ → the lips becomes rounded, so the features of the second sound are imposed on the first → the /d/ becomes rounded.
↳ the differents articulators predict that the second sound which is /u/ is rounded, so the roundness is imposed on the /d/ → we have (anticiptory coarticulation).
and the ultimate result → we have overlapping gestures
↓
overlapping gestures → when the same features of the different sounds become one (the roundness of the /u/ and the roundness of the /d/)
Example: /k/ → is not rounded sound but in the word clue → /klu/ → so here the /k/ and /l/ become rounded because they are followed by rounded sound /u/.
and the features of roundness which is /u/ imposed on the /k/ and /l/.
↳ at the end we have coarticulation.

Another Example : blue → /b l̥ u/ so the /b/ and /l/ are not rounded but they become (rounded). because they are followed by rounded sound /u/.

so when we talk about coarticulation → we talk about (assimlation) where the same features is imposed on different sounds

in the word → play /pleɪ/ → we don't have anticiptory articulation because the /p/ affected the second not the opposite.

* English consonant Allophones : page 76.

1 consonant are longer when at the end of a phrase :-

Example :- (r)ead poo(r).

↓ the /r/ here is longer than /r/ in read

(r)ea(d) dea(r)

↓ longer than (read).

longer than (dear)

2 voiceless stops /p, t, k/ are aspirated when they are syllable initial and followed by a vowel.

Example: pen /pʰɛn/
tan /tʰæn/ } → they are initial and followed by vowel
cook /kʰʊk/

3 obstruents (stops, fricatives and affricates) classified as voiced / b, d, g, v, ð, z, ʒ / are voiced through only a small part of the articulation when they occur at the end of an utterance or before a voiceless sound.

Example : Add two: æd tu → æt tu (the /d/ becomes /t/ because of assimlation.

or another Example: hɛv̥ (f)d → hɛf̥ (f)d

(4) so-called voiced stops and affricates /b, d, g, dʒ/ are voiceless when syllable initial, except when immediatly preceded by a voiced sound.

Example: Boys /bɔɪz/ → the beginning of the phrase become devoiced.

and stop, fricative, and affricates become fully voiced when they are preceded by another voiced sound

↳ Ex: the boys: /ðə bɔɪz/ or good boys /gʊd bɔɪz/

(5) voiceless stops /p, t, k/ are unaspirated after /s/ in word such i spiden
stɑ:ɹ
skaɪ
→ no aspiration because we have /s/ preceded /p, t, k/.

(6) voiceless obstruents /p, t, k, tʃ, f, θ, s/ are longer than the corresponding voiced obsturents /b, d, g, dʒ, v, ð, z, ʒ/ when at the end of a syllable.

Example: m(e)t (shorter) — m(e)d (longer) — sɛrf (shorter) — sɛr(v) (longer) → shorter

(7) The approximants /w, ɹ, j, l/ are at least partially voiceless when they occur after initial /p, t, k/ a's in

play → pl̥eɪ
tree → tr̥i
quiet → kw̥ daɪt
tj̥ub

→ devoiceed. (approximants devoicing).

[8] The gestures for consecutive stops overlap so that stops are unexploded when they occur before another stop in words such as:
apt /ɐpt̚/ and rubbed /ɹʌbd̚/ we delay the plosion
↳ (unploded / leased stop) when we don't release the sto

[9] In many accents of English, syllable final /p, t, k/ are accompanied by an overlapping glottal stop gesture as in pronounciation of tip, pit, kick as [tɪʔp, pɪʔt, kɪʔk] → so we add the [ʔ] before them and use (‿).

[10] In many accents of English, /t/ is replaced by a glotta stop when it occurs before an alveolar nasal in the same word as in beaten [biʔn̩]
[d]
[ɾ]
[ʔ] → the /t/ becomes [ʔ] more than [d] or [ɾ]. f we have a nasal sound in the same word.
Example: kɪtn̩ / kɪʔn̩ / → the /t/ followed by a nasal sound → in such a case the /t/ tends to be change to [ʔ]
[kɪʔn̩] and [biʔn̩].

[11] Nasals are syllabic at the end of word when immediately after an obstruent as in
kɪtn̩
sʌdn̩
bitn̩
ɹɪtn̩
} all of these have nasal sound at the end
/n/ tends to occupies the position of /d/ to become syllabic.
↳ [kɪʔn̩], [sʌʔn̩], [biʔn̩] → we have ① unploded stop and ② nasal plosion + ③ Homorganic articulation.

(12) The lateral /l/ is syllabic at the end of a word when immediately after a consonant.

Example: little /lɪtḷ/ → [lɪt̩l]
middle /mɪdḷ/ → [mɪd̩l]
tunle /tʌnḷ/ → [tʌn̩l] } → we have a delay plosion and syllabic /l/.

* Lateral sound may or may not syllabic.

But in [tʌnl] → we don't have a dela ed plosion.

In [lɪtl], [mɪdl] and [tʌnl] → all of them have Homorganic articulation because they have sane place of articulation (alveolar).

(12a) → The liquids /l, ɹ/ are syllabic at the end of a wo when immediately after consonant.

Example: [seɪbɹ̩]
[ɹeɪzɹ̩]
[hɛmɹ̩]
[teɪlɹ̩] } → we have a retroflex at the end and the retroflex is preceded by /ɹ/.

so for some native speakers: [seɪbɹ̩], [ɹeɪzɹ̩], [hɛmɹ̩] and [teɪlɹ̩] → All of these become syllabic and delay plosi but we don't have a Homorganic articulation except [ɹeɪzɹ̩] → we don't have a delay plosion because the air flows. and [hɛmɹ̩] → don't have delay plosion.

(13) Alveolar stops become voiced taps when they occur between vowels, the second of which is unstressed.

Example: stressed ← sɪtɪi, wɑtəɹ, dɹɛdi → unstressed. → between 2 vowels.

/t/ → [ɾ]
/d/ → [ɾ]

and to become [ɾ] → it has between two vowels, the first one has to be stressed and the second has unstressed.

/t/ becomes a tap mos when occurs betwe two vowels.

(13a) Alveolar stops and alveolar nasal plus stop sequence become voiced taps when they occur between two vowels, the second of which is unstressed.
Example: Painter /peɪnʔɚ/

(14) where we would expect to have an alveolar consonant, we find it to be dental when the next segment is a dental consonants. (dental articulation).
When we have alveolar sounds /t, d, l, n/ followed by /ð or θ/ → these become dental sounds.
Example: eighth [eɪfθ]
tenth [tɛnθ] [bɛt ðə]
wealth [wɛlθ] [ɪn ðə]
width [wɪdθ]

(15) Alveolar stops are reduced or omitted when befereen two consonants. c/t, d/c → we often delete the /t, d/.
Examples: fact finding → /fæk fəɪ ndɪŋ/
send papers → /sɛnd peɪpɚz/
most people → /moʊs pipəl/
→ the /t, d/ tends to be deleted.
↳ fæk fəɪndɪŋ, sɛn peɪpɚz, moʊs pipəl
another Example: friendship /frɛndʃɪp/ → frɛnʃɪp.

6] A homorganic voiceless stop may occur after a nasal before a voiceless fricative followed by an unstressed vowel in the same word.

Example: dance /dæn(t)s/
something /sʌm(p)θɪŋ/ → nasal sounds followed by
youngster /jʌŋ(k)stɚ/ voiceless fricative

(Epenthesis) means Addition (when we add a sound).
* Some native speakers tend to add (voiceless stop).
e voiceless stop must have the same place of articulati
as the nasal.

- n → alveolar so we have to add voiceless alveolar stop. [t].
- m → bilabial, so we have to add voiceless bilabial stop /p/.
- ŋ → velar, we have to add voiceless velar stop /k/

→ dæ(nt)s, sʌ(mp)θɪŋ, jʌ(ŋk)stɚ → this voiceless stop ust form a homorganic articulation and this addition called (epenthesis).

7] A consonant is shortened when it is before an identical consonant.

Examples: hard day /hɑɹ(d)deɪ/ → the first is shorter
top post /tɑ(p)poʊst/ than the second.
dark kat /dɑːɹ(k)kæt/

8] velar stops are more front before front vowel
→ The fronts vowel /i, ɪ, ɛ, æ, eɪ/
velar sunds /k, g, ŋ/ → back.
when the front vowels occur before velar sounds → the back vowels become (more front).

Example: kæt gɛt → front → the /k and g/ become more front (there position)
back front back

19 The lateral /l/ is velarized when after a vowel or before a consonant at the end of a word.

→ 1) when /t/ at the end of a word or before a consonant or after vowel.

Example: file [faɪɫ]
field [fiɫd]

The opposite of velarized /l/ is a clear/light /l/. and clear/light /l/ occur when 1) at the beging of word
2) between two front vowel

Example: light [l̪aɪt]
kill it [kɪl̪ɪt]

Diacritics:

1_ voiceless Approximants: kɹ̥aɪ, kw̥in, tɹ̥ub, kl̥in
2_ Asprition: ʰpaɪn, ʰtu, ʰkɪl
3_ Dental: t̪ɛn̪θ, wɛl̪θ, ɪn̪ ð̪d
4_ velarized: faɪɫt, fildˠ
5_ syllabic: sʌdn̩, /ɪtd̩/, ɹʊpdm̩ → sʌdn̩, /ɪt̩/
6_ Nasalized: mɛ̃n, sɪ̃y, ɛ̃nd