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Intermediate Phonology

Theories of the syllable and theories of phonological weight

This course sets out with introducing the methods that allow to determine underlying representations from the analysis of surface-corpora. Advantage will be taken on various phonological processes occurring in different languages. Arguments will be reviewed which show that the rules established are not just idealisations made by linguists, but psychologically real (so-called external evidence).

In a second step, the reasons for the (re-)introduction of syllable structure into the previously linear model of SPE are presented. It will be demonstrated why phonological theory is assigned to be able to refer to preconsonantal and word-final consonants in a uniform fashion. On the basis of a consensual conception of syllabic structure, the course introduces various proposals regarding the specific organisation of the syllable that have grown out of the late 70s (Onsets, Rhymes, Nuclei, Codas, extrasyllabicity, appendix, branching and empty constituents). Another topic that will be covered is the way a linear string of segments is matched with syllabic constituents: various syllabification-algorithms and the role of sonority are reviewed.

Finally, attention is drawn on a parallel set of data, that is so-called syllabic weight, whose basic unit is the mora. This notion is traditionally used in order to describe that fact that different types of syllables behave contrastingly with respect to stress-assignment. Should the typical evidence on which syllable structure is grounded and the one in which syllable weight roots give rise to two different theoretical modules, i.e. syllabic vs. moraic theory? Or should we rather try to achieve one single theory covering both empirical fields? And in case the latter solution is preferred, should this theory rely on syllables or on morae?

Illustration for all purposes discussed are drawn from various languages, namely English, German, French, Slavic and Afro-Asiatic (Semitic).

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Ordered Rules

Zoque (South Mexico)
(< Dell, François1973. Les règles et les sons. Paris: Hermann)

(1)   tihu   "he has come"   kaʔu   "he is dead"

        tihpa   "he is coming"   kaʔpa   "he is dying"

        tihkeʔtu   "he has come as well"   kaʔkeʔtu   "he is dead as well"

        tihkeʔtpa   "he is coming as well"   kaʔkeʔtpa   "he is dying as well"

        poju   "he has run"
        popja   "he is running"
        pokjeʔtu   "he has run as well"
        pokjeʔtpa   "he is running as well"

(2)   jospa   "he is working"   joskuj   "work"
        petpa   "he is sweeping"   petkuj   "brush"
        hapja   "he is writing"   hakjuj   "writing"

        mesa   "table"   mesakᵃsi   "at the table"
        kuj   "tree"   kukjᵃsi   "at the tree"
        joskuj   "work"   joskukjᵃsi   "at work"
        petkuj   "brush"   petkukjᵃsi   "at the brush"
        hakjuj   "writing"   hakjukjᵃsi   "at the writing"

Formulate the rule of metathesis META.

(3)   kunu   "he has fallen"
        kunba   "he is falling"
        kungeʔtu   "he has fallen as well"

Formulate the rule that manages voicing VOI.

(4)   he has...   he is ...   he has ...as well   they have...
        a. kiʔmu   kiʔmba   kimgeʔtu   kimjahu   "go up"
        b. kihpu   kihpa   kipkeʔtu   kipjahu   "fight"
        c. maŋu   maŋba   maŋgeʔtu   maɲjahu   "arrive"
        d. hahku   hakpa   hahkeʔtu   hakjahu   "cross"
        e. kunu   kunba   kungeʔtu   kuɲahu "fall"
        f. ʔeht͡su   ʔet͡spa   ʔetskeʔtu   ʔeht͡ʃahu   "dance"
        g. wihtu   witpa   witkeʔtu   wihcahu   "march"

h. sohsu   sospa   soskeʔtu   sohʃahu   "cook"

Formulate the rule that manages the presence/ absence of [h].
Formulate the rule of palatalisation PAL.

(5) a. nepu   "he is kicking"
     kenu   "he is seeing"
     t͡saɲu   "he is hitting"
     sunu   "he is loving"
   b. naɲepjatᵃhpa   "they are kicking each other"
     nakjeɲatᵃhpa   "they are seeing each other"
     nat͡ʃaɲjatᵃhpa   "they are hitting each other"
     naʃuɲatᵃhpa   "they are loving each other"

(6) Determine the ordering of META and PAL.

(7) Determine the ordering of PAL and the rule concerning [h].

(8) Determine the relative ordering of META, PAL, VOI and the rule concerning [h].

(9)

	"-ing"			"he has..."	
	1°sg	2°sg	3°sg	3°sg	
a.	mbuhtu	mbjuhtu	pjuhtu	puhtu	"go out"
b.	ŋgenu	ŋgjenu	kjenu	kenu	"see, look"
c.	nduhu	ɲɟuhu	cuhu	tuhu	"shoot (bow)"
d.	nd͡ziŋu	ɲd͡ʒiŋu	t͡ʃiŋu	t͡siŋu	"swim"

(10) Formulate the rule of nasal-assimilation N-ASS.

(11) Determine the ordering of N-ASS with respect to META and PAL, as well as the ordering of META and VOI.

(12) Determine the ordering of PAL and VOI.

(13) Determine the relative ordering of META, PAL, N-ASS anf the rule concerning [h].

(14)

	"-ing"			"he has..."	
	1°sg	2°sg	3°sg	3°sg	
a.	ɦahku	ɦjahku	hjahku	hahku	"cross"
b.	w̥ehu	w̥jehu	wjehu	wehu	"shout"
c.	j̊ohsu	j̊ohsu	johsu	johsu	"work"
d.	sohsu	ʃohsu	ʃohsu	sohsu	"cook"

e.	maŋu	mjaŋu	mjaŋu	maŋu	"go"
f.	nihpu	ɲihpu	ɲihpu	nihpu	"plant"
g.	ʔeh͡t͡su	ʔjeh͡t͡suʔjeh͡t͡su		ʔeh͡t͡su	"dance"

Formulate the rule that drives the nasalisation of nasalalised consonants.

Determine the ordering of META and NAS.

(15)   In which contexts are nasals deleted?
        In which contexts are nasals maintained?

        Consequently, formulate the rule that manages the presence/ absence of nasals N-DEL.

(16)   Determine the ordering of NAS and N-DEL.
        Determine the ordering of META and N-DEL.

(17)   Determine the ordering of PAL and N-DEL.
        Determine the ordering of N-DEL and N-ASS.

(18)   Determine the relative ordering of NAS, N-ASS, VOI, META, H-DEL, PAL and N-DEL.

(19)

	"-ing"			"he has..."	
	1°sg	2°sg	3°sg	3°sg	
a.	ŋgihpu	ŋgihpu	kihpu	kihpu	"fight"
b.	minu minu		minu	minu	"come here"
c.	ʔihtu	ʔihtu	ʔihtu	ʔihtu	"live"

(20)

	noun	locative	instrumental	
a.	t͡saʔ	t͡saʔkᵃsi	t͡saʔpit	"stone"
b.	kuj	kukjᵃsi	kupit	"tree"
c.	ʔaj	ʔakjᵃsi	ʔapit	"leaf"
d.	kumguj	kumgukjᵃsi	kumgupit	"village"

Formulate the rule that manages the presence/ absence of [j].
Two options may be pursued according to their position with respect to META. Identify them.

(21)

	"-ing"			"he has..."	
	1°sg	2°sg	3°sg	3°sg	
a.	ndihu	ɲɟihu	cihu	tihu	"come"
b.	siŋu	ʃiŋu	ʃiŋu	siŋu	"swell"

(22)   Determine the ordering of PAL and J-EFF. The ordering of META and PAL indicates which is the correct
        variant of J-EFF.

(23) notion of "possible morpheme in Zoque":
attested morpheme‑final CC‑clusters

     a.   m n ŋ j h ʔ l r

     b. ʔp ʔt ʔk ʔt͡s ʔs   ʔm ʔn ʔŋ ʔj

     c. hp ht hk ht͡s hs

if [h] were absent from underlying representations, the table would be perfectly symmetrical:

     a. p t k t͡s s   m n ŋ j h ʔ l r

     b. ʔp ʔt ʔk ʔt͡s ʔs   ʔm ʔn ʔŋ ʔj

"a morpheme in Zoque may end in any simple consonant, or in any consonant preceded by [ʔ]"

(24) price to pay:

H‑INS: ø —> h / V ___ [-son] +

	/t͡sit͡s+u/	/t͡sit͡s+pa/
H‑INS	t͡siht͡s+u	t͡siht͡s+pa
H‑DEL		t͡sit͡s+pa
	[t͡siht͡su]	[t͡sit͡spa]

(25) the elimination of H‑DEL is possible if the structural description of H‑INS is modified:

H‑INS: ø —> h / V ___ [-son] + V

"/ **V** ___ + V" because of forms such as /kuʔt+u/ "he has eaten"

(26) state the final table of all rules and their explicit ordering (VOI, J‑DEL, N‑DEL, META, PAL, NAS, H‑INS, N‑ASS) (ouf).

Serbo-Croatian

stressed vowels bear an acute accent

		masculine	feminine	neuter	plural	
(1)	a.	mlád	mladá	mladó	mladí	young
	b.	púst	pustá	pustó	pustí	empty
	c.	zelén	zelená	zelenó	zelení	green
(2)	a.	debéo	debelá	debeló	debelí	fat
	b.	béo	belá	beló	belí	white
	c.	mío	milá	miló	milí	dear
	d.	céo	celá	celó	celí	full
(3)	a.	dóbar	dobrá	dobró	dobrí	good
	b.	jásan	jasná	jasnó	jasní	light
	c.	sítan	sitná	sitnó	sitní	thin, very small
	d.	óštar	oštrá	oštró	oštrí	sharp
	e.	mókar	mokrá	mokró	mokrí	wet
(4)	a.	okrúgao	okruglá	okrugló	okruglí	round
	b.	óbao	oblá	obló	oblí	oval
	c.	nágao	naglá	nagló	naglí	abrupt
	d.	pódao	podlá	podló	podlí	malicious

Polish

		singular	plural	
(1)	1	klup	klubɨ	club
	2	trup	trupɨ	corpse
	3	snɔp	snɔpɨ	bundle
	4	ʒwup	ʒwɔbɨ	manger
	5	trut	trudɨ	effort
	6	kɔt	kɔtɨ	cat
	7	lut	b̦dɨ	ice
	8	grus	gruzɨ	rubble
	9	nɔs	nɔsɨ	nose
	10	vus	vɔzɨ	cart
	11	kɔʃ	kɔʃɛ	basket
	12	nuʃ	nɔʒɛ	knife
	13	wuk	wugi	suds
	14	wuk	wuki	arc
	15	sɔk	sɔki	juice
	16	ruk	rɔgi	horn
	17	bur	bɔrɨ	forest
	18	vuw	vɔwɨ	bull
	19	sul	sɔlɨ	salt
	20	buj	bɔjɨ	combat
	21	ʃum	ʃumɨ	noise
	22	ʒur	ʒurɨ	kind of soup

		present 1sg	imperative 2sg	
(2)	1	rɔbjɛ	rup	do
	2	kɔpjɛ	kɔp	dig
	3	vɔd͡zɛ	vut͡ʃ	lead
	4	psɔt͡sɛ	psɔt͡ʃ	play a trick
	5	ɔtvɔʒɛ	ɔtvuʃ	open
	6	stɔjɛ	stuj	stand
	7	ɔgɔlɛ	ɔgul	shave
	8	zwɔvjɛ	zwuf	fish

Catalan

	masc sg	masc pl	fem sg	fem pl	gloss
(1)	ultim	ultims	ultimə	ultimes	last
(2)	bo	bons	bonə	bones	good
	ple	plens	plenə	plenes	full
	sa	sans	sanə	sanes	sane
(3)	kla	klas	klarə	klares	flat
	du	dus	durə	dures	hard
	seɣu	seɣus	seɣurə	seɣures	safe
(4)	profun	profuns	profundə	profundes	deep
	for	fors	fortə	fortes	strong
	al	als	altə	altes	big
	blaŋ	blaŋs	blaŋkə	blaŋkes	white
	kam	kams			field, cf. kampamen "camp"
(5)	kork	korks			termite
	kalk	kalks			copy
	serp	serps			snake
	petit	petits	petitə	petites	small
(6a)	kazat	kazats	kazaðə	kazaðes	married
	sek	seks	sekə	sekes	dry
	sek	seks	seɣə	seɣes	blind
(6b)	gros	grosos	grosə	groses	big
	gris	grizos	grizə	grizes	grey
	ʔet͡ʃ	ʔed͡ʒos	ʔed͡ʒə	ʔed͡ʒes	ugly
	bot͡ʃ	boʒos	boʒə	boʒes	mad
	rot͡ʃ	roʒos	roʒə	roʒes	red
	kalaʃ	kalaʃos			tiroir
	desit͡ʃ	desid͡ʒos			souhait
(7)	despat͡ʃ	despat͡ʃos			bureau

1. determine the grammatical morphemes in play under (1).
2. identify the rule that is at the origin of the radical alternation observed under (2).
3. identify the rule that is at the origin of the radical alternation observed under (3).
4. identify the rule that is at the origin of the radical alternation observed under (4).
5. the rule that you have just discovered needs to be amended in the light of (5). Rewrite this rule so that it does not conflict with the data shown under (5).
6. under (6a), the words meaning "dry" and "blind" are homophonous in certain cases. Build a hypotheses concerning their underlying identity that allows to derive their non-homophonous instances as well. Write down the rule that is needed in order to correctly derive the surface forms. In the light of these moves, the forms under (6b) become transparent. Which is their respective underlying identity?
7. (6b) shown an allomorph of the masc pl that you have not come across yet. In which context does this allomorph appear?
8. complete the rule that manages the last consonant of the root under (6a) so that all alternations shown under (6b) are correctly derived.
9. the word under (7) contradicts all regularities that you have established so far. Make a hypothesis concerning its underlying identity that would explain why it does not follow the expected pattern.
10. list all the rules that you have come across. If you can, merge several of them into one single rule that is more general than any of the particular statements.
11. are there rules that must apply before or after other rules? Establish the exhaustive grammar that correctly derives the entire corpus.

Somali (Cushitic)

1. Under (1), two verbs are conjugated in present tense. These verbs are "models", their exemplaric properties will guide you **all through** this exercise. Identify the personal endings and the two roots involved.

(1)

	wash	build
1s	keenaa	ḍisaa
2s	keentaa	ḍistaa
3sm	keenaa	ḍisaa
3sf	keentaa	ḍistaa
1p	keennaa	ḍisnaa
2p	keentaan	ḍistaan
3p	keenaan	ḍisaan
imperative 2s	keen	ḍis
imperative 2p	keena	ḍisa

2. Under (2), an alternation of the last radical consonant occurs. Describe it:
    a. which are the alternants in play?
    b. in which environment appears the one, in which environment appears the other?
    c. which alternant is more basic than the other? In other words, which alternant must be present in underlying forms in order to be able to correctly derive the surface forms by rule? The comparison with the verb "wash" is crucial here.
    d. formulate the rule that relates both alternants.

(2)

	give news	greet	govern
1s	warramaa	salaamaa	ħukumaa
2s	warrantaa	salaantaa	ħukuntaa
3sm	warramaa	salaama	ħukumaa
3sf	warrantaa	salaantaa	ħukuntaa
1p	warrannaa	salaannaa	ħukunnaa
2p	warrantaan	salaantaan	ħukuntaan
3p	warramaan	salaamaan	ħukumaan
imperative 2s	warran	salaan	ħukun
imperative 2p	warrama	salaama	ħukuma

3. The conjugation of the verbs under (3) show an abnormal behaviour in the suffix if this suffix is [-t]-initial.
    a. which are the forms awaited? Which are the forms observed?
    b. what could be the reason for this unexpected behaviour? In other words, in the presence of which consonants does it occur? Do these consonants share a specific articulatory property?

c. write the corresponding rule.

(3)

	shout	march slowly	accompany
1s	sawaħaa	hitiqaa	raaʔaa
2s	sawaħdaa	hitiqdaa	raaʔdaa
3sm	sawaħaa	hitiqaa	raaʔaa
3sf	sawaħdaa	hitiqdaa	raaʔdaa
1p	sawaħnaa	hitiqnaa	raaʔnaa
2p	sawaħdaan	hitiqdaan	raaʔdaan
3p	sawaħaan	hitiqaan	raaʔaan
imperative 2s	sawaħ	hitiq	raaʔ
imperative 2p	sawaħa	hitiqa	raaʔa

4. The verbal forms that have gained your attention under (3) do also manifest a peculiar behaviour under (4).
   a. for the verbal forms at stake, which is the result awaited? Which are the actual forms observed?
   b. write the corresponding rule.
   c. for the time being, do not consider the unexpected forms under 1p.

(4)

	miss	do	exchange
1s	faʃalaa	falaa	beddelaa
2s	faʃaʃaa	faʃaa	beddeʃaa
3sm	faʃalaa	falaa	beddelaa
3sf	faʃaʃaa	faʃaa	beddeʃaa
1p	faʃallaa	fallaa	beddellaa
2p	faʃaʃaan	faʃaan	beddeʃaan
3p	faʃalaan	falaan	beddelaan
imperative 2s	faʃal	fal	beddel
imperative 2p	faʃala	fala	beddela

5. a. describe the alternation observed within the roots under (5). Identify the alternating objects. determine the contexts in which both alternants occur.
   b. describe the phenomenon that occurs in 1p of the verb "cause trouble", as well as in 1p of the
   c. verbs under (4). Which is the more general rule it is a manifestation of?

(5)

	cross	eat one's fill	cause trouble
1s	gudbaa	ḍergaa	qahraa
2s	gudubtaa	ḍeregtaa	qahartaa
3sm	gudbaa	ḍergaa	qahraa
3sf	gudubtaa	ḍeregtaa	qahartaa
1p	gudubnaa	ḍeregnaa	qaharraa
2p	gudubtaan	ḍeregtaan	qahartaan
3p	gudbaan	ḍergaan	qahraan
imperative 2s	gudub	ḍereg	qahar
imperative 2p	gudba	ḍerga	qahra

6. a. the verbs under (6) show the same alternation as the ones you have just examined under (5). However, this alternation does not occur everywhere you expect it to.
   b. the key to this peculiar behaviour is the fact that these verbs belong to a different class, which is called autobenefactive (i.e. where the subject and the object of the action are identical). Autobenefactives are built on the basis of a special morpheme. Identify this morpheme and make sure your solution is compatible with the verbs under (8).

(6)

	pile up	hold
1s	tuurtaa	qabtaa
2s	tuurataa	qabataa
3sm	tuurtaa	qabtaa
3sf	tuurataa	qabataa
1p	tuurannaa	qabannaa
2p	tuurataan	qabataan
3p	tuurtaan	qabtaan
imperative 2s	tuuro	qabo
imperative 2p	tuurta	qabta

7. a. the morpheme expressing the definite article is suffixed in Somali. Its underlying identity is /-ta/ (7) shows that this morpheme possesses two allomorphs. Describe the conditions of their
   b. occurrence.
      write the rule that allows to derive the forms observed on the surface from the underlying /-ta/.
   c. Consider that this rule does suffer **no exception whatsoever** in Somali.

(7)

laan	laanta	branch, the branch
deg	degta	summit, the summit
mindi	mindida	knife, the knife
hoojo	hoojoda	mother, the mother

8. a. in spite of their autobenefactive character, the verbs under (8) do not obey the vocalic alternation that is familiar since (6). What could be the reason for this fact (in which way is the structure of the verbs shown hereafter different from the one exhibited by the verbs that have been examined above)?

    b. put forth a hypothesis concerning the underlying identity of the forms under (8) that makes vanish the two following apparent irregularities:
    1. the non-alternation of certain verbal forms under (6).
    2. the alternation in voicing between [t] and [d] that occurs under (8):
       1s daqna**d**aa vs. 2s daqna**t**aa etc.
       nb: and which is completely independent of the one discussed under (3).
    a simple morphological analysis of the morphemes concatenated will enlighten your task.

(8)

	suffer	slurp
1s	daqnadaa	kabbadaa
2s	daqnataa	kabbataa
3sm	daqnadaa	kabbadaa
3sf	daqnataa	kabbataa
1p	daqnannaa	kabbannaa
2p	daqnataan	kabbataan
3p	daqnadaan	kabbadaan
imperative 2s	daqno	kabbo
imperative 2p	daqnada	kabbada

9. a. finally, two verbs appear hereafter that behave like those under (8) (and not like those under (6)) in spite of the fact that they do not seem to instantiate the same structure.

    b. provided the information on Somali collected above, how do you explain the peculiarity of the verb "consider"?

    c. provided the information on Somali collected above, how do you explain the peculiarity of the verb "fall ill"? The phenomenon observed under (7) is of help here.

(9)

	consider	fall ill
1s	taʃadaa	bukadaa
2s	taʃataa	bukataa
3sm	taʃadaa	bukadaa
3sf	taʃataa	bukataa
1p	taʃannaa	bukannaa
2p	taʃataan	bukataan
3p	taʃadaan	bukadaan
imperative 2s	taʃo	buko
imperative 2p	taʃada	bukada