

Handout week 1

THE REPRESENTATION OF CORE PHONOLOGICAL OBJECTS AND PROCESSES

Monday

(1) Setting the scene

- a. phonology is about mind, not about mouth: we want to know what kind of objects speakers have in their mind, not what they do in their mouth.
- b. we don't have any direct access to the linguistic structure of the brain (yet), so the only way to know about it is to look at its secondary manifestation in the mouth.
- c. interaction brain - mouth
 1. how closely does the mouth reproduce the linguistic structure (which only exists in the brain)?
 2. to which extent, and in which way, is the cognitive structure shaped by the properties of the mouth?
- d. answers to question 2:
 1. completely. There is no autonomous phonology, all properties of sound have exclusively extra-phonological explanations:
 - phonetics, e.g. Coleman (2002), Carr (2003)
 - usage, e.g. Bybee (2001)
 2. almost completely:

mainstream in OT these days: inductive grounding

"It is reasonable to suppose [...] that virtually all of segmental phonology [...] is driven by considerations of articulatory ease and perceptual distinctness." Hayes (1996:14)

on this view, the cognitively autonomous element of phonology is reduced to the ranking of constraints, hence to the expression of the balance between the various physical forces that bear on sound (in traditional terminology: to the expression of language-specific parameters)

 - the content of constraints is 100% determined by the extra-linguistic world, hence without any cognitive autonomy.
 - the ranking of constraints is cognitively autonomous and exempt of any extra-phonological influence: it could be anything and its reverse.
 3. not so much

Government Phonology

many properties of sound are shaped by hard-wired cognitive properties that are perfectly autonomous with respect to the extra-linguistic world.

- (2) consequences for the status of phonology in UG
- a. phoneticians and usage-based: neo-behaviourism
 1. there is no phonology in UG, nothing specifically linguistic is encoded in the human genome.
 2. children acquire phonology by mimicry and using more general cognitive capacities that are not specific to linguistics.
 3. Chomsky et al. (2002) is sometimes (often) interpreted in this sense - this is an erroneous interpretation !
 - b. OT
 1. the constraint set is given by UG, i.e. transmitted genetically.
 2. the job of language acquisition consists of figuring out the particular ranking of the universal constraint set for the language at hand.
 - c. Government Phonology (GP)

everything that is specifically linguistic, and hence cognitively autonomous, is encoded in UG, i.e. transmitted genetically.

The list is open (but small), and some (hopefully many) items are shared with other modules (syntax, semantics)

 - Government, Licensing
 - the management of empty Nuclei (ECP)
 - universal regressiveness of syllable-related forces and processes (cf. Kayne's 1995 antisymmetry in syntax)
 - locality: no relation may be established between two objects if there is an intervening object of the same type as the head of the domain (cf. Relativised Minimality in syntax, Rizzi 1990)
 - ...
- (3) discussion with OT: structure and process
- a. do we need representations at all ?
 - b. this question may seem trivial, but in fact is not
 1. what is a representation? Something that can be ill-formed, in short: any autosegmental object. *[dorsal] etc. cannot be ill-formed.
 2. who decides whether a representation is ill-formed?
 - OT: constraints that have an existence which is independent of the representation.
 - traditional autosegmentalism and GP: the intrinsic properties of the representation. Classical example: no line-crossing. Nobody outside the representation intervenes.
 2. what is the weight of the arbitral award of representations ?
 - OT: only relative. "X is ill-formed, but Y is worse, so X is the winner" is a fully acceptable statement.
 - traditional autosegmentalism and GP: absolute. An ill-formed representation is definitely out, it could not be human in any sense, not even a little bit if there are worse alternatives. It is not improbable but possible: it is non-human. The only way to "rescue" an ill-formed representation is to "repair" it, i.e. to make it well-formed.
 3. in short, representations are non-autonomous in OT: their arbitral award is always filtered by the constraint chamber. This is consistent with the basic OT philosophy: grammaticality is decided by constraint interaction, full stop. There could not be any arbitral award external to the constraint chamber in the process of determining what is grammatical and what is not.

- c. the global picture, then:
1. structure and process
nature is made of structure and process. Processes transform pre-existing structure. Hence structure exists in its own right, i.e. without any consideration of eventual processes. Ill-formed structure cannot exist, it collapses. The state of nature before and after the application of a process is this structure. Hence structure can be studied in its own right: you can build models, turn it around, make 3-D images.
All this is true for biology, chemistry, physics. It is also true for linguistics.
 2. hence, any theory of natural phenomena that eclipses either structure or process must be wrong. In the actual architecture of OT, computation is king: the sole judge on grammaticality is computation, i.e. constraint interaction. Structure is present, but not in its own right: its arbitral award can always be overridden by computation. Representations have lost their function: they are there because they have been inherited from the 80s, but they are only decorative now.
 3. this is why representations are interchangeable in OT:
"The tenets of OT, regarding constraint violability and ranking, make no particular claims about phonological representations. We could, for example, do OT with any kind of feature theory: SPE feature bundles or feature geometric representations, privative or binary features, and so on." Lombardi (2001:3)
If we take representations seriously, this is necessarily wrong as wrong can be: we are talking about objects that have a cognitive existence in the neuronal reality, not about some abstract construction that only needs to satisfy the analyst. This is not an intellectual game, this is a quest for discovering natural objects, that are either X or Y, not both.
 4. OT is unable to evaluate the (a)grammaticality of an object or a candidate for its own sake, i.e. in absence of comparison with other objects or other candidates: everything is competition. The logical consequence is the prediction that objects do not possess any inherent degree of grammaticality. This is contrary to the natural principle of structure and process.
 5. OT is only process (constraint interaction), structure has gone over board.
- d. how structure could become a player in OT
1. (timid) reaction against the "computation-is-king" attitude: Oostendorp & Weijer (forth): OT needs a "Universe of discourse". That is, constraint interaction is not carried out in a vacuum space: it is not alone in this world. It evolves within a landscape that it cannot elude nor shape.
 2. this landscape could be representations. One way of implementing landscape is to hard-wire it into GEN: constraints have only power on objects that are produced by GEN. If GEN does not submit certain logically possible configurations to the constraint chamber, these will be universally ill-formed.
 3. the global architecture of OT would need to evolve substantially:
 - hard-wiring things into GEN may be in conflict with richness of the base.
 - putting universal properties into GEN makes the entire enterprise very much look like traditional Principles & Parameters, something that OT has stood up against: universal properties are in GEN (Principles), while language-specific properties are managed by constraint interaction (Parameters). This would mean that OT, a theory of constraint interaction, is only competent for the management of language-specific parameters. The universe of discourse is determined elsewhere by independent considerations.

- e. overgeneration: the central issue of generative phonology since ever, cf. the 9th chapter of SPE, the debate on abstractness in the 70s, the Natural Phonologies, Lexical Phonology etc. Autosegmentalism, i.e. representations, have been the answer of the 80s to the permanent threat of overgeneration: representations are THE overgeneration-killer, cf. for example no line-crossing. Demoting representations to a decorative existence is dysfunctionalising them: we will be back to where we started: heavy overgeneration. Hence for OT, the number of possible grammars that are generated by X constraints and free ranking is factorial X. On the basis of 100 constraints (a very conservative count), the number of possible human grammars is astronomical.

(4) outline of the course

- a. the balance of structure and process is subject to debate, cf. Anderson (1985): possibly cyclic according to fashion etc. This is no serious science: once linguists have understood that both structure and process are needed, they should stop re-inventing the wheel every other decade.
 - 0. neogrammarians: sound balance between structure and process: typical 19th century science, cf. the founding controversy of the neogrammarian school: linguistics is a natural science, the same methodology and laws apply as in physics, chemistry etc.: "rules are exceptionless".
 - 1. structuralism: only structure, as the name correctly states
 - 2. SPE: only process, as the word "generative" correctly states
 - 3. late 70s, early 80s: "autosegmental revolution", focus on representations, decline of computation. By the mid 80s, everybody was unsatisfied with rules and rule ordering, latent (but never explicitly stated) antipathy against derivationalism
 - 4. early 90s up to now: the latent antipathy against derivationalism breaks free: derivationalism is outlawed in all "new" theories, who make this point THE central issue: OT, Declarative Phonology, Government Phonology.Two opposite effects:
 - OT: focus on the management of processes, loss of interest in representations, which become secondary/ decorative.
 - GP: an abstract dissent with ordered rules that is never followed by any alternative proposal (people even try to avoid the word "rule", replacing it by "process": "processes apply whenever their triggering conditions are met" Kaye 1992,1995). On the other hand, renewed and amplified focus on representations, hoping to get rid of ordered rules/ opacity by shifting the burden to
 - 1) the lexicon ("there is no such thing as velar softening or trisyllabic laxening in the synchronic grammar of English")
 - 2) representations (e.g. the autosegmental formulation of Lower, which does away with the ordered rules 1. Lower, 2. yer-deletion)
- b. this course is not about the evaluation of how many pieces of the pie need to/ should be structure, and how many should be process. This question is at the heart of our science, and way too broad to be addressed here. The only assumption that I take for granted is that *there is* structure, and *there is* process, and that both are autonomous, i.e. exist in their own right.

- c. this course focuses on phonological structure.
Actually on a subset thereof only: we will only talk about syllable structure and syllable-related processes.
DISCLAIMER: higher (prosodic, supra-segmental) and lower (melody, everything that goes on below the skeleton) structure will be left for another time.
- d. I pursue two goals:
 1. to show that syllable structure is better represented by a network of lateral relations (Government and Licensing) than by traditional arboreal structure: this is the **lateralisation of structure and causality**.
 2. to show that enriched representations, including quite some structure that has no direct phonetic existence (empty Nuclei), 1) allows to do away with some rule ordering and 2) is needed in order to express cross-linguistic parameters (e.g. vowel-zero alternations)

Tuesday

1. The basic architecture

- (5) some core properties of Government Phonology in general and CVCV in particular
[Standard GP: Kaye et al. 1990, Kaye 1990, Charette 1991, Harris 1994
CVCV: Lowenstamm 1996, 1999, Szigetvári 1999, Scheer 1998, 1999, in press]
 - a. CVCV: constituent structure is a strict sequence of non-branching Onsets and non-branching Nuclei.
 - b. the minimal syllabic unit is an Onset followed by a Nucleus: CV.

some core syllabic objects in CVCV

(6)	closed syllable		geminate		long vowel		[...C#]		"branching Onset"
	O N O N		O N O N		O N O N		... O N		O N O N
	C V C ø		C V		C V		C ø		T ø R V

- (7) empty material
 - a. empty Onsets are for free - no special care.
 - b. empty Nuclei need special care: ECP
they may exist only if they are
 1. governed or
 2. word-final (domain-final) or
 3. enclosed within a domain of Infrasegmental Government (IG)
 - c. only contentful Nuclei have lateral actorship (i.e. can be governors and licensors)
 - d. ill-formedness will be often due to the non-satisfaction of the ECP: orphan empty Nuclei

- (8) structure preservation §§10,17
[a principle in SGP, automatic in CVCV]
- a. syllable structure is recorded in the lexicon and remains stable under phonological processing.
 - b. hence, no resyllabification
[resyllabification is a process whereby a consonant or a vowel starts out its life in constituent X, but ends up in constituent Y; typically Coda → Onset]
 - c. hence, no syllabification algorithm: constituent structure is not created by on-line computation.
 - d. the only thing that is done by on-line computation is
 1. adapting to new situations created by morphological activity (concatenation, domains, other forms of intervention, cf. week 2. This means modifying Government and Licensing.
 2. linking and delinking of autosegmental elements (melody) under the pressure of Government and Licensing.
- (9) lateral relations §208
- a. when looking at the kind of phenomenon that gives rise to syllabic generalisations, the null hypothesis should be lateral, not arboreal: it is always a differential in sonority that is at the origin of syllable structure. "Differential" means "lateral relation among two adjacent objects". Lateral structure encodes the empirical situation directly, arboreal structure only indirectly.
 - b. "co-occurrence restrictions in syntax (in linguistics) are arboreal, hence they should be in phonology as well".
 1. co-occurrence restrictions are not the same in phonology:
 - no "left anchor" in syntax
 - no equivalent of sonority in syntax: no scale on which primary lexical objects are ranked
 2. arboreal structure is needed for reasons other than co-occurrence restrictions in syntax: it expresses hierarchical relations among elements of the linear string. Locality, Binding etc. make no sense without arboreal hierarchy. Nothing of that kind in phonology: co-occurrence is the only *raison d'être* of arboreal syllable structure.
 - c. syllable structure is flat §2
No Merge: there is no tree-building mechanism in phonology.
this is the fundamental difference with syntax. Automatic consequence: there is no recursion in phonology, a long-standing observation. Since recursion means that a node dominates a node of the same kind.
- (10) lateral relation number one: Government §§69,76
primary empirical field of competence: vowel-zero alternations

(11)	zero C__C-V	vowel C__C-ø	vowel C__C-CV	gloss
Moroccan Arabic	kitøb-u	køtib	kittib	write pf act 3pl, 3sg, 3sg causative
German	innør-e	inner	inner-lich	inner+infl, inner, internal
Tangale (Chadic)	dobø-go	dobe	dobu-n-go	called, call, called me
Somali (Cushitic)	nirøg-o	nirig	nirig-ta	young female camel pl, sg indef, sg def
Turkish	devør-i	devir	devir-den	transfer ACC, NOM, ABL
Slavic (e.g. Czech)	lokøt-e	loket	loket-ní	elbow GENsg, NOMsg, adj.
Hungarian	majøm-on	majom	majom-ra	monkey Supressive, NOM, Sublative
Hindi	kaarøk-õõ	kaaræk	kaaræk-nee	"case" oblique pl, NOMsg, agentive
Kolami (Dravidian)	kinøk-atun	kinik	kinik-tan	"break" present, imperative, past

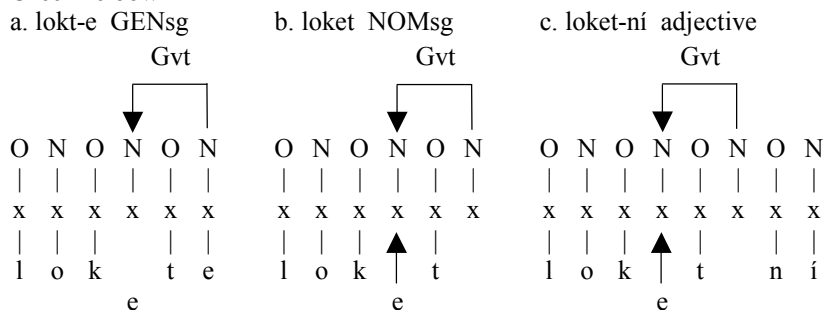
(12) alternation sites show

- zero / __CV
- vowel / __C $\left\{ \begin{matrix} \# \\ C \end{matrix} \right\}$

(13) vowel-zero alternations in CVCV:

- alternating vowels are a floating chunk of melody
- Government acts as an association-inhibitor
- notice the lateralisation of structure and causality when comparing the treatment of CVCV with the traditional Coda analysis.

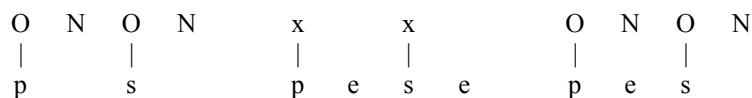
Czech "elbow"



(14) underlying representation of vowels that alternate with zero

example: cz pes - psa "dog NOMsg, GENsg"

- Kaye et al. (1990), Spencer (1986)
- Rubach (1986), Kenstowicz & Rubach (1987)
- CVCV

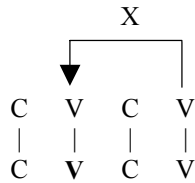


(15) open vs. closed syllables in CVCV - second definition

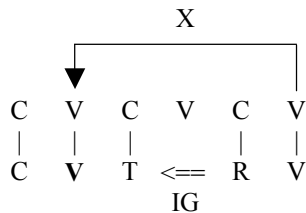
- a vowel stands in an open syllable iff it is the target of a lateral relation.
- a vowel stands in a closed syllable iff it is the target of no lateral relation.

- (16) open vs. closed syllables in CVCV - second definition
(the vowel in question is boldfaced)

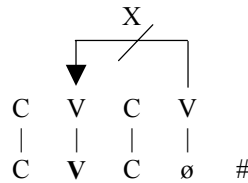
a. vowel in an "open syllable"
one consonant intervening



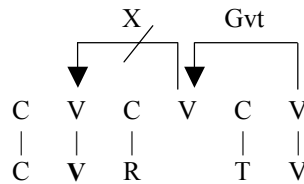
branching Onset intervening



b. vowel in a closed syllable
final



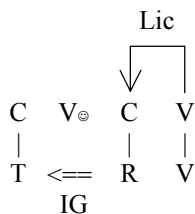
internal



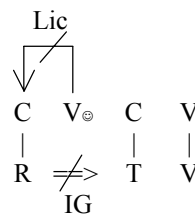
- (17) Infrasegmental Government (IG) §§36,58

- is a segment-gluer: it makes two consonants solidary.
- its empirical field and function is about that of branching Onsets (but not exactly)
- how it works
 - substantial condition
 - the governor must be more complex than the governee
 - complexity counts the number of primes that a segment is made of (Harris 1990,1994). This supposes privative (or underspecified) melodic structure.
 - sonorants are the big guys (= complex), obstruents are the small guys (= simple)
 - hence sonorants govern obstruents
 - phonotactic condition
 - the head of a domain of Infrasegmental Government must be licensed (Charette's 1990 Government Licensing)
 - effect: IG is necessarily head-final: possible in TR, but impossible in RT

- (18) a. head-final Infrasegmental Government

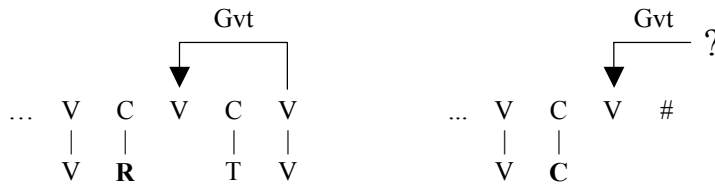


- b. head-initial Infrasegmental Government



- (19) hence the definition of the Coda in CVCV
a consonant stands in a Coda iff it occurs before a governed empty Nucleus.

- (20) The Coda in CVCV - second definition
 (Coda consonants are boldfaced)
 who governs final empty Nuclei? Answer: morphology (cf. week 2)
- | | |
|------------------|---------------|
| a. internal Coda | b. final Coda |
|------------------|---------------|



Wednesday

2. Syllable-sensitive vowel length §221s

- (21) Closed Syllable Shortening

		VV in open syllables		V in closed syllables	
		CV	TRV	RTV	C#
a.	Turkish	mera ak -i	—	mera k -tan	mera k
b.	Czech	kra av -a	—	kra v -ka	kra v
c.	Classical Arabic	?a- quul -u	—	ta- qul -na	qul
d.	Kiowa	guun -e	—	gun -tso	gun

- (22) Open Syllable (Tonic) Lengthening
open syllable

	open syllable		closed syllable			
	CV	TRV	internal	final		
			R.TV	C#	TR#	RT#
a. Icelandic	'luuða	'pæst ^h ri	'haŋka	'θaak ^h	'sœæt ^h r	'pœlv
b. Selayarese	'goolo go'loo-ku	—	'lampa 'laʔba	—	—	—
c. Pal. Arabic	sta'faaru	—	sta'farna	sta'faar	—	—
d. Italian	'faato	'piigro	'parko 'fatto	—	—	—

- (23) there are two distinct lateral forces in nature §151
identical contextual situation - opposite effects
- vowel-zero alternations: weak alternant in open syllable (zero)
 - vowel length: strong alternant in open syllable (long vowel)
 - ==> this cannot be caused by the same phonological force. Hence there must be two of them: Government and Licensing
 - the bad guy: Government inhibits segmental expression
the good guy: Licensing enhances segmental expression
 - alternations in vowel length and vowel-zero alternations are the typical syllable-related vocalic events: they probably exhaust the empirical record.
- §164

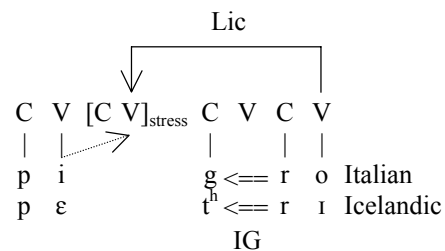
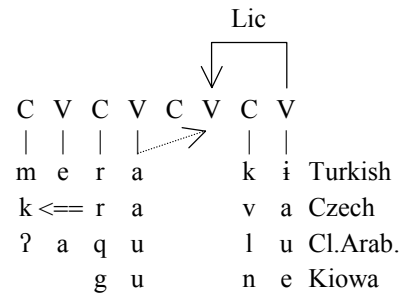
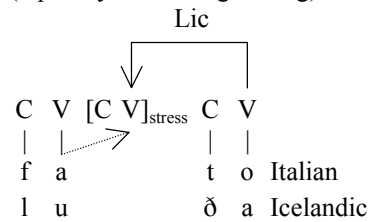
(24) Tonic Lengthening and Closed Syllable Shortening are one §222

a. the complement is licensed: long vowel

Tonic Lengthening (22)

Closed Syllable Shortening (21)

(Open Syllable Lengthening)



no secure evidence:
words that display Closed
Syllable Shortening always
involve a heteromorphemic
cluster in C-CV, which is
mostly of falling sonority.

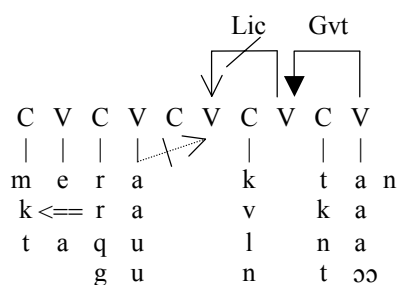
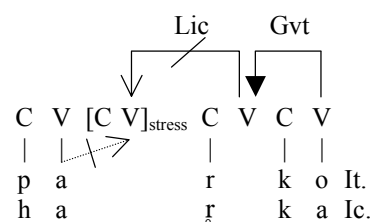
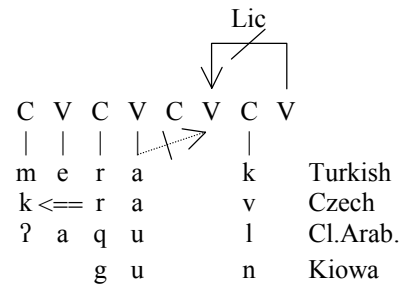
b. the complement fails to be licensed: short vowel

Tonic Lengthening (22)

Closed Syllable Shortening (21)

(Open Syllable Lengthening)

lack of evidence:
there are no word-final
consonants in Italian; final closed
syllables are not affected in
Icelandic.



(25) analysis of syllable-sensitive vowel length §230

- alternating long vowels are left-headed.
- they spread onto their second leg iff this leg is licensed.
- more generally speaking, there is a condition on the existence of long vowels: **their complement must be licensed.**

Systems with inalterable vowel length §221

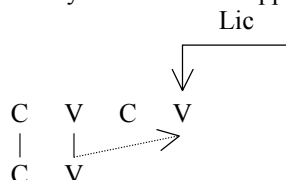
(26) vowel length is stable in German

__(C)V	__(C)#	__(C).CV	spelling	gloss
zuuχ-ən	zuuχ	zuuχ-tə	suchen, such!, suchte	search, search!, searched
zææ-ən	zææ	zææ-tə	säen, säe!, säte	sow, sow!, sowed
byyç-ə	buuχ	buuχ-tə	Bücher, Buch, (er) buchte	books, book, (he) booked

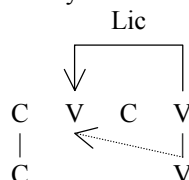
(27) vowel length is stable in Somali

__CV	__C#	__C.CV	gloss
maalin		maalm-o	day sg, pl
keen-aa	keen	keen-taa	bring 1sg, infinitive, 2sg habitual
		ʃaand-o	sieve, strainer indef.
		eeddo	paternal aunt
		aabbe	father

(28) a. alternating long vowels are head-initial:
they need external support



b. non-alternating long vowels are head-final:
they are "self-licensors" §230



(29) parameter on the existence of super-heavy Rhymes §232

- long vowels in languages that allow for super-heavy Rhymes are head-final.
- long vowels in languages that do not tolerate super-heavy Rhymes are head-initial.

3. Syllabic and trapped consonants §240

3.1. Facts

(30) purpose

- establish the intimate relationship between **syllabic** and **trapped** consonants.
- thus, in the first place, introduce the animal "trapped consonant"; everybody knows what syllabic consonants are, but their trapped peers are most certainly unknown to people unfamiliar with Polish.
- why is that so? Because Polish trapped consonants have been extensively studied by Rubach and others (literature under (40)), but under the heading "word-internal extrasyllabic consonants".
- as far as I can see, trapped consonants have never been studied in the light of the evidence coming from their syllabic mates (and vice-versa).
- this is what I intend to do: show that any attempt to discover the phonological identity of trapped consonants without looking at their syllabic mates must fail (and vice-versa).

- f. thus, the following roadmap:
1. preliminary exploration: trapped & syllabic: the same but yet different.
 2. presentation of the synchronic properties and behaviour of trapped consonants.
 3. contrastive behaviour of trapped and syllabic consonants across Slavic.
 4. working hypothesis gained on the faith of prefix vocalisation in Czech and Polish.
 5. diachronic confirmation: the genesis of trapped vs. syllabic consonants in Slavic.
 6. open question: the right periphery.
- g. result:
1. syllabic consonants branch on the preceding, trapped consonants on the following (empty) Nucleus.
 2. it is impossible to say anything about trapped consonants without considering syllabic consonants (and vice-versa).

(31) syllabic and trapped consonants are akin

- a. it is frequent in Slavic that the same consonants in the same words are syllabic in one language, but trapped in another, see (32).
- b. hence, diachronically speaking, the same primitive object has become either syllabic or trapped. How come? According to which rule? More on that soon.
- c. only sonorants can be syllabic or trapped
(some debate regarding this issue, see Dell & Elmedlaoui 1985,1988, Bagemihl 1991)
- d. on the surface, both syllabic and trapped consonants create CRC sequences ("R"=any sonorant)
which make the reputation of Czech, Polish and the like as heavily clustering languages.

(32) lexically trapped consonants in Polish

a. word-internally

	Common Slavic	Polish	Czech	gloss (Polish)	gloss (Czech)
CrC	trъvati	trwać	trvat	to last	to last
CrzC	dъvri	drzwi	dveře	door	door
	grъmĕti	grzmieć	hřmět	to thunder	to thunder
	brъnĕti	brzmieć	brnět	to sound	to tickle
	chъrbъty	grzbiet	hřbet	back	back
	trъstina	trzcina	trstina	reed (plant)	reed (plant)
ClC	kъn-	klnę	klnout	I curse	to curse
	plъv-	plwocina	arch plvat > plivat	sputum	to spit

b. word-finally

	Common Slavic	Polish	Czech	gloss (Polish)	gloss (Czech)
Cr	bebrъ	bóbr	bobr	beaver	beaver
	vĕtrъ	wiatr	vítr	wind	wind
Crz	ръръгъ	pieprz	pepř	pepper	pepper
	vъnjætъ	wewnątrz	vnitř	inside	inner, inside
Cl	myslъ	myśl	mysl	thought	sense

- (33) Polish trapped consonants that are created by a vowel-zero alternation

	Common Slavic	Polish NOMsg	GENsg	gloss
CrC	krъvъ	krew	krwi	blood
	brъvъ	brew	brwi	eyebrow
CrzC	krъstъ	chrzest	chrztu	baptism
ClC	plъtъ	pleć	plci	sex
	slъza	łza < slza	łez GENpl	tear
CnC	česnъkъ	czosnek	czosnku	garlic
		pierwiosnek	pierwiosnka	primroses
	pě-snъ	piosnka	piosnek GENpl	song
		piosenka		

- (34) Modern Czech trapped [ř]: <CrC>

	Common Slavic	Modern Czech	gloss
a. C__C			
	grъb-	po-hřbít, hřbitov	to bury, cemetery
	gъr-tanъ	chřtán	throat
	grъm-ot	hřmot	noise
	tak-гъk-a	takřka	almost
	tręp-ъtъ	třpytit, třpyt	to glance, glance
	krъstiti	křtít	to baptise
	grъměti	hřmět	to thunder
	chъbъtъ	hřbet	back (human)
	strъmen	třmen	stirrup
	trъst-ina	třtina	reed
		jitřní, jitřnice	morning service (rel.)
b. C__#			
	vъnjętrъ	vnitř	interior
	pъpъgъ	pepř	pepper
	verъgъ	vepř	porc
	since 19 th cent.	modř	blue color
c. created by a vowel-zero alternation			
	krъstъ	křest, křtu	baptism NOMsg, GENsg
	vъnjętrъkъ	vnitřek, vnitřku	interior NOMsg, GENsg
	z-jitr-ъkъ	zítřek, GENsg zítřka	

3.2. Antipodal behaviour of syllabic and trapped consonants

- (35) hard facts I

syllabic consonants can bear stress, their trapped mates cannot

Polish has invariable penultimate stress, hence the trapped rhotic in trwać would be stressed if it could. In fact it is not: trwác.

Czech syllabic consonants are regularly stressed if they stand in an appropriate position: trvat with stress on the rhotic etc.

- (36) hard facts II

syllabic consonants count in poetry, their trapped mates do not

if asked, a Czech native speaker will identify two peaks in trvat. And this is also how much this word counts for in Czech poetry.

if asked, a Polish native speaker will identify one peak in trwać. And this is also how much this word counts for in Polish poetry.

(37) hard facts III

- a. trapped consonants are transparent to voice assimilation. Put another way, their flanking consonants must always agree in voicing. *C_{avoice}RC_{-avoice} where R is trapped is ill-formed.

This is the critical fact that has made Rubach go the extrasyllabic way: the trapped consonant remains unparsed after syllabification, then voice assimilation takes place, and finally the extrasyllabic consonant is adjoined to some constituent. Note that this is also the evidence with which he runs OT into trouble, since it requires a two-level treatment: Derivational Optimality Theory (DOT) Rubach 1996,1997a), more recently joined by Kiparsky's Stratal OT (Kiparsky 2000), which is identical as far as I can see.

- b. illustration: word-final trapped consonants in Polish

"Polish has word-final devoicing, which applies 'through' the final trapped C"

	...TR#	...TR-V	spelling	gloss
1.	katr	kadr-a	kadr GENpl, NOMsg	staff
	bupr	bobr-a	bóbr NOMsg, GENsg	beaver
	zupr	zubr-a	żubr NOMsg, GENsg	bison
	mukw	mogw-a	mógł masc., fem.	could
2.	mjelisn	mjelizn-a	mielizn GENpl, NOMsg	shallow water
	mexapizism	mexapizmi	mechanizm NOMsg, NOMpl	mechanism

- c. illustration: word-internal trapped consonants in Polish

"Polish progressive devoicing goes 'through' internal trapped consonants"

			spelling	gloss
1.	trfat̪		trwać	to last
2.	plfat̪		plwać	to spit
3.	kref	krf-i křev-ni	krew NOMsg, krwi GENsg, krewny	blood, relative
4.	br̪ef	brv-i	brew NOMsg, brwi GENsg	eyebrow
5.	j̪entrka	j̪endrek	Jędrka GENsg, Jędreka NOMsg	Andy dim

- d. syllabic consonants are not transparent to voice: Czech

Czech obstruents devoice word-finally

(e.g. *holub* [hɔlup] vs. *holuba* [hɔluba] "pigeon NOMsg, GENsg")

1. word-finally

	...TR#	...TR-V	spelling	gloss
	bɔbr̩	bɔbr-a	bobr NOMsg, GENsg	beaver
	zubr̩	zubr-a	žubr NOMsg, GENsg	bison
	mɔhl̩	mɔhl-a	mohl masc., fem.	could

2. word-internally

	tr̩vat		trvat	to last
	k̩r̩v̩e		krve GENsg	blood

(38)	summary I		
	syllabic and trapped consonants really look like the reverse of one another		
		syllabic consonants	trapped consonants
	count in verse	yes	no
	may be stressed	yes	no
	are transparent to voicing	no	yes

3.3. Common approaches to syllabic and trapped consonants

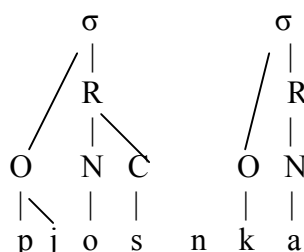
(39) common treatment of syllabic consonants since SPE

- a. literal implementation of the 19th century insight that "syllabic consonants are consonants in vocalic function":
- b. since syllabic consonants behave like vowels, they ARE vowels, i.e. they are consonants because of their melody, and vowels because they sit in a Nucleus. (SPE, especially the shift from [±voc] to [±syll], Clements 1990:293ss, Hall 2000:215ss, Kenstowicz 1994:255s, Blevins 1995).
- c. this implies constant resyllabification when a consonant is or is not syllabic according to what follows: English bott[ɫ]e – blottl-ing, Czech vít[r] – větr-u "wind NOMsg, GENpl" etc.
==> no way to do that in Government Phonology
- d. it must be wrong if basic autosegmental principles are taken seriously: consonanthood and vowelhood is not decided by some inherent property of the segment, but rather depends on the syllabic constituent to which a melodic expression is associated. E.g., a melody specified as front, high and unrounded will show up as a [j] if attached to an Onset, but as an [i] when belonging to a Nucleus. Hence, it is impossible for a melody solely associated to a Nucleus to appear as a consonant.

(40) common treatment of trapped consonants:

- Bethin (1984), Rubach & Booij (1987,1990a,b), Rubach (1996,1997a,b), Gussmann (1992)
- a. they are extrasyllabic, i.e. underparsed by the syllabification algorithm because they are unsyllabifiable, and later integrated into the prosodic hierarchy (different versions as to where they are adjoined to: a syllabic constituent, the phonological word etc.).
 - b. basic argument: their transparency in voice assimilations.
 - c. problem: the expressive power of extrasyllabicity, with some reason, is constrained by the Peripherality Condition (e.g. Roca 1994:213, Spencer 1996:246), which says that
Extrametrical elements must be peripheral in their domain.
This is supposed to rule over all extra-X items: extrametrical, extrasyllabic, extrapedal etc.
On the extrasyllabic account, Polish seems to be the only language where extrametrical items occur word-internally.

- (41) classical interpretation (J. Rubach): trapped consonants are extrasyllabic
 a. final trapped consonants b. internal trapped consonants

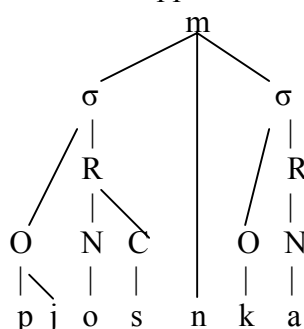


- (42) surface representation of trapped consonants

a. final trapped consonants



b. internal trapped consonants



3.4. New evidence: vocalisation of prefixes (Czech, Polish)

Czech

- (43) vocalisation of Czech prefixes

#CV-stems never provoke vocalised prefixes

#CC-stems may or may not provoke vocalised prefixes. They do iff the stem-initial cluster is broken up by a vowel in some related grammatical form, i.e. iff the root occurs in zero grade. (Scheer 1996,1997,1999)

$\sqrt{C_1C_2}$ -	root provoking vocalized prefixes two forms of the same root				root provoking non- vocalized prefixes
	$/\sqrt{C_1\emptyset C_2}/$		$/\sqrt{C_1VC_2}/$		no occurrence of $\sqrt{C_1VC_2}$
$\sqrt{BR}$ -	ode-brat	pf	od-bírat	ipf	bez-bradý
$\sqrt{DR}$ -	roze-drat	inf	roz-deru	1sg	roz-drobit
$\sqrt{HR}$ -	přede-hra	noun NOMsg	her	noun GENpl	od-hrabat
$\sqrt{HN}$ -	ode-hnat	pf	od-hánět	ipf	roz-hněvat
$\sqrt{PR}$ -	ode-prat	inf	od-peru	1sg	vz-pruha
$\sqrt{SN}$ -	beze-sný	adj	sen	noun NOMsg	pod-sněžník
$\sqrt{ŠL}$ -	vze-šlý	adj	šel	past active part.	roz-šlapat
$\sqrt{ZD}$ -	pode-zdít	inf	zed'	noun NOMsg	od-zdola
$\sqrt{DN}$ -	beze-dný	adj	den	noun GENpl	—

- (44) analysis: roots in zero grade bind the governing potential of the following vowel.

unvocalized prefixes	vocalized prefixes
a. root in full grade Gvt C V C V - C V C V C V C V p o d b <== r a d e k IG podo-bradek "double chin"	c. root in zero grade Gvt C V C V - C V C V C p o d e b r a t pode-brat "seize from below"
b. C-initial root Gvt C V C V - C V C V p o d p i s podo-pis "signature"	

- (45) syllabic consonants always provoke unvocalised prefixes
hence, they pattern with #CV stems, NOT with #CC stems.

roz-drtit	to crush	od-vlhnout	to remove because of humidity
roz-drbat	to scratch to pieces	od-frknout	to snort
roz-mrhat	to waste	od-chrchlat	to clear one's throat
roz-trhat	to tear up	od-krvit	to cause hypoxemia
roz-trpčit	to embitter	od-mrštit	to reject
roz-vrstvit	to pile up	od-škrtat	to cross out
roz-vrzat	to make wobbly	pod-hrnout	to gather up (dress)
roz-vrtat	to drill to pieces	pod-vrh	forgery
roz-vlnit	to churn up (sea)	před-prseň	parapet
		před-krm	starter (dish)

Polish

- (46) literature on the vocalisation of Polish prefixes includes
Laskowski (1975:34ss), Gussmann (1980a:42s,81s,1980b:148ss), Rubach
(1984:186ss), Rubach & Booij (1984:17ss), Szpyra (1992b), Pawelec (1989),
Rowicka (1999a:267ss,1999b).

- (47) regular vowel-zero alternations in Polish prefixes only in related pf-ipf pairs

prefix	perfective = √CC-	imperfective = √CVC	
z(e)-	ze-rwać	z-rywać	to tear off
	ze-drzeć	z-dzierać	to tear off
	ze-brać	z-bierać	to gather
od(e)	ode-mknąć	od-mykać	to open
	ode-tchnąć	od-dychać	to breathe
	ode-zwać	od-zywać	to speak
	ode-przeć	od-pierać	to beat off
	ode-słać	od-syłać	to send back
ob(e)-	obe-schnąć	ob-sychać	to dry
w(e)-	we-ssać	w-sysać	to suck in
	we-trzeć	w-cierać	to rub in
pod(e)-	pode-żreć	pod-żerać	to eat up
	pode-słać	pod-syłać	to send
roz(e)-	roze-rwać	roz-rywać	to tear apart

- (48) Outside of this specific morphological category, vocalised prefixes hardly ever occur. But a lot of unexpected non-vocalizations do occur.

- a. before expressed alternating vowels

pod-pieniek	pień, pnia	honey fungus, trunk NOMsg, GENsg
pod-szewka	szew, szwu	lining, stitch NOMsg, GENsg
bez-senny	sen, snu	sleepless, dream NOMsg, GENsg
bez-denny	dno, den	bottom, bottom NOMsg, GENpl

- b. before unexpressed alternating vowels

od-wszyć	wesz, wszy	de-louse, louse NOMsg, GENsg
od-pchlić	pchła, pcheł	de-flea, flea NOMsg, GENpl
bez-cłowy	cło, ceł	duty-free, duty NOMsg, GENpl
nad-dniówka	dzień, dnia	extra day's work, day NOMsg, GENsg
w-śnić się	sen, snu	start dreaming, dream NOMsg, GENsg
roz-łzawić	łza, łez	draw tears, tears NOMsg, GENpl

- (49) a. hence, there is morphology at work here: the prefix-boundary, outside the pf-ipf paradigm, is "strong", i.e. does not allow the root-vowel to "see" the prefix.
b. whatever the descriptive device (e.g. Government Phonology domains [[odø]wszyć] vs. [ode-mknąć], autonomy of prefixes, ...),
c. non-valuation is ambiguous: it can be due to either phonology or morphology; vocalisation is unambiguous: it stems from phonology alone, morphology plays no role for sure.

- (50) influence of trapped consonants on prefixes (the list aims at exhaustivity)
conclusion: trapped consonants provoke vocalised prefixes.

a. vocalized prefix

root

drg-	roze-drgać (się)	roze-drgany	become vibrating, id. adj
brn-	roze-brnać		to flounder (pf)
brzm-	ode-brzmieć		to echo back
grzm-	ode-grzmieć		to echo (thunder)

b. unvocalized prefix

trw-	roz-trwonić		to squander (pf)
trw-	roz-trwaniać		to squander (ipf)
trw-	z-trwożyć się	s-trwożyć	to become fearful (pf), id.
brzm-	roz-brzmieć	roz-brzmiewać	start to sound (pf), id. (ipf)
krzt-	od-krztusić	od-krztuszać	to cough up (pf), id. (ipf)
plć-	bez-plćiowy		sexless, boring
krew	roz-krwawić	roz-krwawiać	to cause to bleed (pf), id. (ipf)
		bez-krwawy	bloodless (with no casualties)
		bez-krwisty	bloodless (e.g. meet)
		s-krwawić	to stain with blood (pf)

- (51) summary II

syllabic and trapped consonants really look like the reverse of one another

	syllabic consonants	trapped consonants
count in verse	yes	no
may be stressed	yes	no
are transparent to voicing	no	yes
preceding alternation sites are	unvocalised	vocalised

3.5. Alternative approach: syllabic consonants branch on a neighbouring Nucleus

- (52) alternative idea to "syllabic consonants sit in Nuclei":

a. as all other consonants, they belong to an Onset ==> consonantal phonetics

b. in addition, they branch on a Nucleus ==> vocalic phonology

c. no resyllabification: the sonorant branches on a neighbouring Nucleus if it is syllabic (*bottle*) vs. does not branch if it is non-syllabic (*bottling*).

on this analysis, there are two options:

left-branching right-branching



Right-branching structures are argued for by Yoshida (1990), Rowicka (1999a:261ss), Blaho (2001), Afuta (2002), Rennison (1999b:333ss).

Left-branching structures are supported by Harris (1994:224s), Hall (1992:35s), Wiese (1986,1996) and Toft (forth).

- (53) What are the arguments?

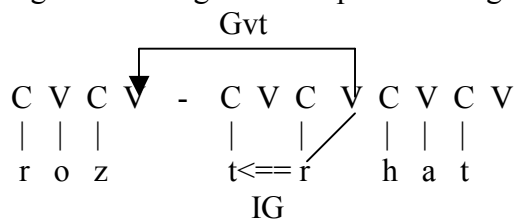
the typical Germanic alternation between syllabic CR# (bottle, Segl) and non-syllabic CR-V# (bottling, Segler) versions of the same consonant seems to allow for both interpretations.

- (55) theory-internal reason in favour of left-branching
Czech: who governs the prefixal Nucleus?

a. option 1: the Nucleus of a left-branching syllabic consonant	b. option 2: the Nucleus of a right-branching syllabic consonant
rozø-trhat "to tear up"	rozø-trhat "to tear up"

- (56) a. the left-branching option is ok: all empty Nuclei are taken care of.
b. the right-branching solution leaves an orphan empty Nucleus.
c. it be argued that the [tr] cluster involving the syllabic consonant and the preceding obstruent form a domain of Infrasegmental Government and thereby circumscribe the enclosed empty Nucleus, as under (57).

- (57) right-branching structure plus Infrasegmental Government



this solution suffers from the existence of $\sqrt{CC}$ clusters that do not qualify for a domain of Infrasegmental Government (i.e. a "branching Onset"):

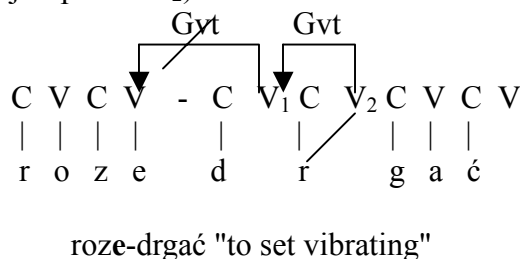
roz-mrhat "to waste"

od-mrštit "to reject"

- (58) what kind of animal is a syllabic consonant?
==> clear sympathy for a left-branching structure.

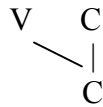
3.6. Trapped consonants are right-branchers

- (59) Polish: trapped consonants provoke vocalised prefixes
hence, the first Nucleus of the root V_1 must be unable to govern. Why? Because it is governed itself. By whom? The only possible candidate is V_2 ([a] would have to jump over V_2).



- (60) summary:
 syllabic consonants branch on the preceding Nucleus
 e.g. Czech trvat "to last"
 trapped consonants branch on the following consonant
 e.g. Polish trwać "to last"

syllabic consonant



trapped consonant



3.7. Diachronic confirmation

- (61) it is a well established fact, but which needs intricate demonstration, that

- a. syllabic consonants were **preceded** by a yer in Common Slavic.
 b. trapped consonants were **followed** by a yer in Common Slavic.

- c. C_бRC > syllabic CRC
 CR_бC > trapped CRC
 d. yers "ь", "ъ" were schwas that faded away in late Common Slavic.
 e. the demonstration is space- and timeconsuming. It is not available in diachronic grammars (where bits and pieces are reported in unrelated locations) because nobody is interested in the comparison of trapped and syllabic consonants.

Relevant literature:

- genesis of syllabic consonants: Stieber (1979:33ss,54ss), Rospond (1979:94ss), Długosz-Kurczabowa & Dubisz (1993:84ss), Nahtigal (1961:111ss), Panzer (1991:296ss), Carlton (1991:151ss,249s), Vondrák (1924:180ss), Vaillant (1950:173ss), Meillet (1934:73ss), Mikkola (1913II:200ss), Mann (1957:54).
- prediction of the timbre of Polish prevocalised roots (Equation 2 (63)): Stieber (1973:23s,42ss,1979:54ss), Długosz-Kurczabowa & Dubisz (1993:84ss), Rospond (1979:94ss), Nahtigal (1961:111ss), Carlton (1991:249s), Vondrák (1924:183ss), Mikkola (1913:201s), Wijk (1949-50:44s).

- (62)

Equation 1

Czech √CRC- = Polish √CRC-

	Common Slavic	Polish	Czech	gloss (Polish)	gloss (Czech)
CrC	trъvati	trwać	trvat	last	last
CrzC	dvъri grъmĕti brъnĕti chrgъbъtъ trъstina	drzwi grzmieć brzmieć grzbiet trzcina	dveře hřmět brnět hřbet trstina	door to thunder sound back reed (plant)	door to thunder tickle back reed (plant)
CiC	slъza klnъ- plъv- blъcha	łza < słza klnę plwocina pchła	slza klnout arch plvat > plivat old Cz blcha > blecha	tear I curse sputum flea	tear curse spit flea

(63)

Equation 2

Czech $\sqrt{\text{CRC-}}$ = Polish $\sqrt{\text{CVRC-}}$ ³

Polish reaction	Common Slavic	Czech	Polish	Czech gloss	Polish gloss
CaRC: 34	гър-dlo гърт-тъ ръгстъ сьг-на	hrdlo hrst prst srna	gardło garść parst sarna	throat (cupped) hand finger roe	throat (cupped) hand roe
CieRC: 16	ръгси сьгръ	prsa srp	piers sierp	breast sickle	breast sickle
CaRC: 4	вълкъ	vlk	wilk	wolf	wolf
CeRC: 6	вълна сьгдъ-се рълнъ	vlna srdce plný	welna serce pełny	wool heart full	wool heart full

Total: 60

(64) conclusion

- can it be predicted whether the Polish response to a Czech syllabic consonant is a vocalized or a trapped sonorant ?

YES:

Polish trapped CRC < following yer CR₆C

Czech $\sqrt{\text{CRC-}}$ = Polish $\sqrt{\text{CRC-}}$

Polish prevocalised CVRC < preceding yer

Czech $\sqrt{\text{CRC-}}$ = Polish $\sqrt{\text{CVRC-}}$

- ==> trapped consonants come from postvocalised CRVC structures
confirmation of their rightbranching structure.
1. questions:
why does Czech not reproduce the Common Slavic opposition тѣрт vs. трѣт in the way Polish does ? Both origins are merged and appear as syllabic consonants
2. how is the Common Slavic opposition between тѣрт and трѣт established ?

(65) question 2:

the ultimate origin of the words whose sonorants are prevocalized in Polish but syllabic in Czech (hence instantiating the equation pol CVRC = cz CRC (63)) is undisputed: the sonorants in question were syllabic in Indo-European (IE). This follows from the fact that the words in which they are found instantiate the IE equation which identifies IE syllabic sonorants (i.e. the zero-grade of roots). The following table provides some illustration for IE syllabic r (see for example Meillet 1937:118ss, Szemerényi 1990:47ss, Panzer 1991:296ss).

equations establishing IE r

skr r	gr ar, ra	lat or, ur	germ ur	lit ir, ur	CS ьr, ъr	pol Vr	cz r
mṛtam		mors	got maúrpr	mirtis	сьмьртъ	śmierć	smrt
	kardia	cordis	got haírto	širdis	сьгдъсе	serce	srdce

³ With one exception that does not bear on the generalization, i.e. CluC- vocalizations such as in pol tłusty = cz tłusty = slk tlstý "thick".

(66) problem

- a. comparatism and Baltic indeed identify a vowel **before** the sonorant.
- b. but the Common Slavic state of affairs is not witnessed by direct recordings. Only Old Church Slavonic (OCS) provides written testimony. And as a matter of fact, OCS texts consistently show the yer after the liquid.
- c. there is a well-known candidate for explaining the OCS occurrence of the yer "on the wrong side" of the liquid:

Slavic **liquid metathesis** (e.g. Panzer 1991:291ss, Nahtigal 1961:108, Carlton 1991:144ss).

Compare for example

non-Slavic	OCS
germ Berg	brěgъ
germ Milch	mlěko
lat hortus	gradъ
lit galva	glava

- d. therefore, the general picture is as follows:
evolution of IE syllabic liquids in Slavic⁴
IE ɾ, ɭ > balt-slav ir, ur, il, ul > CS ыг, ьг, ыл, ьл > OCS гъ, гь, ъъ, ъъ

(67) there are strong indications, however, that <гъ, гь, ъъ, ъъ> in OCS script do not represent a CV-sequence.

- a. it is not infrequent to observe that the yer misses altogether (Vondrák 1924:181) in the texts
- b. the scriptors consistently mismatched both yers: CS ь regularly appears in OCS texts as <ъ>, and vice-versa (Wijk 1949-50).
- c. therefore, the general interpretation is that OCS <гъ, гь, ъъ, ъъ> is simply a way to transcribe syllabic consonants: [ɾ', ɾ, ɭ', ɭ] (where ɾ' and ɭ' are palatalized versions of ɾ, ɭ) were the actual objects present in OCS (Rospond 1979:94, Vondrák 1924:181, Carlton 1991:152, Wijk 1949-50).
- d. under this analysis, there was no metathesis of yer-liquid clusters. Common Slavic CъRC, CъRC sequences simply lost their yer, giving birth to syllabic consonants that kept the memory of the original front vs. back opposition carried by the yers: CъRC > CRɿ'C with a palatalized syllabic liquid, against CъRC > CRɿC where the syllabic consonant is not palatalized.
- e. hence
evolution of IE syllabic liquids in Slavic

IE ɾ, ɭ > balt-slav ir, ur, il, ul > CS ыг, ьг, ыл, ьл > OCS ɾ', ɾ, ɭ', ɭ

⁴ This is the picture that is most widely accepted for the reasons discussed. For instance, Stieber (1973:17, 1979:35), Wijk (1931), Arumaa (1964:151ss), Vondrák (1924:180s, 420s), Carlton (1991:151ss), Vaillant (1950:173ss), Schenker (1995:94) adhere. However, another view is expressed by Pedersen (1905:340), Rospond (1979:95) and Długosz-Kurczabowa & Dubisz (1993:84s) who hold that syllabic consonants did not vocalize in Common Slavic. Instead, the IE syllabic consonants were inherited as such by CS, and only later developments led to pre- or post-vocalized liquids.

(68) but there is yet another reason why OCS <гъ, гъ, ъъ, ъъ> from CS ыг, ыг, ы, ы could not possibly represent a CV-sequence:

if they did, they would not be any different from the original CS гъ, гъ, ъъ, ъъ > OCS <гъ, гъ, ъъ, ъъ>.

- this is contrary to fact: CS тѣrt and тѣrt show contrasting reflexes all over Western and Eastern Slavic languages, e.g. Wijk (1931:59), Vondrák (1924:181), Stieber (1979:56s), Vaillant (1950:173ss), Panzer (1991:297).
- we already know one such case, that is the Polish opposition between vocalized CVRC (63) vs. trapped CRC (62) sonorants.
- both inner-Slavic and Baltic comparatism allows to tell CS тѣrt from CS тѣrt without ambiguity.

(69) CS CRъC = consistently **postvocalised** in Baltic and Eastern Slavic
trapped in Polish: Baltic CRi/uC = ESl CRE/oC = Czech CRъC = Polish CRC

	other IE	Baltic (lith)	Common Slavic	Estern Slavic (rus)	Polish	Czech
CrC	skr dhruva, lat durua		тѣvati	ukr tryvaty	trwać	trvat
		kraujas	кѣvъ	krov', krovī	krew, krwi	krév, krve
CrzC	skr dvaaras	dvaras	дѣrī	dver'	drzwi	dveře
	germ Gram, gr khromos	grumentī	грѣmēti	gremet'	grzmić	hřmět
	lat fremo, germ Bremse, skr bhramaras		брѣnēti	ukr brenity	brzmić	brnět
			чѣrъbъtъ	chrebet	grzbiet	hřbet
		trušis	трѣstina	trostina	trzcina	trstina
	< germ krist		крѣstъ	krest, kresta	chrzest, chrztu	křest, křtu
CIC	germ schlucken	žliukti	slъza	sleza	łza < slza	slza
			клъn-	kljanu	klnę	klnout
	lat glutire		glъtati	glotat'	old p kłtać	hltat
			плъv-	plevat'	plwać	arch plvat > plivat
	skr plutas, gr plytos	latv pluts	плъtъ	plot', ploti	plęć, plci	plt', plti
	germ Floh	blusa	blъcha	blocha	pchła	old Cz blcha > blecha

- (70) CS C_hRC = consistently **prevocalised** in Baltic and Eastern Slavic
vocalized in Polish: Baltic Ci/uRC = ESl Ce/oRC = Czech C_hRC = Polish CVRC⁵

other IE	Baltic (lith)	Common Slavic	Eastern Slavic (rus)	Polish	Czech
lat gurgulio, germ Gurgel	gurklis	гѣг-дло	gorlo	gardło	hrdlo
gr a-gortos	gurste	гѣрт-тъ	gorst'	garść	hrst
skr pr̥stīś, oiran par̥stī, germ Fürst	pirštas	рѣрстѣ	arch perst	parst	prst
lat cervus, gr keras, skr śiras	latv sirnas, oldpr sirvis, lit stirna	сѣг-на	serna	sarna	srna
skr par̥śu	piršis	рѣрси	persi	piers	prsa
lat sarpio, gr harpee,	latv sirpe	сѣгрѣ	serp	sierp	srp
skr vr̥kas, got wulfs, alb ulk	vilkas	вѣлкѣ	volk	wilk	vlk
oiran varna, got wulla	vilna, oprus vilna	вѣлна	volna	welna	vlna
arm sirt, lat cordis, got herto, gr kardia	širdis	сѣрдѣ-це	serdce	serce	srdece
got fuls, skr purnas, but lat plenus, gr pleios	pilnas	рѣпнѣ	polnyi	pełny	plný

- (71) summary of the comparatistic situation

Polish vocalized vs. trapped consonants continue CS t̥rt vs. tr̥t

- | | | | | |
|---|---------------------|--------|---------------------|------|
| | hence: CS | Baltic | ESl | Pol |
| a. Polish trapped sonorants, cf. (69) | CR _h /̥C | CRi/uC | CR _e /oC | CRC |
| b. Polish vocalized sonorants, cf. (70) | C _h /̥RT | Ci/uRC | Ce/oRC | CVRC |

- (72) but what has happened to Czech (and Slovak) trapped consonants ?

- CS pre- and postvocalised sonorants have merged in Czech: they are both syllabic.
- CS tr̥t should produce trapped consonants as much as it does in Polish.
- crux:
 - Polish motivates a right-branching identity for trapped consonants, but is mute on the syllabic side: CS C_hRC > CVRC vs. CS CR_hC > trapped CRC.
 - Czech motivates a left-branching identity for syllabic consonants, but is mute on the trapped side:
CS C_hRC > syllabic C_hRC merged with CS CR_hC > syllabic C_hRC.
- the ideal language for the purpose of the demonstration would be one where CS C_hRC appear as syllabic consonants, against CS CR_hC giving trapped reflexes. In other words, a language where there is a synchronic opposition between syllabic and trapped consonants.

⁵ The consistent Eastern Slavic reflex Ce/oRC that, recall, corresponds to OCS CR_h/̥C also allows to firmly discard the view that the OCS situation is the result of regular Slavic metathesis (cf. the previous section), i.e. CS t̥rt > OCS tr̥t where the sequence <гѣ> would really be pronounced CV. Were OCS tr̥t the result of metathesis, Eastern Slavic would have to come along in so-called pleophonia. This term refers to the regular Eastern Slavic output of the Slavic metathesis that bears a vowel on both sides of the sonorant. Compare for example the Russian reflex of the words quoted in the previous section in order to illustrate the metathesis: germ *Berg*, Milch, lat *hortus*, lit *galva* = OCS br̥gъ, ml̥ko, gradъ, glava = ru *bereg*, *moloko*, *gorod*, *golova*. If words such as OCS sr̥na were the result of metathesis, Russian should produce **serena*, which it does not: only *serna* is attested. Mareš (1956:457, 1965:23) makes the same point, and Wijk (1949-50:42) also provides a consistent evolution of CS t̥rt in Russian. This is further support in favour of the assumption made in most grammars according to which OCS tr̥t < CS t̥rt is but a way of transcribing syllabic sonorants.

- e. this language exists: OLD CZECH.

Written testimony from Old Czech has been handed down since the second half of the 13th century A.D. For about hundred years, CrC clusters from CS tr̥t do not count in poetry and thereby identify as trapped, whereas the reflexes of CS tr̥t > OCz CrC weigh in versification. By the end of the 14th century, however, trapped CrC < CS tr̥t start to count as well. Therefore, the evolution demonstrated in table (77) CS tr̥t > trapped OCz tr̥t > syllabic OCz, MCz tr̥t can be almost followed in real time.

- (73) here are some examples of older sources. In all cases, the poetry obeys typical Old Czech Alexandrine verse, i.e. counting eight syllables.⁶ The change from trapped to syllabic consonants in Old Czech is studied in greater detail by Smetánka (1940), who provides much raw material, datation and counts for individual texts. The following examples have been collected by Lehr-Splawiński & Stieber (1957:97), Komárek (1962:128s).

older sources of Old Czech: r in tr̥t < CS tr̥t does not count

a. C__C within a root		CrC < tr̥t	
1 2 3 4 5 6 7 8			
we krwi jakžto vodě kalé	krwi < kr̥ve	AlxB.	verse 3,18, late 13th, early 14th cent.
1 2 3 4 5 6 7 8			
a z jich srdce krwe utočie	krwe < kr̥ve srdce < s̥rd̥ce	AlxV.	verse 1517, late 13th, early 14th cent.
1 2 3 4 5 6 7 8			
Mezi oči jemu plvali	plvati < pl̥vati	Hrad.	60s of the 14th century
b. C__C outside a root			
1 2 3 4 5 6 7 8			
a ty zlaté jablko jmiechu	jablko < jabl̥ko	AlxV.	late 13th, early 14th cent.
1 2 3 4 5 6 7 8			
v cyprskéj zemi v dobrém slově	cyprský < cypr̥ský	Kat.	early 14th century
c. C__#			
1 2 3 4 5 6 7 8			
bratr Filotón, jenž boj bráše	bratr < bratr̥	AlxV.	late 13th, early 14th cent.
1 2 3 4 5 6 7 8			
vňuž by sě tr̥sl svět i moře	tr̥sl < tr̥sl̥	AlxH.	late 13th, early 14th cent.
1 2 3 4 5 6 7 8			
matko pro tvých sedm radostí	sedm < sedm̥	Hrad.	60s of the 14th century

Texts from the 15th century and younger systematically do count liquids in CrC < CS tr̥t. On the other hand, CrC from CS tr̥t have always contributed to metric weight since the earliest Old Czech sources until the present day. This is also evident from the second verse under (73)a where the liquid in the word "heart" srdce < CS s̥rd̥ce does count in presence of the metrical irrelevance of its mate in "blood GENsg" krwe < CS kr̥ve.

⁶ Old Czech texts are identified according to settled abbreviations. Hrad. = Hradecký rukopis, collection of versified compositions from the 60s of the 14th century. Alx. = Alexandreida, epic poems on Alexander the Great dated end of 13th, beginning of 14th century, AlxV. is a fragment of a later copy thereof dated beginning 15th century, AlxB. and AlxH. are fragments of a later copy dated beginning 14th century. Kat = Katonovy mravní průpovědi, versified translation of the collection of aphorisms by Catonis Distich, dated beginning 14th century. All information on Old Czech texts given here is from Havránek (1968).

- (74) there is an OCz minimal pair syllabic vs. trapped consonant. This was identified by Trubetzkoy (1939:199), who consequently establishes a "correlation of syllabicity". Cf. Komárek (1962:82) and Liewehr (1933:94) on the minimal pair.

Old Czech minimal pair *držěti* "hold" vs. *držeti* "tremble, shake"

	syllabic "hold"	trapped "tremble, shake"
Common Slavic	<i>držati</i>	<i>držati</i>
Polish	<i>dzierżyć</i>	<i>drzeć</i>
Russian	<i>deržat'</i>	<i>drožat'</i>
Old Czech	<i>držěti</i>	<i>držeti</i>
Modern Czech	<i>držet</i>	—

- (75) illustration in verse

Old Czech *držěti* vs. *držeti*

- a. *držěti* = 3 syllables

1 2 3 4 5 6 7 8

to jmě drzal takým kmenem Kat. verse 24

- b. *držeti* = 2 syllables

1 2 3 4 5 6 7 8

všecko pohanstvo drzezalo Kat. verse 2803

- (76) summary

Western Slavic reflexes of Common Slavic *tr̥rt* and *tr̥t*

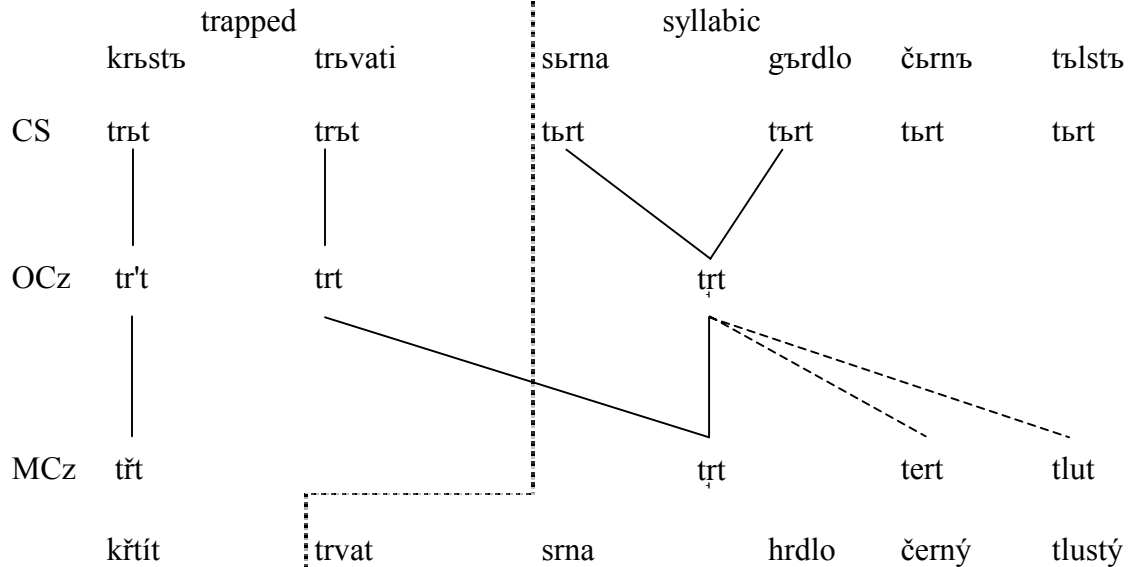
Common Slavic	<i>tr̥rt</i>	<i>tr̥t</i>	example
OCS	<i>tr̥rt</i>	<i>tr̥t</i> trapped (?)	<i>sr̥na</i> - <i>tr̥vati</i>
Old Czech	<i>tr̥rt</i> syllabic	<i>tr̥t</i> trapped	<i>sr̥na</i> - <i>trvati</i>
Modern Czech, Slovak	<i>tr̥rt</i> syllabic	<i>tr̥t</i> syllabic	<i>sr̥na</i> - <i>tr̥vat</i>
Polish	<i>tVrt</i> vocalized	<i>tr̥t</i> trapped	<i>sarna</i> - <i>trwać</i>

- (77) the Czech merger of syllabic and trapped consonants:

spontaneous sound shift OCz trapped > MCz syllabic consonants,

e.g. Trávníček (1935:57s, 111ss, 226ss), Lehr-Splawiński & Stieber (1957:97ss), Komárek (1962:60s, 82, 97ss, 127ss), Liewehr (1933:93s, 162s).

(78) evolution of Common Slavic $\text{tr}^{\text{h}}\text{rt}$ and $\text{tr}^{\text{h}}\text{t}$ in Czech



3.8. What about the voice-transparency of trapped consonants ?

(79) if trapped consonants are not extrasyllabic as held by Rubach and others, why are they transparent to voicing ?

- a fact which usually goes unmentioned: Polish trapped consonants are voiceless themselves. Or rather, there is some variation among speakers. Voiceless pronunciations are very common:
final: kadr [kat̪], bóbr [bup̪], žubr [ʒup̪]
internal: trwać [tʃfat̪], krwi [kr̪fi]
- in non-trapped position, sonorants are always voiced in Polish.
- hence, there is no "final devoicing through the sonorant", but there is simply a final cluster of voiced obstruents that undergoes devoicing.
- ==> trapped consonants are obstruents.
why does the fact of being trapped cause the demotion from a sonorant to an obstruent? Good question.
- but we know that the demotion to obstruents is the common fate of sonorants to which "something has been done": the modification of their place for instance demotes them to an obstruent:
German, Norwegian, French "r" = [ʁ, ʀ]
Czech palatalized [r] is [r̪, ɹ̪], i.e. with a voiced and voiceless variant.
Polish palatalized [r] is [ɹ̪, ʐ̪] ("rz")
- identical pattern in Romansch, a Romance language spoken in Switzerland and Italy. Montreuil (1999:541ss) reports on the synchronic devoicing of trapped sonorants and preceding obstruents:

1. masc.	fem.	
$\text{fr}^{\text{h}}\text{ekt}$	fregd^{h}	cold
dik^{h}	digr^{h}	hard
pok^{h}	pogr^{h}	farmer
2. singular	collective	
$\text{i}^{\text{h}}\text{pek}^{\text{h}}$	$\text{l}^{\text{h}}\text{p}^{\text{h}}\text{egr}^{\text{h}}$	pear
3. noun	diminutive	
pok^{h}	pogret^{h}	farmer

- g. hence, sonorants are not transparent, they are obstruents when trapped. And as such, they undergo and transmit voicing as all other obstruents. Obstruent clusters agree in voicing like everywhere else in the language.

3.9. The troublesome right periphery

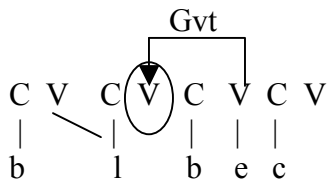
(80) consonant clusters following syllabic consonants in Czech

a. __RT, __TT	b. __RTR	c. __TR	d. __C-e/øC	
			__C-eC	__C-øC-V
brnkat	brnknout	vrchní	blbec	blbce
cvrnat	natrpklý	brblat	čtvrtek	čtvrtku
drnět	trpknout	nazrzlý	cvrček	cvrčku
hrněř	uprchlík	přiblblý	držeb	držba
mrzký		zamlklý	hrnec	hrnce
vlhký		blbnout	krtek	krtka
srdce		drhnout	mrkev	mrkve
umrlčí		drsný	mrtev	mrtvý
		mlžný	srnec	srnce
		trhnout	vrstev	vrstva
		trpnost	zrnec	zrnka
		výtržník	hrdel	hrdlo
		ztvrdnout	prken	prkno

(81) there are way too many orphan empty Nuclei

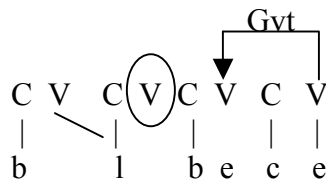
a. (80)a: CRT-TV vlhký "humid"	b. (80)b: CRT-TRV trpknout "become bitter"
c. (80)c: CRT-RV za-mlklý "taciturn"	

d. (80)d: CṚC-eC



blbec "idiot NOMsg"

CṚC-øC-V



blbce "idiot GENsg"

3.10. Conclusion

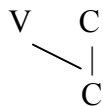
(82) desiderata for the representation of syllabic and trapped consonants

	syllabic consonants	trapped consonants
count in verse	yes	no
may be stressed	yes	no
dispense Government	yes	no
synchrony and diachrony: alternate with sequences of non-syllabic/ non-trapped consonants plus a	preceding vowel	following vowel
flanking consonants always agree in their voice value	no	yes
phonetic correlate	syllabicity	demotion to an obstruent
tolerate the existence of governed empty Nuclei on their righthand side	yes	?
the distribution of following consonant clusters is	identical to the one observed after vowels	?

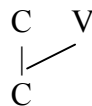
(83) summary

- any theory addressing the phonological identity of syllabic and / or trapped consonants must accommodate the puzzle under (82).
- there is no way to even talk about syllabic consonants without mentioning their trapped mates. The pervasive antipodal behaviour of both objects discredit any isolated treatment in advance.
- proposing an identity for syllabic consonants makes immediate predictions on the trapped side, which must be somehow "the reverse". And vice-versa.
- my best (while imperfect) guess is

syllabic consonant



trapped consonant



this is wrong and/ or incomplete and should be taken as the starting point for further investigation, rather than as a firm result.

- questions remaining
 - what about the heavy clustering at the right periphery of syllabic consonants ?
 - why are trapped consonants invisible for stress and poetry ?

Thursday

4. Lenition and Fortition: the Coda Mirror §110

(Ségéral & Scheer 2001)

- (84) what is lenition ?
positional vs. adjacency effects

	positional	adjacency
a. the melodic content of adjacent positions is relevant	no	yes
b. there is a transmission of melodic primes	no	yes
c. syllable structure is relevant	yes	no
d. typical example	l-vocalisation	palatalisation

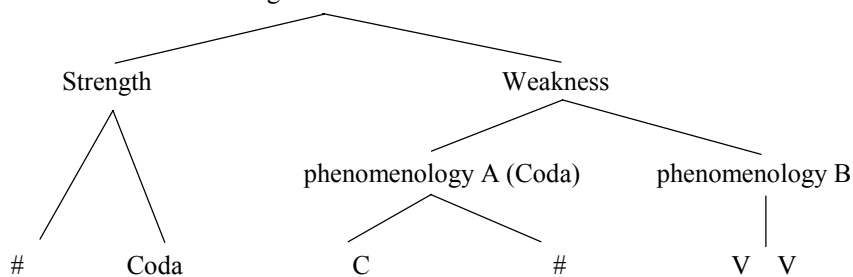
- (85) three players: factors that condition lenition

- sharing of melodic primes confers stability Honeybone (2001,2002)
geminate integrity, High German Consonant Shift:
eng help = germ helfen
vs.
eng swamp = germ Sumpf
- stress: e.g. Verner's Law
or eng véhicule vs. vehícular
- the position in the linear string

- (86) the five positions and their grouping

	position	usual name	
a.	#__V	word-initial	} Strong Position
b.	VC.__V	post-Coda	
c.	V__.CV	internal Coda	} Coda } Weak Positions
d.	V__#	final Coda	
e.	V__V	intervocalic	

- (87) Positional influence
on segmental health



5. The yer context

5.1. The yer context in vowel-zero alternations: LOWER §403

- (104) vowel-zero alternations in Slavic languages
vocalisation in open syllables

	open syllable		closed syllable	
	zero C__C-V	C__C-yer Cø	vowel C__C-ø	C__C-CV
Czech	dom-øk-u	dom-eč-ek	dom-ek	dom-eč-øk-u
Slovak	křid-øl-o	křid-el-iec	křid-el	křid-el-øc-e
Polish	buł-øk-a	buł-ecz-ek	buł-ek	buł-ecz-øk-a
Serbo- Croatian ⁷	vrab-øc-a	vrab-ac-a	vrab-ac	

- (105) the yer context
alternation sites show

$$\begin{array}{l}
 V / _ \left\{ \begin{array}{l} \text{CCV} \\ \text{C\#} \\ \text{C } \mathfrak{b}, \mathfrak{b} \end{array} \right\} \left. \vphantom{\begin{array}{l} \text{CCV} \\ \text{C\#} \\ \text{C } \mathfrak{b}, \mathfrak{b} \end{array}} \right\} \begin{array}{l} \text{in closed syllables} \\ \text{before yers} \end{array} \quad \begin{array}{l} \text{buł-ecz-k-a} \\ \text{buł-ek} \\ \text{buł-ecz-ek} \end{array} \\
 \mathfrak{o} / _ \text{CV} \quad \text{iff } V \neq \mathfrak{b}, \mathfrak{b} \quad \text{buł-øk-a}
 \end{array}$$

- (106) generalisation

- alternation sites are vocalised in open syllables iff the following vowel alternates with zero itself.
- vowels that alternate with zero are called yers in Slavic for historical reasons. They come in two flavours:
one front and palatalizing: $\mathfrak{b}$ [other symbols used in the synchronic literature]
one back and non-palatalizing: $\mathfrak{b}$
literature
- hence, zero occurs in closed syllables and before yers.
- theory is called to be able to refer to this disjunction in a uniform fashion. The closed-syllable analysis is contrary to fact.
- the Eastern way:**
generalisation of the yer-context: the vocalisation of alternation sites is ALWAYS provoked by a yer in the following syllable

Lower

$$\mathfrak{b}, \mathfrak{b} \longrightarrow \text{e, o} / _ \text{C}_0 \{ \mathfrak{b}, \mathfrak{b} \}$$

Lower: Lightner (1965), Gussmann (1980), Rubach (1984,1986), Kenstowicz & Rubach (1987) etc.

⁷ The alternating identity of the final vowel in GENpl *vrab-ac-a* may not be established synchronically since morphology does not allow to add another suffix. However, GENpl *vrab-ac-a* contrasts with GENsg *vrab-øc-a*, and more generally with all other nominal forms: 11 out of 12 vowel-initial case markers (for a total of 14, seven sg, seven pl; only NOMsg and ACCsg are zero) provoke the allomorph containing zero -øc-. Only GENpl induces its vocalised version. Now it is a fact that the diachronic identity of the GENpl, and only of this case marker, is a yer. This can hardly be taken as an accident.

(107) price to pay: underlying yers have to be postulated in locations where they do not appear on the surface:

1) unvocalised alternation sites

2) after word-final consonants

a. the underlying structure of the word bułeczek contains three "abstract vowels":

b u ł ɐ cz ɐ k ɐ

b. derivation: cyclic application of Lower

underlying >	Lower >	yer-deletion >	surface
buł-ɐcz-ɐk-a	buł-ecz-ɐk-a	buł-ecz-k-a	bułecz-k-a
buł-ɐk-ɐ	buł-ek-ɐ	buł-ek	bułek
buł-ɐcz-ɐk-ɐ	buł-ecz-ek-ɐ	buł-ecz-ek	bułecz-ek
buł-ɐk-a	buł-ɐk-a	buł-k-a	bułk-a

(108) consequence: vowel-zero alternations have got nothing to do with syllable structure

a. Lower denies any causal relation between syllable structure and the vocalisation of alternation sites.

Vowel-zero alternations are not triggered by the presence or absence of a consonant in a given syllable (Coda-analysis), but by an intervocalic communication.

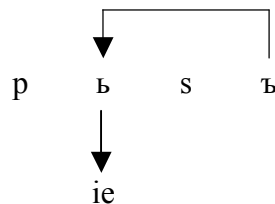
==> **the causal relation is not vertical, but lateral**

that is, a yer is vocalised under the influence of another yer that occurs in the following syllable.

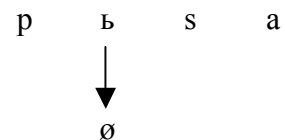
b. the intervocalic communication at hand involves two yers.

Informal statement: "if you get two yers in a row, vocalise the first one".

A) pies NOMsg



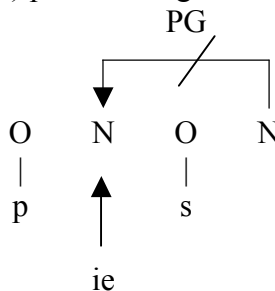
B) psa GENsg



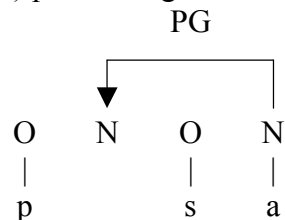
c. Government Phonology Kaye, Lowenstamm and Vergnaud et al. (1990), Kaye (1990), Harris (1994), Lowenstamm (1996), Scheer (1999,ms) was built in complete disregard of Slavic.

1. Structure Preservation and the ban on resyllabification enforce a view whereby the syllabic identity of vowels that alternate with zero is an empty Nucleus even when the zero surfaces:

A) pies NOMsg



B) psa GENsg



2. the lateral relation between "the two yers" of Lower is called Proper Government. Only contentful Nuclei can govern. Therefore, PG breaks down under A), but goes into effect under B).
In the former case, a language-specific epenthesis provides phonetic content for the Nucleus that escapes PG.
3. Or, in informal terms: "if you get two empty Nuclei in a row, vocalise the first one".
4. the distribution of empty Nuclei is controlled by the Empty Category Principle: Nuclei may remain phonetically unexpressed iff
 - A) they are word-final or
 - B) they are properly governed[this is the 1990-version, which has evolved since then]
- d. that is, Government Phonology and Lower say the same thing.
the distribution of empty Nuclei (Gov Phon) and yers (Lower) is strictly identical:
 1. in locations where a vowel alternates with zero
 2. after word-final consonants

(109) conclusion: the traditional analysis of Slavic vowel-zero alternations has been carried out in Standard Government Phonology (sic)

- a. the distribution of "abstract vowels" and empty Nuclei is identical:
 1. in locations where vowels alternate with zero
 2. after word-final consonants
- b. the causality is intervocalic, i.e. lateral: Government
- c. slavacists have invented Lower a long time before GP existed. GP has proposed empty Nuclei and Government for entirely independent reasons and in complete disregard of the Slavic situation.
people have worked on the same empirical object (the yer context) without knowing about each other (Slavicists, phonologists working on French). They have come up with identical solutions (the existence and distribution of "abstract vowels") without building on the data and insights of each other (Slavicists and Government Phonology).

Significantly, all these approaches were contemporary: Gussmann (1980), Rubach (1984), Anderson (1982), Spencer (1986), Kaye et al. (1985,1990).

5.2 The yer context rules over much more than just vowel-zero alternations §418

(110) however, the distributional pattern of the yer context extends beyond vowel-zero alternations

	open syllable		closed syllable		gloss
	C __ C-V	C __ C-yer	C __ C-ø	C __ C-CV	
a. Czech VV-V	žáb-a	žabek-ø	žab-ø	žab-øk-a	frog NOMsg, dim. GENpl, GENpl, dim. NOMsg
	jádr-o	jader-ní	jader-ø		stone (of a fruit) NOMsg, nuclear, GENpl
b. Czech ů-o ⁸	nož-e	nůž-ek-ø	nůž-ø	nůž-øk-y	knife GENsg, scissors (=dim.) GENpl, knife NOMsg, scissors NOMpl
c. Polish ó-o	krow-a	krów-ek-ø	krów-ø	krów-øk-a	cow NOMsg, dim. GENpl, GENpl, dim. NOMsg
d. Polish ą-ę	zęb-a	ząb-ek	ząb-ø	ząb-øk-a	tooth GENpl, dim. NOMsg, NOMsg, dim. GENsg

(111) overall summary of the Slavic situation

- a. on several occasions, vowels behave alike in closed syllables and in open syllables iff the following vowel is a yer.

Or, in other words: vowels in open syllables that occur before yers behave like if they stood in closed syllables. Yers behave as if they were not there.

[disclaimer: note that I do not claim that the alternations at hand are synchronically active in the various languages. I have shown that they are not. But they were active in the synchronic grammar of former stages of the language(s). Diachronic evidence is evidence as much as synchronic evidence. The only thing that is important for my analysis is that there is (or was) a Slavic language where the yer context controls alternations that do not involve vowels and zeros. My analysis is not any more abstract because it is based on diachronic evidence.]

⁸ The majority of Czech roots that show the ů-o alternation does in fact react on yers: *dům* - *domek* "house, id. diminutive", *stůl* - *stolek* "table, id. diminutive" etc. The cases where yers are treated as regular vowels seem to be those where the form that contains the vocalised version of the yer is the Nominative singular. Feminine nouns that show the vocalised yer in GENpl forms bear the unaltered <ů>: *nůž-øk-y* - *nůž-ek* "scissors NOMpl, GENpl", *hůl-øk-a* - *hůl-ek* "little stick NOMsg, GENpl", *půl-øk-a* - *půl-ek* "half NOMsg, GENpl". There is no hope to tell both sets from each other on phonological grounds.

- b. this distribution is identical with the one that controls vowel-zero alternations. If this is not accidental, the generalisation in order must be as follows:
1. vocalic alternations in Slavic languages are triggered by yers.
 2. they are thus the result of an internuclear communication: a lateral relation.
 3. yers are "abstract vowels". They that are underlyingly present
 1. in locations where a vowel alternates with zero
 2. after word-final consonants
 4. target vowels may be yers themselves (vowel-zero alternations), but also regular vowels (alternations in vowel length).
 5. the overall generalisation may not be described with Lower, for Lower covers only vowel-zero alternations.
- The generalisation at stake is of more general intervocalic nature.

(112) French

however, the distributional pattern of the yer context extends beyond Slavic:

French [ɛ] – schwa alternation

closed syllable εC#	open syllable εCə	open syllable əCV	
mɔχsɛl	mɔχsɛləmã	mɔχsəlɔ̃, mɔχsəle	1) je, tu, il, ils morcèle(s)(nt), 2) morcèlement, 3) nous morcelons, 4) inf./ part./ vous morceler/ -é/ -ez
apɛl	apɛləra	apəle	j'appelle, appellera, appellation
ãsɔχsɛl	ãsɔχsɛləmã	ãsɔχsəle	j'ensorcèle etc., ensorcèlement, ensorceler etc.
aχsɛl	aχsɛləmã	aχsəle	je harcèle etc., harcèlement, harceler etc.
aʃɛv	aʃɛvəmã	aʃəve	j'achève etc., achèvement, achever etc.
sɛvɛ	sɛvɛbəka	səvɛe səvɛaʒ	elle sèvre, sevrera, sevrer, sevrage

(113) French ATR-alternations of mid vowels

	closed syllable	open syllable __Cə	open syllable __CV	
e	fɛt	sɛləɾi	fete	je fête, céleri, fêter
	pɛɾdy	bɛtəɾav	pɛɾiɾ	perdu, betterave, périr
	səɾɛn	səɾɛnəmã	səɾɛnite	sereine, sereinement, sérénité
o	kɔd	mɔkəɾi	kode	code, moquerie, coder
	rɔʒ	rɔʒəɾe	rɔʒje	rose, roseraie, rosier
	sɔbɾ	sɔbɾəmã	sɔbɾijete	sobre, sobrement, sobriété
ø	øɾœʒ	øɾœʒəmã	apøɾe	heureuse, heureusement, apeuré
	œvɾ	bœvəɾi	øvɾe	œuvre, beuverie, œuvrer
	ʒœn	vœləɾi	ʒønes	jeune, veulerie, jeunesse

(114) generalisation

- a. Ajustement en syllabe fermée
the French facts are well known and extensively discussed for example in Dell (1973:209ss), Selkirk (1972:367ss), Schane (1968:30ss), Valdman (1972), Morin (1986,1988), Tranel (1987,1988).
- b. +ATR and schwa occur in open syllables.
- c. -ATR and [ɛ] occur in closed syllables AND in open syllables if the following vowel is a schwa.
Since schwa alternates with zero in French, the parallel with the Slavic facts is obvious:
-ATR and [ɛ] occur in closed syllables AND in open syllables if the following vowel alternates with zero itself.

(115) alter- nation	statement	object occurring in		example	
	surface	__CV if V≠schwa	closed syllable and __CV if V=schwa	__CV	__Cyer
	using yers	__CV	__Cyer		
Slavic vowel-zero	zero	zero	vowel	dom-øk-u	dom-ek, dom-eč-ek, dom-eč-øk-u
French schwa - [ɛ]	schwa	[ɛ]		[apɛl] <i>appelle</i>	[apəle] <i>appeler</i>
Pol + Cz vowel length	V	VV	VV	cf. detail	cf. detail
Czech vowel length	VV	V	V	žáb-a	žab, žak-ek, žab-øk-a
French ATR	+ATR	-ATR	-ATR	[fɛt] <i>fête</i>	[fete] <i>fêter</i>

detail of "Pol + Cz vowel length"

	V	VV		
Polish o-ó	[ɔ]	[u]	krow-a	krów, krów-ek, krów-øk-a
Czech o-ů	[ɔ]	[uu]	nož-e	nůž, nůž-øk-y, nůž-ek
Polish ą-ę	ą (> ɛ)	ąą (> a)	zęb-a	zab, załb-ek, załb-øk-a

Friday

6. There are two kinds of vowel-zero alternations in this world: Lower and Havlík §460

(116) Havlík's Law

- a. given a sequence of consecutive yers in Common Slavic, every other yer survives into Old Czech, counting from the right edge of the sequence.
- b. illustration thereof

4	3	2	1	4	3	2	1				
CS	съ	рѣс-	ѣмѣ	>	ocz	se	pøś-emø	se	psem		
	5	4	3	2	1		5	4	3	2	1
CS	съ	шѣв-	ѣс-	ѣмѣ	>	ocz	sø	šev-øc-emø	s	ševcem	
											"with the shoemaker"

(117) vocalisation in open syllables: diachronic situation

	open syllable		closed syllable	
	zero C__C-V	C__C-yer Cø	vowel C__C-ø	C__C-CV
Czech	dom-øk-u	ocz dom-øč-ek mcz dom-eč-ek	dom-ek	dom-eč-øk-u
Polish	pøs-a	opol pøs-ek mpol pies-ek	pies	pies-øk-a

(118) the two patterns of vowel-zero alternations

- Havlík
given a chain of alternation sites, vocalise every other one, counting from the right margin.
- Lower
given a chain of alternation sites, vocalise all of them save the last one.

(119) illustration: "ə" = vowel that alternates with zero

	all systems behave alike here			this is where the parametric variation lies
	in open syllables	in closed syllables		before alternating vowels
	zero C__C-V	vowel C__C-ø	vowel C__C-CV	vowel C__Cə
				zero C__Cə
Havlík				
Moroccan Arabic	kitəb-u	kətīb-ø	kittib-ø	kətīb-ø
German	innər-ə	innər-ø	innər-lich	innər-əs
French	je tə montre			je tə le montre jə te le montre
Old Polish	pøs-a	pies-ø	pies-k-a	pøs-ek
Old Czech	dom-øk-u	dom-ek-ø	dom-eč-øk-u	dom-øč-ek
↓				
Lower				
Modern Slavic				
Polish	pøs-a	pies-ø	pies-k-a	pies-ek
Czech	dom-øk-u	dom-ek-ø	dom-eč-øk-u	domeč-ek

(120) parameterised lateral actorship of schwa
(where schwa = "vowel that alternates with zero")

	schwa may	
	govern	license
modern Slavic	no	no
French, German and Havlík	yes	no

(121) basic nuclear objects and their lateral actorship

	can govern	can license
full Nuclei	yes	yes
schwa	parametrized	parametrized
final empty Nuclei	parametrized	parametrized
internal empty Nuclei	no	no

7. What sonorants do in positional plight §578

(122) Purpose

- a. what I want to show is theory-independent:
an unforeseen variety of otherwise unrelated processes turn out to be the response to one single cause. That is,
 1. (all ?) processes involving sonorants in Coda position are triggered by the positional pressure that characterizes this position (= weakness).
 2. Coda consonants are reputed to be passive. The reverse is true: they are active.
 3. their goal is to remedy their positional plight.
 4. in order to do that, they try to achieve a branching status:
 - branching on a neighbour's melody (homorganic NCs)
 - branching on a neighbour's skeletal position (syllabic consonants)
- b. this unification is only achieved when looking at the facts through the prism of CVCV.

7.1. hence, the problem: CVCV has got nothing to say about homorganic NC clusters

(123 a.

the Master-Servant analysis:

probably all current theories assume that the active role in the homorganizing process is played by the obstruent, while the nasal is the patient of the process.

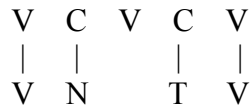
- b. in Standard Government Phonology (i.e. non-CVCV, Kaye et al. 1990), this view on the matter was particularly welcome since all Codas were necessarily (interconstituent-) governed by the following Onset, and all homorganic NC clusters instantiate Coda-Onset sequences. Therefore, the regressive character of nasal assimilation in this case was predicted (see Harris 1990, 1994:69).
- c. in CVCV, this option is not available.
- d. in terms of the Coda Mirror, the nasal stands in a weak position (Coda), while the obstruent occurs in a strong position (Coda Mirror). Why should the nasal assimilate its place of articulation to the obstruent in this configuration?

==> **The only possible answer appeals to its weakness, which creates instability.**

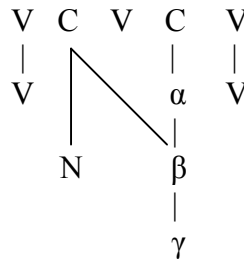
7.2. what to do in CVCV

(124) NC clusters

a. input before homorganisation



b. output after homorganisation: a "partial" or "nasal geminate", see for example Harris (1994:69,174s)



(125 a. is there reason to believe that the structure under (4b) is more stable than the one under (4a)? In other words, is the sharing of place features any salvation to the plight that the nasal experiences due to its weak position?

The answer is YES: it is well known that geminates are the most stable consonantal structure of all: geminate integrity (Kenstowicz & Pyle 1973, Hayes 1986, Schein & Steriade 1986).

More recently, the fact of sharing melody (place, voicing) has also been identified as conferring stability/ inalterability: Honeybone (2002).

b. **what homorganic NCs are:**

the segmental effect is a reaction on the weakness that strikes the nasal in Coda position. In order to escape this positional calamity, the nasal "pirates" some melodic features its neighbour's structure.

c. **==> the Master-Servant analysis is wrong**

- the obstruent is NOT the master, it plays a passive role.

- the nasal plays the active role: it seeks branching support from its neighbour.

7.3. Usually unrelated evidence 1: the behaviour of nasals in final Codas

(126) what can you make believe in this scenario?

Maybe the predictions it makes because the Coda is a disjunctive context: if nasals react on their positional precariousness in internal Codas, they should do so in final Codas as well. This happens to be true.

(127) Somali (Cushitic)

surface observation: /m/ and /n/ are neutralised to [n] in Coda position.

However, nasals are always homorganic in internal Codas.

==> homorganisation in internal Codas vs. lenition /m/ —> [n] in final Codas.

N occurs in #__

a.	singular indef.	singular def	plural	
	maar	maarta	maaro	house
	naar	naatra	naaro	moskito

N occurs in __# __C V__V

b.	/-m/	singular indef.	singular def	plural	
		sun	sunta	sumo	poison
		laan	laanta	laamo	branch
		sin	sinta	simo	hip

c.	/-n/	singular indef.	singular def	plural	
		dan	danta	dano	thing
		daan	daanta	daano	shore
		saan	saanta	saano	to hide

nasals before other elements

d.	/-m/	nin	niman	man sg, pl
		nim-baa		man + focus element
		niŋ-ka		man + article

Southern French

(128) nasals in Southern French I

alternation final __# - preconsonantal __C

	V__V	__C	__#	French spelling	gloss
a.	/-mC/	ʃampetrə	ʃaŋ	champêtre, champ	of the field, field
		kampe	kaŋ	camper, camp	to camp, camp
		tamporerə	taŋ	temps	time
		plombe	plɔŋ	plomber, plomb	to seal, lead (metal)
b.	/-nC/	rɔndə	rɔŋ	rond	round
		blɔndə	blɔŋ	blond	blond
		grandə	graŋ	grand	big
		brijantə	brijaŋ	brillant	brilliant
		kɔntantə	kɔntaŋ	content	happy
c.	"-ŋC"	lɔŋgə	lɔŋ	long	long
		saŋgeŋ	saŋ	sanguin, sang	of the blood, blood

(129) nasals in Southern French II

alternation final # - intervocalic V V

	V <u> </u> V	<u> </u> C	<u> </u> #	French spelling	gloss
a. /-m/	faminə		fɛŋ	faim, famine	hunger, famine
	nome		nɔŋ	nom	name
	ɛseme		ɛsɛŋ	essaim	swarm
	parfyme		parfœŋ	parfum	perfume
b. /-n/	katalanə		katalaŋ	catalan	catalan adj.
	fīnə		fɛŋ	fin	end
	plənə		plɛŋ	plein	full
	bɔnə		bɔŋ	bon	good
c. /-ɲ/	beɲe		bɛŋ	bain, (se) baigner	bath, take a bath
	deɲe		dedɛŋ	daigner, dédain	to dare, disdain
	swaɲe		swɛŋ	soigner, soin	look after, care
	elwaɲe		lwɛŋ	éloigner, loin	to distance, far away
	aŋkwaɲyrə		kweŋ	encoignure, coin	angle, corner

(130) nasals in Southern French III

nasals before fricatives

	V <u> </u> V	<u> </u> C	<u> </u> #	French spelling	gloss
a. /-nF-/		danse		danser	to dance
		blanʃə	blaŋ	blanc	white
		franʃə	fraŋ	franc	open, direct
		brɔnze		bronzer	to get a tan
		defansœr		défenseur	defender
		gɔnfle		gonfler	to blow up
		anvi		envie	desire
/-mF-/	no clear examples				

Polish

(131) contextual variation of nasal vowels in Polish

	a. <u> </u> Stop	b. <u> </u> Fricative	c. <u> </u> #	spelling	
ɛ <u> </u> lab	fstemp	—	muvjẽw̃		wstę
					p,
					mów
					ię
<u> </u> dent	kɔlenda	jẽw̃zik		kolęda, język	
<u> </u> postalv	—	vẽw̃ʃitɕ		węszyć	
<u> </u> vel	lɛŋk	pẽw̃xɛʃ		lęk, pęcherz	
a <u> </u> lab	kɔmpatɕ	vɔw̃vus	muvjɔw̃	kapać, wawóz, mówią	
<u> </u> dent	kɔnt	kɔw̃satɕ		kąt, kąsać	
<u> </u> postalv	—	mɔw̃ʃ		maż	
<u> </u> vel	tɕɔŋgnɔntɕ	vɔw̃xatɕ		ciągnąć, wachać	

(132) conclusion

in all systems reviewed, the weakness of nasals in Codas produces a contrast between the word-internal and the word-final position: in the former situation where a following consonant (stop) is available, the nasal "pirates" its place features. In word-final situation, there is no possible source for consonantal place features, and hence the nasal is depleted of its own place: depending on the system, it appears as the unmarked dental or velar. In Polish, the nasal is even more undressed since it has lost its occlusion in addition of its place: a Polish nasal in plight and without salvaging consonant in sight surfaces as a nasalized velar glide.

7.4. Usually unrelated evidence 2: the birth of nasal vowels (French, Portuguese, Slavic)

(133) genesis of nasal vowels in French

		V V		C		#		French spelling
a. Vm	amare	ɛme	rumpere	rõprə	rem	rjẽ		aimer, rompre, rien
	amaru	amər	gamba	ʒãb	m(e)um	mõ		amer, jambe, mon
	clamore	klamœr	rum(i)ce	rõs	fame	fẽ		clameur, ronce, faim
b. Vn	plana	plen	ventu	vã	non	nõ		plaine, vent, non
	panariu	pajne	sentire	sãtir	vin(u)	vẽ		panier, sentir, vin
	luna	lyn	man(i)ca	mãʃ	ann(u)	ã		lune, manche, an

(134) genesis of nasal vowels in Slavic

a. VNC sequences (nasals in internal Coda)

	other IE languages	Slavic	
		OCS	pol
1. Vm	ind mām̐sa, got mimz gr gomfos, engl comb, lit žambas lat tremo, lit tremti	męso zõbъ tręstъ	mięso ząb trząść
2. Vn	lat de-fendo, lit geneti lat pons, gr pontos lat anser, germ Gans, lit ankštas	žęť põť gõsъ	żąc pątnik gęś

b. VN# sequences (nasals in final Coda)

	other IE languages	Slavic	
		OCS	pol
Vm	ACCsg IE *-ām̐, e.g. ind sut-ām̐, gr k ^h or-ān, lat mens-am 1 st sg e.g. gr, lat fer-ō, got bair-a, Slavic *-ōN with secondary -N	-õ e.g. glav-õ - õ ber-õ	-ę głow-ę -ę ber-ę

7.5. General summary so far

(135) possible reactions of a nasal in Coda position

a. it docks on a preceding vowel Result: nasal vowels in internal Coda in final Coda	b. it docks on a following consonant Result: homorganic NC cluster in internal Coda
--	--

7.6. Something that should not happen: German homorganic CN clusters

(136) German homorganic CN clusters:

nasals react twice: they become homorganic AND syllabic

		a. infinitive -en		singular	b. -n plural		spelling
		schwa present	schwa absent		schwa present	schwa absent	
lab__	b	haabən	haabm̩	kaabə	kaabən	kaabm̩	haben, Rabe
	m	kaɪmən	kaɪmm̩	flamə	flamən	flamm̩	reimen, Flamme
	f	helfən	helfm̩	ʔafə	ʔafən	ʔafm̩	helfen, Affe
dent__	t	vətən	vət̩	bootə	bootən	boot̩	wetten, Bote
	s	hasən	has̩	ʃtʰaasə	ʃtʰaasən	ʃtʰaas̩	hassen, Straße
	l	falən	fal̩	hallə	hallən	hall̩	fallen, Halle
	n	ɸɪnən	ɸɪnn̩	biinə	biinən	biinn̩	rinnen, Biene
vel__	g	zaagən	zaag̩	tsɔjgə	tsɔjgən	tsɔjg̩	sagen, Zeuge
	ŋ	ziŋən	ziŋ̩	jʊŋə	jʊŋən	jʊŋ̩	singen, Junge
uvul__	χ	laχən	laχ̩	kaχə	kaχən	kaχ̩	lachen, Rache
	r	faaχən	faaχ̩	vaakə	vaakən	vaak̩	fahren, Ware

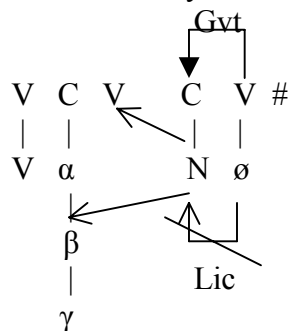
- (137) a. under any of the standard analyses, this is either entirely unexpected or even predicted not to exist. Homorganic NC clusters are so massively found across languages that most phonologists would grant a universal status to the direction of assimilation. On the cross-linguistic scene, the German case is utmost exotic.
- b. the typical analysis in Standard Government Phonology, represented by Harris (1990,1994), is incompatible with the existence of homorganic CN clusters.
- c. there is nothing wrong with homorganic CN clusters in CVCV: nasals are in positional plight as before, only is there nobody they can rip off to their right, so they turn left.
- d. why are homorganic CN clusters so rare, as compared to their NC peers? Because it is not easy to make a N stand in Coda position after a consonant. The only way that this can be achieved is precisely through syncope: VCəN#.

7.7. Schwa is killed by the stabilizing action of the nasal

(138) the nasal branches twice: on a foreign melody and on a foreign skeletal position

- a. the nasal is driven to lateral action because of its positional discomfort. Since there is nothing it could dock on to its right, it must spread leftwards. The object that schwa encounters first is schwa.
- b. in order to dock on the preceding consonant, the nasal must kill schwa. This is done by occupying its skeletal position.
==> result: syllabicity of the nasal.
- c. what is a syllabic consonant? Traditional 19th century view: "vowels weaken in certain positions and at some point die of senility; the neighbouring sonorant then takes over the syllabic function".
This causality is inverted here: schwa does not fade away, but is killed.
- d. why does this only happen after schwa? Because schwa is weak; full vowels cannot be evacuated. [traditional scenario: schwa is weak and therefore fades away; here: schwa is weak and therefore falls prey to the aggression of the nasal. On both accounts, the weakness of schwa is the critical condition]
- e. schwa being off the way, the nasal can also branch on the preceding consonant.
result: homorganicity.
- f. homorganicity: the usual causality is also inverted: the homorganisation of nasals is the cause, rather than the consequence of the absence of schwa.

(139) schwa is killed by the colonising action of the nasal in positional plight



1. the nasal pirates schwa's skeletal position
==> syllabicity
2. the nasal pirates the melody of the preceding obstruent
==> homorganicity

(140) all other sonorants behave like nasals (e.g. Hall 1992:34s, Wiese 1996:243ss):

- a. the lateral becomes syllabic (but of course not homorganic)

/CəL#/ --> [CL#]

Segel [zeegl]

Handel [handl]

Löffel [lœfl]

Henkel [hɛŋkl]

sail

commerce

spoon

handle

- b. the r-sound also reacts, but in a different way: it vocalizes.⁹

⁹ The third candidate, "r" = [ʁ,χ], is out of business here: it implodes in the same conditions. The Lenition of "r" in Coda is called r-vocalization in the German literature (see for example Hall 1992:56ss, Wiese 1996:252ss). The segmental result of the lateral pressure on "r" is some of low schwa which is crucially distinct from the regular schwa that is discussed here. It is usually transcribed as [ɐ] or [ʌ]. Some examples are *lehren*, *sparen* [leɐən, ʃtudiɪən] "teach inf., study inf." vs. *ich lehre*, *ich studiere* [leeə, ʃtudiɪə] "I teach, I study" (familiar speech where the 1st person sg marker -e [-ə] is unpronounced), *er lehrt*, *et studiert* [leeət, ʃtudiɪət] "he teaches, he studies". In the frame of the present analysis, r-vocalization is certainly due to its position in a Coda. But this is only a necessary, not the sufficient condition. It is only because it does not qualify as a syllabic consonant that the consonant "r" is sacrificed as such, experiences depletion and ends up colouring the preceding schwa. And in turn, the inability of "r" to act as a syllabic consonant must surely be related to its status as a "fake" sonorant: only sonorants can be syllabic (at least in German), but the German "r" is actually a uvular fricative [ʁ,χ] with an apical history (it was [r] in MHG) and a synchronically ambiguous behaviour (it still counts as a sonorant for the matter of syllabification: [tχ,bʁ] etc are good branching Onsets; and it provokes [ç], not [χ], to its right as all other sonorants: *durch*, *manch*, *Dolch* [dʊɐç, manç, dɔlç] "through, some, dagger").

7.8. Homorganicity has got nothing to do with adjacency

(141) *Segnung* [Cn-V]: non-homorganic nasal and obligatory absence of schwa

	root	without suffix		with vowel-initial suffix			
		schwa present	schwa absent	infinitive -en, -ern	agentive -er	nominalising -ung	other
g__	Segen	zeegən	zeegŋ	zeekn-ən	zeekn-ɐ	seekn-ʊŋ	—
	eigen	ʔajgən	ʔajgŋ	ajkn-ən	ajkn-ɐ	ajkn-ʊŋ	—
	lügen	lyygən	lyygŋ	—	lyykn-ɐ	—	lyykn-əʔɪʃ
	Wagen	vaagən	vaagŋ	—	vaakn-ɐ	—	—
	wagen	vaagən	vaagŋ	—	—	—	vaakn-ɪs
	Regen	ʁeegən	ʁeegŋ	ʁeekn-ən	—	—	ʁeekn-əʔɪʃ
	gegen	geegən	geegŋ	bəgeekn-ən	geekn-ɐ	bəgeekn-ʊŋ	geekn-əʔɪʃ
	zeugen	ʔsɔjgən	ʔsɔjgŋ	—	—	—	ʔsɔjknɪs
	sorgen	zɔʁgən	zɔʁgŋ	—	—	—	bəzɔʁknɪs
k__	trocken	tʁɔkən	tʁɔkŋ	tʁɔkn-ən	tʁɔkn-ɐ	tʁɔkn-ʊŋ	—
t__	Garten	gaatən	gaatŋ	gɛʔtn-ən	gɛʔtn-ɐ	—	—
	Kasten	kastən	kastŋ	—	kestn-ɐ	—	—
b__	loben	loobən	loobm̥	—	(lɔɔpn-ɐ)	—	gəlɔɔpn-ɪs
	erleben	ʔɛʔleebən	ʔɛʔleebm̥	—	—	—	ɛʔleepn-ɪs
	eben	ʔeebən	ʔeebm̥	ʔeepn-ən	ʔeepn-ɐ	ʔeepn-ʊŋ	—
p__	Wappen	vapən	vapm̥	vapn-ən	—	—	—
f__	offen	ʔɔfən	ʔɔfŋ	ʔœfn-ən	ʔœfn-ɐ	ʔœfn-ʊŋ	—
	schaffen	ʃafən	ʃafŋ	—	ʃafn-ɐ	—	—

(142) three crucial observations

- there is a CN cluster, but the nasal must not be homorganic.
- /-CəN#/ may appear with or without schwa: Regen [ʁeegən] and [ʁeegŋ]
the absence of schwa is mandatory in /-CəN-V/: regnen [ʁeeknən], *[ʁeekənən]
- the obstruent preceding the nasal is devoiced: regnen [ʁeeknən]. [no devoicing in Southern dialects]
it is not in Regen [ʁeegŋ]

(143) **observation 1:** the nasal must not be homorganic

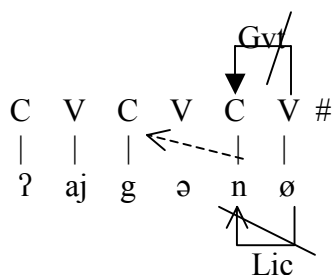
It is commonly believed that homorganicity is produced by adjacency.

The real reason for homorganicity is positional: being in positional plight or not.

a. homorganic CN

German *eigen* [ʔajgŋ]

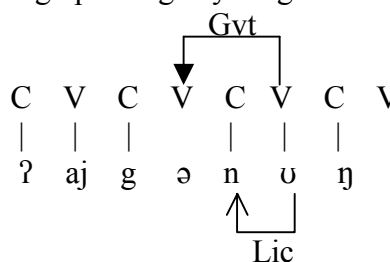
reason: the nasal is in Coda position and pirates the melody of the preceding obstruent.



b. non-homorganic CN

German *Eignung* [ʔajknʊŋ]

the nasal is not in Coda position (but in the strong Coda Mirror position). Therefore, there is no reason for it to go pirating anything.



(144) **observation 2:** schwa must not be present

two different reasons for the phonetic absence of schwa

- the absence of schwa is optional in case it is due to the spreading of a syllabic consonant.
- the absence of schwa is obligatory in case it is due to Government.

(145) **observation 3:** obstruents devoice before the nasal

- this is the proof that the nasal is not in Coda, but in post-Coda position.
- in German, obstruents devoice in both final and internal Codas (e.g. Brockhaus (1995):
Freund-e [fʁɔjnd-ə] "friends"
vs.
Freund [fʁɔjnt] "friend" *freund-lich* [fʁɔjnt-lɪç] "friendly"
1. recall that in CVCV, a consonant in a Coda identifies as occurring before a governed empty Nucleus.
2. hence, the Nucleus preceding the nasal in *regnen* /regənən/ must be governed.
3. by contrast, it cannot be governed in *Regen* [ʁeegŋ] because the final Nucleus is empty.
- hence confirmation of the structures under (143).

7.9. Usually unrelated evidence III: consequences for the genesis and identity of syllabic consonants

(146) syllabicity again

- a. already mentioned: syllabic and trapped (= the mysterious non-counting "syllabic" consonants in Polish, e.g. trwać "to last") consonants are not the result of the loss of a vowel, but stem from the positional plight of the sonorant in Coda position, which drives it to kill the preceding schwa.

7.10. General summary

(147) processes that are triggered by the positional plight of sonorants in Coda position

event	position of the sonorant	result		illustration
		laterals and rhotics	nasals	
spreading onto foreign melody: place features shared	spreading to the right	V__CV V__#	— impossible: nobody there	prefix /in-/ in English etc. —
	spreading to the left	V__CV V__#	— nasal vowel	genesis of French and Slavic nasal vowels
		VC__#	— homorganicity	German habm _ɪ
spreading onto a foreign position: branching structure	spreading to the right	C__ə# C__əC	trapped consonant CR#, CRC	Polish, see chapter I,10 (§240)
	spreading to the left	Və__# Cə__C	syllabic consonant CR#, CRC	German, English, Czech, Serbo-Croatian, see chapter I,10 (§240)
lenition	V__# and/ or V__C	depletion of manner l,r → [j]	depletion of place m → n	l,r → [j]: §50; m → n: Somali (§583)
		ɫ → [w]	l → [ɫ] n → ŋ	ɫ → w: Portuguese (§520) n → ŋ: Southern French (§584)
		r → [ɐ]		German r-vocalisation (§49, note 9) (also English)
		r → [r]		e.g. Portuguese

(148) processes that fall under the scope of the theory

type of reaction		result
spreading (successful stabilization)	on another segment: shared place	only nasals 1. homorganic NC and CN clusters 2. genesis of nasal vowels
	on another position	nasals and liquids 1. genesis of syllabic consonants 2. genesis of trapped consonants
Lenition (unsuccessful stabilization)		nasals and liquids 1. liquids: depletion of manner primes l,r → [j], ʔ → [w]. r → [ʁ] 2. nasals: depletion of place primes /m/ → [n], /n/ → [ŋ]

(149) definition of major classes according to their behaviour under position pressure

	can become homorganic	can spread onto another syllabic position (i.e. become syllabic)	can experience Lenition
nasals	yes	yes	yes
liquids	no	yes	yes
obstruents	no	not really	yes

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