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Introduction to Interface Theory

Milestones in interface thinking

(1) milestones
- a. Inverted T
  Chomsky (1965: 15)
- b. inside-out interpretation (cyclicity)
  Chomsky et al (1956: 75)
- c. interactionism
  Lexical Phonology
- d. selective spell-out
  Halle & Vergnaud (1987)
- e. no look-back devices
  Chomsky (1973), many incarnations, today the PIC

DAY 1
Zoom in with an example: affix classes

1. The phenomenon

(2) class membership of English affixes

class 1		class 2	
in-		un-	
-ity		-ness	
-ic		-less	
-ian		-hood	
-ory		-like	
-ary		-dom	
-ion		-ful	
-ate		-ship	
-al	(adjective-forming)	-ed	(adjectival)
-y	(noun-forming)	-ing	(noun-forming)

(3) diagnostics for class membership
- a. morphological:
  1. affix ordering
     Siegel (1974)
     class 1 affixes occur closer to the stem than class 2 affixes (this is where their name comes from).
     cl1-cl1: *atom-ic$_1$-ity$_1$*, *univers-al$_1$-ity$_1$*
     cl2-cl2: *atom-less$_2$-ness$_2$*, *beauty-ful$_2$-ness$_2$*, *guard-ed$_2$-ness$_2$*
     cl1-cl2: *univers-al$_1$-ness$_2$*
     cl2-cl1: * **atom-less$_2$-ity$_1$*, **piti-less$_2$-ity$_1$*, **guard-ed$_2$-ity$_1$*
  2. bound stems
     class 1 affixes + bound stem: *in-ert*, *in-trepid*)
     class 1 affixes + independent word: *in-tolerable*
     class 2 affixes + bound stem: * **un-ert*, **un-trepid*
     class 2 affixes + independent word: *un-aware*

- b. phonological
  1. stress placement
     class 1: stress-shifting: párent - parént-al (válid-valíd-ity, átom, atóm-ic)
     class 2: stress-neutral: párent - pãrent-hood (válid-ness, átom-ise)
  2. trisyllabic shortening
     class 1: sane - san-ity, Christ - Christ-ian
     class 2: maiden - maiden-hood, wild - wild-ness
  3. nasal assimilation
     class 1: im$_1$-possible
     class 2: un$_2$-predictable

(4) affix ordering
is actually not true
Aronoff (1976), Aronoff & Sridhar (1983, 1987)
- a. patent-abíl$_2$-ity$_1$
- b. develop-mént$_2$-al$_1$
- c. organ-iz$_2$-at-ion$_1$
- d. un-$_2$grammatic-al$_1$-ity$_1$

(5) affix classes
- a. a general phenomenon or merely a peculiarity of English?
- b. English
  different lexical strata in the historical development of the language
  class 1: Romance
  class 2: Germanic
- c. affix classes have a cross-linguistic reality
  Dutch, German, Malayalam (Dravidian), Basque, Dakota (native American) confirm the English pattern: typically, affix classes correspond to the import of various strata of vocabulary in different historical periods of the language.
- d. overview:
  Booij (2000 [1996]:297)

(6) empirical challenge: underapplication
Affix class-based phenomena require the *underapplication* of phonology: a subset of the active phonology of the language must be precluded from applying to strings that were created by the attachment of a certain affix class.

2. Four analyses

2.1. SPE

(7) SPE
representational
- a. class 1 = +
  class 2 = #
- b. parent
  parent+al
  parent#hood
- c. main stress rule
  Shift mail stress one syllable right upon the concatenation of each suffix.
  This rule applies only to strings that do not contain any #.

d. general pattern
is a rule-blocking boundary: rules are made sensitive to #.
E.g. N assimilates to the place of a following obstruent if not followed by #.

(8) underapplication
achieved by the reference of rule to (rule-blocking) boundaries.

2.2. Lexical Phonology

(9) Lexical Phonology
analysis of stress shift

		parent	parént-al	párent-hood
lexicon		parent	parent	parent
level 1	concatenation	—	parent-al	—
	stress assignment	párent	parént-al	párent
level 2	concatenation	—	—	párent-hood
	rule application	—	—	—

(10) Lexical Phonology
analysis of Trisyllabic Shortening

		san-ity	maiden-hood
lexicon		sejn	mejdən
level 1	concatenation	sejn-ɪtɪ	—
	Trisyll. Short.	sæn-ɪtɪ	—
level 2	concatenation	—	mejdən-hʊd
	rule application	—	—

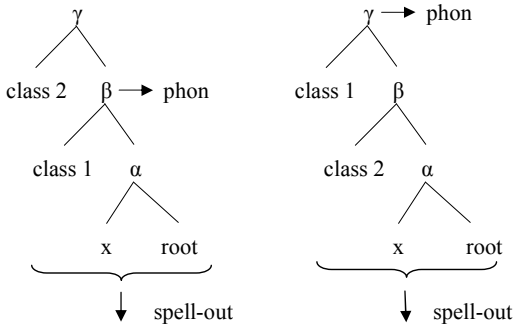
(11) Lexical Phonology
analysis of nasal assimilation

		im-possible	un-predictable
lexicon		possible	predictable
level 1	concatenation	in-possible	—
	nasal assimilation	im-possible	—
level 2	concatenation	—	un-predictable
	rule application	—	—

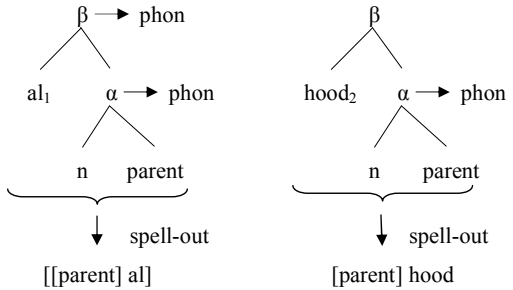
(12) underapplication
achieved by morpheme-specific mini-grammars:
a. selective rule application
b. level ordering

2.3. Halle & Vergnaud (1987)

(13) Halle & Vergnaud (1987a): analysis of affix classes
a. univérs-al-ness b. govern-mént-al



(14) Halle & Vergnaud (1987a): analysis of affix class-based stress
a. parént-al b. párent-hood



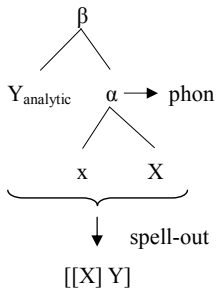
(15) underapplication
achieved by selective spell-out
a. affix-triggered interpretation:
1. class 1 affixes trigger spell-out (are cyclic)
2. class 2 affixes do not trigger spell-out (are non-cyclic)
b. only one single phonology
c. stress rule
penultimate stress is assigned to all interpretational units, i.e. all chunks that are spelt out (=bracket-enclosed).
Prior to its application, all stresses present in the string (Stress Erasure Convention).
d. the root is an interpretational unit of its own
/parent/ → [parent] → pãrent

e. the word is not an interpretational unit.
Like in SPE, there is a specific word-level phonology (which is non-cyclic)

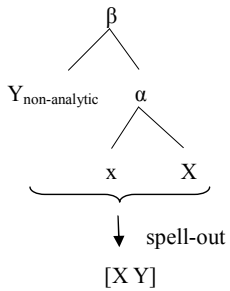
2.4. Kaye (1995)

(16) Kaye: analytic affixes provoke the spell-out of their sister

a. Y is analytic: α is spelled out



b. Y is non-analytic: α is not spelled out

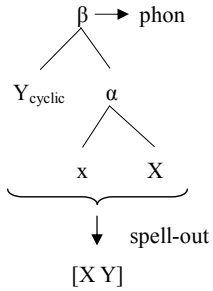


(17) underapplication
is achieved by selective spell-out, but:

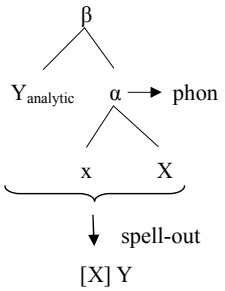
a. when interpretation is triggered by interpretation-triggering affixes (which Kaye calls analytic),
what is spelt out is *the sister* of the affix at hand.
b. the word is an interpretational unit
c. class 1 = do not trigger interpretation (non-analytic)
class 2 = trigger interpretation (analytic)
d. ==>
[parent al_1] vs. [[parent] $hood_2$]
e. no look-back (which Kaye calls robustness)
a property created through previous phonological computation cannot be undone by later computation.
==> [[párent] hood] → *[parént-hood]

(18) comparison
interpretation-triggering affixes: what exactly is spelled out

a. Halle & Vergnaud (1987a): cyclic affixes trigger the spell-out of their own constituent β



b. Kaye (1995): analytic affixes trigger the spell-out of their sister α



(19) properties shared by Halle & Vergnaud (1987a) and Kaye (1995)

	Halle & Vergnaud	Kaye
a. multiple computational systems		
1. morpheme-specific	no	no
2. sentence-specific (Praguian segreg.)	no	no
3. word-level-specific	yes	yes?
b. cyclic (inside-out) interpretation of words	yes	yes
c. selective spell-out	yes	yes
d. interpretation triggered by a lexical property of affixes upon concatenation	yes	yes

(20) differences between Halle & Vergnaud (1987a) and Kaye (1995)

	Halle & Vergnaud	Kaye
a. the root is an interpretational unit	yes	no
b. the word is an interpretational unit	no	yes
c. morpho-syntactic terminals may be interpretational units	no	yes
d. interpretation-triggering affixes trigger the spell-out of	their own node	their sister
e. English affix classes: type that triggers interpretation	class 1	class 2
f. underapplication is achieved by	cycles	cycles and no look-back
g. no look-back device		
1. type of device used	SCC-K	modification-inhibiting
2. derived environment effects built in	yes	no
3. no look-back is relevant for underapplication	no	yes

3. intermodular argumentation (syntax → phonology)

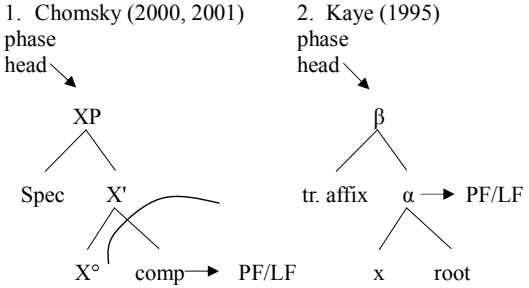
(21) intermodular argumentation (syntax → phonology)

a. affix class-related phenomena: three competitors

	selective spell-out	spells out
Lexical Phonology	no	the mother
Halle & Vergnaud (1987)	yes	the mother
Kaye (1995)	yes	the sister

(22) syntactic referee I
derivation by phase is based on selective spell-out: not all nodes are phase heads
[except for spell-out-as-you-merge, Epstein *et al.* et al. 1998 et seq.]
==> LP is wrong

(23) syntactic referee II
the phase edge: spell out your sister !
==> Halle & Vergnaud are wrong
the phase edge in syntax and phonology



only competitor left: Kaye (1995)

(24) intermodular argumentation
Scheer (2008, 2009)

a. analytic/theoretical choices in phonology are liable to consequences in morpho-phonology, and vice-versa. Cross-modular predictions are made.
b. offers a maximally independent referee within the realm of grammar
c. was little or not explored in the past (because you need both-way communication to do it, and the generative orthodoxy was "ship once and forget" until 1999 (phonological interactionism has had no fortune in syntax).

(25) Phase Theory forces us to ask questions that were not asked before

a. it creates a pipe between morpho-syntax and phonology, and whatever happens on one end may impact the other end.
b. there was no such mutual marshalling before: "all concatenation before all interpretation" ruled since Aspects.

(26) convergence

a. the mechanisms which have been proposed on the morpho-syntactic side in order to manage the procedural communication with phonology, and their phonological equivalents are actually converging to a large extent – but this is not really perceived because they run under different labels.
b. there is no alternative anyway if there is any cyclic communication between morpho-syntactic structure and phonological interpretation at all:
==> the spell-out mechanism must be the same on both sides: the pieces that travel are the same.
c. convergence is a criterion for selecting among competing solutions in phonology.

DAY 2
Introduction to Cognitive Science and its application to language

(27) Generative Linguistics in Cognitive Science
(Gardner 1985)
historically speaking, generative linguistics is the application of the standard theory of cognitive science to language:
- modularity
- serial computation (Turing - von Neumann)

(28) Cognitive Science-informed/oriented textbooks for linguists
a. Isac, Daniela & Charles Reiss 2008. I-Language. An Introduction to Linguistics as Cognitive Science. Oxford: OUP.
b. Boeckx, Cedric 2010. Language in Cognition. Uncovering mental structures and the rules behind them. Oxford: Wiley-Blackwell.
c. Interlude (§586) of
Scheer, Tobias 2011. A Guide to Morphosyntax-Phonology Interface Theories. How Extra-Phonological Information is Treated in Phonology since Trubetzkoy's Grenzsignale. Berlin: Mouton de Gruyter.

1. Modularity

(29) the mind is made of a number of specialized computational systems
a. Franz-Josef Gall (1758-1828), phrenology
[PLAY ppt]
b. Turing - von Neumann model that underlies the so-called cognitive revolution of the 50s-60s (Gardner 1985) and is the basis of current computation in all areas
1. computation is based on distinct
1. short-term (working) and
2. long-term memory
(this is the essence of the Universal Turing/von Neumann Machine)
2. instructions written in this language are independently stored in long-tem memory ==> software
3. computational action cannot modify the code of instructions
4. literature
Herken (1995), Clapin (2002), Pylyshyn (1984, 1989), Haugeland 1989: 133ff).
Introduction from the linguistic perspective: Boeckx (2010: 33ff)
c. Chomsky & Halle's (1968) description of the phonological rule system:

"The rules of the grammar operate in a mechanical fashion; one may think of them as instructions that might be given to a mindless robot, incapable of exercising any judgment or imagination in their application. Any ambiguity or inexplicitness in the statement of rules must in principle be eliminated, since the receiver of the instructions is assumed to be incapable of using intelligence to fill in gaps or to correct errors." Chomsky & Halle (1968:60)

d. modern and explicit incarnation: Fodor (1983) and following

(30) competing model of the mind: connectionism
a. Rumelhart *et al.* (1986) and following
b. issues:
– parallel, instead of serial computation
– colourless (content-free) computation: computation is all-purpose, rather than (domain) specific
– consequence: computation is non-symbolic
– non-distinction between storage and computation: rule-list fallacy
– reductionsim (eliminativism): there is no mind, the brain is the only relevant entity
c. in linguistics: "Cognitive" Linguistics, Langacker (1987) and following, see e.g. Taylor (2002) for an overview.
d. overview literature:
Pinker & Mehler (eds.) (1988), Dinsmore (1992), Pylyshyn (1999), Rumelhart (1989), Stillings *et al.* (1995:63ff), Thagard (2005:111ff)

(31) core properties of cognitive modules according to Segal (1996:145)
a. **domain specificity**
b. **informational encapsulation**
c. obligatory filtering
d. fast speed
e. shallow outputs
f. limited inaccessibility
g. characteristic ontogeny
h. dedicated neural architecture
i. characteristic patterns of breakdown

(32) how do we identify modules?
a. **domain specificity**
b. **informational encapsulation**
c. based on pathologies: double dissociation

(33) how much of the mind is modular?
a. Fodor (1983, 2000 etc.):
1. the mind has a non-modular core
2. this core is made of central systems: teleological etc.
3. these are impenetrable for human intelligence: don't even try
"the more global […] a cognitive process is, the less anybody understands it" (Fodor 1983:107)
b. lower vs. higher cognitive functions
(only) lower cognitive functions are modular in kind: perceptual systems and language.
c. this line of thought is goes back to Descartes: I know that I have a mind (soul) that is distinct from my body, but I will never be able to know how it works and what it is made of.
Also Chomsky
[e.g. Chomsky 1984:6f, 23f, Chomsky 1995b:2f, chapter 4 of Chomsky 1975 is called "Problems and mysteries in the study of human language"]

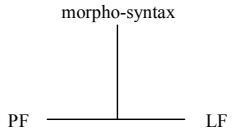
d. opposite take: massive modularity
   1. the mind is modular through and through
   2. Sperber (1994, 2001)
   3. evolutionary psychology: Pinker (1997), Plotkin (1998)
   4. in linguistics: Smith & Tsimpli (1995:164ff, 1999)
e. an outgrowth of the idea that modularity is not restricted to perceptual systems (or lower functions) is its application to higher functions, and namely to social interactions and culture:
   Cosmides & Tooby (1992a,b), Hirschfeld & Gelman (eds.) (1994) and following.
f. overviews
   Stainton (ed.) (2006:3ff), Samuels *et al.* (1999)

(34) a related topic: is the mind (are modules) the result of Darwinian adaptation?
   a. NO: Hauser *et al.* et al. (2002), Hornstein (2009) etc.
   b. YES: Pinker & Jackendoff (2005a,b), evolutionary psychology (Barkow *et al.* 1992)

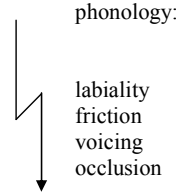
(35) domain specificity requires translation
   a. a direct consequence of the fact that different modules speak different languages (of the mind) is their inability to understand each other. Modules can only parse objects that belong to their own language, i.e. which are part of the domain-specific vocabulary that they are designed to process.
   b. "'Mixed' representation[s] should be impossible. Rather, phonological, syntactic and conceptual representations should be strictly segregated, but coordinated through correspondence rules that constitute the interfaces." Jackendoff (1997:87ff)

2. Modularity in language

(36) the standard model: inverted T
   a. three independent and domain-specific computational systems:
      1. (morpho-)syntax = the concatenative system, whose output is interpreted by
      2. phonology (PF) = assigns a pronunciation
      3. semantics (LF) = assigns a meaning
      Chomsky (1965:15ff)



(37) **phonology vs. the rest**
   a. if we go by domain specificity,
      the major ontological gap in language is between phonology and the rest.
      Vocabulary used in



   b. Jackendoff's (1987, 1992, 1997) Representational Modularity
      (called Structure-Constrained Modularity today, Jackendoff 2002:218ff)

      "The overall idea is that the mind/brain encodes information in some finite number of distinct representational formats or 'languages of the mind.' Each of these 'languages' is a formal system with its own proprietary set of primitives and principles of combination, so that it defines an infinite set of expressions along familiar generative lines. For each of these formats, there is a module of mind/brain responsible for it. For example, phonological structure and syntactic structure are distinct representational formats, with distinct and only partly commensurate primitives and principles of combination. Representational Modularity therefore posits that the architecture of the mind/brain devotes separate modules to these two encodings. Each of these modules is domain specific.
      […] The generative grammar for each 'language of the mind,' then, is a formal description of the repertoire of structures available to the corresponding representational module." Jackendoff (1997:41)
   c. Chomsky (2000)
      "The phonological component is generally assumed to be isolated in even stronger respects: there are *true* phonological features that are visible only to the phonological component and form a separate subsystem of FL [the Faculty of Language], with its own special properties." Chomsky (2000:118, emphasis in original)
   d. Late Insertion = segregation of phonological vocabulary
      while up to Government & Binding (80s), morpho-syntactic computation was done on the basis of complete lexical information that included syntactic, morphological and semantic features as much as phonological material (sealed suitcases), Late Insertion is the idea that phonological material is absent from morpho-syntactic computation

3. Zoom on the communication between morpho-syntax and phonology

(38) derivational and representational communication
   a. since Chomsky *et al.* (1956: 75) where cyclic derivation is introduced, both are operative in generative grammar.
   b. representational: **translation**
      a morpho-syntactic object is translated into a phonological object
      example for the translation of morphemes: in Czech, the morpho-syntactic object
      - <number = plural>
      - <person = 3>
      - <verb class = X>
      is translated into phonological vocabulary and appears in the linear string as
      -ou (oni krad-ou etc.)

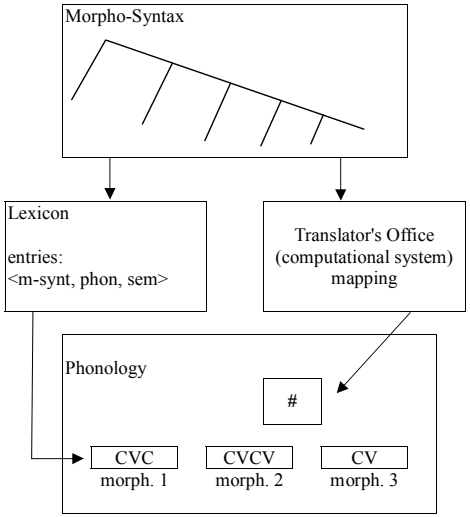
c. derivational: cyclic derivation, today called phase theory
==> nothing is translated, but the output is impacted
[[[A] B] C] is interpreted successively from inside out:
1st round: [A] is interpreted (by PF and LF)
2nd round: [AB] is interpreted (by PF and LF)
3rd round: [ABC] is interpreted (by PF and LF)

==> hence [[[A] B] C] and, say, [[A] BC] produce different results

"[ ]" is called a phase and the distribution of phases over syntactic structure is a currently debated question.

4. How translation has always worked: Two Channels

(39) Translation in generative interface thinking
Mixed lexical and computational translation:
Two Channels



(40) lexical translation
a. concerns **morphemic information** of the output of morpho-syntactic computation
b. morphemic information is matched with lexical entries, which compete for insertion.
c. lexical entries are made of three types of information
1. morpho-syntactic
2. phonological
3. semantic
d. look-up
translation is through a lexical access that works like a multilingual dictionary:
you know the item of one language and want to know what their equivalence is in another language.
e. example
- <number = plural>
- <person = 3>
- <verb class = X>
==> morpheme injected into phonology: -ou

(41) computational translation
a. concerns **non-morphemic information** (or boundary information) of the output of morpho-syntactic computation
b. the items inserted into the linear string
1. are not stored in the lexicon (long-term memory)
2. exist only during online computation (working memory)
3. are created through a computational action that transforms a (morpho-syntactic) input into a (phonological) output according to a fixed set of computational instructions (that is stored in long-term memory).
E.g. the SPE-algorithm that inserts hash marks at the edges of every major category (N, V, A) and of every projection thereof (NP, VP etc.).

5. Core properties of translation

(42) partial homology
Jackendoff (2002)
a. translation is selective: only a subset of the properties of the sending module is made available to the receiving module.

"Correspondence rules perform complex negotiations between two partly incompatible spaces of distinctions, in which only certain parts of each are 'visible' to the other." Jackendoff (1997:221)

"The overall architecture of grammar consists of a collection of generative components G_1, …, G_n that create/ license structures S_1, …, S_n, plus a set of interfaces I_{jk} that constrain the relation between structures of type S_j and structures of type S_k. […] Typically, an interface I_{jk} does not 'see' all of either S_j or S_k; it attends only to certain aspects of them." Jackendoff (2002:123)

b. the amount of structure that is visible for interface processors in a given module may be small or big, and this is unpredictable: the translational channel between two modules may have a more or less narrow "information bottleneck" (Jackendoff's 2002:229 term).
c. well supported in language:
morpho-syntax and melody are incommunicado in both ways

(43) translation is arbitrary
Jackendoff (2002)
a. which pieces of the structure of the sending module are translated cannot be predicted.
b. well supported in language:
the mapping puzzle (Scheer 2011): all efforts at finding cross-linguistic patterns of translation have been by and large vain. That is, phonologists could not come up with natural classes of boundaries.

(44) modules receive variable inputs, but produce a uniform output
many-to-one
modules may draw on information that comes from a range of other modules
a. example: in perception, phonology is fed at least by acoustic-phonetic and visual information.
==> McGurk effect (McGurk & MacDonald 1976, Ingleby & Azra 2003)
b. the circuitry of visual stimuli that reach grammatical processing appears to be different from auditory stimuli, but processed by the auditory cortex (Calvert & Cambell 2003).
c. complementary distribution
interestingly, the McGurk input into the phonological module appears to be the complementary set of what morpho-syntax can provide: melodic primes.

(45) one-to-many
a. the output of a given module may be used as the input to a range of other modules
audition
provides information for a number of very different modules: sound is processed by
- all-purpose audition (e.g. the perception of sound that is produced by animals)
- voice recognition (the identification of humans according to their voice)
- auditory affect perception (emotion detector)
- perception of linguistically relevant phonetic material
b. consequence
variable input vocabularies that are all mutually unintelligible must be translated into the proprietary vocabulary of the receiving module.

6. History of translation and its violation in generative phonology

(46) definition
domain specificity and hence modularity is violated when phonology makes reference to **untranslated** morpho-syntactic information

6.1. SPE

[The Sound Pattern of English, Chomsky & Halle 1968]

(47) phonology makes reference to both translated and untranslated morpho-syntactic information
a. boundary information
there is a translation procedure: **non-morphemic** morpho-syntactic information is translated into so-called boundaries #
- <root = krást>
- <number = plural>
- <person = 3>
- <verb class = X>
==> result of translation: krad # ou

compare for example class 1 vs. class 2 affixes in English:
párent = bare root, penultimate stress
parént-al = root + class 1 affix, penultimate stress
párent # hood = root + class 2 affix, root stress (stress assignment blocked)
b. but there is also reference to untranslated information:
labelled brackets
$[[\text{electric}]_{\text{Adj}}\ \text{ity}]_{\text{Noun}}$
bláckboard $[_{N}\#\ [_{A}\#\ \text{black}\ \#]_{A}\ [_{N}\#\ \text{board}\ \#]_{N}\ \#]_{\mathbf{N}}$
black bóard $[_{NP}\#\ [_{A}\#\ \text{black}\ \#]_{A}\ [_{N}\#\ \text{board}\ \#]_{N}\ \#]_{\mathbf{NP}}$

- brackets are aliens: non-parsable by the phonology
- labels (Adj. etc.) are untranslated information

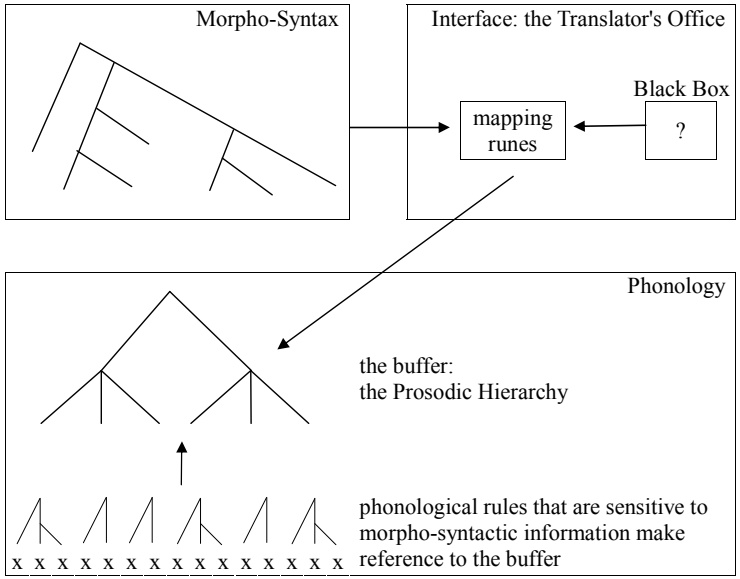
6.2. Prosodic Phonology

(48) 80s: Prosodic Phonology
Selkirk (1981 [1978], 1984), Nespor & Vogel (1986)
emerged from the conflict with the so-called Direct Syntax approach that proposes to make direct reference to untranslated morpho-syntactic information, hence to
==> abandon translation altogether
Kaisse (1983, 1985, 1990), Chen (1990), Odden (1987, 1990), Pyle (1972), Rotenberg (1978), Clements (1978)
==> the conflict was decided in favour of Prosodic Phonology in the mid-80s.

(49) Indirect Reference and its consequence, the Prosodic Hierarchy
phonological processes make only indirect reference to morpho-syntactic information.
a. reference to functions and labels (argument, adjunct, DP etc.) is prohibited altogether.
b. reference to structure is allowed, but only indirectly:
true morpho.syntactic structure is translated into the Prosodic Hierarchy (which lies inside the phonology), to which phonological rules then make reference.

(50) perfectly modular architecture
- a. phonological computation makes reference only to translated information
- b. translation is done in **modular no-man's land** (neither morpho-syntax nor phonology)
- c. translation is **computational**: mapping rules are RULES, i.e. carry out a computation in its own right.

(51) general architecture of Prosodic Phonology



(52) non-isomorphism: the black box
[a footnote to Prosodic Phonology]
a.

(53) a good and a bad reason for Indirect Reference
- a. the bad reason (put forth by Prosodic Phonology)
  non-isomorphism (the black box)
  [Selkirk 1981 [1978], Nespor & Vogel 1986: all through the book, 4s,34ss,124ss etc., Vogel & Kenesei 1990, Nespor *et al.* et al. 1996 etc.]
  1. some phonological rules make reference to information that is not contained in morpho-syntactic structure. That is, to domains that do not represent any single node on the morpho-syntactic side.
  2. ==> morpho-syntactic structure needs to be readjusted before it can be used by phonology
  3. SPE's readjustment component = mapping rules, the Black Box
  4. SPE-example: cat-rat-cheese
- b. the good reason: modularity
  [which was never invoked in the PP literature]

(54) non-isomorphism (and hence the Prosodic Hierarchy) evaporates when boundaries or modern Spell-Out are used
- a. cat-rat-cheese: every CP starts a new intonational unit.
- b. if phonological rules make reference to boundaries, rather than to domains, there is no argument at all: the Prosodic Hierarchy and the mapping mechanism are redundant.
- c. non-isomorphism is a mirage created
  1. by the domain-a priori
  2. by the SPE-GB-80s implementation of the inverted T: "all concatenation before all interpretation.
  morpho-syntactic and phonological structure is necessarily isomorphic when looked at through the prism of Spell-Out and/or boundaries (rather than of domains).

6.3. OT

(55) Optimality Theory (OT): massive violation I
Direct Syntax in OT is regular, uncontradicted and unreflected
[Scheer 2011:§523]
Constraint-based mapping with ALIGN: translation is done IN the phonology, and this is a permanent violation of domain specificity.
Example (Kleinhenz 1998: 39f)
- a. German
  auf-essen "to eat up"
  is made of a stem (*essen*) and a prefix (*auf*).
- b. epenthetic glottal stop: *auf-ʔessen*.
- c. ONSET >> ALIGN (Stem, L, PrWd, L) >> DEP
- d. The alignment constraint demands that the beginning of the stem coincides with a prosodic word; regular mapping would express the same requirement by the fact of assigning two separate prosodic words to the prefix and to the stem.
- e. ONSET demands the presence of a consonant in the first syllable of *essen* – hence the epenthetic glottal stop.
- f. *au.fessen*
  the stem and the prosodic word are misaligned, and this is fatal since ALIGN outranks the epenthesis-hostile DEP.
- g. In a language with the reverse ranking, *au.fessen* without glottal stop would be optimal.
- h. rule-based mapping
  Regular rule-based mapping would describe this variation by a parameter on the assignment of the prosodic word, which may or may not encompass prefixes. That is, the domain of glottal stop insertion is the prosodic word: glottal stops are inserted at their left edge. In German, the prefix makes a prosodic word of its own; the prefix-final consonant cannot join *essen* because there is no syllabification across prosodic word boundaries (in German). *Essen* will therefore be subject to glottal stop insertion. In the hypothetical language where *au.fessen* is encountered, the prefix and the stem cohabitate within a single phonological word: this allows the prefix-final consonant to join *essen*, and no glottal stop will be inserted.

i. OT produces the winner without mentioning any particular process and thus without any process (or rule) making reference to the Prosodic Hierarchy. The effect is achieved by the interspersing of alignment with regular phonological constraints that are not involved in issues related to the interface (ONSET and DEP).
j. This system significantly contrasts with rule-based mapping: it conflates a two-step procedure into one single constraint. On the regular account, prosodic constituency is first created by mapping; phonological rules then make reference to the prosodic structure. These steps are procedurally ordered, and domestic phonological rules refer to the carrier of morpho-syntactic information in the description of their environment, as much as they may refer to truly phonological conditions.

(56) Optimality Theory (OT): massive violation II
Other instances of modularity violation in OT
a. so-called interface constraints (e.g. Anttila 2002)
declension-specific: $Faith_{Declension-15}$
parts of speech-specific: $Faith_{noun}$
specific to individual lexical items: $Faith_{jumala}$
b. parallel ambition of OT
tropism to scramble the computation of information that belongs to different domains: morphological, phonological, phonetic and sometimes even syntactic and semantic constraints (Russell 1997) cohabitate in the same constraint chamber.
Kager (2000: 123) promotes scrambling, arguing that this morpho-phonological intimacy is an advantage: the more modular contours are blurred, the better the theory fares.
c. body of constraints itself
since formulations are in prose and entirely unrestricted, they may well, and actually do, contain both phonological and morphological instructions. E.g. Yip (1998: 219).
d. sometimes modularity as such, in language and elsewhere in the mind, is declared wrong: Burzio (2007)
e. OT roots in connectionism, and hence has a scrambling trope: one of its founders, Paul Smolensky, was also at the forefront of the development of PDP:
e.g. Smolensky (1987)

(57) current minimalist syntax has created a monster: PF
[PLAY ppt]
[Chomsky 2000 and following]
a. empty (narrow) syntax, pump up PF: clean syntax, dirty phonology?
b. PF used to be coextensive with "phonology", or "phonological computation"
c. it has now become an agora for all kinds of operations that have got nothing to do with phonological computation.
==> one of them is a strong modularity offender: PF Movement
[Embick & Noyer 2001 and following]
PF Movement moves items along the syntactic tree, but the movement is triggered by phonological properties.

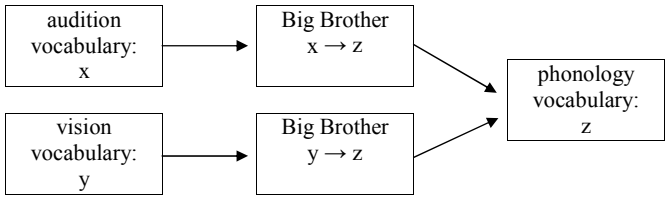
7. Outlook: One-Channel Translation

7.1. Computational translation violates domain specificity

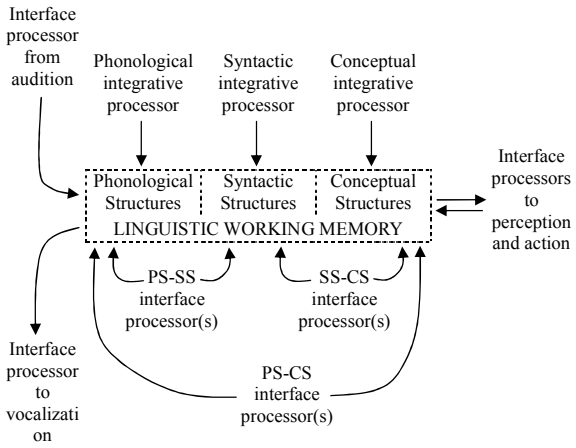
(58) computational translation
a. translation of non-morphemic information has always been conceived of as computational
1. readjustment rules (SPE)
2. mapping rules (Prosodic Phonology)
3. correspondence rules (Jackendoff)
all are a computation in its own right, i.e. distinct from either the sending or the receiving module.
b. Big Brother
translation by computation requires the Translator to have access to both the vocabulary of the sending and the vocabulary of the receiving module.
==> violation of domain specificity
c. Jackendoff (2002:229) tries to discuss away this contradiction by resorting to the word "bi-domain specificity": interface modules are domain-specific like all others, but they are super-modules and therefore can be specific to two domains.
==> contradiction in terms
d. "a cynic might say therefore that the issue of modularity is dissolved. I would disagree" (Jackendoff 2002:229).
There is no further argument, though.

(59) what is the status of computational devices that do translation?
a. they can only be modules, since there is nothing in modular theory that carries out computation apart from modules.
==> but they cannot be modules because they violate domain specificity.
b. in Jackendoff's model (where modules are called processors):
1. inferential processors (Fodor's central systems)
2. integrative processors (Fodor's modules)
3. interface processors
integrative processors are related by interface processors.

(60) reduction of variable inputs to a uniform output
a. no trouble for computational translation: on their input side, modules have a Big Brother for each different vocabulary that they are fed with.
b. example [audition, vision] → phonology



(61) modular structure of language according to Jackendoff
(reproduction of the chart from Jackendoff 2002: 199)



7.2. Translation always involves a lexical access

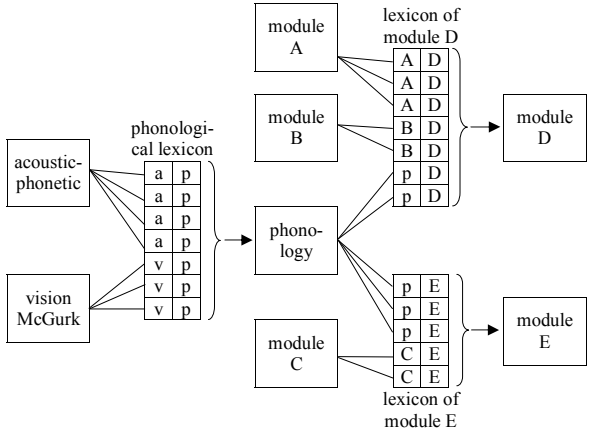
(62) alternative to computational translation
- a. all translation is only lexical
- b. both morphemic and non-morphemic information is translated through a lexical access
- c. all phonological material originates in the lexicon
- d. what about the workings of translation in other cognitive functions? Is this currently done by computational mechanisms?

(63) translation bears the signs of **lexical** activity
- a. arbitrary relations of an input and an output
  [as in dictionaries]
- b. refusal to obey cross-linguistic lawful behaviour
  [mapping puzzle]

(64) other arguments for lexical translation
- a. Big Brothers violate domain specificity
- b. economy / Occam's Razor: lexical translation uses the resources of modular theory that are needed anyway.
  Modularity knows only
  1. modules
  2. lexica
  3. eventually central systems

(65) reduction of variable inputs to a uniform output
- a. instead of having a number of Big Brothers, modules have a proprietary Lexicon on their input side.
- b. this Lexicon has variable inputs (i.e. written in the distinct vocabularies of the different inputs), but a uniform output, i.e. only phonological vocabulary.
- c. in this perspective, lexical entries are pairs of arbitrarily associated items which belong to two different domains.

(66) intermodular communication with lexical translation



DAY 3
What does that buy us?

1. Arguments from Cognitive Science missed

(67) inside-out interpretation
can be saved only if spell-out is piecemeal
- a. SPE-type brackets violate modularity: put brackets in your string and send it to phonology as a whole when all concatenation is done up to the last CP.
- b. brackets disappear if cycles are sent to phonology piecemeal (interactionism).
- c. ==> argument in favour of interactionism (Phase Theory)
- d. Lexical Phonology introduced this way of piecemeal communication in the 80s, but even under anti-interactionist fire (from Halle & Vergnaud 1987) did not use the argument.

(68) Indirect Reference
- a. major debate of the early-mid 80s: Direct Syntax vs. Indirect Reference
  Direct Syntax: phonological rules make reference to DPs, adjuncts etc. (Kaisse 1985, Odden 1987).
- b. debate could have been decided by Domain Specificity, but nobody was referring to Modularity or Cognitive Science.
- c. Indirect Reference
  is the requirement for translation, i.e. the consequence of domain specificity.

(69) Late Insertion
is the discovery of domain specificity, but without any reference to Cognitive Science
- a. Distributed Morphology
  introduces the idea of 3 distinct lexica
  1. input to morpho-syntax (syntactic features)
  2. input to phonology (morphemes, selected by spell-out)
  3. encyclopedia
- b. linguistics-internal reasons:
  1. multiplication of functional projections since GB
  2. atomisation of basic syntactic building blocks, smaller than the morpheme
  3. getting rid of dead freight: sealed suitcases
- c. result:
  two distinct vocabularies for morpho-syntax and phonology.

2. What translation is good for

(70) translation forces us to ask questions that were not asked before
- a. it creates a pipe between morpho-syntax and phonology, and whatever happens on one end may impact the other end. Spell-Out thus marshals both morpho-syntax and phonology.
- b. Phase Theory is the bridge that forces syntax and phonology to converge.
- b. there was no such mutual marshalling before: "all concatenation before all interpretation" ruled since Aspects.

(71) phases (cycles) vs. prosodic constituency
- a. On the representational side
  phonologists have always created domains that are dictated by phonological processes: domains of rule application. Without this, however, having any consequence on the morpho-syntactic side: non-isomorphy is the cornerstone of Prosodic Phonology. It says that phonological domains may not exactly correspond to morpho-syntactic constituent structure.
  ==> there is a Black Box that does things between morpho-syntax and phonology, whose workings are unknown (and uninvestigated), but which provides a nice licence to phonologists to have whatever domain they need..
- b. On the procedural side
  the definition of phonologically relevant chunks of the string (domains) is also done procedurally, i.e. by the definition of cycles (in Lexical Phonology), but the official attitude on both sides was "peaceful coexistence" and "we don't question what the others do, we don't look at it, we don't compare".
  [exceptions: Inkelas 1990, Selkirk 1984, arguing that cycles should be replaced by prosodic constituency]
- c. postlexical phonology is non-cyclic
  Kiparsky (1982)
  1. at and above the word level, chunk definition is ONLY representational, i.e. done by the Prosodic Hierarchy.
  2. incarnation of peaceful coexistence
  3. Official abandon of external sandhi to Prosodic Phonology.
  4. ==> without argument.
- c. phase theory has substantially modified the landscape
  (but this went by and large unnoticed in phonological quarters):
  1. phase theory obliterates non-cyclic postlexical phonology: it defines phonologically relevant chunks above the word level.
  2. it is unlikely that a computational system is completely insensitive to its input conditions: phonology receives input piecemeal. Unlikely it ignores the chunks that it is sent.
  3. impact of piecemeal fire below the word level is commonplace.
- d. if phase theory is correct
  there must be cycles in external sandhi
- e. prosodic constituency is redundant
  D'Alessandro & Scheer (in press)

(72) intermodular argumentation (syntax → phonology)
morpheme-specific mini-phonologies are in trouble
- a. how many computational systems are there in phonology?
- b. candidates:
  1. distinct morpheme-specific systems (Lexical Phonology)
  2. a specific word-level phonology (everybody)
  3. distinct chunk-specific systems (lexical vs. post-lexical, LP)
- c. formal argument
  morpheme-specific systems and selective spell-out do the same job. They are therefore mutually exclusive.
  ==> if we know that selective spell-out is correct, morpheme-specific systems are in trouble

d. if the PIC is active in syntax, it must also be active in phonology.
   1. the PIC has an extra-grammatical motivation in minimalism: it saves active memory
      "There is mounting evidence that the design of FL [faculty of language] reduces computational complexity. That is no a priori requirement, but (if true) an empirical discovery, interesting and unexpected. One indication that it may be true is that principles that introduce computational complexity have repeatedly been shown to be empirically false." Chomsky (2001:15)
   2. this also applies to phonological computation according to Chomsky:
      "If such ideas prove correct, we have a further sharpening of the choices made by FL [faculty of language] within the range of design optimization: the selected conditions reduce computational burden for narrow syntax and phonology." Chomsky (2001:15)

      "The computational burden is further reduced if the phonological component too can 'forget' earlier stages of derivation." Chomsky (2001:12f)

e. the PIC does not participate in the management of affix class-related phenomena under morpheme-specific mini-phonologies.
   It does contribute to Kaye's version of selective spell-out.
   ==> Kaye's system is on the right track

(73) intermodular argumentation (phonology → syntax)
node-driven vs. piece-driven spell-out

a. piece-driven spell-out
   in phonology, spell-out is triggered by a lexical property of pieces:
   - class 2 affixes trigger spell-out (of their sister)
   - class 1 affixes do not trigger any spell-out
   [in Kaye's system]
   whatever the theory, nobody doubts that spell-out is triggered by a lexical property of pieces.

b. node-driven phase
   in syntax, phase theory as it stands and ongoing discussion about phasehood is always about nodes: CP, vP, DP etc.
   1. of course nodes are the projection of some terminal, but the discussion does not concern terminals.
   2. a phasehood feature
      for vP, piece-driven phase would mean that v has a phasehood feature that vP is a projection of.
   3. for heads with overt lexical content like DP, this opens the possibility for some DPs to trigger spell-out, while others do not.

c. den Dikken's (2007) Phase Extension
   is on this track: a piece is granted phasehood by its position in situ, but then preserves it through movement, even if it lands under a node that is not a phase head per se.

d. piece-driven phase is perhaps to be considered as an option in syntax:
   reducing variation to the lexicon is certainly a minimalistic thing to do.

(74) OT and connectionism
What OT did and did not take over from connectionism
Prince & Smolensky (1993: 217ff)

a.	parallel computation	YES
b.	anti-modularity	well… scrambling tropism
c.	only computation, no representaitons	well…computational tropism
d.	connection weight	NO (YES: Harm. Gr.)

e.	anti-symbolic (colourless comp.)	NO
f.	list-rule fallacy	NO
g.	inductive learning (blank sheet)	NO

"knowledge of language can be empirically acquired through statistical induction from training data" (P&S 1993: 217)

3. Modular PIC

D'Alessandro & Scheer (in press)

(75) impact of phases in syntax and phonology: what's the match?

a. ideally,
   1. there is only one cycle common to syntax and PF (as well as LF)
      Chomsky insists on that on various occasions: "a single cycle for syntax and phonology".
   2. every cycle (phase) is endowed with a PIC

b. but this is not the case at all
   the match between syntactic and phonological traces of phases appears to be arbitrary.

(76) selective footprints in phonology
Trivial empirical fact:
not every phase has a phonological effect (is visible in the phonology).
(Scheer 2009a,b)

a. E.g. t-flapping in (relevant varieties of) English, which applies **in all syntactic environments alike** provided the /t/ is word-final and intervocalic (e.g. Nespor & Vogel 1986:46f, 224ff).

b. a**t** issue
   a whi**t**e owl
   invi**t**e Olivia
   a**t** eleven
   just the other nigh**t** a racoon was spotted in our neighbourhood
   a very dangerous wild ca**t** escaped from the zoo

c. But there are of course phase boundaries within the domain of application of t-flapping.

d. ==> phase boundaries are ignored altogether by t-flapping.

e. this is true for many other external sandhi phenomena:
   ==> phonology only exaceptionally cares for phase boundaries.

(77) logical possibilities of (mis)match between Spell-Out and PIC

PIC at syntax	PIC at PF	illustration	phonological phenomenon
+	+	Abruzzese: transitive active *v*	RF
–	+	Abruzzese: unaccusative *v*	RF
–	–	Abruzzese: passive *v*	RF
+	–	Abruzzese: C	RF
		English: *v*P	t-flapping

(78) consequence
Modular PIC
a. independence of Spell-Out and the PIC
b. there is a phase skeleton hard wired for the language that specifies access points, i.e. which nodes will trigger Spell-Out
c. these phase nodes may or may not be armed with a PIC
d. the PIC is
1. module-specific
2. node-specific
3. process-specific
4. maybe language-specific

4. Minimalism & Biolinguistics

(79) Interactionism
is enforced by the minimalist concern for economy of cognitive resources (active memory)
a. "There is mounting evidence that the design of FL [faculty of language] reduces computational complexity. That is no a priori requirement, but (if true) an empirical discovery, interesting and unexpected. One indication that it may be true is that principles that introduce computational complexity have repeatedly been shown to be empirically false." Chomsky (2001:15)
b. The bias against computational complexity is thus assumed to have extra-linguistic causes, i.e. the restriction on the availability of active memory, an expensive cognitive resource.

(80) Phase Impenetrability is the instrument of active memory economy
Phase Impenetrability is a cognitive-economy-born no look-back device.

5. What it does not buy us: no look-back devices

5.1. SPE and Chomsky (1973)

(81) what no look-back is for
a. like lexicalism, no look-back is born in the early 70s as an overgeneration-killer
b. Chomsky's (1973) Strict Cycle Condition
Idea: linguistic computation cannot look back to previously interpreted strings.
c. ordered transformations in syntax overgenerated as much as ordered rules in phonology. Overgeneration was a plague, and there were two antidotes:
1. lexicalism = restriction of underlying forms
2. no look-back = restriction of computation
d. lexicalism
Chomsky's (1970) Remarks on Nominalization
1. *reduction*, *transmission*, *recital*
2. are not the result of on-line computation
3. because their derivation is unproductive and semantically opaque
4. rather, they are stored in the lexicon as a whole.
5. Therefore their pronunciation does not require any concatenation.

6. Same picture on the phonological side: the abstractness debate.
How many distinct lexical items is *electricity* made of?

(82) SPE
a. Bracket Erasure: Chomsky & Halle (1968: 20)
b. inner brackets are erased after each cycle = after each affix
c. or, be precise…
consecutive affixes of the same major category are in the same cycle.
The result of every cycle is an actual word which may be pronounced and has a meaning.
d. *theatricality*
Chomsky & Halle (1968: 88f)
five morphemes distributed over three cycles:
$[[[\text{theatr}]_N \text{ ic} + \text{al}]_A \text{ i} + \text{ty}]_N$.
e. the delineation of cycles follows the distribution of # boundaries: it is determined by major categories (N, V, A and projections thereof).
==> brackets and #s are isomorphic
f. the output of each cycle, then, is an actual word:
théatre, *theátr-ic-al*, *theatr-ic-al-i-ty*.
g. ==> SPE has the technology for no look-back,
but does not apply it: as far as I can see there is no impact of no look-back on particular derivations in SPE

(83) Strict Cycle Condition
Chomsky (1973)
a. prevents rules from applying if they do not use material that was introduced into the derivation on the current cycle.
b. "No rule can apply to a domain dominated by a cyclic node A in such a way as to affect solely a proper subdomain of A dominated by a node B which is also a cyclic node." Chomsky (1973:243)
c. rules are blocked whose structural description is met by a string that is made exclusively of material that belongs to a previous cycle.
d. given $[[\text{AB}]_i \text{ C}]_j$, a rule that is triggered by AB can apply at cycle i, but not at cycle j.
In other words, rules must use material that was introduced on the latest cycle.
e. In Chomsky's (1973: 243) terms,
"rules cannot in effect return to earlier stages of the cycle after the derivation has moved to larger, more inclusive domains."

5.2. Derived Environment Effects

(84) Strict Cycle Condition (Mascaró)
Application to phonology
a. Kean (1974)
b. Mascaró (1976)
Strict Cycle Condition (SCC-M)
"Proper application of cyclic rules
For a cyclic rule to apply properly in any given cycle j, it must make specific use of information proper to (i.e. introduced by virtue of) cycle j."
Mascaró (1976:7)
c. SCC-M has got nothing to do with derived environment effects: it is unable to prevent rules from applying to mono-morphemic strings.
1. For example, it does not prevent Trisyllabic Shortening from applying to underived items such as *nightingale* and *ivory*:
2. on the innermost cycle, i.e. [nightingale], the rule would use material of this cycle and hence apply "properly".

(85) Strict Cycle Condition (Halle-Kiparsky)
a. Strict Cycle Condition (SCC-HK)
Halle (1978)
Kiparsky (1982)
b. "A cyclic rule R applies properly on cycle j only if either a) or b) is satisfied:
a) R makes specific use of information, part of which is available on a prior pass through the cyclic rules, and part of which becomes first available on cycle j. […]
b) R makes specific use of information assigned on cycle j by a rule applying before R."
Halle (1978:131)
c. the move introduces the proviso that in addition of new material, "properly" applying rules must also make use of old material.
This indeed blocks the application of any rule to the innermost cycle, which by definition cannot contain any old material.
==> Derives Environment Effects
d. labour done:
Trisyllabic Shortening
sane - san-ity
but no TSh in monomorphemic items: nightingale, ivory

5.3. Bracket Erasure

(86) Bracket Erasure
in Lexical Phonology
Mohanan (1986)
a. Bracket Erasure is supposed to be a major insight of Lexical Phonology: the morphological structure of earlier concatenation is invisible for the phonology. That is, at any given point of concatenation, phonology cannot "look back" into more embedded structure - it sees only those boundaries that have been created on its own level (or cycle).
Namely, bracket erasure is held to embody the generalisation according to which phonological rules that apply across words have no access to the morphological structure of the words at hand (Kaisse & Shaw 1985).
b. Bracket Erasure
At the end of each cycle (stratum), brackets are erased.
c. Bracket erasure makes all morphological divisions that were not created by concatenation at the latest stratum invisible for phonological rules.
1. Hence a string like $[[[A]\ B]_1\ C]_2$ where subscripts indicate strata, and brackets morphological divisions, will appear as [[AB] C] on stratum 2 since the internal structure of [[A] B] was erased at the end of stratum 1.
2. Whether a rule appeals to A, B, C or any combination thereof is entirely irrelevant: bracket erasure makes no statement at all.
d. Bracket Erasure
has nothing to do with Chomsky's original idea to require that material from the latest cycle must be used by rules. With Mohanan's bracket erasure, rules may or may not use material from the latest cycle, and they may or may not use material from previous cycles. Bracket erasure does not impose any restriction on the kind of material used.
e. Bracket Erasure
makes only sense when it works in tandem with bracket-sensitive rules – otherwise it has no effect at all. That is, only rules that bear brackets in their structural description will be affected by the absence of "old" brackets that were erased.

(87) brackets are not boundaries
a. they delineate the juncture between two morphemes
b. but they cannot express any further morpho-syntactic information because there is only one kind of bracket
c. brackets are unable to distinguish between phonologically relevant and irrelevant morpho-syntactic information
d. brackets are unable to distinguish between junctures of different kinds (e.g. class 1 vs. class 2)
e. brackets merely indicate that there is a boundary

(88) recall:
rule-blocking boundaries
eliminated altogether in LP
example:
nasal assimilation

a. im-possible, i[ŋ]-credible
vs.
u[n]-predictable, u[n]-comfortable
b. analysis, as before
- nasal assimilation is a level 1 rule
- hence un- can never assimilate since it joins in only at level 2

(89) rule-triggering boundaries
additional machinery is needed: brackets
rule-triggering boundaries are called derived environment effects in Lexical Phonology
(e.g. Kiparsky 1982b, Rubach 1985)

(90) Bracket Erasure
a. nasal cluster simplification
(Mohanan 1986:21ss, Halle & Mohanan 1985:95s, Borowsky 1986:232ss)

[gN] – [N]

__#	__-V	
	class 2 suffixes	class 1 suffixes
[N]	[N]	[gN]
sign	sign-ing	sign-ature, sign-al, sign-ify
resign	resign-ed	resign-ation
assign	assign-ment	assign-ation
design	design-ed, design-s	design-ate
malign	malign-ing, malign-ed	malign-ant, malign-ity
benign	—	benign-ity, benign-ant
paradigm	—	paradigm-atic

[mn] – [m]

__#	__-V	
	class 2 suffixes	class 1 suffixes
[m]	[m]	[mn]
solemn	—	solemn-ity
damn	damn-ing	damn-ation
condemn	condemn-ing	condemn-ation
hymn	hymn-ing, hymn-ed	hymn-al, hymn-ology, hymn-ary, hymn-ic
column	column-s, column-ed	column-al
autumn	—	autumn-al

b. English angma: g-deletion
Halle & Mohanan (1985:62ss)

__#	class 2	morpheme-internal	class 1
sing [ŋ]	sing-er [ŋ]	finger [ŋg]	young-er [ŋg]
	sing-ing [ŋ]		long-er [ŋg]
			(vs. long-er [ŋ])

(91) analysis
a. g deletion (post-nasal), domain: level 2
g —> ø / __ [+nasal]]
b. n deletion, domain: level 2
n —> ø / [+nasal] __]
c. g deletion (angma), domain: level 2
g —> ø / [+nasal]__]
d. Bracket Erasure
Erase the internal brackets at the end of each level.
e. damn - damn-ing - damn-ation

		sing	sing-ing	finger	young-er
level 1		[sing]	—	[finger]	[young] [er]
Bracket Erasure		—	—	—	[young er]
level 2	affixation		[sing] [ing]	—	—
	deletion	~~[sing]~~	~~[sing]~~	—	—

5.4. Modification-inhibiting no look-back

(92) early instances
a. Riemsdijk's (1978) Head Constraint in syntax
b. Free Element Condition
Prince (1985)
1. Latin enclitics
liminá-que "and the thresholds" (**limína-que*)
Steriade (1988: 297)
[[word] enclitic]
The foot which was acquired on the word-internal cycle cannot be erased when the word is computed together with the enclitic.
2. restrictions of the FEC
- it only applies to stress: there is no more general ambition regarding other phenomena or other types of structure.
- it only applies to certain languages: it is not a property of computation as such.
c. Structure Preservation
structure-building vs. structure-changing rules
1. application of the FEC to syllable structure
Steriade (1982:84ff, 1984, 1988:205, Greek and Latin), van van Oostendorp (1994, Dutch) and J. Harris (1993, Spanish).
2. suffix-prefix asymmetries
- [root - suffix] vs. [prefix [root - suffix]]
- syllabification of the root cannot be undone or modified on the outer cycle when the prefix is added.
- this produces the "unnatural" syllabic parse CVC.VC when the root is vowel-initial and the prefix consonant-initial

3. Spanish
   s → h in codas
   deseo [deseo] "desire" = de.se.o
   des-echo [deheo] "waste" = des.e.o
   Steriade (1982:355): "syllabification rules […] do not change already assigned syllable structures."

(93) Kaye (1995)
recall his analysis of affix class phenomena:
párent . paréent-al - párent-hood

(94) The PIC
Chomsky's (2000) "spell-out and forget" is too strong for phonology
a. external sandhi phenomena, i.e. phonological processes that apply across word boundaries.
b. violate modification-inhibiting no look-back by definition: words are always spelled out.
c. They should therefore be "frozen" no matter what, and hence any further phonology that applies across word boundaries should be prohibited. This is obviously not the case: external sandhi (postlexical phonology) exists.

(95) modification-inhibiting no look-back
is more suited for phonology
don't undo!
modification-inhibiting no look-back only concerns properties of the string that were acquired by previous computation. Lexical properties may be modified at any time even if the string was already interpreted.

DAY 4
Things that are settled

1. Morpho-syntax and melody are incommunicado

(96) Morpho-syntax and melody are incommunicado
a. a **massive** generalization when looking at
   1. the empirical facts
   2. the behaviour of interface theories (including over time)
b. but which is not really made explicit in the literature

(97) *melody → morpho-syntax
a. phonology-free syntax (Zwicky & Pullum 1986)
   has rapidly become the standard view of the macro-landscape regarding modular identities, also in the Prosodic Phonology literature. Relevant references in this context include Pullum & Zwicky (1988), Vogel & Kenesei (1990:346ff), Miller *et al. et al*. (1997) and Guasti & Nespor (1999).
b. there is no such thing as "verbs are raising verbs iff they begin with a labial".
c. the generalisation is too strong as it stands: only melody is unable to influence concatenation, while items above the skeleton may impact the workings of morpho-syntax.
d. literature that challenges the invisibility of phonological properties for morpho-syntax: Inkelas (1990), Inkelas & Zec (1990, 1995), Hargus (1993), Neeleman & Reinhart (1998), Szendrői (2001, 2003, 2004) regarding syntax, Szymanek (1980), Ackema & Neeleman (2004:2), Burzio (2007) regarding morphology.
   Szymanek (1980), Vogel & Kenesei (1990) and Inkelas & Zec (1995) provide surveys of phenomena that are frequently quoted in support of the fact that phonology may have bearing on morphology and syntax.
e. when looking at the inventory of phenomena that are argued to induce a bottom-up conditioning, a clear regularity appears, though.
   1. everybody indeed agrees with Zwicky & Pullum's (1986) original observation that *segmental* properties of sound never affect a syntactic derivation; Vogel & Kenesei (1990:346) as well as Inkelas & Zec (1990:366, 1995:547) for example are explicit on this.
   2. on the other hand, recurring candidates for bottom-up conditioning are located above the skeleton. This observation is also made by Kaisse & Hargus (1993:4) in the debate on interactionism: "if an affix subcategorizes for a base with certain derived phonological properties, those properties are almost always supra-segmental (e.g. stress)."
f. phonological properties that are found to bear on concatenation
   1. intonation and stress
      (Szendröi 2001, 2003, 2004, Hargus 1993)
   2. tree-geometric properties of the prosodic constituency
      (for example the existence or branchingness of constituents, Inkelas & Zec 1988, 1990:372ff)
   3. the size of lexical items
      (minimal word constraints: number of syllables or moras, e.g. Inkelas & Zec 1990:372ff, Hargus 1993, Bendjaballah & Haiden 2005, forth)

4. rhythm
   (Guasti & Nespor 1999)

g. the red line runs at the skeleton:
   ==> phonology-free syntax is in fact melody-free syntax

h. the literature also discusses cases where melodic properties impact the concatenation of morphemes (e.g. the aforementioned Szymanek 1980 and Ackema & Neeleman 2004:2, Burzio 2007).
   Hargus (1993:54ff) presents evidence for phonology-sensitive morphology from segmental processes, but points out herself (p.69) that these unexpectedly share the fact of involving non-concatenative morphology (Semitic, reduplication, infixation).

i. closer look at phonologically conditioned infixation, which appears to be a particularly harsh violation of phonology-free morphology and therefore is typically quoted in this context.
   1. Based on Moravcsik (2000), Samuels (2009:147ff) provides an overview of phonological factors that are known to condition infixation cross-linguistically. The list of anchor points that infixes look at in order to determine their landing site falls into two categories:
      - edge-oriented and
      - prominence-oriented
   2. For the left edge for example, documented situations are
      - "after the first consonant (or consonant cluster)"
      - "after the first vowel"
      - "after the first syllable" and
      - "after the second consonant".
   3. Prominence-based attractors are
      - stressed vowels,
      - stressed syllables
      - stressed feet.
   4. But in no case is melody reported to be relevant for the definition of the landing site. Hence cases where infixes are inserted after, say, the first labial consonant of the word (and in absence of labials are prefixed) do not seem to be on record.
   5. Zuraw (2007) has found evidence for the influence of major categories
      Tagalog (Austronesian, Philippines) word-initial stop-glide clusters are significantly more often split than stop-liquid clusters. Tagalog does not have native word-initial CC clusters, and hence speakers must make a decision to insert relevant infixes (which normally land after the first consonant of the word) either after C_1 or C_2 (e.g. *graduate* can come out as *g-um-raduate* or *gr-um-aduate*).
      No harm for the generalisation that infixation is blind to melody: the most obvious analysis is to interpret the difference between stop-liquid and stop-glide as a contrast in (syllable) structure, rather than in melody.

(98) * morpho-syntax → melody
   a. carriers of morpho-syntactic information do not include melody
      when morpho-syntax ships off a representational item to phonology, it never accesses the area below the skeleton.
   b. that is, melodic properties of sound are never targeted by any higher level intervention
      of the kind
      "p becomes r before this or that morpho-syntactic division"
      or "all velars palatalize word-initially"
      or "raising verbs palatalise"
      Morpho-syntax can only bear on the phonological structure above the skeleton.
   c. all interface theories *tacitly* implement this empirical fact:
      carriers of morpho-syntactic information that are inserted into phonology through the representational channel always land at (juncture phonemes, SPE-type hashmarks) or above (prosodic constituency) the skeleton; they do not include melody.[1]

2. Boundary impact is process-specific

(99) the impact of boundaries is process-specific
   a. it is not the case that if a given boundary impacts a phonological process X, it will also impact all other processes of the language.
   b. in-built in Lexical Phonology
      where different sets of rules apply at different strata (boundaries).
   c. in-built in SPE and Prosodic Phonology
      where rules make reference to (translated or untranslated) morpho-syntactic information.
   d. in a phase-based system where
      1. chunks are not defined representationally
      2. phonological processes do not make reference to morpho-s<ntactic information,
      what needs to be made process-specific is the PIC.

3. Morpho-syntax has no bearing on the content of phonological computation

(100) independence of phonological computation and morpho-syntactic influence
   a. morpho-syntactic information never modifies the instructions that phonological computation is made of.
   b. it can only curb the application of phonological computation
      1. by inserting representational items into the linear string
      2. by restricting access to "old" chunks (no look-back, PIC)

4. There are no boundaries inside morphemes

[1] The only case that I am aware of where morpho-syntactic information was really proposed to have a melodic incarnation is Lass' (1971) analysis where the word boundary identifies as [-voice].

(101) edge-interior asymmetry
- a. phonological effects of extra-phonological intervention are only encountered at morpho-syntactic breaks.
- b. Every phonologist has come across cases where the kind of phonology which is observed at morpheme edges is different from the phonology that applies morpheme-internally.
  Example: clustering at the right edge of words in English: sixths.
  This is a robust cross-linguistic generalisation; it is observed by, among others, Rubach & Booij (1990), Piggott (1999) and Broselow (2003).
- c. the edge-interior asymmetry is not asymmetric in just any way
  1. phonology is regular, normal, unmarked, clean, well-behaved in the middle of morphemes
  2. edges typically introduce irregularities and exceptional patterns that cause theories to devise edge-specific mechanisms such as extrasyllabicity (or extra-metricality, extra-prosodicity for that matter).

(102) structuralism
- a. Level Independence (§**Erreur ! Source du renvoi introuvable.**) is a headstone of structuralist theory; in the perspective of a discovery procedure where linguistic representations are constructed bottom-up from phonetics over phonemes and morphemes to sentences, look-ahead is prohibited.
- b. Therefore there can be no morphological information in phonology.
- c. but morpho-syntactic information was reintroduced through the back door in the phonological guise of juncture phonemes.
- d. If Level Independence was to be held up, then, the coincidence of juncture phonemes and morpho-syntactic divisions had to be accidental.
- e. This opened (or rather: pushed) the door for the disastrous practice of referring to ghost-junctures in the midst of morphemes: anything and its reverse could be ascribed to them.
- f. example for this kind of deus ex machina
  Hill (1954)
  "define[s] juncture […] as a lengthening of the preceding phoneme by one half-unit, where a full unit is equal to the average length of a sound as member of a phoneme." Hill (1954:440)

  lat. *labra* > it. *labbra*

  "no explanation […] is as simple as postulating the sequence /-b + r-/ […], where the juncture resulted in a lengthening of the preceding consonant."

5. There is no phonetic correlate of morpho-syntactic information

(103) structuralism
- a. morpho-syntactic divisions are represented by juncture phonemes.
- b. Juncture phonemes are phonemes and therefore should have a phonetic correlate just like all other phonemes.
- c. For his "open juncture" phoneme, Moulton (1947) for example proposes allophonic variation between a "pause" and "zero".
- d. we are talking about a phonetic exponent that is stable and occurs independently of whether and how juncture bears on phonological processes.

(104) Generative diacritics make no noise
(except in Natural Generative Phonology)
- a. The question of a phonetic correlate of morpho-syntactic divisions has been handed over to generative theory, where it appears in form of the featural content of boundaries.
- b. In SPE, boundaries are regular segments which, like all other segments, are defined by features, one of which specifies that they are [-segment] (while real segments such as /p/ and /a/ are [+segment]).
- c. This is the generative way to make sure that boundaries have no phonetic manifestation: implicit in the [-segment] specification is that [-segment] segments are not pronounced.

(105) Pyle (1972)
Herald of the bankruptcy of diacritics
- a. That morpho-syntactic information does not behave like phonemes or segments was shown early on (Pyle 1972), but phonologists then put a lot of effort into ignoring this fact.
- b. given the universal X → Y / A__B,
  what about

1. # → +	boundary mutation
2. ø → + / A__B	epenthesis
3. +C → C+ / A__B	linear order
4. + → a / C__C	boundary-to-segment /dog+s/ → [dogas]

- c. the official story goes that ugly SPE-diacritics were replaced by gentle autosegmental structures when Prosodic Phonology appeared. Hence that the elimination of diacritics is a major achievement of Prosodic Phonology.
  What really happened was that linear diacritics were replaced by autosegmental diacritics.
  Pyle's argument applies to diacritics, of whatever kind [see week 2 class].

DAY 5
Modular standards for the lower interface (with phonetics)

1. Spell-Out, post-phonological

(106) summary
- a. application of the modular architecture to the lower interface
  Scheer (2014), Cyran (2014)
- b. called Phonetic Interpretation in 90s-Government Phonology
- c. effect:
  the relationship between phonology and phonetics is arbitrary (sic)
  Conclusion also arrived at from the phonetic side: Boersma (1998), Hamann (2011, 2014)

(107) two distinct computational systems?
- a. are phonology and phonetics are two distinct computational systems?
- b. if they are not, there is no interface in the first place, and hence no point in applying the workings of the other interface.
- c. the question whether phonetics is just low-level phonology, rather than ontologically distinct, is the subject of a long-standing debate.
- d. coming from connectionism (Smolensky 1988), OT is genetically endowed with a **scrambling tropism** that blurs or does away with modular contours, on both ends of phonology: morphological and phonetic constraints are typically interspersed with phonological constraints in the same constraint hierarchy, and characteristics of two domains (phonology-phonetics, phonology-morphology) often co-occur in the formulation of constraints.
- e. The alternative view that upholds a modular distinction between phonology and phonetics is also represented in the literature, though (see the overview in Kingston 2007).
- f. we proceed on the assumption that phonology and phonetics are
  - two distinct computational systems
  - two distinct modules
  - with two distinct vocabularies
  - hence that can communicate only through translation

(108) consequence
- a. there must be a **spell-out** operation that converts the output of phonology into units of the phonetic vocabulary.
- b. as was shown, modular spell-out has a number of properties that then must also apply to its post-phonological instantiation, and which entail a number of consequences:

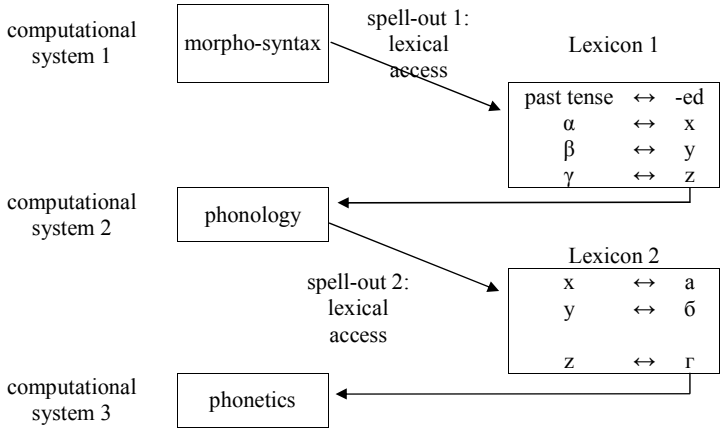
(109) the phonology-phonetics interface conceived of as

post-phonological Spell-Out

i.e. the spell-out of the result of phonological computation (phonological structure) as vocabulary items of the phonetic module.
Post-phonological spell-out has four core properties.

(110) post-phonological spell-out
puts a cognitive name on what is known in Government Phonology as *phonetic interpretation*
Harris & Lindsey (1990, 1995: 46ff), Harris (1996), Gussmann (2007: 25ff)

(111) fragment of grammar involving phonology



2. Workings

(112) #1
Lexical access: list-type conversion
- a. the match between phonological structure and phonetic exponents thereof is done through a **lexical access**. That is, the conversion is list-type, or one-to-one: a phonetic item X is assigned to a phonological item A.
- b. the dictionary-type list in question is hard-wired, i.e. stored in long-term memory and not subject to any influence from (phonological or any other) computation. It does undergo diachronic change, though.

(113) #2
No computation
- a. the difference between list-based and computational conversion is the absence of an input-output relationship in the former: the two items of the correspondence are not related by a computation that transforms one into the other.
- b. nothing is said about the nature and the size of the phonological structure A and its phonetic exponent X.
  1. Namely, there is no segment-based implicit: the phonological units that are screened by the spell-out mechanism may comprise one or several timing units (x-slots).
  2. Basic autosegmental principles apply: only those melodic items that are associated to timing/syllable structure are transmitted to the phonetics (i.e. floating melody is not). This property of the spell-out mechanism is universal.

(114) #3

The match is arbitrary

a. recall that a fundamental property of translation is the arbitrariness of the two items of distinct vocabularies that are related.
b. This follows from the fact that translation is list-based: like in a multilingual dictionary, there is no reason why "table" has the equivalent "stół" in Polish, "Tisch" in German or "udfirk" in some other language.
c. A consequence of arbitrariness is what Kaye (2005) calls the "**epistemological principle of GP**"
   1. the only means to determine the phonological identity of an item is to observe its (phonological) behaviour. Its phonetic properties will not tell us anything.
   2. That is, in case spell-out "decides" to have a given phonological structure pronounced by a rather distant phonetic exponent, its phonetic properties may be opposite to its phonological identity and behaviour.
   3. For example, if an /u/ is pronounced [i], it will not palatalise despite its being front phonetically. Relevant examples are discussed below.

(115) #4

Conversion is exceptionless

a. A basic criterion for classifying alternations as morpho-phonological, allomorphic, phonological, analogical, lexical or phonetic is the presence of exceptions.
b. The whole notion of exception makes only sense when both alternants are related by computation: an exception is an exception to an expected result, i.e. the application of an algorithm that transforms X into Y.
c. If, say, *electric* and *electricity* are two distinct lexical items, it does not make sense to say that *antique* - *antiquity* is an exception to the k - s-ity pattern: there is no such pattern in the first place.
d. Hence talking about exceptions supposes computation. Since the match of phonological structure and its phonetic exponent does not involve any computation, it must be exceptionless.
e. This is indeed what we know from the morpho-syntax - phonology spell-out: there is no variation, there are no exceptions in the assignment of phonological material to morpho-syntactic structure.
f. ==>
   What that means is that among all alternations found in language, only those that are exceptionless can possibly be due to post-phonological spell-out.

(116) exceptionlessness = phonetic proximity

The idea that exceptionlessness and "proximity" to phonetics are strongly related is a long-standing insight:

a. exceptionless alternations are often called
   1. "low level",
   2. "surface palatalization" (in Polish) or,
   3. quite aptly (for bad reasons though), "late".
b. This expresses the view that on the route towards phonetics, exceptionless alternations are rather close towards the phonetic end.
c.

(117) "late": inside vs. outside of phonology

a. the literature in question
   continues to place the processes and hand *in* the phonology: "late" means "towards the end of the application of ordered rules" in SPE.
b. in the present modular approach
   1. "late" means "outside of the phonology"
   2. the alternations in question arise **during post-phonological spell-out**.

3. Effects

(118) #1

how much of the alternations that we observe on the surface is exactly the result of phonological computation?

a. answers
   1. SPE: big is beautiful
      close to 100%, including "alternations" like *eye* - *ocular* or *sweet* - *hedonistic*
      Also with a modern offspring: Hale & Reiss (2008)
   2. since the 70s
      constantly decreased, in order to constrain the generative power of SPE:
      - the abstractness debate (internal revision): Kiparsky (1968-73) and following
      - Natural (Generative) Phonology
   3. small is beautiful
      very little labour is left for phonology
      This perspective is worked out and theorized by Gussmann (2007), especially for Polish.
b. outsourcing
   how do alternations work that are not the result of phonological computation?
   1. no computation
      - distinct lexical entries (electri[k]c - electri[s]ity)
      - post-phonological spell-out
   2. non-phonological computation (grammatical)
      - allomorphy (the root has two allomorphs, *electri[k]-* and *electri[s]-*)
      - post-phonological spell-out (e.g. so-called surface palatalization in Polish)
   3. non-phonological computation (non-grammatical)
      analogy
c. post-phonological spell-out shows that there is life after all phonological computation is done, and how this life is organized.

(119) an example:

shifting labour from phonological computation to post-phonological spell-out (phonetic interpretation)

a. in Polish, [ɛ] behaves in three different ways

1. palatalizing e	lot - loci-e	"flight Nsg, Lsg"
2. non-palatalizing e	lot - lot-em	"id. Nsg, Isg"
	rak - rak-iem	"crab Nsg. Isg"
3. post-velar e in recent loans	kelner "waiter", kemping "camping"	

b. classical analysis (Rubach 1984)
   1. one-to-one match between phonological behaviour and phonetic substance:
      - any item that is phonologically [+front] (or [-back]) palatalizes
      - only items that are phonologically [+front] (or [-back]) palatalize
   2. consequences
      – palatalization is only triggered by [+front] (or [-back]) items
      – in case a phonetically [+front] (or [-back]) item fails to trigger palatalization, it cannot be [+front] (or [-back]) by the time the palatalization process applies.
   3. ==>
      – Isg -em is /-ɤm/ (where /ɤ/ is a back unrounded vowel, distinct from /ɔ/ through roundness).
      – rule ordering:
        1. palatalization (/-ɤm/ has no effect)
        2. context-free transformation of /-ɤm/ into /-ɛm/ *by phonological computation*
      – hence there is an additional vowel in the inventory of Polish, /ɤ/, which is absolutely neutralized
c. Gussmann (2007: 56ff)
   1. there are three phonologically distinct [ɛ]'s
      – palatalizing e (lot - loci-e "flight Nsg, Lsg"): I--A
      – non-palatalizing e (lot - lot-em "id. Nsg, Isg"): __--I--A
      – post-velar e in recent loans (kelner, kemping): A--I
   2. which all bear the palatal agent I, though in different function (no automaticity of palatalization in presence of the palatal agent)
   3. the "surface neutralization" occurs during post-phonological spell-out (phonetic interpretation), rather than *in* the phonology (by phonological computation).

(120) #2
virtual length
a. the length of phonologically long vowels and phonological geminates may be marked in the phonetic signal by duration, but also by other means: there is no reason why phonological length should always be flagged by duration.
   Virtually long items do not betray their length by phonetic cues related to duration, but by other properties that can be read off the signal.
b. vowel length has been found to be expressed by
   1. ATRness in French
      Rizzolo (2002)
   2. vowel reduction
      - Semitic (Lowenstamm 1991, 2011)
      - Ge'ez (Old Ethiopian) (Ségéral 1996)
      - Kabyle Berber (Bendjaballah 2001, Ben Si Saïd 2011)
   3. stress
      in Apulian dialects of Italian (Bucci in press)

c. phonological geminates have been found to be expressed by
   1. the length of the preceding vowel
      - German (Caratini 2009)
      - Cologne dialect of German (Ségéral & Scheer 2001)
      - English (Hammond 2007)
   2. the (non-)inhibition of a preceding vowel-zero alternation
      Somali (Barillot & Ségéral 2005)
   3. aspiration
      English (Ségéral & Scheer 2008)
   4. preaspiration
      Icelandic and Andalusian dialects of Spanish (Curculescu 2011)
d. examples from English
   1. agma
      [ŋ] is /ng/:
      - it occurs only after short vowels
      - it does not occur word-initially
      Gussmann (1998), Dressler (1981) for German
   2. distribution of short/lax vs. long/tense vowels in English
      short/lax vowels occur in closed syllables, hence the phonetically simplex t in *city* must be a geminate. *NOT* an ambisyllabic consonant.
      ==> ambisyllabicity is the analysis of people back in the 70s where it could not be conceived that a phonetically simplex consonant is related to two skeletal slots. The unbreakable rule was a one-to-one mapping between x-slots and phonetic duration.
      Hammond (1997)

(121) #3
how much slack ought to be allowed between the phonological identity of a segment and its pronunciation?
a. we know that the same phonetic object may have distinct phonological identities across languages: [ɛ] may be
   1. I.A,
   2. A.I or
   3. I.A
   (using GP representations where the head of the expression is underscored).
   But may it also be
   4. I alone?
   5. A alone?
   6. or even U alone?
b. intuitively, there must be limitations on how things can be pronounced, since otherwise a three vowel i-a-u system could in fact be flip-flop where [i] is the pronunciation of A, [a] of U and [u] of I.
c. the arbitrariness of post-phonological spell-out enforces a counter-intuitive position, though: yes, flip-flop is indeed a possible situation.

(122) confirmation of counter-intuitive arbitrariness

a. South-East British posh girls
Uffmann (2010) reports that in the speech of this group,

"vowels are currently shifting quite dramatically, with back/high vowels fronting and unrounding, and a counter-clockwise rotation of most of the remainder of the system, leading not only to vowel realisations that are quite distinct from traditional Received Pronunciation, but also, at least for some speakers, to near-merger situations (e.g. /i:-u:, ey-ow, e-æ/)"
(abstract of Uffmann 2010).

Hence posh girls will pronounce "boot" as [biit].

b. "r"
1. in some languages the sonorant "r" is pronounced as a uvular fricative [ʁ, χ] or trill [R]. French, German, Norwegian and Sorbian are cases in point.
2. In these languages, like all other obstruents [ʁ] undergoes final devoicing (if present in the grammar), and voice assimilation.
3. Phonologically, however, it "continues" to behave like a sonorant: only sonorants can engage in a branching onset, but the uvular fricative or trill does so jollily.
4. When looked at through the lens of post-phonological spell-out, there is nothing wrong with this situation: for some reason the languages in question have decided to pronounce the phonological item /r/ as a uvular. This does not change anything to its phonological properties or behaviour.

c. "exotic" segments: ingressives, clicks etc.
1. surface-bound classical phonological analysis takes these articulatory artefacts seriously and may implement corresponding melodic primes (a special feature for clicks for example: [±click]).
2. in the perspective of post-phonological spell-out, ingressives and clicks are but funny pronunciations (garden varieties as Jonathan Kaye would say) of regular phonological objects that occur in other languages as well.
3. but of course it must be secured that there are enough distinct phonological representations for all items that contrast in such a language.

References

Ackema, Peter & Ad Neeleman 2004. Beyond Morphology. Interface Conditions on Word Formation. Oxford: Oxford University Press.

Anttila, Arto 2002. Morphologically conditioned phonological alternations. Natural Language and Linguistic Theory 20: 1-42.

Aronoff, Mark 1976. Word Formation in Generative Grammar. Cambridge, Mass.: MIT Press.

Aronoff, Mark & S. Sridhar 1983. Morphological levels in English and Kannada, or Atarizing Reagan. Chicago Linguistics Society 19, Papers from the Parasession on the interplay of Phonology, Morphology and Syntax, edited by J. Richardson, M. Marks & A. Chukerman, 3-16. Chicago: Chicago Linguistics Society.

Aronoff, Mark & S. Sridhar 1987. Morphological levels in English and Kannada. Rules and the Lexicon, edited by Edmund Gussmann, 9-22. Lublin: Katolicki Universytet Lubelski.

Barillot, Xavier & Philippe Ségéral 2005. On phonological Processes in the '3rd' conjugation in Somali. Folia Orientalia 41: 115-131.

Barkow, Jerome, Leda Cosmides & John Tooby 1992. The Adapted Mind. Evolutionary Psychology and the Generation of Culture. Oxford: OUP.

Ben Si Saïd, Samir 2011. Interaction between structure and melody: the case of Kabyle nouns. On Words and Sounds, edited by Kamila Dębowska-Kozłowska & Katarzyna Dziubalska-Kołaczyk, 37-48. Newcastle upon Tyne: Cambridge Scholars.

Bendjaballah, Sabrina 2001. The negative preterite in Kabyle Berber. Folia Linguistica 34: 185-223.

Bendjaballah, Sabrina & Martin Haiden 2005. Berber prepositions, templates and the PF interface. Paper presented at GLOW 28, Geneva 31 March - 2 April.

Bendjaballah, Sabrina & Martin Haiden 2013. La représentation syntaxique des prépositions faibles du berbère de Chemini. Prépositions et postpositions: approches typologiques et formelles, edited by Tseng J., 87-123. Paris: Hermès Lavoisier.

Boeckx, Cedric 2010. Language in Cognition. Uncovering mental structures and the rules behind them. Oxford: Wiley-Blackwell.

Boersma, Paul 1998. Functional Phonology. Formalizing the interactions between articulatory and perceptual drives. The Hague: Holland Academic Graphics.

Booij, Geert 2000 [1996]. The phonology-morphology interface. The First Glot International State-of-the-Article Book, edited by Lisa Cheng & Rint Sybesma, 287-305. Berlin: Mouton de Gruyter.

Borowsky, Toni 1986. Topics in the lexical phonology of English. Ph.D dissertation, University of Massachusetts, Amherst.

Broselow, Ellen 2003. Marginal phonology: phonotactics at the edge. The Linguistic Review 20: 159-193.

Bucci, Jonathan 2013. Voyelles longues virtuelles et réduction vocalique en coratin. Canadian Journal of Linguistics 58: 397-414.

Burzio, Luigi 2007. Phonetically conditioned syncretism. Selected proceedings of the 5th Décembrettes: Morphology in Toulouse, edited by Fabio Montermini, Gilles Boyé & Nabil Hathout, 1-19. Somerville, MA: Cascadilla.

Calvert, Gemma & Ruth Cambell 2003. Reading Speech from Still and Moving Faces: The Neural Substrates of Visible Speech. Journal of Cognitive Neuroscience 15: 57-70.

Caratini, Emilie 2009. Vocalic and consonantal quantity in German: synchronic and diachronic perspectives. Ph.D dissertation, Nice University and Leipzig University.

Chen, Matthew 1990. What must phonology know about syntax? The Phonology-Syntax Connection, edited by Sharon Inkelas & Draga Zec, 19-46. Chicago: University of Chicago Press.

Chomsky, Noam 1965. Aspects of the Theory of Syntax. Cambridge, Mass.: MIT Press.

Chomsky, Noam 1970. Remarks on nominalisation. Readings in English Transformational Grammar, edited by R. Jacobs & P. Rosenbaum, 184-221. Walthamm, Mass.: Ginn.

Chomsky, Noam 1973. Conditions on Transformations. A Festschrift for Morris Halle, edited by Stephen Anderson & Paul Kiparsky, 232-286. New York: Holt, Rinehart & Winston.

Chomsky, Noam 1975. Reflections on Language. New York: Pantheon.

Chomsky, Noam 1984. Modular Approaches to the Study of Mind. San Diego: San Diego University Press.

Chomsky, Noam 1995. Language and Nature. Mind 104: 1-61.

Chomsky, Noam 2000. Minimalist inquiries: the framework. Step by Step. Essays on Minimalist Syntax in Honor of Howard Lasnik, edited by Roger Martin, David Michaels & Juan Uriagereka, 89-155. Cambridge, Mass.: MIT Press.

Chomsky, Noam 2001. Derivation by Phase. Ken Hale: A Life in Language, edited by

Michael Kenstowicz, 1-52. Cambridge, Mass.: MIT Press.
Chomsky, Noam & Morris Halle 1968. The Sound Pattern of English. Cambridge, Mass.: MIT Press.
Chomsky, Noam, Morris Halle & Fred Lukoff 1956. On Accent and Juncture in English. For Roman Jakobson. Essays on the occasion of his sixtieth birthday, edited by Morris Halle, Horace Lunt, Hugh McLean & Cornelis van Schooneveld, 65-80. The Hague: Mouton.
Clapin, Hugh 2002. Content and Cognitive Science. Language & Communication 22: 231-242.
Clements, George 1978. Tone and syntax in Ewe. Elements of stress, tone and intonation, edited by Donna Jo Napoli, 21-99. Washington, D.C.: Georgetown University Press.
Cosmides, Leda & John Tooby 1992. Cognitive adaptations for social exchange. The adapted mind. Evolutionary psychology and the generation of culture, edited by Jerome Barkow, Leda Cosmides & John Tooby, 163-228. Oxford: OUP.
Cosmides, Leda & John Tooby 1992. The Psychological Foundations of Culture. The adapted mind. Evolutionary psychology and the generation of culture, edited by J. Barkow, Leda Cosmides & John Tooby, 19-136. Oxford: OUP.
Curculescu, Elena 2011. Preaspiration in Spanish: the case of Andalusian dialects. Paper presented at the 19th Mancheser Phonology Meeting, Manchester 19-21 May.
Cyran, Eugeniusz 2014. Between Phonology and Phonetics. Polish Voicing. Berlin: Mouton de Gruyter.
D'Alessandro, Roberta & Tobias Scheer in press. Modular PIC. Linguistic Inquiry.
den Dikken, Marcel 2007. Phase Extension: Contours of a theory of the role of head movement in phrasal extraction. Theoretical Linguistics 33: 1-41.
Dinsmore, John (ed.) 1992. The symbolic and connectionist paradigms: closing the gap. Hillsdale: Erlbaum.
Dressler, Wolfgang 1981. External evidence for an abstract analysis of the German velar nasal. Phonology in the 1980's, edited by Didier Goyvaerts, 445-467. Ghent: Story-Scientia.
Embick, David & Rolf Noyer 2001. Movement Operations after Syntax. Linguistic Inquiry 32: 555-595.
Epstein, Samuel, E.M. Groat, R. Kawashima & H. Kitahara 1998. A Derivational Approach to Syntactic Relations. Oxford: OUP.
Fodor, Jerry 1983. The modularity of the mind. Cambridge, Mass.: MIT-Bradford.
Fodor, Jerry 2000. The mind doesn't work that way: The scope and limits of computational psychology. Cambridge, Mass.: MIT Press.
Gardner, Howard 1985. The Mind's New Science: A History of the Cognitive Revolution. New York: Basic Books.
Guasti, Theresa & Marina Nespor 1999. Is syntax Phonology-free? Phrasal Phonology, edited by René Kager & Wim Zonneveld, 73-97. Nijmegen: Nijmegen University Press.
Gussmann, Edmund 1998. Domains, relations, and the English agma. Structure and Interpretation. Studies in Phonology, edited by Eugeniusz Cyran, 101-126. Lublin: Folium. WEB.
Hale, Mark & Charles Reiss 2008. The Phonological Enterprise. Oxford: OUP.
Halle, Morris 1978. Formal vs. functional considerations in phonology. Studies in the Linguistic Sciences 8: 123-134. Reprinted in Brogyányi, Bela (ed.) 1979. Studies in diachronic, synchronic and typological linguistics: Festschrift for O. Szemerényi, 325-341. Amsterdam: Benjamins.
Halle, Morris & Jean-Roger Vergnaud 1987. An Essay on Stress. Cambridge, Mass.: MIT Press.

Hamann, Silke 2011. The Phonetics-Phonology Interface. The Continuum Companion to Phonology, edited by Nancy Kula, Bert Botma & Kuniya Nasukawa, 202-224. London: Continuum.
Hamann, Silke 2014. Phonetics-phonology mismatches. Paper presented at Old World Conference in Phonology, Leiden 22-25 January.
Hammond, Michael 1997. Vowel Quantity and Syllabification in English. Language 73: 1-17.
Hargus, Sharon 1993. Modeling the Phonology - Morphology Interface. Studies in Lexical Phonology, edited by Sharon Hargus & Ellen Kaisse, 45-74. New York: Academic Press.
Harris, James 1993. Integrity of prosodic constituents and the domain of syllabification in Spanish and Catalan. The view from Building 20. Essays in Linguistics in Honor of Sylvain Bromberger, edited by Kenneth Hale & Samuel Keyser, 177-193. Cambridge, Mass.: MIT Press.
Harris, John 1996. Phonological output is redundancy-free and fully interpretable. Current trends in Phonology. Models and Methods, edited by Jacques Durand & Bernard Laks, 305-332. Salford, Manchester: ESRI.
Harris, John & Geoff Lindsey 1995. The elements of phonological representation. Frontiers of Phonology, edited by Jacques Durand & Francis Katamba, 34-79. Harlow, Essex: Longman. WEB.
Haugeland, John 1989. Artificial Intelligence. The Very Idea. Cambridge, Mass.: MIT Press.
Hauser, Marc, Noam Chomsky & Tecumseh Fitch 2002. The faculty of language: what is it, who has it, and how did it evolve ? Science 298: 1569-1579.
Herken, Rolf (ed.) 1995. The Universal Turing Machine: A Half-Century Survey. Wien: Springer.
Hill, Archibald 1954. Juncture and syllable division in Latin. Language 30: 439-447.
Hirschfeld, Lawrence & Susan Gelman (eds.) 1994. Mapping the mind: Domain specificity in cognition and culture. Cambridge: CUP.
Hornstein, Norbert 2009. A Theory of Syntax. Cambridge: CUP.
Ingleby, Michael & Ali Azra 2003. Phonological Primes and McGurk Fusion. Proceedings of the 15th International Congress of Phonetic Sciences: 2609-2612. WEB.
Inkelas, Sharon 1990. Prosodic Constituency in the Lexicon. New York: Garland.
Inkelas, Sharon & Draga Zec 1988. Serbo-Croatian pitch accent: the interactions of tone, stress and intonation. Language 64: 227-248.
Inkelas, Sharon & Draga Zec 1990. Prosodically constrained syntax. The Phonology-Syntax Connection, edited by Sharon Inkelas & Draga Zec, 365-378. Chicago: Chicago University Press.
Inkelas, Sharon & Draga Zec 1995. Syntax-phonology Interface. The Handbook of Phonological Theory, edited by John Goldsmith, 535-549. Oxford: Blackwell.
Jackendoff, Ray 1987. Consciousness and the computational mind. Cambridge, Mass.: MIT Press.
Jackendoff, Ray 1992. Languages of the mind. Cambridge, Mass.: MIT Press.
Jackendoff, Ray 1997. The Architecture of the Language Faculty. Cambridge, Massachusetts: MIT Press.
Jackendoff, Ray 2002. Foundations of Language. Brain, Meaning, Grammar, Evolution. Oxford: Oxford University Press.
Kager, René 2000. Stem Stress and Peak Correspondence in Dutch. Optimality Theory, edited by Joost Dekkers, Frank van der Leeuw & Jeroen van de Weijer, 121-150. Oxford: Oxford University Press.
Kaisse, Ellen 1983. The syntax of auxiliary reduction in English. Language 59: 93-122.
Kaisse, Ellen 1985. Connected Speech. The interaction of Syntax and Phonology. London,

New York: Academic Press.
Kaisse, Ellen 1990. Toward a Typology of Postlexical Rules. The Phonology-Syntax Connection, edited by Sharon Inkelas & Draga Zec, 127-143. Chicago: Chicago University Press.
Kaisse, Ellen & Sharon Hargus 1993. Introduction. Studies in Lexical Phonology, edited by Sharon Hargus & Ellen Kaisse, 1-19. New York: Academic Press.
Kaisse, Ellen & Patricia Shaw 1985. On the theory of Lexical Phonology. Phonology Yearbook 2: 1-30.
Kaye, Jonathan 1995. Derivations and Interfaces. Frontiers of Phonology, edited by Jacques Durand & Francis Katamba, 289-332. London & New York: Longman. Also in SOAS Working Papers in Linguistics and Phonetics 3, 1993, 90-126. WEB.
Kaye, Jonathan 2005. "GP, I'll have to put your flat feet on the ground". Organizing Grammar. Studies in Honor of Henk van Riemsdijk, edited by Hans Broekhuis, Norbert Corver, Riny Huybregts, Ursula Kleinhenz & Jan Koster, 283-288. Berlin: Mouton de Gruyter.
Kean, Mary-Louise 1974. The Strict Cycle in Phonology. Linguistic Inquiry 5: 179-203.
Kingston, John 2007. The phonetics-phonology interface. The Cambridge Handbook of Phonology, edited by Paul De Lacy, 435-456. Cambridge: CUP.
Kiparsky, Paul 1968-1973. How abstract is phonology? Manuscript circulated since 1968 and published 1973 in: Three Dimensions of Linguistic Theory, edited by Osamu Fujimura, 5-56. Tokyo: TEC.
Kiparsky, Paul 1982. From Cyclic Phonology to Lexical Phonology. The structure of phonological representations I, edited by Harry van der Hulst & Norval Smith, 131-175. Dordrecht: Foris. WEB.
Kleinhenz, Ursula 1998. On Words and Phrases in Phonology. A comparative study with focus on German. Ph.D thesis, University of Tübingen.
Langacker, Ronald 1987. Foundations of Cognitive Grammar, 2 Vols. Stanford: Stanford University Press.
Lowenstamm, Jean 1991. Vocalic length and centralization in two branches of Semitic (Ethiopic and Arabic). Semitic Studies in Honor of Wolf Leslau on the occasion of his 85th birthday, edited by Alan S. Kaye, 949-965. Wiesbaden: Harrassowitz. WEB.
Lowenstamm, Jean 2011. The Phonological Pattern of phi-features in the Perfective Paradigm of Moroccan Arabic. Brill's Annual of Afroasiatic Languages and Linguistics 3: 140-201.
Mascaró, Joan 1976. Catalan Phonology and the Phonological Cycle. Ph.D. dissertation, MIT.
McGurk, Harry & John MacDonald 1976. Hearing Lips and Seeing Voices. Nature 264: 746-748.
Miller, Philip, Geoffrey Pullum & Arnold Zwicky 1997. The Principle of Phonology-Free Syntax: four apparent counterexamples in French. Journal of Linguistics 33: 67-90.
Mohanan, Karuvannur 1986. The Theory of Lexical Phonology. Dordrecht: Reidel.
Moravcsik, Edith 2000. Infixation. Morphology. An international handbook on inflection and word-formation, Vol.1, edited by Geert Booij, 545-552. Berlin: de Gruyter.
Neeleman, Ad & Tanya Reinhart 1998. Scrambling and the PF-interface. The Projection of Arguments: Lexical and Compositional Factors, edited by Miriam Butt & Wilhelm Geuder, 309-353. Chicago: CSLI.
Nespor, Marina, Theresa Guasti & Anne Christophe 1996. Selecting word order: the Rhythmic Activation Principle. Interfaces in Phonology, edited by Ursula Kleinhenz, 1-26. Berlin: Akademie Verlag.
Nespor, Marina & Irene Vogel 1986. Prosodic Phonology. Dordrecht: Foris.
Odden, David 1987. Kimatuumbi phrasal phonology. Phonology 4: 13-26.

Odden, David 1990. Syntax, lexical rules and postlexical rules in Kimatuumbi. The Phonology-Syntax Connection, edited by Sharon Inkelas & Draga Zec, 259-277. Chicago: University of Chicago Press.
Piggott, Glyne 1999. At the right edge of words. The Linguistic Review 16: 143-185.
Pinker, Steven 1997. How the mind works. New York: Norton.
Pinker, Steven & Ray Jackendoff 2005. The faculty of language: what's special about it ? Cognition 95: 201-236.
Pinker, Steven & Ray Jackendoff 2005. The nature of the language faculty and its implications for the evolution of language (Reply to Fitch, Hauser and Chomsky). Cognition 97: 211-225.
Pinker, Steven & Jacques Mehler (eds.) 1988. Connections and Symbols. Cambridge, Mass.: MIT Press.
Plotkin, Henry 1998. Evolution in mind. Cambridge, Mass.: Harvard University Press.
Prince, Alan 1985. Improving Tree Theory. Proceedings of the 11th Annual Meeting of the Berkeley Linguistics Society, edited by M. Niepokuj, M. van Clay, V. Nikiforidou & D. Feder, 471-490. Berkeley: University of California, Berkeley.
Prince, Alan & Paul Smolensky 1993 [2004]. Optimality Theory. Constraint Interaction in Generative Grammar. Ms, Rutgers University, University of Colorado (ROA version August 2002). Revised version published by Blackwell in 2004.
Pullum, Geoffrey & Arnold Zwicky 1988. The syntax-phonology interface. Linguistics: the Cambridge survey. Vol. I, edited by Frederick Newmeyer, 255-280. Cambridge: Cambridge University Press.
Pyle, Charles 1972. On Eliminating BM's. Papers from the eighth regional meeting of the Chicago Linguistic Society, edited by Paul Peranteau, Judith Levi & Gloria Phares, 516-532. Chicago: Chicago Linguistic Society.
Pylyshyn, Zenon 1984. Computation and Cognition. Cambridge, Mass.: MIT Press.
Pylyshyn, Zenon 1989. On computation and cognition: Toward a foundation of cognitive science: A response to the reviews by A.K. Mackworth and M.J. Stefik. Artificial Intelligence 38: 248-251.
Pylyshyn, Zenon 1999. What's in your Mind? What is Cognitive Science?, edited by Zenon Pylyshyn & Ernest Lepore, 1-25. Oxford: Blackwell.
Riemsdijk, Henk van 1978. A Case Study in Syntactic Markedness. Peter de Ridder.
Rizzolo, Olivier 2002. Du leurre phonétique des voyelles moyennes en français et du divorce entre Licenciement et Licenciement pour gouverner. Ph.D dissertation, Université de Nice. WEB.
Rotenberg, Joel 1978. The Syntax of Phonology. Ph.D dissertation, MIT.
Rubach, Jerzy 1984. Cyclic and Lexical Phonology: The Structure of Polish. Dordrecht: Foris.
Rubach, Jerzy 1985. Lexical Phonology: lexical and postlexical derivations. Phonology Yearbook 2: 157-172.
Rubach, Jerzy & Geert Booij 1990. Edge of constituent effects in Polish. Natural Language and Linguistic Theory 8: 427-463.
Rumelhart, David 1989. The Architecture of Mind: A Connectionist Approach. Foundations of Cognitive Science, edited by Michael Posner, 133-159. Cambridge, Mass.: MIT Press.
Rumelhart, David E., James L. McClelland & the PDP Research Group (eds.) 1986. Parallel Distributed Processing: Exploration in the Micro-Structure of Cognition. 2 vols. Cambridge, Mass.: MIT Press.
Russell, Kevin 1997. Optimality Theory and Morphology. Optimality Theory. An overview, edited by Diana Archangeli & D. Langendoen, 102-133. Oxford: Blackwell.
Samuels, Bridget 2009. The structure of phonological theory. Ph.D dissertation, Harvard

University.
Samuels, Richard, Stephen Stich & Patrice Tremoulet 1999. Rethinking Rationality: From Bleak Implications to Darwinian Modules. What is Cognitive Science?, edited by Zenon Pylyshyn & Ernest Lepore, 74-120. Oxford: Blackwell.
Scheer, Tobias 2008. Spell out your Sister! Proceedings of the 27th West Coast Conference on Formal Linguistics, edited by Natasha Abner & Jason Bishop, 379-387. Somerville: Cascadilla. WEB.
Scheer, Tobias 2009. External sandhi: what the initial CV is initial of. Studi e Saggi Linguistici 47: 43-82. WEB.
Scheer, Tobias 2009. Intermodular Argumentation and the Word-Spell-Out-Mystery. Explorations of Phase Theory: Interpretation at the Interfaces, edited by Kleanthes Grohmann, 23-65. Berlin: Mouton de Gruyter. WEB.
Scheer, Tobias 2011. A Guide to Morphosyntax-Phonology Interface Theories. How Extra-Phonological Information is Treated in Phonology since Trubetzkoy's Grenzsignale. Berlin: Mouton de Gruyter.
Scheer, Tobias 2014. Spell-Out, Post-Phonological. Crossing Phonetics-Phonology Lines, edited by Eugeniusz Cyran & Jolanta Szpyra-Kozlowska, 255-275. Newcastle upon Tyne: Cambridge Scholars.
Segal, Gabriel 1996. The modularity of theory of mind. Theories of Theories of Mind, edited by P. Carruthers & P. Smith, 141-157. Cambridge: CUP.
Ségéral, Philippe 1996. L'apophonie en ge'ez. Studies in Afroasiatic Grammar, edited by Jacqueline Lecarme, Jean Lowenstamm & Ur Shlonsky, 360-391. La Hague: Holland Academic Graphics. WEB.
Ségéral, Philippe & Tobias Scheer 2001. Abstractness in phonology: the case of virtual geminates. Constraints and Preferences, edited by Katarzyna Dziubalska-Kołaczyk, 311-337. Berlin & New York: Mouton de Gruyter. WEB.
Ségéral, Philippe & Tobias Scheer 2008. The Coda Mirror, stress and positional parameters. Lenition and Fortition, edited by Joaquim Brandão de Carvalho, Tobias Scheer & Philippe Ségéral, 483-518. Berlin: Mouton de Gruyter. WEB.
Selkirk, Elisabeth 1981 [1978]. On prosodic structure and its relation to syntactic structure. Nordic Prosody II, edited by Thorstein Fretheim, 111-140. Trondheim: TAPIR.
Selkirk, Elisabeth 1984. Phonology and Syntax: The Relation between Sound and Structure. Cambridge, Mass.: MIT Press.
Siegel, Dorothy 1974. Topics in English Morphology. Ph.D. dissertation, MIT.
Smith, Neil & Ianthi-Maria Tsimpli 1995. The mind of a savant. Language-learning and modularity. Oxford: Blackwell.
Smith, Neil & Ianthi-Maria Tsimpli 1999. Modules and quasi-modules: Language and Theory of Mind in a Polyglot Savant. Learning and Individual Differences 10: 193-215.
Smolensky, Paul 1987. Connectionist AI, symbolic AI, and the brain. Artificial Intelligence Review 1: 95-109.
Smolensky, Paul 1988. On the proper treatment of connectionism. Brain and Behavioural Sciences 11: 1-74.
Sperber, Dan 1994. The modularity of thought and the epidemiology of representations. Mapping the mind: Domain specificity in cognition and culture, edited by L.A. Hirschfeld & S.A. Gelman, 39-67. Cambridge: CUP.
Sperber, Dan 2001. In Defense of Massive Modularity. Language, Brain and Cognitive Development, edited by Emmanuel Dupoux, 47-57. Cambridge, Mass.: MIT Press.
Stainton, Robert J. (ed.) 2006. Contemporary debates in Cognitive Science. Oxford: Blackwell.
Stillings, Neil, Steven Weisler, Christopher Chase, Mark Feinstein, Jay Garfield & Edwina

Rissland 1995. Cognitive Science. An Introduction. Cambridge, Mass.: MIT Press.
Szendrői, Kriszta 2001. Focus and the Syntax-Phonology Interface. Ph.D dissertation, University College London.
Szendrői, Kriszta 2003. A stress-based approach to the syntax of Hungarian focus. The Linguistic Review 20: 37-78.
Szendrői, Kriszta 2004. A stress-based approach to climbing. Verb clusters. A study of Hungarian, German and Dutch, edited by Katalin É.Kiss & Henk van Riemsdijk, 205-233. Amsterdam: Benjamins.
Szymanek, Bogdan 1980. Phonological conditioning of word formation rules. Folia Linguistica 14: 413-425.
Taylor, John 2002. Cognitive Grammar. Oxford: Oxford University Press.
Thagard, Paul 2005. Mind. Introduction to Cognitive Science. Cambridge, Mass.: MIT Press.
Uffmann, Christian 2010. The Non-Trivialness of Segmental Representations. Paper presented at OCP-7, Nice 28-30 January.
van Oostendorp, Marc 1994. Affixation and integrity of syllable structure in Dutch. Linguistics in the Netherlands 1994, edited by Reineke Bok-Bennema & Crit Cremers, 151-162. Amsterdam: Benjamins.
Vogel, Irene & István Kenesei 1990. Syntax and semantics in phonology. The Phonology-Syntax Connection, edited by Sharon Inkelas & Draga Zec, 339-363. Chicago: University of Chicago Press.
Yip, Moira 1998. Identity Avoidance in Phonology and Morphology. Morphology and its Relation to Phonology and Syntax, edited by Steven Lapointe, Diane Brentari & Patrick Farrell, 216-246. Stanford: CSLI Publications.
Zuraw, Kie 2007. The Role of Phonetic Knowledge in Phonological Patterning: Corpus and Survey Evidence from Tagalog Infixation. Language 83: 277-316.
Zwicky, Arnold & Geoffrey Pullum 1986. The Principle of Phonology-free Syntax: introductory remarks. Ohio State University Working Papers in Linguistics 32: 63-91.