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Workshop on Morphosyntax-Phonology
Interface Theories
Leiden
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Topics in Interface Theory

1. Anchor points of the book

(1) Interface Dualism
   a. both procedural and representational channels are needed
   b. their balance is a resident question, just as in phonology proper (Anderson 1985)

(2) modularity
   a. historically speaking, generative linguistics is the application of the standard theory of cognitive science to language:
      - modularity
      - serial computation (Turing - von Neumann)
   b. is the prism through which interface theories are looked at in the book, and the referee by which they are assessed
   c. defines the contours of the book: Jackendoff in, HPSG out
   d. generative modularity offenders: there are a number of them, past and present.
   e. therefore there is an introduction to (the history of) modularity from the cognitive science perspective, including the history of modularity in generative linguistics.

(3) intermodular argumentation
   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)

(4) genesis and prime interest of the original book project: the representational side

a. starting point (Scheer 2004)

1. CVCV is a "flat" theory of phonology regarding syllable structure, which is represented by lateral relations (the trademark of Government Phonology), rather than by syllabic arborescence.
   ==> in phonology, hierarchical structure is expressed by Dependency relations, rather than by arboreal dominance.
   ==> the argument is purely phonology-internal
2. if this is true, we have an explanation for the absence of recursion in phonology (watch out, NOT of recursive structure, which may be an option favoured by the analyst in absence of recursive phenomena): there is no tree-building mechanism, and recursion supposes trees.
3. generative grammar is syntactico-centristic: there is just one concatenative device (morpho-phonology), supplemented with two interpretative devices (semantics, phonology).
   ==> there is no concatenation in semantics and phonology,
   ==> hence no Merge, hence no trees, hence no recursion

b. if there are no trees in phonology, they must also be absent from the interface mechanism:
   ==> the Prosodic Hierarchy must be wrong

c. historical generalization
   the representational items that carry morpho-syntactic information and are inserted into phonological strings are always the basic units of the current phonological theory:
   1. juncture *phonemes* in structuralism
   2. a feature matrix in SPE (# is a [-segment] segment)
   3. an autosegmental tree since the early 80s (the Prosodic Hierarchy)

d. formal properties of the Prosodic Hierarchy
   1. is a diacritic, i.e. a non-organic part of phonology: violation of modularity
   2. does not satisfy minimal requirements for trees:
      - not a bottom-up construction (from the PWd on)
      - is the projection of nothing: node labels do not depend on terminals

e. the debate that has never taken place:
   local vs. non-local (domain-based) intervention in phonology

f. - is there a way to be non-diacritic AND local? YES
   - is there a way to be non-diacritic AND non-local (domain-based)? NO
   ==> Direct Interface

g. recently there is an anti-Prosodic Hierarchy literature in DM quarters: Pak (2008), Samuels (2009)
   ==> same conclusion, different motivation
   1. attempt to define phonologically relevant domains in terms of phase structure, rather than by prosodic constituency
   2. abandon Indirect Reference for Direct Syntax
   ==> Indirect Reference is THE translation of modularity into interface theory
   ==> I argue that Indirect Reference is correct, but that the Prosodic Hierarchy is not

h. how life goes…
   1. the critique of the Prosodic Hierarchy is in the book
   2. but the alternative view that I argue for, Direct Interface, was thrown out
   3. so in the end the book is much more on the procedural than on the representational side, regarding both volume and content.

2. Why phase theory is a good thing to have

(5) because it 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.

(6) examples from the book I
   phase theory (interactionism) is the only way to reconcile inside-out interpretation (a landmark and genuine contribution of generative linguistics) and modularity
   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.

(7) examples from the book II
   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)
      for a long time, the definition of phonologically relevant chunks of the string (domains) was also done procedurally, i.e. by the definition of cycle (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. now a "peaceful coexistence" IS trouble because it empties phase theory from its empirical content: if phases are phonologically irrelevant, or may be amended arbitrarily by a Black Box, phase theory as such is in danger (Chomsky insists on that on various occasions: "a single cycle for syntax and phonology".
      ==> all phonologically relevant domains are phases: DM, Pak (2008), Samuels (2009)
      ==> we will hear Lisa Cheng and Laura Downing precisely on this later on.
   d. evaluating whether a given interface phenomenon is due to representational or procedural management is incredibly hard.
      I have tried for years to set up a catalogue of criteria, and to classify relevant phenomena – without success. The initial project of providing an evaluation measure was abandoned in the book.

(8) examples from the book III
procedural first
Newell & Scheer (2007)

a. representation-based analyses of interface phenomena do not have any impact on the morpho-syntactic side.
Phase-based analyses do make predictions on the morpho-syntactic side.
==> if you can, prefer phase-based analyses: you will be able to probe them in morpho-syntax, they make predictions regarding the derivational history of the items.

b. example in- vs. un-.

c. phonology, representational analysis:
$[\text{iM-possible}]_{\text{PrW}}$ - one PrW
vs.
$[\text{uN}]_{\text{PrW}}$ $[\text{predictable}]_{\text{PrW}}$ - two PrW
==> nasal assimilation occurs only inside PrWs

d. phonology, procedural analysis:
un- is a morphological adjunct and as such merged counter-cyclically; also, it is spelled out prior to being merged (Lebeaux 1988, Stepanov 2001).
un- is therefore protected by the PIC upon the interpretation of [[un]-predictable]
in- is not because it was not spelled out by itself, and therefore assimilates.

e. prediction on the morpho-syntactic side
1. by the representational solution: NONE
2. by the procedural solution: a number

d. comparative allomorphy selection
invisibility of un- (but not of in-):
unlikelier (likelier) vs. *impoliter (politer, more impolite).

e. bracketing paradoxes
1. the structure of *un-happi-er* should be [[un [happy]] er] since it means "more unhappy", rather than "not more happy".
==> *un-* has only scope over the root
2. phonologically, however, the structure should be [un [[happy] er]] since the synthetic comparative *-er* selects maximally bisyllabic stems (*big* - *bigger*, *happy* - *happier*); adjectives with more syllables have an analytic comparative (*beautiful* - **beautifuller, more beautiful*). The synthetic *un-happi-er*, then, is only possible if *-er* is concatenated before *un-* is merged.
3. this behaviour falls out if *un-* is a counter-cyclically merged adjunct: it is absent when the comparative selects for maximally bisyllabic roots. By contrast, *in-* is present upon suffixation and thus blocks the derivation.

(9) examples from the book IV
the Word-Spell-Out Mystery

a. [[A] B]
examples where the cyclic spell-out of A,B = *morphemes* leaves phonological traces are commonplace.

b. the same structure, however, does not appear to have any impact on phonology ever if A and B are words:
there are no no-look-back effects (PIC effects) at the word level.

c. modules are supposed to be sensitive to their input conditions.
If morpho-syntactic structure is sent to phonology piecemeal, there is no reason why phonology should react on small chunks (morphemes), but ignore big chunks (words).

d. LP encodes this fact, but does not make it explicit, or discuss it:
an on/off switch for cyclicity: morphology yes, syntax no (both are independent computational systems)

e. effect on interface analyses:
the Prosodic Hierarchy has the monopoly of external sandhi: analyses are only EVER representational.

f. phase theory forces us to ask the question why:
1. we are sure that there are phases above the word level
2. phases are supposed to automatically trigger the PIC
3. are morphology and syntax one or two computational systems?
4. ==> PIC à la carte (chunk-specific PIC)?

Examples from the book V
Intermodular argumentation

(10) intermodular argumentation 1 (syntax → phonology)

a. affix class-related phenomena: three competitors

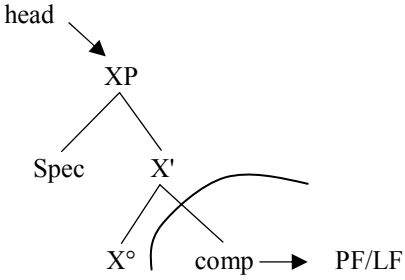
	selective spell-out	spells out
Lexical Phonology	no	the mother
Halle & Vergnaud (1987)	yes	the mother
Kaye (1995)	yes	the sister

b. 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. 1998 et seq.]
==> LP is wrong

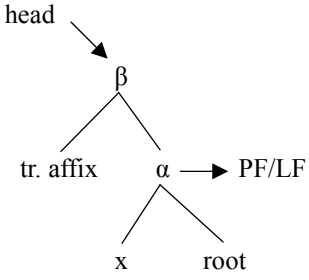
c. syntactic referee II
the phase edge: spell out your sister !
==> Halle & Vergnaud are wrong

the phase edge in syntax and phonology

1. Chomsky (2000, 2001)



2. Kaye (1995)



d. only competitor left: Kaye (1995)

(11) intermodular argumentation 2 (syntax → phonology)
morpheme-specific mini-phonologies are wrong

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 must be wrong.
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 must be right.

(12) intermodular argumentation 3 (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 over 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.

(13) the BIG question:
(non-)coincidence of morpho-syntactic and phonological phases
[and also of PF- and LF-phases, there is a literature on asymmetric spell-out, e.g. Marušič (2005)]

a. "Assume that all three components are cyclic. […] In the worst case, the three cycles are independent; the best case is that there is a single cycle only. Assume that to be true. Then Φ [the phonological component] and Σ [the semantic component] apply to units constructed by NS [narrow syntax], and the three components of the derivation of <PHON, SEM> proceed cyclically in parallel. L [language] contains operations that transfer each unit to Φ and Σ. In the best case, these apply at the same stage of the cycle. […] In this conception there is no LF: rather, the computation maps LA [lexical array] to <PHON, SEM> piece-by-piece cyclically." Chomsky (2004:107)

b. if syntactic and phonological phases are isomorphic, the legitimate assumption is that they leave traces on both sides.

c. this is obviously NOT the case:
recall the word-spell-out-mystery: word-size phases refuse to leave phonological traces

d. are there any phases for which we have concordant syntactic and phonological motivation?
Barely any: CP
but certainly not vP, DP: where are the phonological traces?
or "the word": where are the syntactic traces?

e. if every syntactician can posit his phases without being liable to any phonological consequences, and every phonologist can posit phases without being liable to any syntactic consequences,
==> what is the empirical content of phase theory?

f. or we have to bite the bullet:
1. there is a phase skeleton (nodes) that is defined in syntax
2. spell-out occurs at every member of the skeleton
3. but a PIC may or may not be associated to any given node (no automatic PIC)
4. PIC conditions are imposed on syntactic and phonological computation independently:

g. ==> spell-out may be vacuous (i.e. without effect) on the syntactic or the phonological side.
==> considerable weakening of the extra-grammatical ambition of phase theory (memory-saver)

3. Morpho-syntax and melody are incommunicado

(14) 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

(15) *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.* (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.

(16) * 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]

(17) phonology is ontologically split into two worlds: UP vs. DOWN
     (Scheer 2004)
  a. phonetics participate in the LOWER world: melodic primes have a phonetic grounding
     syllables do not participate: there is no phonetic rationale behind syllables.
  b. cross-modal variation:
     modality-independence (vocal and signed) requires different melodic primes, but not different syllable structure.
  c. UP vs. DOWN define the two types of processes that exist in phonology:
     - contamination (assimilation)
     vs.
     - positional (syllable-based or conditioned by higher structure)
  d. crazy rules are always melodic, never syllabic
     e.g. Bach & Harms (1972), Buckley (2000, 2003), Hyman (2001),
     cf. Scheer (2009)
     1. examples:
        Southern Pomoan (native American, California) (Buckley 1994, 2000, 2003)
        i → u / d__
        Ndebele (Bantu, Zimbabwe) (Hyman 2001)
        p^h, β, b, mb → $\widehat{tʃ}$, $\widehat{tʃ'}$ (ejective), $\widehat{dʒ}$, $\widehat{ɲdʒ}$ / __w
     2. crazy rules are only ever melodically crazy: there is nothing like
        - closed syllable lengthening
        - open syllable shortening
        - compensatory shortening
     3. fits with Hale & Reiss (2000a,b, 2008): substance-free computation
        phonological computation does not care
        - for the objects that are manipulated
        - or for the causal relationship between the triggering context and the change observed
        ==> anything can become anything in any context

[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].

4. but this concerns only melody:
   there is no phonetic rationale for syllabic conditioning. Syllable-related processes are thus truly phonological in kind, and the occurring and non-occurring patterns must follow from genuinely phonological restrictions on the computational system.

e. McMahon (2003)
   - OT is very successful for everything that is above the skeleton (stress etc.)
   - OT is very unsuccessful for segmental alternations

4. PF - a minimalism-born hermaphrodite

(18) clean syntax, dirty phonology/PF?
   a. minimalism shrinks syntax
      minimalism pumps up PF
   b. the minimalist transfer of activity from syntax to the interfaces loads PF much more than LF.
   c. under this charge, the status of PF changes quite dramatically. While in the classical inverted T that generative grammar has lived with since the 60s PF was more or less coextensive with phonology, i.e. the phonological computational system, it is now pumped up with a whole lot of operations and items that have got nothing to do with what phonologists call phonology.
   d. PF has become "phonology plus something"
      but nobody really knows what that "something" is.
   e. dumping into the PF dustbin and hoping that it is big enough
      minimalist syntacticians are quick and happy to dump all kinds of things into the PF-dustbin: PF is often treated as a black box.

(19) what does the P in PF stand for?
   a. Chomsky for example does not make much difference between phonology and phonetics:
   b. "We may think of the language, then, as a finitely specified generative procedure (function) that enumerates an infinite set of SDs [structural descriptions]. Each SD, in turn, specifies the full array of phonetic, semantic, and syntactic properties of a particular linguistic expression." Chomsky (1995:14f)
   c. "At the PF level, properties of the language can be readily observed and variation is possible within the fixed repertoire of phonetic properties and the invariant principles of universal phonetics." Chomsky (1995:27)
   d. "The PF representation π is a string of phonetic primes with syllabic and intonational structure indicated, derived by a computation from σ." Chomsky (1995:35)
   e. "The PF level itself is too primitive and unstructured to serve this purpose, but elements formed in the course of the mapping of syntactic objects to a PF representation might qualify." Chomsky (1995:379)

      It is hard to imagine what kind of item could be at the same time external to PF but internal to the "phonological component", which itself is a piece of PF.

(20) Properties of PF: what kind of animals live in the intermundia?
Internal structure of PF

a. PF: a whole continent
Therefore Pak (2008:26) says that "[t]he PF branch […] is thus viewed as a highly articulated derivational component, which yields a number of intermediate structural representations before the final surface form is reached."

b. Like Chomsky and much of the literature, Pak does not make explicit whether she means a computational system in the sense of a Fodorian module when she talks about a "derivational component".

c. the most typical thing that syntacticians want PF to do is certainly deletion:
of copies, or involving ellipsis and sluicing

d. other candidates for a management at PF:
topic-focus, theme-rheme, figure-ground, linearity, head movement and stylistic operations.

e. Richards (2004) adds an interesting hypothesis regarding the limitations of PF action:
"The assumption that PF cannot drive syntactic operations ties in with the more general thesis, presented in section 2.5.1.3, that PF can only operate with the structures that the syntax provides to it: in particular, PF cannot build extra structure, that is, create new positions not licensed during the syntactic part of the derivation." Richards (2004:12, note 2)

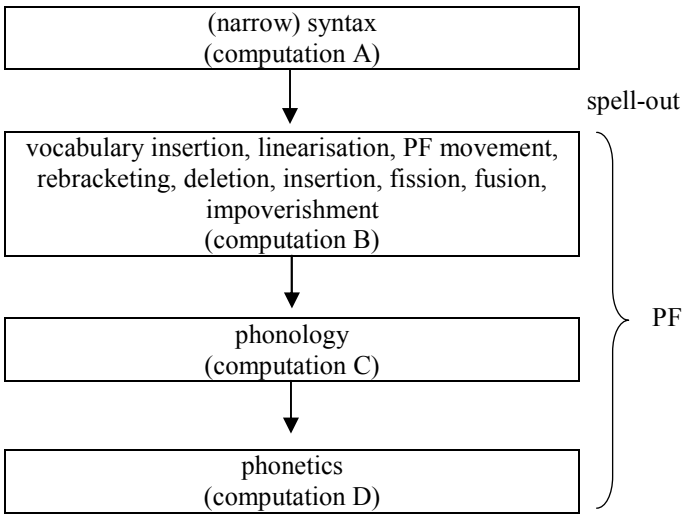
Hence PF movement for example can move phonological terminals around, but only to positions that are inherited by syntax.

f. Pak (2008) provides a list of operations that are assumed to take place at PF
1. *Structural readjustments*, a limited set of movement, rebracketing, and deletion/insertion operations whose surface effects are often recognized as 'syntax-morphology mismatches'
2. *Vocabulary insertion*, which adds phonological content to function morphemes
3. *Linearization operations*, which establish linear order between/across structures"

g. under f1, one senses that DM is aware of the fact that additional movement, deletion, insertion etc. is a source of dramatic overgeneration, and therefore prophylactically talks about "a limited set" of operations.
As far as I can see, though, nobody knows in which way exactly the operations "at PF" are limited, let alone the reason for such limitations.

(21) Trying to make sense of PF from the modular point of view
PF is a cover term for a number of serially ordered computational systems

what PF is made of



(22) The minimalism-born intermundia violates domain specificity = modularity

a. mixing of vocabularies
   1. computation B is past vocabulary insertion; this means that phonological material is present and, according to PF movement, forms the terminal elements of the morpho-syntactic tree, which is also still available.
   2. this cannot be reconciled with domain specificity: computation B would have to access the morpho-syntactic labels of the tree, the tree geometrics and phonological vocabulary at the same time.
   3. Also, the tree labels would be the projection of nothing: on standard assumptions hierarchical structure is a projection of terminal elements. In a PF movement tree, however, phonological terminals would cohabitate with morpho-syntactic structure and labels: this does not make any sense.

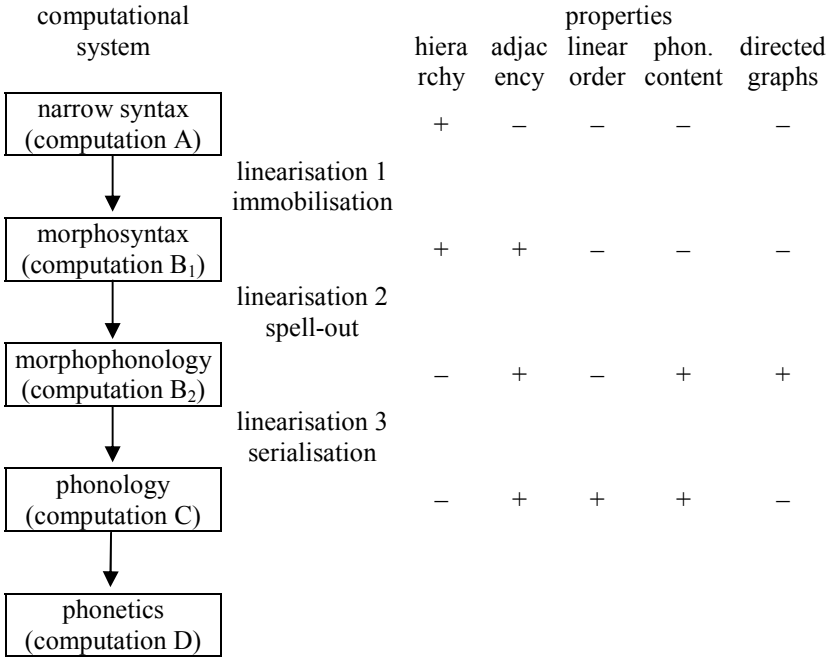
   ==> Computation B is thus a modular alien.

b. linearization
   1. one wonders what it means to linearise upon spell-out from (narrow) syntax, but to leave the tree in place, and to allow for (PF) movement along its structure. A linearised string does not look like a tree, does it?
   2. Or does linearisation in fact take place at the end of computation B when PF movement has applied and a linear input to computation C, the phonologists' phonology, needs to be created?

c. back to Direct Syntax
   1. proposals in DM quarters go even further by mixing computation B with computation C, the real phonology.
   2. Pak (2008:42ff, 60ff) sets out to do away with the Prosodic Hierarchy: she correctly argues that prosodic constituency is superfluous if phonology has direct access to morpho-syntactic information.
      In fact the core of her proposal is a much stronger violation of modularity: she argues that the action of computation C (phonology) is serially interleaved with computation B (the intermundia).

      "The hypothesis pursued in this dissertation is that phonological rules may also use Concatenation statements – as well as other kinds of linearization statements – as their domains. In other words, *phonological rules are interleaved with linearization operations*." Pak (2008:28, emphasis in original)

(23) internal structure of computation B according to Idsardi & Raimy (forth)



(24) how could computation B comply with modular standards?
[not in the book]
   a. melody-free syntax
      1. we know that UPPER phonological properties can bear on morpho-syntax.
      2. they need to somehow be read off computation C (phonology)
      3. computation B may be the place where "morpho-syntax" takes them into account.
      4. this means that they must be present in computation B.
   b. lexical entries are fully specified for syllable (and other UPPER) structure
      1. an (old and) foundational idea of Government Phonology
      2. nothing can enter the lexicon that has not been passed through phonological computation:
         - control of well-formedness
         - syllabification

c. on these assumptions, UPPER phonological structure is
   1. either present since vocabulary insertion (no phonological computation needed)
   2. or computable in computation B (no phonological computation needed):
      stress assignment for example is based on information regarding syllable structure (light vs. heavy Rhymes), but never on melodic information:

      "One issue this typology raises is not why stress is sensitive to sonority, but rather why it is not sensitive to so many other properties. There are no stress systems in which subsegmental features such as Place of Articulation or backness in vowels plays a role in assigning stress. The same goes for features such as [round], [nasal], and secondary articulation." de Lacy (2002:93)

d. this amounts to reinstalling a version of sealed suitcases:
   LOWER phonological properties are present since vocabulary insertion (computation B), but cannot be accessed until phonology (computation C).
e. in any case, no action in computation B may be triggered by melodic properties:
   1. Piggott & Newell (2006) is ok:
      PF Movement triggered by vowel length.
   2. Lowenstamm (2008) not ok:
      PF Movement triggered by the presence of an empty nucleus in the French possessive *son*, which is underlyingly /sø/ and moves in order for its empty nucleus to receive melodic material.
      Hence computation B must be able to make the difference between contentful and empty nuclei.
f. the sealed suitcase scenario does not explain (cf. (22))
   1. how the tree present in computation B could have phonological terminals:
      nodes are still projections of nothing
   2. how linearization at the seam of narrow syntax and PF can leave a tree in place, which itself is progressively linearized in order to produce a linear input for computation C.

5. Conclusion

(25) outlook
   a. on the representational side
      - if melody is not a possible output of translation
      - if syllable structure is "flat"
      - if there is no other arboreal structure above the skeleton (not for stress either: Szigetvári & Scheer 2005)

      then
      - possible carriers of morpho-syntactic information in phonology reduce to syllabic space (an empty CV unit in CVCV)
      - this is worked out in the piece that didn't make it into the book
      - representational intervention is local, rather than domain-based
        ==> inserted items are local **AND** non-diacritic
   b. on the procedural side
      1. where is Phase Theory going?
      2. what is the PIC a property of?
         the spell-out mechanism?
         Syntactic and phonological computation independently?

c. who designs interface theories?
   1. only phonologists in the past
   2. half an exception: DM
   3. we need more syntacticians in!

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