Tobias Scheer
CNRS 6039, Université de Nice
scheer@unice.fr
this handout and many of the references
quoted at www.unice.fr/dsl/tobias.htm

HOW SYNTAX AND MORPHOLOGY TALK TO PHONOLOGY

(1) Interface Dualism
     morpho-syntactic information can be shipped off to the phonology through two
     channels
     a. representationally
         SPE: boundaries #, + etc.
         Prosodic Phonology: the Prosodic Hierarchy (omegas, phis etc.)
     b. procedurally
         SPE: the phonological cycle
         Lexical Phonology: strata
         Distributed Morphology: Phase Impenetrability (modern version of the Strict Cycle
         Condition, Mascaró 1976)

(2) purpose
     a. show that Interface Dualism is necessary: a theory without either channel is
         incorrect
     b. have a closer look at the representational side: show that the Prosodic Hierarchy is
         as much a diacritic as SPE-type boundaries
     c. develop an alternative: Direct Interface
         1. disentangle the notion of "boundary": boundaries are 1) local and 2) diacritic
         2. representational intervention must be local, but non-diacritic
         3. having non-diacritic boundaries seems to be a paradox, but it isn't.
     d. [if there is time left]
         have a look at the procedural side, and specifically at how and why OT refuses to
         implement anything of the kind (anti-cyclicity).
         Discuss some consequences:
         1. blurred modular contours at best, more frequently harsh violations of modularity
         2. existence of two parallel computational systems in the phonology: indexed
            constraints, co-phonologies
         3. show that multiple computational systems is the functional equivalent of Phase
            Impenetrability: both are in complementary distribution. Theories that have one
            don't have the other. But if Phase Impenetrability is needed anyway 1) for
            purely syntactic reasons and 2) for the communicaiton with semantics, the
            choice seems to be made.

(3) complementary distribution of Interface Dualism over the two major theories that have
     emerged simultaneously and still dominate the debate
     a. Lexical Phonology - a purely procedural world
     b. Prosodic Phonology - a purely representational world
     c. their relationship is officially that of a "peaceful coexistence", but in reality
         troublesome: Inkelas (1990). They are in direct concurrence..

(4) [just to make clear what kind of phenomena we are not looking at: stratal effects]
     párent   underived
     párent-hood   class 2   stem and affix do not sit in the same cycle (Phase)
     parént-al   class 1   stem and affix sit in the same cycle (Phase)

1. How Prosodic Phonology works

(5) The spine of the classical approach (SPE, Pros Phon): Indirect Reference
     a. since Selkirk (1981 [1978]), interface theory regarding the communication
         between phonology and the other modules of grammar is dominated by the central
         idea of Prosodic Phonology (PP): Indirect Reference..
     b. That is, phonological processes make only indirect reference to morpho-syntactic
         information. The latter is thus transformed into the Prosodic Hierarchy (which lies
         inside the phonology), to which phonological rules make reference.

(6) hence the central idea of PP: prosodic constituency, which I call the buffer (or the
     sponge) because its only function is to store morpho-syntactic information
     a. mapping rules
         are the translator's office: they transform morpho-syntactic information into
         prosodic constituency, which lies inside the phonology. They are the construction
         worker of the buffer.
     b. crucially (cf. non-isomorphism below), morpho-syntactic information is not
         conditioning mapping rules alone: boundary-grouping may also be a function of
         genuine and language-specific instructions.
         This is what I call the Black Box.
     c. the nature of the buffer is a secondary question: the grid (Selkirk 1984) or the
         regular arboreal constituency of PP.
     d. this general picture has not been modified by OT - it was only adapted to the new
         environment (tension between Wrap and Align, parametric variation of phrasing
         expressed by constraint interaction/ factorial typology, anti-cyclicity (OO, co-
         phonologies, etc.)

(7)   general architecture of Prosodic Phonology
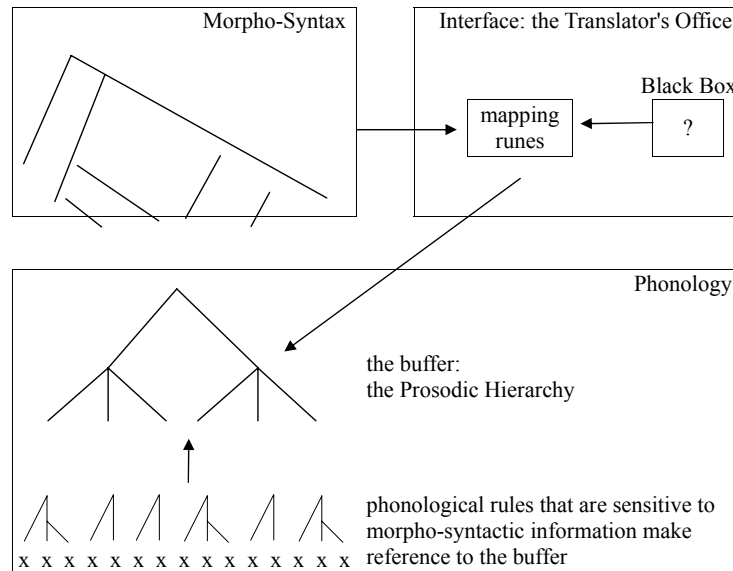
2. A bad reason for Indirect Reference: non-isomorphism

(8) non-isomorphism: why the buffer exists
   a.   why should reference to morpho-syntactic structure be indirect? Why should phonology be burdened with several extra layers of arboreal structure and an extra mapping mechanism? Isn't this redundant?
   b.   **direct-syntax approach**
       Kaisse (1983,1985,1990), Chen (1990), Odden (1987,1990), Pyle (1972), Rotenberg (1978), Clements (1978), also in the Prosodic Phonology tradition: Napoli & Nespor 1979).
       Competition of direct syntax approaches and Prosodic Phonology in the special issue of the Phonological Yearbook edited by Kaisse & Zwicky (1987).
   c.   basic argument against direct-syntax which has been repeated over and over again: **non-isomorphism**.
       [Selkirk 1981 [1978], Nespor & Vogel 1986: all through the book, 4s,34ss,124ss etc., Vogel & Kenesei 1990, Nespor et al. 1996 etc.]
   d.   non-isomorphism is the claim that some phonological rules make reference to information that is not contained in the morpho-syntactic structure. That is, to domains that do not represent any single node on the morpho-syntactic side.
   e.   let us examine two examples:
       1. mismatch of phonological and morpho-syntactic domains
          [this is the one originating in SPE p.371 that runs all through the literature]
          This is [the cat that caught [the rat that stole [the cheese]]]
          [This is the cat] [that caught the rat] [that stole the cheese]

       2. reference to the domain of two sentences: there is no morpho-syntactic node that dominates two sentences. Nespor & Vogel's (1986) explanation here: the semantic relation between the two sentences of the second example is not tight enough.
          There's my mothe[r]. I've got to go.
          There's my mothe*[r]. I've got two cats.
   f.   both examples indeed show that phonological domains are non-isomorphic with morpho-syntactic structure. Therefore, goes the argument,
       1. the domains to which phonology makes reference must first be created: we need a parallel domain structure in phonology, the buffer, and its construction worker, mapping rules.
       2. the input to mapping rules is certainly morpho-syntactic structure, but not only: mapping rules take sovereign decisions how to build phonological domains that do not rely on the morpho-syntactic input.
          ==> this is what I call the Black Box.
   g.   ==> hence the existence of the buffer crucially hinges on non-isomorphism.

(9) non-isomorphism evaporates when boundaries are used
   a.   both examples above (and all others) have a straightforward explanation when boundaries are used instead of domains:
       1. every CP starts a new intonational unit.
       2. semantics/ pragmatics distribute boundaries that allow or block the linking of r.
   b.   hence if phonological rules make reference to boundaries rather than to domains, there is no argument at all.
   c.   in this case all the prosodic constituency and the mapping mechanism are redundant.

3. A good reason for Indirect Reference: Modularity

(10) If the Prosodic Hierarchy is redundant and non-isomorphism not a problem anymore, why don't we make direct reference to morpho-syntax?
      Why do we need a translator's office at all?
      Indirect Reference and the Translator's Office are needed for 2 good reasons:
   a.   modularity
       1. as the general organization of the mind/ brain
          Fodor (1983): a module is a hard-wired computational system that is built on fixed neural architecture, domain-specific, autonomous, automatic, stimulus-driven and insensitive to central cognitive goals.
          It is designed for a special purpose: it "solve[s] a very restricted class of problems, and the information it can use to solve them with is proprietary" (Fodor 1998).
          Overview literature includes Pinker (1997), Plotkin (1998) and Fodor (2000).
          Evidence for this cognitive architecture: it is a documented fact that the dysfunction of some cognitive capacities does not impede others. Subjects with the Williams syndrome for example show serious deficits in spatial cognition, number and problem solving, but perform well on language and face recognition tasks (Karmiloff-Smith et al. 1995).

2. the modular postulate disables different modules to see what is going on in each other. Selkirk (1984) for example uses this argument:

"The syntax and the phonology are entirely autonomous components, the rules of syntax making no appeal to phonology and vice versa. Mediating between these components, however, are two others that define the relation between the syntactic and phonological representations of a sentence. The principles of these components have a mixed vocabulary." (Selkirk 1984:410f)

3. correspondence rules = the Translator's Office

"The theory of Representational Modularity [posits], in addition to the representation modules proposed above, a system of interface modules. An interface module communicates between two levels of encoding, say L1 and L2, by carrying out a partial translation of information in L1 form into information in L2 form" Jackendoff (1997:42)

"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)

b. phonology and syntax do not speak the same language
[closely related to modularity]

1. as far as I can see, this argument is entirely absent from the PP literature. It has been extensively used by Jackendoff (1992,1994,1997,2002) and Starke (who is not good friends with ink).

2. number, person, verbs, nouns, quantification, aspect and so forth are categories that are understood and processed in syntax as well as in morphology and semantics. Phonology does not even know what quantification etc. is. On the other hand, the higher modules do not know what occlusion, palatality or an Onset is.
==> phonology-free syntax

3. this is what Jackendoff calls Representational Modularity

"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)

"'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 (1997:87ss)

(11) In sum, thus, Prosodic Phonology did exactly the right thing - introducing Indirect Reference as a major principle of interface architecture, installing a Tranlator's Office and mapping rules - but for the wrong reason (non-isomorphism).

4. From boundaries to domains - a major break in phonological culture

(12) since non-isomorphism evaporates if boundaries are used, the question arises why boundaries, the traditional interface currency (since the neogrammarians and unquestioned until PP), were replaced by domains.

(13) Historical excursus: the real innovation of PP is the shift from boundaries to domains:
a. all major concepts used in Prosodic Phonology have already been proposed by Chomsky & Halle (1968).

SPE (pp9s,371s)	PP
readjustment rules	mapping rules
phonological rules make reference to the readjusted surface structure Σ', not to SS (=Σ) itself	indirect reference
Σ'	Prosodic Hierarchy
discrepancy between SS and the input to phonological structure:	non-isomorphism
The cat that caught the rat that stole the cheese.	
new: phonological rules make reference to boundaries	to domains
new: reference to Σ' only in case of non-isomorphism	always

b. "We have two concepts of surface structure: input to the phonological component and output of the syntactic component. It is an empirical question whether these two concepts coincide. In fact, they do coincide to a very significant degree, but there are also certain discrepancies. These discrepancies […] indicate that the grammar must contain certain rules converting the surface structures generated by the syntactic component into a form appropriate for use by the phonological component. In particular, if a linguistic expression reaches a certain level of complexity, it will be divided into successive parts that we will call 'phonological phrases', each of which is a maximal domain for phonological processes. […]
It appears that the syntactic component of the grammar generates a surface structure Σ which is converted, by readjustment rules that mark phonological phrases and delete structure, to a still more superficial structure Σ'. The latter then enters the phonological component of the grammar." Chomsky & Halle (1968:9s)

c. strange views on SPE in the PP literature

"According to SPE, phonological rules apply to the linear surface structure of a sentence, that is, to the output of the syntactic rules." Nespor & Vogel (1982:225)

"In an SPE-type model of phonology, the only way of representing the domains of a phonological rule is in terms of morphosyntactic constituents, the implicit claim being that such constituents are, in fact, the only domains in which phonological rules may apply." Vogel (1986:59)

"in traditional generative theory it was supposed that these [morpho-syntactic] domains directly correspond to syntactic constituents (see Chomsky & Halle, 1968)" Nespor & Vogel (1986:37)

d. hence the motivation for replacing boundaries by domains is absolutely critical: domains are the only innovation of PP. PP hinges on non-isomorphism, which evaporates when boundaries are used instead of domains. Thus PP and indirect reference are immaterial if there is no good reason for replacing boundaries by domains.
[note: SPE works with boundaries, but non-isomorphism was an issue then because the particular way that boundaries were defined and shipped off to phonology did not allow for capturing the cat-rat-cheese impairment.]

(14) arguments raised against boundaries
rare in the early PP literature, absent since (and including) Nespor & Vogel (1986).
a. the diacritic argument
Rotenberg (1978:16ss, chapter "Against Boundaries"), Selkirk (1980a), Booij (1983,1985a) and Szpyra (1989).
nothing new: Pyle (1972) has provided the relevant arguments:
1. overgeneration: anything and its reverse can be described
2. diacritics are not linguistic objects (they are not just a peculiar kind of segments): p can become f, but not #.
Except in Selkirk's work (Selkirk 1981 [1978], 1980a,b, esp. 1984), the older juncture/ boundary/ SPE interface literature is almost completely absent from the PP literature.
[e.g. Chomsky et al. (1956), Sag (1974), Basbøll (1975,1978a,b,1981a,b), McCawley (1968), Devine & Stephens (1976,1980), Stanley (1969,1973), Hyman (1978), Strauss (1979), Anderson (1974)]
b. domains have an independent motivation: stress, rhythm, music
Selkirk (1980a:126ss,1984:8ss)
1. boundaries serve only interface purposes, while autosegmental structure can cover both domestic phonological properties (i.e. which exist independently of any interface issue) and interface information.
2. Selkirk (1986) (following Nespor & Vogel 1986 and the rest of the PP literature) abandons the ambition to melt all empirical properties at stake into one single set of representations: stress and rhythm are represented by the grid, and the grid is derived by a second mapping from prosodic constituency. This also follows Hayes' (1984:65,69) suggestion (which has become mainstream) that rhythm is only an accidentally linguistic property and lies outside of the grammar.
3. unifying stress/ rhythm and interface information has become a handicap as it was understood that both empirical events do not behave alike: namely Inkelas (1990).
==> we are dealing with two independent empirical objects, so they must not be unified - everybody agrees on that today.
c. non-arguments:

"in the theory of prosodic phonology, grammatical boundaries can be dispensed with in phonological representations." Booij (1983:268)

[also Selkirk (1981 [1978]:136ss)]
this is certainly true, but does not tell us why PP should be preferred in the first place.

(15) Domains are a child of autosegmentalism
in fact it is an autosegmentalised version of the SPE interface theory.
a. In the early 80s when phonology was progressively autosegmentalised in every area, Selkirk clearly identifies the motivation for abandoning boundaries in favour of domains:
if everything is autosegmental, so must the interface be, hence we must eliminate ugly linear boundaries and build some autosegmental, i.e. arboreal structure instead.
"the syllables of phonological representation are arranged in some kind of hierarchical organization. […] By 'hierarchical organization' we mean, very roughly speaking, the organization of the units of phonological analysis into layers, vertically arranged on the same plane. […] This conception of phonological representation as having its own hierarchical structure(s) demands a radical rethinking of the relation between syntax and phonology. […] Thus the interpretation question - the question of the mapping between phonological representation and syntactic representation - takes on a much greater importance than in the standard theory, and has an entirely different quality to it. It must be viewed as a characterization of the relation between the syntactic hierarchy, on the one hand, and the phonological hierarchy (or hierarchies), on the other." Selkirk (1984:7f)

Therefore,

"the junctural properties of sentences should be somehow represented 'suprasegmentally' rather than as the segmental boundaries of the standard theory. […] Thus the theory of phonological representation that we will advocate here eliminates segmental boundary elements altogether." Selkirk (1984:8)
b. already in Nespor & Vogel (1986), the transition with linear SPE plays no role anymore: domains are taken for granted. The later PP literature does not examine this question anymore.
For over 20 years PP stands unchallenged as the generative interface theory. The success may be appraised when considering that the units of PP - the phonological word, the phonological phrase etc. - have become descriptive categories in every-day conversation of phonologists.

5. The Prosodic Hierarchy is a diacritic (if an autosegmental one)

(16) the Prosodic Hierarchy does not include syllables and feet
a. the four higher levels serve no other purpose than the interface
b. they have no other definition than the one provided by the structural description of phonological rules that are sensitive to morpho-syntactic information.
c. Syllables and feet, however, are independently motivated: the former is a bottom-up construction based on the sonority of its terminal elements, the segments, while the latter is a function of stress. Neither the sonority of segments, which is recorded in the lexicon, nor the distribution of stress relies in any way on any structural description of some phonological rule.
d. ==> if there were no interface, syllables and feet would still exist, but the four higher levels of the Prosodic Hierarchy would not.
Syllables and feet exist for truly phonological reasons, and only for those reasons.

e. the syllable and feet owe nothing to mapping rules, hence they do not store any morpho-syntactic information:

"The phonological word is the lowest constituent of the prosodic hierarchy which is constructed on the basis of mapping rules that make substantial use of nonphonological notions." Nespor & Vogel (1986:109)

Selikirk (1986:385) and Rice (1990:292 note 3) also point out this fact (see also Chen 1990:36).

(17) the Prosodic Hierarchy is the modern continuation of boundaries
a. Vogel & Kenesei (1990:344) review the arguments in favour of Indirect Reference, the heart of Prosodic Phonology. One point they make is a historical one: all interface theories have been indirect thus far, so there is probably something to this approach. They namely single out SPE as a predecessor of Indirect Reference.

"Working within the SPE framework, Selkirk [1972] modifies the original proposal by showing that at least in certain types of phonological phenomena, interaction between the two components is only indirect. Word boundaries (#'s) inserted into a string on the basis of syntactic structure determine where external sandhi rules apply. Phonological rules thus do not directly 'see' syntactic structure, but rather access only strings of segments and boundaries." Vogel & Kenesei (1990:344)

Hence the equivalence between #s and the modern prosodic arborescence.
b. The same line of reasoning is found in the overview article by Inkelas & Zec (1995): they call p-structure the level of representation that mediates between morpho-syntax and phonology and explicitly identify boundaries as the ancestor of its more recent prosodic incarnation:

"An early version of p-structure was proposed in SPE and developed in subsequent work (Selkirk 1972,1974; Rotenberg 1978). According to this view, domains of phonological rules are expressed in terms of phonological boundary symbols, generated by rules. […] Far more constrained is the 'prosodic' view of p-structure. Under this view, p-structure occupies a level with its own hierarchical organization and a high degree of autonomy." Inkelas & Zec (1995:537s)

Thus prosodic constituency is but a more advanced version of boundaries.
c. prosodic constituency and boundaries share the following properties
1. they are the output of the translational process that is operated in the Translator's Office.
2. buffer: their exclusive purpose is to store extra-phonological information in the phonology.
3. they are absent from domestic phonology, i.e. from processes that do not appeal to any extra-phonological information.
4. their choice and names are arbitrary: "#", "omega"

5. pointing out that prosodic constituents represent certain stretches of the linear string which coarsely correlate with morpho-syntactic divisions does not make omegas and phis less arbitrary.

    This only shows that their only purpose is to replicate morpho-syntactic structure in phonology.

    The same may be said about boundaries - and actually has been said about boundaries (by McCawley 1968): + and # represent two different boundary strengths, the latter dividing larger chunks of the linear string.

d. conclusion

1. "#"s and "omegas" have the same status: they are non-phonological intruders in the phonological world whose only purpose is to stock extra-phonological information.
2. They are necessary in order to fulfil the promise of Indirect Reference.
3. For some strange reason, though, boundaries are stigmatised as arbitrary diacritics, while prosodic constituency is sold as a "truly phonological object" (e.g. Selkirk 1984:32,409s, Nespor & Vogel 1986:27ss,110ss).

    For example, Nespor & Vogel (1986:3) call boundaries "pseudo-phonological terms" and argue that phonology should only be able to refer to truly phonological objects (just as syntax can only make reference to truly syntactic objects).

(18) **definition: what is a diacritic?**

a. in module X, something that serves no other purpose than stocking and restoring information from other modules that is needed for the computation in module X.
b. in module X, something that is created without any contribution of module X.
    ==> the genesis of boundaries and the Prosodic Hierarchy does not require any kind of phonological information.

6. What boundaries are: diacritic and local

(19) boundaries are local and diacritic

a. what is a boundary?
    1. local
    2. diacritic
b. the debate between local (boundaries) and non-local (domains) intervention is completely absent in the PP literature. Nonetheless it is THE critical difference between SPE and PP.
c. boundaries are local, domains are not
    1. they define the relation between two adjacent morphemes or words..
    2. domains span a number of elements of the linear string and thereby create labelled clusters
    3. an individual element of the linear string belongs to a domain, but it cannot "belong" to a boundary.
    4. a boundary is precisely located in the linear string and can influence only adjacent objects: the one immediately preceding and the one immediately following.
    5. it does not make sense to talk about domains that intervene, or are located between two elements of the linear string.

d. boundaries are diacritic
    as soon as one needs to represent boundaries, a diacritic object enters the scene.
e. domains are diacritic as well
f. the difference between boundaries and domains is not their diacritic vs. non-diacritic character (they are both diacritic); what really distinguishes them is locality: boundaries have a local action, domains have a non-local action.

7. Summary so far: desiderata for the representational part of an interface theory

(20) Prosodic Phonology has thrown out the local baby with the diacritic bath

a. as soon as boundaries were shown to be ugly diacritics and hence done away with, the local option was thrown out as well without any discussion regarding locality.
b. boundaries and domains are equally bad on the diacritic count.
c. recall that non-isomorphism is the ONLY reason for Indirect Reference.
    And that it evaporates if boundaries are used instead of domains.
d. but there is a good reason for Indirect Reference: modulariy.
e. desiderata for an interface theory
    1. modular no-man's-land-based Translator's Office
    2. No Diacritics
        we need an interface without diacritics - but how could either boundaries or domains be non-diacritic ?
    3. Local or Non-Local intervention?
        can we decide between the local and the domain-based option ?

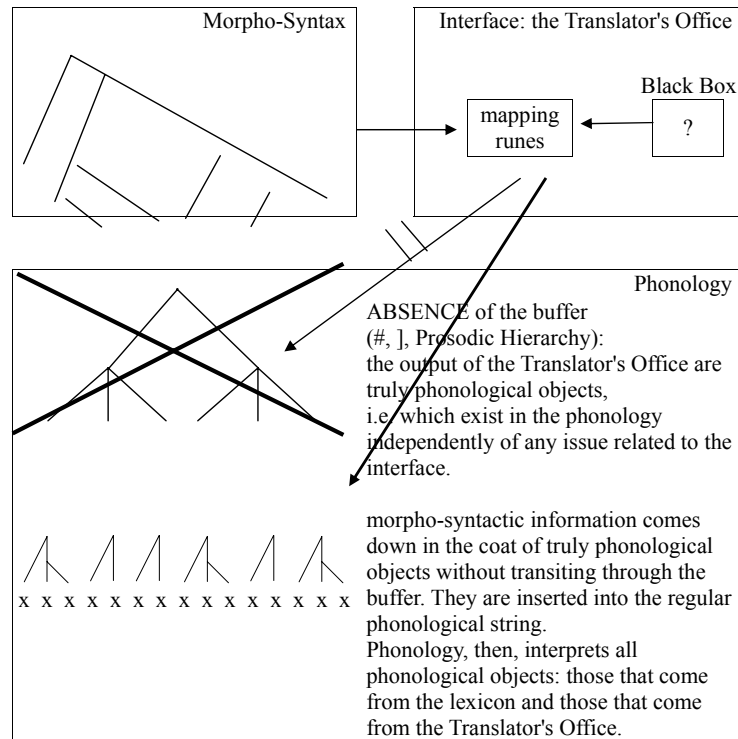## 8. Direct Interface

(21) the direct principle: No Mediation
    Scheer (2005a,b, 2006a,b, forth a,b)

a   unlike all other interface theories (except Direct Syntax), no specific interface vocabulary is imposed (#, omegas etc.).
b. the vocabulary of the representational device is the vocabulary of the phonological theory:
    ==> only truly phonological objects can be the output of the Translator's Office
c. this is how "non-diacritic boundaries" are achieved:
    higher level intervention is both local and non-diacritic.

(22) No Mediation - hence no diacritics

a. the output of the Translator's Office are only truly phonological units.
b. **definition of "truly phonological object"**
    a truly phonological object is a unit that is needed for the purpose of domestic phonology and in absence of any issue related to extra-phonological information.
c. hence, are ruled out:
    - omegas, the Prosodic Hierarchy
    - boundaries
    - brackets

(23) general architecture of Prosodic Phonology

Morpho-Syntax

Interface: the Translator's Office

Black Box

mapping
runes

?

Phonology

ABSENCE of the buffer
(#,], Prosodic Hierarchy):
the output of the Translator's Office are
truly phonological objects,
i.e. which exist in the phonology
independently of any issue related to the
interface.

x x x x x x x x x x x x x x x x x

morpho-syntactic information comes
down in the coat of truly phonological
objects without transiting through the
buffer. They are inserted into the regular
phonological string.
Phonology, then, interprets all
phonological objects: those that come
from the lexicon and those that come
from the Translator's Office.

(24) Local or non-local intervention?
  a. domains do not qualify as the output of the Translator's Office because they are necessarily created by phonological computation.
  b. the upper part of the Prosodic Hierarchy (down to, and including, the phonological word) does not qualify anyway because it is created ex cathedra in the Translator's Office.
  c. the lower part (syllables and feet) in principle does precisely because it does not owe anything to decisions made in the Translator's Office: syllables and feet are bottom-up constructions that comply with the definition of a truly phonological object.
  d. as a consequence, however, syllables and feet are not primitive phonological objects: they are constructed through a phonological computation that necessarily relies on basic phonological material.
     Hence in absence of such a computation based on phonological material, syllables and feet do not exist. Therefore they cannot be the output of the Translator's Office.
  e. ==> domains cannot be the output of the Translator's Office
     ==> representational intervention is necessarily LOCAL.

(25) actions that the Translator's Office may take
  a. representational
     it may send down an object to the phonology. This object is a truly phonological unit and will be inserted at the boundary of two morphemes or words. Its action therefore is only local.
  b. procedural: chunk submission
     it may decide to submit only a chunk of the total linear string to the phonology, and to repeat this action several times with variously sized chunks (from smaller to bigger, climbing up the morpho-syntactic tree). Every time phonology receives some chunk, it assigns phonological interpretation to it. Obviously, chunk-submission is not local in character.

(26) side-effect:
     phonological theories may be evaluated according to their behaviour at the interface
  a. unlike all other theories (except Direct Syntax), Direct Interface does not impose any interface vocabulary.
  b. its representational vocabulary are the units of whatever phonological theory is used.
  c. different domestic phonological theories have different vocabulary, and hence make different predictions how the interface works and what is a possible interface event.
  d. hence they may be evaluated according to their behaviour at the interface.
  e. structuralism and SPE did exactly the right thing:
     1. here is what my phonological theory looks like
     2. hence my interface vocabulary will be one of my phonological units
        - phonemes in structuralism
        - segments in SPE
     3. this predicts absurd interface events: # → p etc.
     4. conclusion: the phonological theory must be wrong.
        - The objects which it offers for the incarnation of higher level information are the wrong ones.
        - ==> phonological theory must have other objects, of a kind that have not been discovered yet.
        - ==> autosegmental representations could have been discovered on these grounds.

(27) Direct Interface is theory-neutral
  a. it sets a frame for phonological theories
  b. phonological theories will be more or less successful: they will offer this or that inventory of phonological objects.
  c. the only condition is that a candidate phonological theory offers genuine phonological objects - which does not appear to be the case of OT (which consists only of computation)
  d. hence the interests of OT and the representational channel into the phonology are orthogonal: OT is not a fully-fleged theory of phonology, it covers just the computational part. It needs a "universe of discourse" anyway Oostendorp & Weijer (2005).
  e. Interface Dualism is actually a way of demonstrating that OT is lacking a theory of representations: there IS a representational channel, hence every phonological theory must offer representational objects as the output of the Translator's Office.

(28) the DIRECT effect

true phonological objects make predictions in phonology precisely because they provoke predictable phonological reactions. Whatever the theory, this reaction may be calculated beforehand.

a. diacritics do not make any prediction: "#" could trigger or block any phonological process and its reverse. A CV unit cannot.

b. example: the beginning of the word

it is not true that the beginning of the word has arbitrary and interchangeable effects in the phonology. At least three effects are recurrent cross-linguistically (Scheer 2004:§87, why do pink panthers always the same thing?):

1. restrictions on word-initial clusters (either TR-only, or as morpheme.internally)
2. strength of word-initial consonants (which are either strong, or follow the intervocalic pattern)
3. prohibition of first vowels of words to be dropped (either present, or possible in the same way as morpheme-internally)
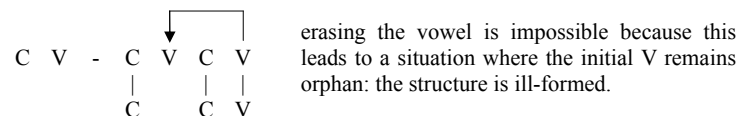
b. illustration

language A: ø → V / #C__C

language B: V → ø / #C__C

are both possible natural languages when using #: the object "#" does not rebel against language B, which of course is non-human. Because "#" does not make any prediction at all, it has no predictable effect on phonology: it could trigger any process and its reverse.

By contrast, CVCV and # = CV (Lowenstamm 1999) make a clear prediction:

Gvt

C V - C V C V   erasing the vowel is impossible because this
| | | leads to a situation where the initial V remains
C   C V   orphan: the structure is ill-formed.

9. Conclusion

(29) conclusion

a. there IS communication with the phonology through a representational channel.
b. this communication can only insert truly phonological objects into the phonology.
c. decisions regarding which object is shipped off and where it is inserted are made in a Translator's Office, which is located in modular no-man's land. This roughly corresponds to Jackendoff's Correspondence Rules.
d. hence do no quality as interface currency because of No Diacritics:
   - #, +
   - the Prosodic Hierarchy (omegas, phis etc.)
   - brackets (Lexical Phonology)
e. this opens the way for a competition of phonological theories on the grounds of their behaviour at the interface: differnet vocabularies make different predictions.

f. next goal: the elimination of the Translator's Office
   1 if it cannot be a module, it cannot exist
   .
   2 it allows for "magic" operations (the Black Box of Prosodic Phonology)
   .
   3 it allows to ship off objects that will not be inserted in sandhi position, i.e.
   . between two morphemes.
   4 it allows for the insertion of objects that do not spell out any morpho-syntactic
   . terminal (or node): a transition between two nodes may as well trigger the insertion of a phonological object.

g. reduce the Translator's Office to a lexical access
   1 any object shipped off to the phonology spells out a morpho-syntactic node (or
   . terminal)
   2 the only way of inserting an object into the phonology is local in a strict sense:
   . between two morphemes.
   3 the only source for material that is submitted for phonological computation is
   . the lexicon:
      - the phonological material representing morphemes spells out terminals or nodes and comes from the lexicon.
      - the phonological material representing non-morphemic information spells out terminals or nodes and comes from the lexicon (not from the Translator's Office).

h. in short: representational intervention in phonology reduces to the insertion of CV units.
   1. but this is the view from a particular phonological theory
   2. Claudine Pagliano says that for different reasons

References

[Quite some of the following references are available at www.unice.fr/dsl/tobias.htm, Little Interface Library]

Anderson, Stephen 1974. On the typology of phonological rules. Papers from the parasession on Natural Phonology, edited by A. Bruck, R. Fox & M. La Galy, 1-12. Chicago: Chicago Linguistic Society.

Basbøll, Hans 1975. Grammatical boundaries in phonology. Aripuc 9, 109-135.

Basbøll, Hans 1978. Boundaries and the ranking of rules in French phonology. Etudes de phonologie française, edited by Benoît de Cornulier & François Dell, 3-18. Marseille: Editions du CNRS.

Basbøll, Hans 1978. Schwa, jonctures et syllabification dans les représentations phonologiques du français. Acta Linguistica Hafniensia 16, 147-182.

Basbøll, Hans 1981. Metrical Theory and the French Foot. Phonologica 1980, edited by Wolfgang Dressler, Oskar Pfeiffer & John Rennison, 35-43. Innsbruck: Institut für Sprachwissenschaft Innsbruck.

Basbøll, Hans 1981. On the function of boundaries in phonological rules. Phonology in the 1980's, edited by Didier Goyvaerts, 245-269. Ghent: Story-Scientia.

Booij, Geert 1983. Principles and parameters in Prosodic Phonology. Linguistics 21, 249-280.

Booij, Geert 1985. The Interaction of Phonology and Morphology in Prosodic Phonology. Phono-morphology. Studies in the Interaction of Phonology and Morphology, edited by Edmund Gussmann, 23-34. Lublin: Katolicki Universytet Lubelski.

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, 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.

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.

Devine, Andrew & Laurence Stephens 1976. The Function and Status of Boundaries in Phonology. Linguistic Studies offered to Joseph Greenberg on the occasion of his sixtieth birthday, edited by Alphonse Juilland, 285-312. Saratoga, Cal.: Anma Libri.

Devine, Andrew & Laurence Stephens 1980. On the Phonological Definition of Boundaries. Juncture, edited by Mark Aronoff & Mary-Louise Kean, 57-78. Saratoga: Anma Libri.

Fodor, Jerry 1983. The modularity of the mind. Cambridge, Mass.: MIT-Bradford.

Fodor, Jerry 1998. The Trouble with Psychological Darwinism. London Review of Books 22, 11-13.

Fodor, Jerry 2000. The mind doesn't work that way: The scope and limits of computational psychology. Cambridge, Mass.: MIT Press.

Hayes, Bruce 1984. The phonology of rhythm in English. Linguistic Inquiry 15, 33-74.

Hyman, Larry 1978. Word Demarcation. Universals of Human Language, Vol 2, edited by Joseph Greenberg, 443-470. Stanford: Stanford University Press.

Inkelas, Sharon 1990. Prosodic Constituency in the Lexicon. New York: Garland.

Jackendoff, Ray 1992. Languages of the mind. Cambridge, Mass.: MIT Press.

Jackendoff, Ray 1994. Patterns in the Mind. Language and human nature. BasicBooks.

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.

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 & Arnold Zwicky 1987. Introduction: syntactic influences on phonological rules. Phonology 4, 3-11.

Karmiloff-Smith, Annette, Edward Klima, Ursula Bellugi, Julia Grant & Simon Baron-Cohen 1995. Is There a Social Module? Language, Face Processing, and Theory of Mind in Individuals with Williams Syndrome. Journal of Cognitive Neuroscience 7, 196-208.

Lowenstamm, Jean 1999. The beginning of the word. Phonologica 1996, edited by John Rennison & Klaus Kühnhammer, 153-166. La Hague: Holland Academic Graphics.

Mascaró, Joan 1976. Catalan Phonology and the Phonological Cycle. Ph.D. dissertation. MIT.

McCawley, James 1968. The Phonological Component of a Grammar of Japanese. The Hague: Mouton.

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.

Oostendorp, Marc van & Jeroen van de Weijer 2005. Phonological alphabets and the structure of the segment. The internal organisation of phonological segments, edited by Marc van Oostendorp & Jeroen van de Weijer, 1-23. Berlin: Mouton de Gruyter.

Pinker, Steven 1997. How the mind works. New York: Norton.

Plotkin, Henry 1998. Evolution in mind. Cambridge, Mass.: Harvard University Press.

Rice, Keren 1990. Predicting Rule Domains in the Phrasal Phonology. The Phonology-Syntax Connection, edited by Sharon Inkelas & Draga Zec, 289-312. Chicago: Chicago University Press.

Sag, Ivan 1974. The Grassmann's Law Ordering Pseudoparadox. Linguistic Inquiry 5, 591-607.

Scheer, Tobias 2004. A Lateral Theory of Phonology. Vol.1: What is CVCV, and why should it be? Berlin: Mouton de Gruyter.

Scheer, Tobias 2005. We need a translator's office, but the buffer has to go: Direct Interface. Paper presented at the 36th Poznań Linguistic Meeting, Poznań 22-24 April.

Scheer, Tobias 2005. When higher modules talk to phonology, they talk to empty Nuclei. Paper presented at the conference Sounds of Silence, Tilburg 19-22 October.

Scheer, Tobias 2006. The balance of representation and computation at the Interface. Paper presented at the 14th Manchester Phonology Meeting, Manchester 25-27 May.

Scheer, Tobias 2006. Interface Dualism. Paper presented at the 37th Poznan Linguistic Meeting, Poznan 20-23 April.

Scheer, Tobias forth. Why the Prosodic Hierarchy is a diacritic and why the Interface must be Direct. To appear in the proceedings of the Tilburg Sounds of Silence conference.

Stanley, Richard 1969. The Phonology of the Navaho Verb. Ph.D dissertation, MIT.

Stanley, Richard 1973. Boundaries in phonology. A Festschrift for Morris Halle, edited by Stephen Anderson & Paul Kiparsky, 185-206. New York: Holt, Rinehart & Winston.

Strauss, Steven 1979. Against Boundary Distinctions in English Morphology. Linguistic Analysis 5, 387-419.

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.