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Colloque du PFC
Paris, 11-13 décembre 2003
ce handout & davantage à
www.unice.fr/dsl/tobias.htm

PRIVATIVE MELODIC REPRESENTATIONS AND STRUCTURALIST THINKING: LICENSING CONSTRAINTS

(1) purpose
   a. generative phonology was ill-advised to ban structuralist thinking from teaching, theory and mind.
   b. Clements (2001,2002) shows that systemic featural economy is a reality across phonological systems: phoneme inventories are not random, but favour the multiple usage of a given feature over a non-economical use of many features. He concludes that melodic representations must not ignore this fact, and proposes an implementation of this insight in terms of **representational economy**: he "eliminate[s] all representational elements that play no role in the phonological system of a given language" (Clements 2001:96).
   c. earlier structuralist traces in generative phonology: contrastive underspecification (Steriade 1987, Clements 1987, Archangeli 1988).
      Also present in OT, under the heading of perception: dispersion (Padgett 2001, ms).
   d. structuralist thinking has also been implemented into the privative approach to melody (although this may not have been the intention of the authors): **Licensing Constraints** (literature see below). In this talk, I present this line of thought.

(2) it would be nice if we were a little more cumulative
   a. Structure and Process of a natural object
      1. neogrammarians have established that language is a natural, not a conventional object. Linguists do a natural, not a social science (even though of course there is a social implementation of the core non-social object of study).
      2. structuralists have established that a sound is not a linguistic object in itself; it becomes a linguistic object only if it contracts relations with other sounds.
      3. generativists have established that there is on-line processing of linguistic information in our brains when we speak, and that linguists ought to be eager to precisely characterise how this cognitive activity works.
   b. structuralists accept (more or less) the neogrammarian finding, but are indifferent to the notion of process: the linguistic job is done when the system of a given language is exhaustively described. Whether the description is in any way similar or compatible with the actual cognitive reality does not matter.
   c. generativists accept (and have developed) the neogrammarian finding, but have always been deaf for the structuralist message: phonological processes operate over **sounds**, not over phonemes. Since Halle's early demonstration that in Russian a non-phoneme, [d͡ʒ], undergoes devoicing in the same way as phonemes, there is no place for the phoneme in the theory anymore. Generativists are unable to conceive that the same process has different effects on the same sound according to the specific properties of the system that the sound is part of.

d. **nature is made of structure and process**.
There is no natural science without structure, or without process. Natural objects exist independently of any processing, and then are exposed to some process that alters their properties.
==> it makes no sense to do phonology without either structuralism or generativism. The two key concepts are actually carried in the names of the two approaches.

(3) the old debate: binary vs. privative (unary, monovalent, holistic) representation of melody
a. **binary**: melodic primes have a positive and a negative value, each of which can be accessed and manipulated by phonological processes.
Source: Jakobson's articulatory features, via SPE to Clements' Feature Geometry (Clements 1985 and forthfollowing).
b. **privative**: melodic primes do not have different values; they are either present or absent. If present, they contribute their properties to the segmental expression; if absent, they do not. Obviously, privative primes can only be accessed and modified if they are present.
Source: Anderson & Jones (1974,1977), further declined in Dependency Phonology (Anderson & Ewen 1987), Particle Phonology (Schane 1984, Brandão de Carvalho 1993) and Government Phonology (Kaye 1985).
c. various amounts of privativity have been introduced into binary feature geometric approaches by **underspecification** theories: some features (according to markedness or contrastivity) are absent from lexical representations; they come into being through "late" fill-in or default rules.
Source: Steriade (1987), Clements (1987), Archangeli (1988), Pulleyblank (1988), Avery & Rice (1989)

(4) core functioning of privative representations
melodic primes: I - frontness
A - lowness
U - roundness

[y] = I+U I = [i] U = [u]

[ø] = I+U+A e = I+A o = U+A

A = [a]

(5) additional tools
a. headedness (Gov Phon, heads underscored): I+A = [ɛ]
I+A = [æ]
the head contributes more to the overall result than the operator.
weight (Particle Phon): I = [i]
I+A = [ɪ]
I+A+A = [e]
I+A+A+A = [ɛ] etc.
b. the neutral vowel (Gov Phon) is responsible for centrality: v = [ɨ], v+A = [ə]

(6) representation of ATRness
   a. classical: an independent prime (Kaye et al. 1985).
   b. I is the agent of ATRness (Hulst 1989, Brandão de Carvalho 1993).
   c. lax vowels are empty-headed (Harris 1994).
   d. lax vowels are headless (revised theory of elements, London)[1]

(7) two typical arguments when comparing binary and privative approaches
   a. in favour of binary approaches:
      the natural class "high vowels" has no positive characterisation in privative systems. Only the negative statement "all and only the expressions from which A is absent" can do the job. More generally speaking, there is no equivalent to the features [high]/ [low].
   b. in favour of privative approaches:
      something that is no there cannot spread. Both values of binary features are supposed to be able to spread, but this makes a wrong prediction for [nasal]: [+nasal] spreads, but [-nasal] does not. This is straightforward with a privative N: it can spread only when it is present.

Londonian Licensing Constraints

(8) idea: one single device, Licensing Constraints (LC), describe
   1) the systemic properties of the language
   2) the behaviour of this language with respect to phonological processes
   literature: Kaye (2000,2001), Charette (1994,1996), Cobb (1997)

(9) LCs and systemic properties
   a. **Overgeneration**
      i.e. the old problem, which was central in SPE and the post-SPe discussion in the computational area of the grammar. It was also central in the melodic discussion in Government Phonology (and used as an argument against Feature Geometry).
   b. **free combinability** - a basic claim of privative systems
      given the set of melodic primes and the properties of the concatenation operation, all and only those expressions that are generated must exist in natural language.
      The concatenation operation implements the head-operator relation.
   c. a system with 10 primes and no restrictions on their concatenation produces horrible overgeneration.
   d. early attempt at fighting back overgeneration: universal restrictions on the computational part: Charm (Kaye et al. 1985, 1990). Unsuccessful.
   e. fighting back overgeneration on both fronts:
      1. reducing the number of primes: the revised theory of elements, cf. above.
      2. restricting the computational part, but this time not by implementing universal restrictions on the combination of primes, but language-specific limitations. Hence Licensing Constraints.

[1] Different aspects of this model have appeared scattered over the issues of SOAS Working papers. Some succinct summaries are available in Kaye (2000,2001), Charette & Göksel (1994,1996) and Cobb (1997)

(10) Licensing Constraints
- a. there are two kinds of Licensing Constraints
  1. restriction on the headhood of a prime
     ex. "A cannot be head" or "I must be head"
  2. restriction on the ability of a head to license operators
     ex. "nothing can license A" or "I must be licensed"
- b. a language-particular system does not instantiate all logically possible combinations of primes. A system is the result of a specifically curtailed combinatory. LCs describe these language-specific properties.
- c. thus function nb 1: description of cross-linguistic variation
  example: I-U and U-I are supposed to be two different objects that produce the same phonetic result, [y]. There are indeed two different [y]s in Swedish (spelt <u> and <y>). But in French there is only one [y]. This is the result of the action of a LC on the combination of I and U.
- d. function 2: generation of specific systems e o
  assume a typical system with four mid vowels: ɛ ɔ
  -ATR [ɛ,ɔ] are necessarily headless I-A and U-A, respectively. Hence, we are left with four logically possible identities for the two remaining vowels [e,o]:
  I-A A-I
  U-A A-U
  A LC will thus restrict free combinability:
  "A does not license operators" for example filters out A-I and A-U.
  Thus [e] = I-A, [o] = U-A
  But "nothing can license A" does the same job in a different way: I-A and U-A are ruled out. Thus [e] = A-I, [o] = A-U
  Both options could be true. It is not the systemic properties of the language that will help us to select, but its behaviour in regard of phonological processes.

Application: Turkish

(data & analysis from Charette & Göksel 1994,1996)

(11) vocalic system of Turkish

y i ɨ u

œ ɛ ɔ

a

(12) Licensing constraint number one
"operators must be licensed"
- a. that is, all vowels are headed (only heads are licensors).
- b. Reason: there is no contrast between tense (=headed) and lax (=headless) vowels in the language.
- c. consequences: i=I, a=A, u=U. And ɨ=ø anyway.

(13) what is the identity of the four remaining vowels ?

a. e,o,ö,ü
they are necessarily complex. Possible identities:
e could be A-I or I-A
o could be A-U or U-A
ü could be I-U or U-I
ö could be I-A-U with any element head

b. how overgeneration could be curtailed: a constraint on headhood

1. "I must be head"
rules out A-I, hence e = I-A
U-I, hence ü = I-U
I-A-U and I-A-U, hence ö = I-A-U
but says nothing about o, which can still be either U-A or A-U

2. "U must be head"
rules out A-U, hence o = U-A
I-U, hence ü = U-I
I-A-U and I-A-U, hence ö = I-A-U
but says nothing about e, which can still be either I-A or A-I

3. "A must be head"
rules out I-A, hence e = A-I
U-A, hence o = A-U
I-A-U and I-A-U, hence ö = I-A-U
but says nothing about ü, which can still be either U-I or I-U

c. hence we need another Licensing constraint: "X does not license operators"
this produces six options, any of which describes the vocalic system of Turkish without overgeneration:

1.1. "I must be head" + "A does not license operators"

	old	new
rules out	A-I, hence e = I-A	e = I-A
	U-I, hence ü = I-U	ü = I-U
	I-A-U and I-A-U, hence ö = I-A-U	ö = I-A-U
	o = U-A or A-U ?	**decision: o = U-A**

1.2. "I must be head" + "U does not license operators"

	old	new
rules out	A-I, hence e = I-A	e = I-A
	U-I, hence ü = I-U	ü = I-U
	I-A-U and I-A-U, hence ö = I-A-U	ö = I-A-U
	o = U-A or A-U ?	**decision: o = A-U**

2.1. "U must be head" + "A does not license operators"

	old	new
rules out	A-U, hence o = U-A	o = U-A
	I-U, hence ü = U-I	ü = U-I
	I-A-U and I-A-U, hence ö = I-A-U	ö = I-A-U
	e = I-A or A-I ?	**decision: e = I-A**

2.2. "U must be head" + "I does not license operators"

	old	new
rules out	A-U, hence o = U-A	o = U-A
	I-U, hence ü = U-I	ü = U-I
	I-A-U and I-A-U, hence ö = I-A-U	ö = I-A-U
	e = I-A or A-I ?	**decision: e = A-I**

3.1. "A must be head" + "I does not license operators"

	old	new
rules out	I-A, hence e = A-I	e = A-I
	U-A, hence o = A-U	o = A-U
	I-A-U and I-A-U, hence ö = I-A-U	ö = I-A-U
	ü = U-I or I-U ?	**decision: e = U-I**

3.2. "A must be head" + "U does not license operators"

	old	new
rules out	I-A, hence e = A-I	e = A-I
	U-A, hence o = A-U	o = A-U
	I-A-U and I-A-U, hence ö = I-A-U	ö = I-A-U
	ü = U-I or I-U ?	**decision: e = I-U**

(14) summary thus far

a. the inspection of the bare vocalic system of Turkish tells us something about its phonological identity, but not all.
b. we are left with six possible identities for complex vowels.
c. the behaviour of the language in phonological processing will betray the correct option.
d. the revealing process is vowel harmony.

(15) Turkish vowel harmony

a. terminology:
dominant Nuclei = harmony heads = donors of primes
recessive Nuclei = harmony dependents = receive primes
in Turkish, only the first Nucleus of a word is dominant, all others are recessive.
b. two kinds of harmony
1. front harmony: recessive Nuclei show alternations between a-e
occurs in type 1 suffixes
2. front + roundness harmony: recessive Nuclei show alternations between ɨ-i-u-ü
occurs in type 2 suffixes
c. example

alternation	stem	relativiser = type 1	imperative = type 2	gloss
i - e - i	gir	gir-en	gir-in	enter
e - e - i	kes	kes-en	kes-in	cut
ü - e - ü	gül	gül-en	gül-ün	laugh
ö - e - ü	gör	gör-en	gör-ün	see
u - a - u	kur	kur-an	kur-un	establish
o - a - u	sor	sor-an	sor-un	ask
a - a - ɨ	kal	kal-an	kal-ɨn	remain
ɨ - a - ɨ	kɨs	kɨs-an	kɨs-ɨn	reduce

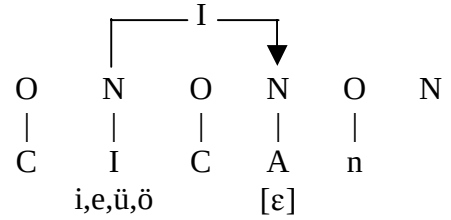
(16) how it works

a. type 1 vs. type 2 is a lexical contrast. Hence type 1 and type 2 suffixes must have a different lexical representation. All the rest should be predictable from the harmony process.

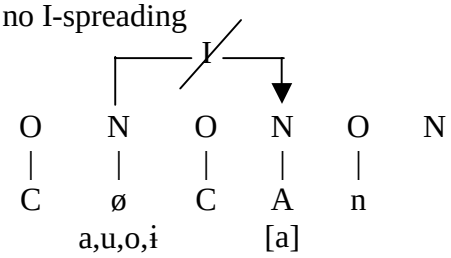
b. type 1
the difference between e and a is I-A (headedness irrelevant for the time being) vs. A. Since there is no "substractive spreading" (even semantic nonsense), the lexical representation must be A, and the harmony process adds an I iff present in the dominant Nucleus.

1. I-containing vowels: i,e,ü,ö
I-lacking vowels: a,u,o,ɨ
2. hence a very simple generalisation: dominant I spreads on recessive A.

I-spreading



no I-spreading



c. type 2

1. here, both I and U spread: front + roundness harmony.
2. we can discover the lexical identity of the recessive Nucleus when looking at the result that appears when no spreading occurs, i.e. with dominant Nuclei that contain neither I nor U.
3. the result with dominant a,ɨ is ɨ. Hence, the lexical identity of type 2 suffixes is zero: they have an empty Nucleus.
4. vowels that contain I, but no U: i,e ==> result: ø+I = i
vowels that contain U, but no I: u,o ==> result: ø+U = u
vowels that contain both I and U: ü,ö ==> result: ø+I+U = ü
vowels that contain neither I nor U: a,ɨ ==> result: ø+ø = ɨ

d. questions raised by the harmony system: asymmetric behaviour of primes

1. I always spreads, on both empty (type 2) and A-containing (type 1) Nuclei.
2. U spreads, but only on empty (type 2) Nuclei: no roundness harmony with A-containing (type 1) Nuclei.
3. A never spreads on any recessive Nucleus under any circumstance.
WHY ?

(17) assumptions on vowel harmony

a. the harmonic prime in the recessive Nucleus is licensed by its antecedent in the dominating Nucleus. Spreading is an instantiation of element licensing: **the head licenses a copy of itself**.

b. they form a chain. Consequence: the presence of two primes in a recessive Nucleus whereby one is of lexical, the other of harmonic origin, does not imply that both contract a licensing relationship. In fact they do not.
Therefore, **complex expressions in recessive Nuclei need not obey the Licensing Constraints of the language**.

(18) interplay of Licensing Constraints and vowel harmony

a. we are now in position to decide between the options of (13)c:
   1.1. "I must be head" + "A does not license operators"
   1.2. "I must be head" + "U does not license operators"
   2.1. "U must be head" + "A does not license operators"
   2.2. "U must be head" + "I does not license operators"
   3.1. "A must be head" + "I does not license operators"
   3.2. "A must be head" + "U does not license operators"

b. harmony tells us that A does not license operators: it never spreads, and spreading means licensing, cf. (17)a.
   hence, only two systems qualify:
   1.1. "I must be head" + "A does not license operators"
   2.1. "U must be head" + "A does not license operators"

c. Charette & Göksel (1996:14) opt for the latter solution, for reasons that are irrelevant here.

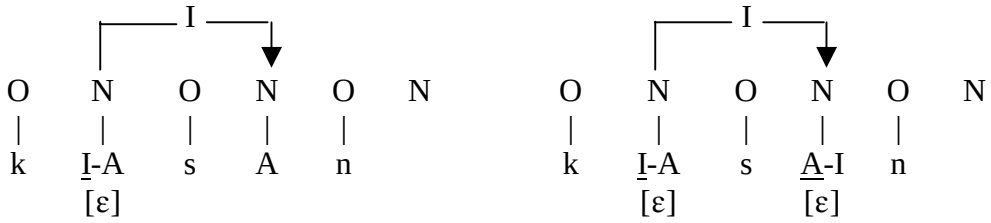
d. they also discuss the question why U spreads into empty Nuclei, but not into those inhabited by A. This issue is related to the previous one: Charette & Göksel (1996:14ss).

e. hence, the final system of Licensing constraints for Turkish:
   1. operators must be licensed
   2. A is not a licensor
   3. U must be head

(19) an interesting consequence:
the same phonetic AND systemic object must be able to enjoy two different phonological identities.

a. what happens when I spreads on an A-containing suffix (type 1)

underlying /kes-an/ surface [kɛs-ɛn]



b. crucially,
   lexical [ɛ] = I-A
   harmonic [ɛ] = A-I
   why? because the lexical /a/ is headed A (all vowels are headed in Turkish), that is joined by a harmonic I.
   Switching = change from head to operator (or vice-versa).
   Charette & Göksel (1996:13s) argue that switching is illegal in Turkish for independent reasons. Hence, the harmonic process could not produce
   /A/ —> [I-A]

(20) are we ready to buy that ?

This implementation of structuralist thinking drives us into the eternal debate of the relation between phonetics and phonology:

a. structuralism does not care for the phonetic appearance of phonemes, nor for their underlying identity (because structuralism does not talk about cognitive realities). BUT it is absolutely certain for structuralism that there is only one phoneme /e/ in Turkish: putative [ε_1] is not opposable to putative [ε_2].

==> Charette & Göksel must be wrong.

b. absolute neutralisation is a typical generative disease.

Kiparsky's (1968) "How abstract is phonology?" has launched the debate on abstractness - and hence overgeneration -, which has dominated generative discussion in the 70s and part of the 80s (et qui pend au nez de OT, mais sans qu'il en soit question).

==> Charette & Göksel must be wrong.

c. everybody has come to the minimal conclusion that absolute neutralisation must be outlawed. Charette & Göksel's proposal goes down the old track right into the swamps: there is a single phonetic and systemic object, but it behaves in two different ways/ my theory says it must be twofold. So there are two distinct e's: /e_1/ and /e_2/.

d. Charette & Göksel (1994:34s) quote the case of French:

"e" in absolute word-final position in some words is necessarily [e], but in others may or must be (variation…) [ɛ]:

	…__C# = [ɛ]	…__#
necessarily [e] in __#	dernière	dernier [e]
	familière	familier [e]
may/ must be [ɛ] in __#		parfait [ɛ]
		lait [e]
		balai [ɛ] etc.
minimal pair in certain varieties	fait [fɛ]	fée [fe]

Charette & Göksel's solution:

[e]	= I-A I head
[ɛ] in dernière	= I-A headless
[ɛ] in lait	= A-I A head

e. question

if dernier vs. lait is really a hard fact that suffers no variation, everybody will probably have to implement a lexical distinction between the two "e"s in both words. How could this be done?

1) Charete & Göksel = different melodic representations - absolute neutralisation

2) lexical marking of the specific Nucleus in specific words - non-melodic

3) any other solution?

(21) conclusion

a. phonological theory needs to be made of structure and process - thus structuralist thinking must somehow be implemented.
b. there are several ways to do that - Licensing constraints is one, Clements' contrast-guided selective structure building is another. They continue the two traditions of melodic representation - binary and privative. My best guess is that they are not incompatible - but that needs to worked out.
c. in any event, admitting absolute neutralisation is a price that I am rather not prepared to pay for the implementation of structuralist thinking into the theory. But fortunately absolute neutralisation is not a necessary consequence of Licensing Constraints.
d. the idea is simple and promising: to have one single set of language-specific parameters on melody that account for both systemic idiosyncrasies and language-specific properties of phonological processes.

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