

DP-internal phonological asymmetries and the structure of grammar

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0. Goals of this talk

- (a) to analyze two cases which show a phonological asymmetry within the DP:
- Northeastern Central (NEC) Catalan: apparent *s*-deletion under certain phonological conditions only in prenominal position;
 - Spanish: *o* ~ \emptyset alternation in certain DP elements that depends on postnominal vs. prenominal position.
- [A more detailed analysis of these two cases can be found in Bonet, Lloret and Mascaró (in preparation).]
- (b) to see what consequences the analysis provided for these cases has for the organization of grammar, especially regarding the relationship between syntax, morphology and phonology.

1. Introduction

- Generally, in the Romance languages there is concord between the head N and other elements within the DP (example from most varieties of Catalan).


- (1) *totes les meves antigues companyes italianes casades*
all-FPI the-FPI my-FPI old-FPI fellow-FPI Italian-FPI married-FPI
'all my old married Italian female fellows'

- (2) a. Basic DP organization (taken from Cinque 2005):

[... [_{WP} Dem ... [_{XP} Num ... [_{YP} A [_{NP} N]]]]]

- b. Derived DP:

[... [_{WP} Dem ... [_{XP} Num ... [_{YP} N A e]]]]



- Claims wrt concord:
 - In the syntax concord takes place only between the N and the DP-elements it c-commands.
 - OT-PF determines the final scope of concord within the DP.

2. NEC Catalan: *s* ~ \emptyset alternation

2.1. The facts

- Plural *s* fails to surface in a specific phonological context (C_C) only in prenominal position within the DP.

(3) a. *NEC Catalan*

un_ meu_ companys casats
a my fellow-Pl married-Pl
'some married fellows of mine'

aquell_ bon_ vins blancs
that good wine-Pl white-Pl
'those good white wines'

molt_ poc_ professionals bons presents
much few professional-Pl good-Pl present-Pl
'very few present good professionals'

b. *Other Central Catalan varieties*

uns meus companys casats
'some married fellows of mine'

aquells bons vins blancs
'those good white wines'

molts pocs professionals bons presents
'very few present good professionals'

(4) *Conditions for s-deletion in NEC Catalan*

- a. *s* is preceded and followed by a consonant,
- b. *s* occurs in prenominal position within the DP, and
- c. *s* is the plural morph.

(5) a. *Condition (4a) is not fulfilled; 's' surfaces*

aquest-**s** estrany-**s** ulls [əkèdz əstrànjz úls]
this-Pl strange-Pl eye-Pl
'these strange eyes'

quine-**s** male-**s** carreteres
what-FPl bad-FPl road-FPl
'what bad roads'

no gaire-**s** bon-**s** aficionats
not much-Pl good-Pl amateur-Pl
'not many good amateurs'

b. *Condition (4b) is not fulfilled; 's' surfaces*

cabells llargs tenyits
hair-Pl long-Pl dyed-Pl
'dyed long hairs'

vins blancs tan cars
wine-Pl white-Pl so expensive-Pl
'so expensive white wines'

(5) c. *Condition (4c) is not fulfilled; 's' surfaces*

un fals conseller
 'a false counselor'

 un dolç cant
 'a sweet singing'

2.2. *The analysis*¹

(6) uns avis vells
 some-Pl grandfather-Pl old-Pl
 'Some old grandparents'

- Assumption (shared by Distributed Morphology; Halle & Marantz 1993): The syntax operates with morphosyntactic features, phonological features are introduced later (*Vocabulary Insertion*).

(7) a. Input to syntax: [UN VELL AVI_{Pl}]
 b. Output from syntax: [UN AVI_{Pl} VELL_{Pl}]

- Vocabulary insertion takes place. For prenominal modifiers, since concord has not taken place yet, all possible relevant vocabulary items are introduced, (8b).

(8) a. Input to constraint evaluation for the N *avis* and the postnominal modifier *vells*

[_{STEM} avi] [_{FLEC} S_{Pl}] [_{STEM} vell] [_{FLEC} S_{Pl}]

b. Input to constraint evaluation for the prenominal modifier *un-uns*

[_{STEM} un] [_{FLEC} Ø_{SG}, S_{Pl}]

(9) *Relevant constraints*

- CONC(ORD): If a N has an inflectional feature F, all other modifiers within the DP must have the inflectional feature F.
- MATCH: No contradictory values of an inflectional feature F within a DP.
- *FEAT(URES): "No morphological expression of agreement features."
 (Samek-Lodovici 2002: 8, NOFEATS)
- MAX(FLEC): Every FLEC constituent of the input has a correspondent in the output.
- MAX(SEGMENT): "Every segment of the input has a correspondent in the output. (No phonological deletion.)" (McCarthy&Prince 1995: 264)

¹ For simplification I abstract away from Gender in this section. Gender is brought in in section 3.

(10)

	MAX(SEG)	MAX(FLEC)
a. Postnominal input: vell- _[FLEC s_{PL}]		
Outputs:	vell- _[FLEC s_{PL}]	√
	vell- _[FLEC -PL]	*
	vell	*
b. Prenominal input: un, _[FLEC ∅_{SG}, s_{PL}]		
Outputs:	un- _[FLEC s_{PL}]	√
	un- _[FLEC -PL]	*
	un	√

(11) Ranking: MAX(SEG), MATCH >> *CsC >> CONCORD, MAX(FLEC) >> *FEAT

- The constraint ranking in (11) ensures that the N and postnominal DP-elements surface with the plural morph.²

(12) *taps vells* ‘old corks’

tap- _[FC s_{PL}] vell- _[FC s_{PL}]	MAX (SEG)	MATCH	*CsC	CONC	MAX (FC)	*FEAT
a. \mathcal{E} tap- _[FC s_{PL}] vell- _[FC s_{PL}]			*			**
b. tap- _[FC -PL] vell- _[FC s_{PL}]	*!					**
c. tap vell- _[FC s_{PL}]	*!				*	*

- In prenominal position, plural *s* is realized only when *CsC is not violated. When *CsC is violated only the stem (an uninflected form) surfaces.

(13) *uns avis* ‘some grandparents’

un, _[FC ∅_{SG}, s_{PL}] avi- _[FC s_{PL}]	MAX (SEG)	MATCH	*CsC	CONC	MAX (FC)	*FEAT
a. \mathcal{E} un- _[FC s_{PL}] avi- _[FC s_{PL}]						**
b. un- _[FC ∅_{SG}] avi- _[FC s_{PL}]		*!		*		**
c. un avi- _[FC s_{PL}]				*!	*	*
d. un- _[FC -PL] avi- _[FC s_{PL}]	*!					**

(14) *un_ taps* ‘some corks’

un, _[FC ∅_{SG}, s_{PL}] tap- _[FC s_{PL}]	MAX (SEG)	MATCH	*CsC	CONC	MAX (FC)	*FEAT
a. un- _[FC s_{PL}] tap- _[FC s_{PL}]			*!			**
b. un- _[FC ∅_{SG}] tap- _[FC s_{PL}]		*!		*		**
c. \mathcal{E} un tap- _[FC s_{PL}]				*	*	*
d. un- _[FC -PL] tap- _[FC s_{PL}]	*!					**

² The low dash (_) that appears in (10) and in the following tableaux indicates a phonologically deleted segment.

(20) *plen_ poders* ‘full powers (MPI)’

plen(n),[ø _{SG} , s _{PL}] poder-[s _{PL}]	MAX (SEG)	MATCH	*CsC	CONC	MAX (FC)	*FEAT
a. plen-[s _{PL}] poder-[s _{PL}]			*!			**
b. ple-[ø _{SG}] poder-[s _{PL}]		*!		*		**
c. \mathcal{E} plen poder-[s _{PL}]				*	*	*

(21) *ple acord* ‘full agreement (MSg)’

plen(n),[ø _{SG} , s _{PL}] acord-[ø _{SG}]	MAX (SEG)	MATCH	*CsC	CONC	MAX (FC)	*FEAT
a. \mathcal{E} ple-[ø _{SG}] acord-[ø _{SG}]					**	**
b. plen acord-[ø _{SG}]				*!	*	*

2.3. *Some factorial typology*

(22) Constraint ranking needed for NEC Catalan

MAX, MATCH >> *CsC >> CONCORD, MAX(FLEC) >> *FEAT

- In most dialects of Catalan, plural *s* surfaces across the board within the DP.

(23) morphological constraints, faithfulness >> *CsC

- In Rossellonese Catalan, *s* deletes systematically when in a C_C context.

(24) *CsC >> morphological constraints, faithfulness

2.4. *Against analyses based on prosodic domains*

- It cannot be argued that plural *s* fails to surface when internal to a phonological phrase. Along the lines of Chen (1985), Selkirk (1986) and others, one could try to say that the right edge of a lexical X⁰ coincides with the right edge of a phonological phrase (φ), and that determines the domain of the process.

(25) (aquell_ plans)φ (desproporcionats)φ
that plan-Pl disproportionate-Pl
‘those disproportionate plans’

(26) (xais)φ (blancs)φ
sheep-Pl white-Pl
‘white sheep-Pl’

(27) (un_ pantalons)φ (vermells)φ (foradats)φ (llarguíssims)φ
some trouser-Pl red-Pl with-holes-Pl very-long-Pl
‘some very long red trousers with holes’

- (28) a. *(tots aquell_ complicadíssims)ϕ (càlculs)ϕ (nous)ϕ
 all-Pl that very-complicated-Pl calculation-Pl new-Pl
 ‘all those new very complicated calculations’
 b. tots aquell_ complicadíssim_ càlculs nous

3. Spanish: *o* ~ \emptyset alternation

3.1. The data

- Some lexical items show a *o* ~ \emptyset alternation depending on their position, prenominal or postnominal, within the DP.

- | | |
|--|--|
| (29) a. algún compañero
some fellow-M | b. compañero alguno
fellow-M some-M |
| ningún libro
no book-M | libro ninguno
book-M none-M |
| primer día
first day-M | Alfonso primero
Alfonso-M first-M |
| tercer cumpleaños
third birthday-M | Carlos tercero
Carlos-M third-M |
| mi niño
my child-M | niño mío
child-M mine-M |
| tu niño
your child-M | niño tuyo
child-M yours-M |
| su niño
3.POSS child-M | niño suyo
child-M 3.POSS |
| buen caso
good case-M | caso bueno
case-M good-M |
| mal día
bad day-M | día malo
day-M bad-M |

- The alternation only shows up when the relevant items are masculine singular.

- (30) a. algún compañero
some fellow-MSg
- b. alguna compañera *algún compañera
some-FSg fellow-FSg
- algunos compañeros *algún compañeros
some-MPl fellow-MPl
- algunas compañeras *algún compañeras
some-FPl fellow-FPl

- Masculine singular lexical items other than the ones in (29) do not show the $o \sim \emptyset$ alternation.

- (31) a. tercer cumpleaños
third birthday
*novén cumpleaños noveno cumpleaños
ninth birthday
- b. algún compañero
some fellow
*tod compañero todo compañero
all fellow(s)
- (32) a. buen caso
good case
mal día
bad day
- b. *viej reloj viejo reloj
old watch
*plen invierno pleno invierno
full winter
*rar ejemplar raro ejemplar
rare specimen
*escás margen escaso margen
little margin

3.2. The analysis

- The fact that some lexical items but not others show the $o \sim \emptyset$ alternation means that these differences have to be encoded in the lexical entry (the Vocabulary) of the relevant items.

(33) Input to constraint evaluation for prenominal *noveno-novena-novenos-novenas*

- a. noven,_[FLEC o_M, a_F, ∅_{SG}, s_{PL}]
b. Shorthand: noven,FLEC

(34) Input to constraint evaluation for prenominal *primer-primero-primera-primeros-primeras*

- a. { primer }
{ primer,_[FLEC o_M, a_F, ∅_{SG}, s_{PL}] }
- b. Shorthand: primer (FLEC)

- The general constraint CONCORD must be split into more specific constraints that refer to specific values of inflectional features.

(35) Relevant CONCORD constraints here:

CONCORD(FEM), CONCORD(PL) Shorthand: CONC(F,PL)

(36) Ranking: MAX(SEG), MAX(FLEC), CONC(F,PL) >> *FEAT >> CONC

- This ranking derives easily the prenominal / postnominal asymmetry for alternating lexical items, which have the possibility, only in prenominal position, of surfacing as bare stems without violating MAX(FC).

(37) *algún piso primero* ‘some first-M floor-M’

algun (FLEC) pis-[o _{MSG}] primer-[o _{MSG}]	MAX (SEG)	MAX (FC)	CONC (F,PL)	*FEAT	CONC
a. algun-o _{MSG} pis-o _{MSG} primer-o _{MSG}				***!	
b. algún pis-o _{MSG} primer	*!	*		*	**
c. ☞ algún pis-o _{MSG} primer-o _{MSG}				**	*

- Nonalternating items always violate MAX(FC), as we saw was the case for NEC Catalan. In that variety, the relative low ranking of MAX(FC) allows bare stems to occasionally surface (see (14), e.g.). In Spanish the relative high ranking of the same constraint prevents bare stems from surfacing.

(38) *noveno piso* ‘ninth-M floor-M’

noven,FLEC pis-[o _{MSG}]	MAX (SEG)	MAX (FC)	CONC (F,PL)	*FEAT	CONC
a. ☞ noven-o _{MSG} pis-o _{MSG}				**	
b. novén pis-o _{MSG}		*!		*	*

- The relative high ranking of CONC(F,PL) prevents bare stems from surfacing when the N is feminine and or plural.

(39) *alguna planta* ‘some-F floor-F’

algun (FLEC) plant-a _{FSG}	MAX (SEG)	MAX (FC)	CONC (F,PL)	*FEAT	CONC
a. ☞ algun-a _{FSG} plant-a _{FSG}				**	
b. algún plant-a _{FSG}			*!	*	*

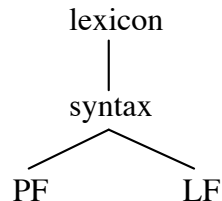
(40) *algunos pisos* ‘some-MPI floors-MPI’

algun (FLEC) pis-o _{M-SPL}	MAX (SEG)	MAX (FC)	CONC (F,PL)	*FEAT	CONC
a. ☞ algun-o _{M-SPL} pis-o _{M-SPL}				**	
b. algún-o _M pis-o _{M-SPL}			*!	**	*
c. algún-s _{PL} pis-o _{M-SPL}				**	*!
d. algún pis-o _{M-SPL}			*!	*	**

- The $o \sim \emptyset$ alternation, then, is not interpreted as an alternation between class markers (default, non-default), but as an alternation between a masculine singular word and a bare stem.

4. DP-internal phonological asymmetries and the structure of grammar

(41) Traditional generative inverted Y model (e.g., Chomsky 1981)



(42) The Principle of Phonology-Free Syntax (from Miller, Pullum & Zwicky 1997; see also Zwicky 1969, Zwicky & Pullum 1986):

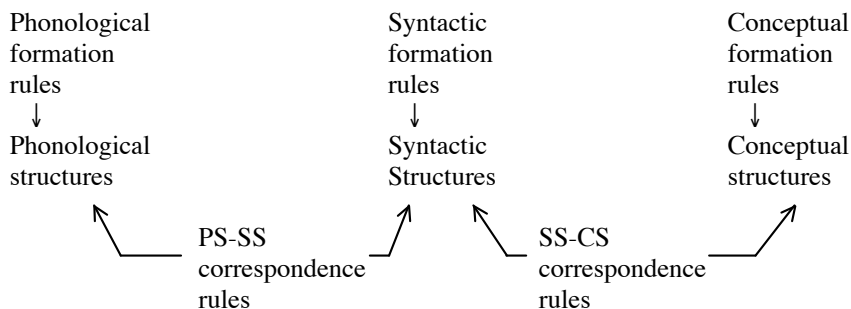
“In the grammar of a natural language, rules of syntax make no reference to phonology.”

(43) Indirect Reference Hypothesis (Inkelas 1989: 9):

“Phonological rules refer to only prosodic constituent structure.”

- Zec & Inkelas (1990) propose a nonderivational model of the grammar in which all components are co-present; the phonology-syntax interaction is mediated by prosodic structure.

(44) The tripartite parallel architecture (Jackendoff 1997: 39)



- Within Optimality Theory, Russell (1999) and Teeple (2006) propose a model in which syntax and phonology are evaluated in parallel; syntax is not the input to phonology (or morphology). (See also the discussion in Golston 1995.)

Model A: syntax and phonology are evaluated separately and interface constraints make sure that the different outputs from different components can cooccur (Russell 1999; consistent with Zec & Inkelas 1990, and Jackendoff 1997, (44)).

Model B: the input to grammar is semantic: a single “component” evaluates the phonology, the morphology and the syntax, through interspersed constraints (Teepie 2006).

- Problems for a parallel model of the syntax-phonology relationship:
 - Against model A: as illustrated in (28), prosodic constituency cannot account for the asymmetry.
 - Against model B: the facts concerning NEC Catalan, e.g., could be obtained by splitting CONCORD into two constraints, POSTNCONCORD and PRENCONCORD, plus a constraint ensuring the plural morph to surface on the N (let us call it N[pl]). The ranking needed would be: POSTNCONCORD, N[pl] >> *CsC >> PRENCONCORD. Some problems: (a) splitting CONCORD in the way it has to be done is just a stipulation; (b) factorial typology would predict unattested patterns (e.g., concord surfacing on prenominal and postnominal elements but not on the N itself).
- In the serial proposal made here:
 - the input to PF contains syntactic information because syntax precedes PF.
 - the asymmetry is indirectly caused by N movement in the syntax.

- (45) a. Input to syntax: [Det Adj₁ Adj₂ N-pl]_{DP}
 b. At PF: [Det Adj₁ N-pl Adj₂-pl]_{DP}
- └──────────────────┘
 faithfulness to
 assigned syntactic concord

5. Conclusions

- Two cases have been analyzed which at first sight involve segmental deletion in prenominal position. It has been argued that, instead, there is lack of concord; what surfaces in these cases is a bare stem.
- A serial model in which syntax feeds PF and concord is split between the two components accounts naturally for DP-internal asymmetries like the ones that have been discussed here.

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