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# Occitan Plurals: a Case for a Morpheme-Based Morphology<sup>1</sup>

Patrick Sauzet (Toulouse)

## Abstract

This paper argues that the evolution of plural marking in Occitan favors an approach to morphology involving morphemes, as assumed traditionally and in a number of current approaches (Hockett 1954, Spencer 1991 for presentations of the alternative, Lieber 1992 for a strict adherence to the concept of morpheme or Halle & Marantz 1993 for a more permissive re-elaboration), rather than an a-morphous analysis, typically associated with autonomous conceptions of morphology (Anderson 1992, Aronoff 1994). If correct, Occitan plurals would represent an interesting case because it is difficult to argue against more permissive and powerful frameworks, which autonomous and a-morphous approaches represent in comparison with morpheme-based theories where morphology ideally reduces to interface effects between syntax, phonology, and the lexicon where morphemes are listed.

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<sup>1</sup> This is a preliminary version of Patrick Sauzet 2012 *Occitan Plurals: A Case For A Morpheme Based Morphology* in Sascha Gaglia & Marc-Olivier Hinzelin eds *Inflection and word formation in Romance languages*, Amsterdam ; Philadelphia : John Benjamins Pub. Co., 179-200/ vi-400 p.

## 1 Introduction

Occitan plurals originally were – and in many dialects still are – realized by suffixation of a final coronal fricative, /s/ (or /z/): *ostal* ‘house’, *ostals* ‘houses’. The same marking shows up on determiners and adjectives in determiner phrases (DP): *aqueste polit ostal nòu* ‘this nice new house’, *aquestes polits ostals nòus*, ‘these nice new houses’. This type of plural (similar to Portuguese, Spanish or Catalan plurals) can be characterized as ‘sigmatic and iterated’. A typical evolution in a substantial group of Occitan dialects yields non-sigmatic (vocalic) and non-iterated (punctual) plurals. In this type, plural morphology is expressed on the determiner only (as it is the case in modern French: *les jolies maisons neuves* [le ʒɔli mɛzɔ̃ nœv] ‘the nice new houses’) where plural determiner *les* [le] (in contrast to the SG *le* [lə]) is the only perceptible mark of plural. The shift to vocalic marking results from sandhi phenomena inside the DP, which affect the coronal fricative. Occitan data point to the fact that the two aspects of the evolution (loss of sigmatic character and loss of iteration) are interdependent. The evolution of plural marking on the determiner toward a vocalic type appears to be conditioned by the loss of –s at the end of the noun.

This can readily be explained under a morpheme-based approach: no matter how much altered the sigmatic mark on the determiner

might be, it is still interpreted as an avatar of /s/. But if *-s* vanishes, noun-finally, then reinterpretation of the plural in the determiner as a vowel or a vocalic feature may occur, and it does indeed occur in many places. In other words, identification of the same morpheme in the determiner and the noun blocks reinterpretation, whereas loss of the mark in the noun allows for it. Under a process-based analysis of the word-and-paradigm type, one would expect a pluralization rule specific to Occitan determiners to arise readily, because other specificities of pluralization in the determiner (loss of /l/ in contract determiner forms) have to be handled by a specific rule in that type of framework.

The present paper is organized as follows. Section 2 recalls the typology of plural in Romance and in Occitan, section 3 introduces the changes which have altered or tend to alter the hereditary sigmatic and iterated plural system in Occitan. Section 4 insists on the importance of the ‘double change’ type of plural, those which jointly shift from sigmatic and iterated to non-sigmatic and unique. The following section (5) addresses theoretical considerations and section 6 exposes the phenomena specific to the pluralization of the contracted forms of the article. In the Conclusions, I propose that these forms need a specific treatment which in process-based morphology would be a specific Word-Formation Rule (WFR). This comes as a confirmation that whereas in a morpheme-based

approach the identification of the same morpheme in noun and determiner blocks reinterpreted, nothing should prevent the emergence of a specific pluralization rule on the determiner in a process-based conception of morphology.

## 2 Typology

### 2.1 Romance

Plural is a well-known criterion for classifying Romance languages (Meyer-Lübke 1894: 41-42, Wartburg 1936, 1967: 25ff, Bourciez 1946: 227ff, D’Hulst 2006; Barra-Jover, forthcoming and Dalbera 1993 for a study of an area where the split occurs): sigmatic plural characterizes Western Romance (1b) as opposed to non-sigmatic Eastern Romance forms (1a).

- (1) Romance plurals in ‘goats’
  - (a) Eastern Romance: Italian *le capre*, Romanian *caprele*
  - (b) Western Romance: Occitan *las cabras*, Catalan *les cabres*, Spanish *las cabras*, Portuguese *as cabras*, French *les chèvres*

This typological split was straightforwardly realized at the early stages of the Romance languages. Among the Western Romance languages, sigmatic plural is largely preserved up to this day in the Iberian Peninsula, where Portuguese, (standard) Spanish or Catalan maintain this type of marking. French orthography (2a, c) still

reflects an early sigmatic stage of the language but contemporary French where sigmatism reduces to *liaison* (the realization of the plural mark /z/ before a vowel as in 2d) is far less clearly so (2b vs 2d; Bourciez 1946: 674).

(2) French plural

(a)	written:	SG <i>la chèvre</i>	PL <i>les chèvres</i>
		'goat(s)'	
(b)	pronounced:	SG [lafɛvʁ]	PL [lefɛvʁ]
(c)	written:	SG <i>l'oie</i>	PL <i>les oies</i>
		'goose / geese'	
(d)	pronounced:	SG [lwa]	PL [lezwa]

Phonetically (linguistically) modern French plural receives a primarily vocalic marking and this marking resides on the determiner (SG *le* [l(ə)], *la* [la], PL *les* [le] 'the').<sup>2</sup> This exclusive location on the determiner makes the difference between the French type of vocalic plurals and the more ancient Italian vocalic plural. French plural (except for some exceptional cases<sup>3</sup>) receives a single spell-out whereas Italian plural marking is iterated by agreement all over the DP (Barra-Jover, forthcoming).

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<sup>2</sup> This has lead Matthew Dryer to enlist French among languages where plural is expressed by means of a "plural word" (Dryer 1989). The Poyaudin dialect of French, a variety which ignores *liaison*, completes the evolution toward vocalic marking (cf. Massot 2008: 158).

<sup>3</sup> Multiple plural marking shows up in French when an adjective precedes a vowel-initial noun: *les bons amis* [lebɔ̃zam'i] 'the good friends' (where both the [e] of the determiner and the *liaison* [z] are plural exponents).

## 2.2 Occitan

Inside this Romance typology (3), Occitan is particularly interesting because among the variety of its dialects, both sigmatic (3a, c) and non-sigmatic vocalic (3b, d) plurals, both iterated (3a, b) and non-iterated (3c, d) spell-out of plural can be found. In a recent paper Franck Floricic insists on the diversity of Occitan plural systems and provides an in depth study of a specific system (non sigmatic and iterated) (Floricic 2010).

(3) A general typology of Occitan plurals in ‘goats’

(a) iterated and sigmatic:

[las k'aβɾɔs], [las kr'aβɔs]

*las cabras, las crabas*<sup>4</sup>

(general type in Lengadocian and Gascon,<sup>5</sup>

also in Alpine dialects)

(b) iterated and non-sigmatic:

[la: tsaβr'a:]<sup>6</sup> *las chabras*

(general type in Limousin)

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<sup>4</sup> Forms in italics are orthographical forms. Modern Occitan orthography tends to write a plural mark (–s) even in dialects where it is no longer realized or where it gets deeply altered. Orthographical forms are only given for reference. Only phonetic forms (within square brackets) are relevant to the argument.

<sup>5</sup> This is one of the facts that lead Pierre Bec to group Gascon and Lengadocian together into what he calls the “Aquitano-Pyrenean” dialectal complex of Occitan (Bec 1963).

<sup>6</sup> Stress generally shifts to the lengthened final syllable in (High) Limousin dialect. In those dialects, length is generally more conspicuous than stress, yielding an impression of accentual indecision in spondaic words as say [be:tjaw] *bestiau* ‘beast’. For Limousin stress pattern, see Javanaud (1981) and Dourdet (forthcoming).

(c) unique and sigmatic (a rather infrequent type):

[las kr'aβə] *las crabas*

(Les Esseintes, *ALLOc* 33.13)<sup>7</sup>

[las k'abɛɔ] *las cabras*

(Lézan, *ALLOr* 30.09)

(d) unique and non-sigmatic:<sup>8</sup>

[lej k'abro], [li k'abro] *lei cabras*

(general in Provençal, and in part of Perigord)

Occitan dialects not only present a great variety of plural systems, they also provide us with an occasion to single out the processes by which a non-sigmatic plural may evolve from a sigmatic type. In order to present these processes, a brief glance at the phonology of Occitan may be helpful.

Canonical syllables<sup>9</sup> in Occitan, if closed, may end with a sonorant (glides, nasal, /l/ and /r/). Geminates aside, [s] is the only obstruent allowed in the coda (Sauzet 1994: 88). Being a legitimate coda

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<sup>7</sup> All forms identified as *ALLOc*, *ALLOr* are taken from still to be published material from those surveys (see References for details). Names heading the reference are place names, the number at the end codes the same place after the post-office code of the department (33 = Gironde, etc.)

<sup>8</sup> The Provençal type of non iterated plural (realized on the determiner) is well recognized (partly because of the literary fortune of the Occitan dialect of Provence, cf. for instance Lafont 1967: 62). As map 2 attests, there also exists an area where plural only gets realized on the noun (Cf. Calvet 1969 : 182-183).

<sup>9</sup> I call 'canonical syllables' such syllables that are licit word-internally, which typically count only one post-nuclear segment in the rhyme. Richer word-final sequences, when allowed – which is not the case in all dialects – involve extra stipulation to account for their licensing (cf. Sauzet 1994: 101; Sauzet 2004).



makes *-s* a suitable plural marker in many Occitan dialects because nouns frequently end in vowels (4a). In consonant-final nouns or adjectives, plural *-s* is realized outside the canonical syllable, in an extrasyllabic position only allowed word-finally (4b).<sup>10</sup>

(4) Occitan plurals: post-vocalic and post-consonantal marking

(a) *la cabra* [la . k'a . βɾɔ] → *las cabras*

[las . k'a . βɾɔs] ‘the goat(s)’

(b) *l’ostal* [lus . t'al] → *los ostals*

[lu . zus . tal <s>] ‘the house(s)’

(‘.’ separates syllables and ‘<>’ encodes extrasyllabicity)

Some Occitan dialects allow *-s* in the coda without restriction and correlatively present no alteration nor opacity in plural marking (at least post-vocalically, cf. note 8). This is true of Western Gascon varieties, in some of which noun final *-s* (be it a plural marker or not) does not even undergo voicing before a voiced initial consonant (*ALF*-map 1349). A ubiquitous fact in Occitan, however, is *-s*-voicing in *liaison* before a vowel. All sigmatic

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<sup>10</sup> Occitan dialects vary in their licensing of extrasyllabicity. Some dialects allow for two extrasyllabic final segments, one lexical and the plural morpheme: *pòrcs* [pɔr . <ks>] ‘pigs’. In most sigmatic dialects however, only one extrasyllabic segment is licensed: SG *pòrc* [pɔr . <k>], PL *pòrcs* [pɔr . <s>]. Finally, some dialects do not allow for any extrasyllabic material and hence only realize plural after vowels, cf. the example (ii) in the Appendix. (Cf. Sauzet 2004 for a discussion of word final clusters in Occitan.)

dialects of Occitan realize the plural marker *-s* as a voiced fricative ([z], sometimes [ʒ] or [ʒ̥]) before a vowel-initial noun (5).<sup>11</sup>

(5) Prevocalic voicing

*los òmes* [luz'ɔmes] ‘the men’

One natural way to account for this systematical prevocalic voicing is to assume that the plural marker is underlyingly /z/ and undergoes final devoicing when no resyllabification or voicing assimilation occurs. Final devoicing occurs in all Occitan dialects which retain obstruents word-finally.<sup>12</sup> The most stable sigmatic Occitan plural-marking system hence presents a uniform [s]-realization except for *liaison* (prevocalic) context. Facts from Donzac (6) illustrate such a system (with regressive voice assimilation however). The first two examples (6a, b) exemplify singular forms for comparison.

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<sup>11</sup> The ALF-map 52 *les arbres* (*los aubres* ‘the trees’) shows no exception to *-s*-voicing in prevocalic position (only some spots where the definite article is *eth*, PL *eths* [ets], where the plural morpheme is amalgamated into a final affricate, resist voicing).

<sup>12</sup> Still it must be explained why *liaison* bleeds devoicing, not only in clitics but in all cases of resyllabification. In fact, as a reviewer accurately notes, the choice for the underlying form of the plural morpheme is not a simple issue. Anyhow, one needs to assume final devoicing for obstruents in Occitan (cf. the following adjectives *ras* [r'as] M.SG and *rasa* [r'azɔ] F.SG ‘short-haired’ vs *gras* [gr'as] M.SG and *grassa* [gr'asɔ] F.SG ‘fat’) and voicing for the coronal fricative in *liaison* (cf. *legís* [ledʒ'is] ‘(s)he reads’ and *legissi* [ledʒ'isi] ‘I read’ but the imperative with an enclitic object pronoun *legís-o* [ledʒiz'u] ‘read it!’). Assuming /z/ as the form of the plural marker, along with a peripheral status of the morpheme allows to restrict yodization to this morpheme (and a few other ones) accounting for contrasts as the following: *mes de mai* [medem'aj] (s → Ø) ‘month of May’ vs *las del fons* [lɔjdelfons] (z → j) ‘the ones at the bottom’ (example from eastern Lengadocian, Sumena-Sant Marçal [Sumène-Saint-Martial, 30]).

(6) Pure sigmatic plural in Donzac (*ALLOc* 82.20)

(a) the sky      *lo cèu*      lu s'ɛw

(b) the moon      *la luna*      la l'yno

(c) the pigs      *los tessons, los pòrcs*

lus tes'us, lus p'ɔrs

(d) the oxen      *los bueus*      luz byws

(e) the blacksmiths      *los faures*      lus f'awres

(f) the birds      *los ausèths*      luz awz'ets

(g) the goats      *las crabas*      las kr'aβos

(h) the cows      *las vacas*      laz b'akos

(i) the geese      *las aucas*      laz 'awkos

(j) the vine-stocks      *las socas*      las s'ukos,

la s'ukos

### 3 Patterns for change

As mentioned above, the use of [-s] as a plural marker can be connected with the admission of –s as a coda in Occitan. Although, there is not a strict and mechanical conditioning effect of phonology upon morphology, a general fit of morphological material within the phonological latitude of the language is the expected situation.

Northern Occitan dialects present a different syllabic pattern, more restrictive than the one that can be found in southern varieties.

Specifically northern varieties replace [s] in codas by length (7).

(7) Length for –s-coda in Northern Occitan

(a) *la pasta* ‘the dough’:

southern realization: [la p'astɔ]

(b) *la pasta* ‘the dough’:

northern realization: [lɔ p'a:tɔ]

Not surprisingly, this phonological change gives birth to a different plural marking. Actually, in some northern areas, plural is not sigmatic, as a result of phonological change, but remains iterated, in conformity with etymology (8).<sup>13</sup>

(8) Length for –s-plural in Southern vs Northern Occitan

(a) South: *la cabra, las cabras* [la k'aβrɔ],

[las k'aβrɔs] ‘the goat(s)’

(b) North: *la chabra, las chabras*

[lɔ s'abrɔ], [la(:) sɔbr'a(:)] ‘the goat(s)’

(c) South: *las pastas* [las p'astɔs] ‘the dough(s)’

(d) North: *las pastas* [la(:) p(')a:t'a:] ‘the dough(s)’

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<sup>13</sup> Synchronically there is no reason to postulate an /z/ or /s/ as the source for length (there are no *liaison* phenomena in Limousin varieties of Northern Occitan which have developed distinctive length). The plural morpheme is a prosodic unit without specified segmental content (a mora or any formal equivalent of it).

As can be seen from (8), length affects vowel quality and stress placement, which in turn may replace length (at least phonetically) as plural marker. Although it may also secondarily evolve toward non-iterated plural marking, replacement of [s] by length basically transposes under new phonological conditions the inherited iterated sigmatic plural.

The case on which we are focusing is connected with the specificity of [s]-coda distribution in Southern Occitan. Word-internally, Southern Occitan regularly presents coda –s before unvoiced stops but not elsewhere. For instance, there is not a single instance of [s] (or [z]) preceding a consonant other than the unvoiced stops in all the forms from Toulouse as recorded in the THESOC-database<sup>14</sup> (forms from *ALLOc*). A systematic check through Alibert's reference dictionary<sup>15</sup> (Alibert 1965) only yields [s] + consonant ( $\neq$  [p, t, k]) in two types of words: prefixed forms and learned words. The first type includes for instance the most productive class of words formed by means of the prefix *des-* ('un-') which can productively occur before any verb in order to express the opposite action: *tapar* 'to cork up' and *destapar* 'to uncork'. It also appears in parasyntetic denominal verbs meaning 'perform a

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<sup>14</sup> The THESOC-database is a computerized compilation of data from linguistic atlases covering the Occitan-speaking area. Those data are partially accessible online: <<http://thesaurus.unice.fr/>>. The THESOC has been developed by a research group at the University of Nice under the supervision of Jean-Philippe Dalbera.

<sup>15</sup> In orthographical notation.

negative action about N’: *cara* ‘face’ → *descarar* ‘disfigure’.

Certainly, *des-* freely and frequently precedes roots beginning with a consonant other than unvoiced stops. In Lengadocian, prefix-final *-s* typically is silent in such contexts: *far* [f’a] ‘to do’, *desfar* [def’a] ‘to undo’, *nis* [n’is] ‘nest’, *desnizar* [deniz’a] ‘unnest’. The same applies to other prefixes such as *tras-*, *tres-*, *mes-*, etc. As for learned words, most of them are not normally used by native speakers and can be considered to exceed the regular phonology of the language. Some such words, however, have been integrated into popular use and have undergone changes which suppress the offending cluster: French *catéchisme* ‘catechism’ is realized as [katetf’ime] or becomes *catechirme* [katetf’irme] (the learned Occitan form would be *catequisme*, and the learned pronunciation allows for the realization of *-s-*: [katek’izme]). The city name *Strasbourg* was adapted to “Straborc” (*Estraborg*) in medieval documents from Toulouse (Wolff 1954: 135).

These restrictions on the appearance of *-s* in the coda help understanding the allomorphy affecting the plural morpheme in Lengadocian (and Eastern Gascon). In those dialects, the plural morpheme presents the range of realizations illustrated in (9), with

singular forms in 9a, b). This type of plural represents ‘altered sigmatic plurals’,<sup>16</sup> as opposed to pure sigmatic plurals (0).

(9) Altered sigmatic plural (a frequent pattern)<sup>17</sup>

in Onet la Glèisa (Onet-L’Eglise, *ALLOc* 12.06)

- |     |                 |                   |             |
|-----|-----------------|-------------------|-------------|
| (a) | the sky         | <i>lo cèl</i>     | lu s'ɛl     |
| (b) | the moon        | <i>la luna</i>    | lə l'yno    |
| (c) | the pigs        | <i>los pòrcs</i>  | lus pw'ɔrs  |
| (d) | the oxen        | <i>los buòus</i>  | luj bu'ɔws  |
| (e) | the birds       | <i>los aucèls</i> | luz ɔws'ɛls |
| (f) | the goats       | <i>las cabras</i> | ləs k'abros |
| (g) | the cows        | <i>las vacas</i>  | ləj b'akos  |
| (h) | the geese       | <i>las aucas</i>  | ləz 'awkos  |
| (i) | the blacksmiths | <i>los fabres</i> | luj         |

f'aβres

- |     |                 |                  |     |
|-----|-----------------|------------------|-----|
| (j) | the vine-stocks | <i>las socas</i> | ləj |
|-----|-----------------|------------------|-----|

s'ukos

Onet’s system represents a widespread type of alternation by which plural morphology is realized as [z] before a vowel (9e, h), as [s] before an unvoiced stop (9c, f) and [j] elsewhere, i.e. before

<sup>16</sup> This variation of the plural morpheme was first explicitly described by Roque-Ferrier (1876).

<sup>17</sup> This type corresponds to ‘altered sigmatic 3’ in Map 1.

consonants which are either voiced or continuous (9d, g, i, j).<sup>18</sup>

This alternation system avoids [s] in coda position and replaces it by [j], a segment which is fully licit before any consonant.

(10) Altered sigmatic plural (another type)<sup>19</sup>

in La Cassanha (Lacassagne, *ALLOc* 12.23)

(a)	the sky	<i>lo cèl</i>	lu ʃ'ɛl
(b)	the moon	<i>la luna</i>	lɔ l'yno
(c)	the pigs	<i>los pòrcs</i>	lus pw'ɔrks
(d)	the oxen	<i>los buòus</i>	lul bu'ɔws
(e)	the birds	<i>los aucèls</i>	luz ɔws'ɛls
(f)	the goats	<i>las cabras</i>	lah k'abros
(g)	the cows	<i>las vacas</i>	lal b'akos
(h)	the geese	<i>las aucas</i>	laz 'awkos
(i)	the blacksmiths	<i>los faures</i>	lul f'abres
(j)	the vine-stocks	<i>las socas</i>	lɔl s'ukos

The table given under (0 displays a variant system of altered plural (singular forms in (10 a, b)). Here [l] replaces [s] in coda when the following segment is a consonant but not an unvoiced stop. Other dialects have [r] or [n] in the same context (cf. **Map 1**).

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<sup>18</sup> Or both... but [v] does not belong to the phonetic inventory of Western Lengadocian and [z] is fairly rare word-initially. In more eastern dialects, where [v] has subsisted or has been reintroduced, yodization occurs before [v]. It also occurs before [z]: *los zèbres* [lujz'ɛβres] 'the zebras'.

<sup>19</sup> This type corresponds to 'altered sigmatic 2' in Map 1.



**Map 1: Plural marking on the definite article in the Western Lengadocian area<sup>20</sup> [Annexed]**

In the two preceding tables, the phonological processes seems to yield a sharp distinction between plural marking in the article and in the noun. It must then be emphasized that the kind of alteration observed in the determiner may also affect any plural marker in the appropriate sandhi context (in the coda before a voiced or continuous consonant). In fact, the alteration is not even exclusive for plural markers and according to dialects it variably affects –s’s with other values. Typically it may concern 2nd person –s in verbs as in *cantas de cançons* [k,antəjðekans'us] ‘you sing songs’, the final –s in the negative marker *pas* as in *I a pas de pan* [jap,ajdep'a] ‘there is no bread’, and in some dialects every final –s.

Sigmatic (and iterated) plural versus vocalic (and only affecting the determiner) has long been recognized as a classifying property which allows to characterize within Southern Occitan Gascon and Lengadocian on one side, and Provençal on the other. Although some philologists have first been tempted to trace this difference back to the two-case declension of old Occitan, it has long been established that the Provençal vocalic type of nominal plural ([li /

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<sup>20</sup> In Map 1, ‘fully sigmatic’ refers to dialects where the plural marker on the determiner only gets realized as [z] or [s], ‘altered sigmatic 1’ applies to dialects where the only occurring alteration is debuccalization (realization as [h]) or assimilation in some contexts. Other ‘altered sigmatic’ types may also involve debuccalization and/or assimilation but are characterized by shift to yod, a lateral or a rhotic as mentioned in the caption. ‘Altered sigmatic 3’ entails yodization, the phonetic forerunner of vocalic marking.

lej bj'ɔw] *lei buòus* ‘the oxen’) derives from the altered sigmatic plural ([luj / lyj / lej / li bjɔws] *los buòus* ‘the oxen’) (Koschwitz 1894: 74, Ronjat 1937: 37 – but Ford 1921: 168 still adheres to the subject-case hypothesis).<sup>21</sup>

This state of affairs, it may be noted in passing, provides a model (if not an argument) for the phonetic explanation of the Eastern Romance type of plural against the morphological one. Occitan illustrates as active (in the most frequent type of altered sigmatic plurals) or frozen (in Provençal or in the Périgord) the replacement of *–s* by a vocalic glide and/or vowel alteration (fronting and or closing). This represents a living model for the transformation of Latin LUPOS into Italian *lupi* ‘wolfs’, as well as of the parallel change of CASAS to *case* ‘houses’. An altered plural type similar to modern central Occitan systems probably existed in the unrecorded prehistory of Italian.

As D’Hulst notes, this point has already made by Rohlfs (D’Hulst 2006: 1316, Rohlfs 1966: 431). D’Hulst, however, seems to consider the case unconvincing because the change would only affect the determiner (the example quoted by Rohlfs is *las ròdas*

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<sup>21</sup> Old Occitan had the following declension for a word as *bòu* (mod. *buòu* ‘ox’): singular subject case (SC): *lo bòus*, singular object case (OC): *lo bòu*, plural SC: *li buòu*, plural OC *los buòus*. SC-genealogy for modern plurals would explain [li] but not the more widespread [lej] of which *li* represents a regular reduction (whereas no regular process could explain the diphthongization of [i] to [ej]), late medieval documents in Provence attest the same generalization of OC as in other areas, feminine forms were sigmatic in the SC (*las vacas* ‘the cows’) in Medieval Occitan whereas *lei* is found in both genders (*lei vacas* [lej ~ li v'ako]).

[lajr:ʷðos] ‘the wheels’ but Rohlfs himself also gives examples in other contexts). The important point Occitan data document is the transformation of plural *-s* into a palatal glide [j] along with possible further evolution of the resulting diphthong. As we have seen, in Occitan dialects where the phonetic change is active, it typically occurs in sandhi before consonants (other than unvoiced stops) and hence predominantly concerns the determiner (which as a proclitic is strongly connected with the following word). In order to yield the modern Italian system, the same change must have been triggered in a different context, viz. word-finally without further conditions. Interestingly such a situation exists in some part of the Occitan domain (Carcinol dialect, Lot department) where *las vacas (blancas)* ‘the (white) cows’ sounds [laj vakɔj (blanɔkj)]. Carcinol represents a direct model for the early evolution of Italian.<sup>22</sup>

Occitan data also give interesting clues for the asymmetry concerning palatalization in Italian. As Maiden (1996) emphasizes, feminine nouns never palatalize in the plural (*amica, amiche* ‘friend(s)-F’ and there are no forms in *\*-ce*) whereas some masculine nouns do palatalize (*amico, amici* ‘friend(s)-M’ vs *sacco, sacchi* ‘sack(s)-M’). Maiden explains this difference as a

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<sup>22</sup> Carcinol still realizes a sigmatic marking before unvoiced stops and in *liaison*. Italian supposes further generalization of the semi-vocalic (and then vocalic) marking.

consequence of the masculine plural forms being partly the output of Latin nominative forms in *-I* (and not exclusively the result of the alteration of Latin accusative *-OS / -ES* sequences). It may be worth noting, however, that mid vowels may be more prone to alter than the low vowel [a] when combining with yod. In eastern Gascony, in dialects which clearly are of the altered sigmatic type, realizations like [libjɔws] *los buòus* ‘the oxen’, [lajβakɔs] *las vacas* ‘the cows’ are found (and not \*[liβakɔs]). In early Eastern Romance, diphthongs with a mid vowel like [-ɔj], [-ej] may have reduced to [-i] sooner than diphthongs with the low vowel [-aj]. The former evolution could have applied early enough to trigger palatalization but not the latter one.

#### **4 The double shift case**

Let us return to Occitan plurals. The sigmatic case does not deserve particular comment except for the polymorphism of *-s* in sandhi where the germs for possible evolutions lie. The iterated vocalic type is also quite straightforward. Coda *-s* disappears and gives birth to a length contrast which represents the plural marker. This new plural marking is sometimes preserved iterated or only preserved in the determiner or in the noun. Loss ~~or preservation~~ of iteration of the plural marker happens in some sigmatic dialects; too (cf. 3c): it probably results from the reinterpretation of phonetic loss either in sandhi or word-finally, but it has no specific

bearing ~~on the organization of morphology.~~ on the status of morphemes (it rather concerns agreement and the syntax-morphology interface, a point we are not concerned with in this paper).

The most interesting type of change is the double change by which the sigmatic iterated type results replaced by a vocalic marking in the sole determiner. Put together, these two types of nominal pluralization (iterated sigmatic and vocalic in the determiner) cover most of the Southern Occitan area (see **Map 2**).

### **Map 2: Occitan plurals: a general typology [Annexed]**

This distribution results from what seems to represent a decisive constraint on the evolution of plural systems. Conversion to a vocalic marking in the determiner depends on the loss of *-s-* marking in the noun. Western Lengadocian, the territory covered by the *ALLOc*, is the crucial area to look at in this respect. Sigmatic dialects in this area present intensive allomorphy and notably allomorphy implying [j]. It is this phonetic variation which is liable to give rise to a vocalic system. Map 1 indicates the geographical distribution of plural types in Western Lengadocian.<sup>23</sup>

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<sup>23</sup> The data upon which Map 1 is built are unpublished data of the *ALLOc*. They consist of lists of forms of the type given in (0) where the definite article has been elicited in the various contexts relevant for variation, viz. before unvoiced stops, before unvoiced fricatives or voiced consonant and before vowels. The noun itself is utterance-final.

I interpret polymorphism in the realization of the plural mark in the article as the result of an abstract sigmatic marking /z/ which undergoes phonological change. Conversely, I consider that uniform vocalic (including semi-vocalic) realization

The decisive observation is that the area, represented in Map 1 in the north-western part of the domain where the definite article presents a vocalic marking (that is a system with no trace of *-s* except in *liaison*) is totally enclosed in the area where *-s* deletes word-finally, a larger area which is indicated in **Map 3**.

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of the determiner (with the exception of the presence of [z] in hiatus) corresponds to a reinterpretation of the plural as vocalic. Hence forms in (0) correspond to an altered sigmatic plural whereas the following forms make up a vocalic paradigm (i, ii).

(i) A vocalic (non-iterated) plural in Sainte-Eulalie d'Eymet (*ALLOc* 24.22)

	(a)	the sky	<i>lo cièl</i>	lu fʃ'ɛl
	(b)	the moon	<i>la luna</i>	la l'yno
	(c)	the pigs	<i>les pòrcs</i>	lej p'ɔr
	(d)	the oxen	<i>les bueus, les buòus</i>	lej b'ɛw,
lej bj'o	(e)	the blacksmiths	<i>les faures</i>	lej f'awre
	(f)	the birds	<i>les ausèus</i>	lez
owz'ɛw	(g)	the goats	<i>las crabas</i>	lej kr'aβo
	(h)	the cows	<i>las vacas</i>	lej b'ako
	(i)	the geese	<i>las aucas</i>	lez 'awko
	(j)	the vine-stocks	<i>las socas</i>	lej s'uko

(ii) Another vocalic plural in Savignac de Miremont (*ALLOc* 24.11)

	(a)	the sky	<i>lo cièl</i>	lu fʃ'ɛl
	(b)	the moon	<i>la luna</i>	lɔ l'yno
	(c)	the pigs	<i>los tessons</i>	ly tɛf'u
	(d)	the oxen	<i>los buòus</i>	ly bj'o
	(e)	the blacksmiths	<i>los faures</i>	ly f'awre
	(f)	the birds	<i>los ausèls</i>	lyʒ owz'ɛl
	(g)	the goats	<i>las crabas</i>	lɔj kr'abo
	(h)	the cows	<i>las vacas</i>	lɔj v'ako
	(i)	the geese	<i>las aucas</i>	lɔjʒ 'awko
	(k)	the vine-stocks	<i>las socas</i>	lɔj f'uko

The two systems differ in a number of interesting respects. The first one neutralizes the masculine vs feminine distinction in the plural, while the second one does not. Both systems present a coronal fricative pre-vocalically, but in the first one, when this consonant is present, the vocalic marking reduces to vowel change and the following glide does not appear, whereas in the second case the presence of the anti-hiatic segment is not accompanied by any other modification.

### **Map 3: Noun-final plural marking in the Western Lengadocian area [Annexed]**

Alteration of final *-s* in the determiner is much more frequent than in the noun. In the determiner, change occurs as soon as the segmental environment is met, whereas in nouns it only does if the noun is strongly connected to a following item (if there is any).

Therefore, a shift to vocalic marking in the frequently modified (vocalized) modifier rather than in the noun is the expected situation. It is also the actual situation indeed. But the crucial point is that the shift to vocalic marking in the determiner is conditioned by the disappearance of final *-s* in the following noun.<sup>24</sup>

#### **5 Theoretical considerations**

A straightforward explanation for that correlation can be given as far as facts are analyzed in terms of morphemes: identity of the plural marker in the noun and the determiner represents an unmarked state of affairs and speakers / learners tend to maintain it. The presence of a plural mark which can be identified as *-s* at the end of the noun entails the identification of the same mark in the determiner, no matter how much it may be blurred by extensive allomorphy. It seems then that having one single morpheme at the

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<sup>24</sup> Within the area covered by the *ALLOc*, as we have seen, there is no exception to the generalization that makes the emergence of a vocalic non-iterated plural dependent on the disappearance of the final sigmatic marking. The generalization holds as well when the much wider area covered by the *ALF* is taken into consideration. Actually, the *ALF* encompasses the whole Occitan domain. For a case deserving some further discussion, see the Appendix.

cost of frequent allomorphy in one position represents a simpler grammar than having two different transparent morphemes for the same content (plural). The relevance of morphemes as a significant piece of mental grammar would then be confirmed by Occitan data.

The situation can be synthesized as follows: Plural frequently receives a different realization in the determiner and the noun, vocalic in the determiner and sigmatic in the noun as in the typical phrase [luj f'awres] *los faures*. Yet the more frequent vocalic plural form in the determiner does not generalize (although nothing phonetically would prevent such a generalization; [-j-] before unvoiced stops is fine in Occitan) and sigmatic realization on the determiner persists in the relevant context (before unvoiced stops). On the other hand vocalic marking in the determiner does generalize in dialects where plural marking on the noun disappear altogether.

Let us make explicit two treatments of the Occitan facts we have presented, one relying on morphemes and an Item-and-Arrangement approach, the other one being cast into a rule based Word-and-Process approach *à la* Anderson.

In a morpheme analysis, the speaker-hearer confronted with the phrase [luj bj'ɔws] (and its singular counterpart [lu bj'ɔw] *lo buòu*) could elaborate the following hypotheses (11):



(11) Morpheme-based alternative for [luj f'awres]

(a) two morphemes: /i/-PLUR / \_\_\_ ]<sub>ART.DEF</sub> and  
/z/-PLUR / \_\_\_ ]

/ lu + i # faure + z /

phonology: / lu + i # faure + z /

→ [luj f'awres]

(b) one morpheme: /i/-PLUR / \_\_\_ ] and a rule  
converting /i/ to [s] in some contexts

/ lu + i # faure + i /

phonology: / lu + i # faure + i /

→ [luj f'awres]

(c) one morpheme: /z/-PLUR / \_\_\_ ] and a rule  
converting /z/ to [j] in some contexts

/ lu + z # faure + z /

phonology: / lu + z # faure + z /

→ [luj f'awres]

The first analysis (11a) is more transparent but it involves lexical complexity represented by two synonymous morphemes only differing in their subcategorization properties. Certainly, switching to the right analysis (11c) results from additional data being available to the learner. Those include on the one hand cases where

the determiner presents a sigmatic ending ([lus p'ɔrs] *los pòrcs*) and cases where the noun also exhibits allomorphy ([luj f,awrej βj'ɛls] *los faures vièlhs* 'the old blacksmiths') on the other hand. Additional data both determine the choice for a one morpheme analysis and for the right underlying form. Additional data can be considered all the more efficient in triggering the acquisition of the needed phonological processes as the double morpheme hypothesis is marked and costly. Unfortunately, the sociolinguistic situation of Occitan makes acquisition data difficult to access (because traditional varieties presenting the relevant alternation are hardly transmitted to children). It seems however that children at a first stage of acquisition of the language tend not to produce [j]-allophones and instead generalize [s]-marking. Joan Fulhet (p.c.) who experienced an interrupted acquisition of Occitan in his own childhood reports his spontaneous competence in Occitan did not involve yodization (which he then observed as a linguist in the elders' speech). I also noticed that in the dialect of Sumena-Sant Marçal (Sumène-Saint-Martial, 30) younger speakers with less constant practice of the language often lack the yodization and present a steady sigmatic plural realization. These observations, although unsystematic, suggest establishing a unique morpheme (corresponding to a biuniqueness configuration where nominal plural receives a single phonetic exponent) is so strongly preferred

that it rather leads to disregard alternation than to reproduce it via suppletion (before the relevant phonology is acquired).

In a Word-and-Process approach, the scenario would look as in (12):

(12) Word-based alternative for [luj f'awres]

(a) two morpholexical rules:

- determiner rule:  $X]_{\text{ART.DEF}} \rightarrow Xi]_{\text{ART.DEF}} / \_ ]_{\text{PL}}$

- general rule:  $X] \rightarrow Xz] / \_ ]_{\text{PL}}$

$[lu \# fawre]_{\text{PL}} \rightarrow [lui \# fawrez]_{\text{PL}}$

phonology:  $[lui \# fawrez]_{\text{PL}} \rightarrow [luj f'awres]$

(b) one morpholexical rule: /z/-PLUR /  $\_ ]$  and

a rule converting /z/ to [j] in some contexts

- general rule:  $X] \rightarrow Xz] / \_ ]_{\text{PL}}$

$[lu \# fawre]_{\text{PL}} \rightarrow [luz \# fawrez]_{\text{PL}}$

phonology:  $[luz \# fawrez]_{\text{PL}} \rightarrow [luj f'awres]$

For the sake of brevity, I do not take into consideration this time the hypothesis of the generalization of the vocalic allophone as the base form for all plural marking. The generalization of the specific rule (the determiner rule) has no more improbability than the generalization of the specific morpheme in (11). ~~If the general rules are abandoned for some reason, the specific rule becomes general *ipso facto*.~~ The decisive choice is between a one rule

solution or a two rule solution. The reasons for selecting one specific rule under the first option do not fundamentally differ from the reasons for selecting one morpheme over the other.

In this approach, the shift from analysis (12a) to analysis (12b) results from the same additional data that have been mentioned to justify abandonment of the two-morpheme hypothesis. The spur for shift now no longer lies in seeking for morphemic bi-uniqueness, but rather in replacing a morpholexical rule by a phonological rule.

Certainly, everything being equal, a phonological process requiring no morphological information is simpler and less costly than a specific morpholexical rule which complements (and bleeds) the general rule for nominal pluralization.

It should be noticed however that yodization in many Occitan dialects is restricted to a very limited group of morphemes (plural morpheme, 2SG-morpheme of verbs, and the 3SG-form of the verb ‘to be’: *es*). If this restriction is expressed directly, then the shift appears slight: from a morpholexical rule (inserting /i/ as a plural marker) to a morphologically-conditioned rule (converting /z/ to [j] under morphological conditions).

The restriction on [z]-vocalization can be expressed indirectly, by assigning to the plural morpheme (and the other ones, which adopt a similar behaviour) a specific status by which it is only inserted

postlexically. The phonological rule converting /z/ to [j] also applies postlexically.

In every framework, a phonological alternation – if it can be stated – will result simpler than allomorphy. The contrast, however, is far less dramatic when a morpholexical rule is replaced by a phonological rule than when enriching the phonology allows to reduce morphemic synonymy. One could expect then that due to the high frequency of vocalization in the article a grammar with two morpholexical rules could have been stabilized in a significant number of dialects. In the first place, the Word-and-Process approach suggests that learners would first build a grammar with two morpholexical rules and then eventually simplify. In an Item-and-Arrangement approach, it is conceivable that the strength of the biuniqueness requirement – before it leads to acquire the phonological rules governing the allophonic variation of /z/ – rather yields a provisional grammar without alternation but only one morpheme (in conformity with the sparse observations about acquisition I have been able to mention).

In its simplest formulation, the argument is that a Word-and-Process approach should make easier the emergence of a specific pluralization rule on the determiner, even in the presence of a preserved marker on the noun. The plausibility for the emergence of such a special pluralization rule can be strengthened by the

examination of the contracted article (see section 6). In a Word-and-Process framework, plural marking in the contracted article must be handled by a special morpholexical rule, whereas in a morpheme-based analysis the plural of contracted form does not affect the plural morpheme itself.

### 6 Plural of contracted articles and Conclusions

The Occitan masculine definite article undergoes contraction after some prepositions (13).

(13) Preposition + article (SG or PL) contractions in Occitan

- |     |                              |                |                             |
|-----|------------------------------|----------------|-----------------------------|
| (a) | <i>*de lo</i> → <i>del</i> , | <i>*de los</i> |                             |
|     |                              |                | → <i>dels</i> ‘of the’      |
| (b) | <i>*a lo</i> → <i>al</i> ,   | <i>*a los</i>  |                             |
|     |                              |                | → <i>als</i> ‘to the’       |
| (c) | <i>per lo</i> → <i>pel</i> , | <i>per los</i> |                             |
|     |                              |                | → <i>pels</i> ‘through the’ |
| (d) | <i>jos lo</i> → <i>jol</i> , | <i>jos los</i> |                             |
|     |                              |                | → <i>jols</i> ‘under the’   |

As the asterisks suggest, in the first two cases (13a, b) contraction is obligatory whereas this is not the case with other prepositions (13c, d). In modern orthography, the plural form of the contracted article is simply the singular form + *-s*. The same notation was used in the Middle Ages when it probably reflected pronunciation.

In modern pronunciation, however, the [-l-] in the contracted form is systematically silent in the plural (14).

- (14) Occitan contractions (continued)
- (a) *del* [del], *dels* [des] ‘of the’
  - (b) *al* [al], *als* [as] ‘to the’

This treatment is connected with syllable structure.<sup>25</sup> Occitan only allows one segment in the coda (in canonical syllables). Deletion of /l/ makes it possible for the plural morpheme to be realized (as such or in an altered form) before a consonant (15):

- (15) /l/-dropping in contracted articles
- (a) *dels pòrcs* [desp'ɔrs], *dels buòus* [dejβ'ɔws]
  - (b) *als pòrcs* [asp'ɔrs], *als buòus* [ajβj'ɔws]

This state of affairs contrasts with what prevails noun-finally (and in general at the end of lexical words). In this context a cluster formed by a final *-l* followed by plural *-s* remains unaltered as long as there is no *liaison* (formation of a unique syllabification domain) with a following word. In case *liaison* occurs, it is the plural morpheme which gets truncated (a general treatment for word-final consonant clusters) as in (16).

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<sup>25</sup> It is connected with syllable structure but not directly dependent on it. Before consonants, deletion of /l/ is the only way to make a coda position available where the plural is realized. In present day Occitan however, /l/-deletion also applies when de contracted article precedes a vowel: *dels òmes* [dez'ɔmes], *als òmes* [az'ɔmes] ‘of / to the men’. /l/-deletion has been lexicalized somehow and the result is that the plural morpheme is always realized.

(16) Plural dropping in nouns

- (a) *los ostals* [lu . zus . tal <s>] ‘the houses’
- (b) *los ostals nous* [lu . zus . tal . now . <s>]  
‘the new houses’
- (c) *los ostals qu’avèm comprats*  
[lu . zus . tal .Ø. ka . βεη . kum .prats ...]  
‘the houses that (we) have bought’

In a morpheme-based approach, nothing suggests to ascribe the contrast in the treatment of /ls/-sequences in nouns (or adjectives) to a difference concerning the plural morpheme. Rather the analysis must rely on an allomorphy of the definite article involving a zero allomorph which is selected when the article is both involved in a contraction and pluralized. Note that contraction also implies selection of the zero allomorph for masculine gender: *del* /de + l + Ø<sub>M</sub>/ vs *lo* /l + u/. The plural form would have to be something like: *de(l)s* /de + Ø<sub>DEF</sub> + Ø<sub>M</sub> + z<sub>PL</sub>/

In a framework using morpholexical rules, the natural strategy at hand to deal with such forms is to make contracted articles subject to a specific pluralization rule (17):

(17) Plural in contracted determiners as morpholexical rule

- (a) two morpholexical rules:



- contracted determiner rule:  $XI]_{\text{contr. ART.DEF}} \rightarrow$

$Xz]_{\text{contr. ART.DEF}} / \_ ]_{\text{PL}}$ <sup>26</sup>

- general rule:  $X] \rightarrow Xz] / \_ ]_{\text{PL}}$

If a specific pluralization rule has to be posited for contracted forms, why is this not readily the case for the article itself? Why does the frequent vocalic realization of the plural in the determiner not result in the emergence of such a specific pluralization rule in dialects which preserve an audible plural *-s*-morpheme in the noun?

Identification of the same morpheme in the determiner and the noun, no matter how statistically different the realization is, provides a natural explanation for the conservation of a sigmatic marking in the determiner as long as nouns also preserve such marking. Hence, Occitan plural facts represent a case in favour of an approach which appeals to morphemes as units in the morphology.

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<sup>26</sup> In the hypothesis of a specific rule pluralizing the definite article, the contract definite article would also receive vocalic marking (it presents a vocalic allophone under the same condition as the non contracted article does).

### Appendix: ALF 991: a problematic case

Actually, as mentioned in note 22, I have been able to find one exception to the generalization advocated here in the ALF-data viz. ALF 991 (Saint-Sauveur[-sur-Tinée]). The system unveiled by the ALF is confirmed by the data from Philippe Dalbera's systematic survey of Alpes-Maritimes Occitan (Dalbera 1994: 596-598). The offending system appears representative of a restricted area in the Alpes-Maritimes department. Saint-Sauveur's data, are as follows (i):

- (i) Plural in Sant Sauvedor de Tinèa (Saint-Sauveur-sur-Tinée, 06)
  - (a) *lo camp* [luk'amp] 'the field', *lei camps* [lik'amps] 'the fields'
  - (b) *la pala* [lap'ala] 'the shovel', *lei palas* [lip'alas] 'the shovels'

Data are not presented exactly in this way in Dalbera (1994: 597) but examples can readily be inferred from other tables and from the text. Orthographic forms are added under my own responsibility. Saint-Sauveur presents a mutated article and a fully preserved sigmatic marking not only in the noun but in adjectives too, including in adjectives in prenominal position and including numeral as *dos*, *doas* 'two' (a numeral adjective which bears gender and number morphology in Occitan). Indeed, it is probably too strong a claim to maintain that the identification of the ending in the determiner and in the noun as one and the same morpheme absolutely precludes a diverging evolution of the two objects. The split of a morpheme into two represents a complexification of the grammar but should not be considered an impossible move.

In order for an altered mark in the determiner to be interpreted as a variant of the sigmatic ending in the noun, the phonological rules must be present in the dialect allowing to connect to each other altered forms and the unaltered ones. Dialects where the altered final *-s* in the determiner has given birth to a vocalic marking plural in the determiner as in Provençal, typically lose the possibility for an alteration of *-s* altogether. Indeed in nouns and adjectives the sigmatic mark is lost and thus cannot alternate. Final *-s* has been retained however in

verbs and when it forms part of a root: [k'antes] *cantes* ‘your sing’ (SG), [kant'as] *cantatz* ‘your sing’ (PL); [m'as] *mas* ‘farm’.

My explanation for Saint-Sauveur’s situation relies on the loss of the yodization rule by contact with dialects which present mutated (vocalic) plural articles and no more –s-allomorphy. Loss of –s-allomorphy may also be observed in the easternmost dialects of Lengadocian. For instance in Lesan (Lézan, *ALLOr* 30.09), we find the following forms (ii):

- (ii) Plural in Lesan (Lézan, *ALLOr* 30.09)
- |     |                |                   |             |
|-----|----------------|-------------------|-------------|
| (a) | the pigs       | <i>los pòrcs</i>  | lus p'ɔr    |
| (b) | the ways       | <i>los camìns</i> | los kam'is  |
| (c) | the roosters   | <i>los gals</i>   | luz gal     |
| (d) | the birds      | <i>los aucèls</i> | luz aws'ei  |
| (e) | the goats      | <i>las crabas</i> | las kr'abos |
| (f) | the sheep (PL) | <i>las fedas</i>  | laz f'edos  |
| (g) | the geese      | <i>las aucas</i>  | laz 'awkos  |

This dialect has remained sigmatic although the plural markers only receive overt realization after a vowel (those dialects do not allow realization of the plural marker in an extrametrical position). But there is no allomorphy except for voicing alternation. In particular yodization does not apply. Dialects of this sort however are located between sigmatic and yodizing Lengadocian dialects in the West and vocalic non-yodizing (or no longer yodizing) dialects in the East. As yodization must be the source for vocalic plurals, it is clear that what happens in dialects as Lesan (Lézan) in (ii) is the spreading of the loss of the yodization rule from dialects where it had yielded vocalic plural in the determiner to dialects which preserve sigmatic marking. In the case of Lesan and other such eastern Lengadocian dialects, loss of yodization reestablishes a non-alternating sigmatic system. In the case of Sant Salvador de Tinèa (Saint-

Sauveur-sur-Tinée), it has isolated the definite article – where the vocalic allomorph has been retained – from the general pattern which remains sigmatic. I conclude that Sant Salvador's exceptional system can be explained. Simply we must add to the condition that plural marking may shift from sigmatic to vocalic in the determiner iff the plural mark is lost in the noun, the possibility that reinterpretation is forced by the loss of the yodization rule, which allows the most frequent form in the article to be lexicalized. It may also be the case that vocalic forms of the plural article have been borrowed in Sant Salvador from neighboring, more prestigious southern dialects.

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