

i patris sui insecando usq; actus nec
delet conatus sit. Hostis. Cu aut
rat utaq; nec xpianitas nec qalibet

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eme. & hunc fratrem meum
i non cessat. Insurgit populu
incendit. rapit. cedibusque
at. Qua obre. nunc neces
caco & conuenimus. Et qm uos
stabilis fide ac firma pte nate
e credimus. hoc sacramtu. jst nos
to tu uro. iurare decreuimus.
ibz iniqua cupiditate illecti hoc
sed ut ex adref. fids nobis uro
rio quatenus dederit. de comu
x tu simus. Si aut qd absit
u qd fti meo iurauero uiola
sero. a subdractione mea. nec
iuramento qd in iurastis.

haec eade uerba romana lingua potasse
Lodhu uic qm maior natus erat. prior
hinc deinde seferuatur u testatur.
Pro do amur & xpian populo & nro comuni
saluamur. dñt di en auiam. inquantu
saur & podur medunet. si saluamur
est meon fratre karlo. & in ad iudha
& in cad huns cora. sicu oru p dret son
fracta saluar dñt. Ino quid il mshro
si faze. Et abluher nui plaid nuqui
prindrai qui meon uol est. meon fratre
karlo in damno sit. Quod cu lodhu uic
explete. karolus taudis ca lingua sicet
eade uerba restituit.
Ingodes minna in duntet xpianet solcher
indunfer becherogalunsi. furbese.
moda ge fram mordafo framio murgor
geuize indunadl furbibz sohaldibz
an minas bruddher sofo manmit rehtu
finan bruhet. scal utu ucha xermigoso
maduo. in duntet luhertin. oherm put
hing noge gango. themunian. uition. mo
cet cadon uuerhen.
Sacramtu aut qd ueroruq; populus
quiq; propria lingua testatur est.
Romana lingua sic se habet. Silodhu
uig sacramto. que son fratre karlo
iurat conseruat. Et karlus meosendz
desuo parte n lofianet. si uocurnar non
lunt pos. neio neneulz cui co recur nar
unt pos. in nulla a uia contra lodhu
uug. nuntli uer. Teudisca aut lingue.

unq; quia unq; stitit. Cui karolus
hinc eade uerba romana lingua potasse
Lodhu uic qm maior natus erat. prior
hinc deinde seferuatur u testatur.
Pro do amur & xpian populo & nro comuni
saluamur. dñt di en auiam. inquantu
saur & podur medunet. si saluamur
est meon fratre karlo. & in ad iudha
& in cad huns cora. sicu oru p dret son
fracta saluar dñt. Ino quid il mshro
si faze. Et abluher nui plaid nuqui
prindrai qui meon uol est. meon fratre
karlo in damno sit. Quod cu lodhu uic
explete. karolus taudis ca lingua sicet
eade uerba restituit.
Ingodes minna in duntet xpianet solcher
indunfer becherogalunsi. furbese.

Tensing of Word-Final [ɔ] to [o] in French: The Phonologization of a Morphophonological Rule

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The phonological opposition between the two mid back rounded vowels [ɔ] and [o] of Standard French, e.g., *sotte* [sɔt] vs. *saute* [sɔt], is neutralized in word-final position, where only the tense vowel [o] occurs,¹ as in *sot* [so] and

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1. We will assume here that the opposition between [o] and [ɔ] is basically one of tenseness, the difference in height being a correlate. More precisely, we adopt Redenbarger's articulatory features for vowels (1981: 85):

| | | -back | | +back | |
|------|-------|--------|--------|--------|--------|
| | | +t | -t | +t | -t |
| | +high | i | y | u | |
| | -high | e | ɛ | ø | œ |
| -low | -high | | | o | |
| +low | -high | ɜ | a | ɑ | |
| | | -round | +round | -round | +round |

In modern Standard French tense vowels are phonetically long in closed stressed syllables. The vowel [ɜ] is defined as tense, front, and lower than lax [e] (for the former symbol see Pullum & Ludusaw 1986: 52). It is seldom observed in modern varieties of Standard French, but a three-way distinction between the reflexes of [e], [ɛ] and [ɜ] in word-final position is still noted by Haudricourt & Thomas (1968). The specific choice of articulatory features is not crucial for our presentation (Lindau 1978 proposes "peripherality" as a more descriptive denomination than "tenseness"), provided that it allows for the definition of the class of segments {[o], [ɔ]}, which would be represented here as [+syll, -high, -low, +back], and for which we will use the abbreviation O.

saut [so] (cf., for instance, Gougenheim 1935:22 or Walter 1977:40–42).² This neutralization is relatively recent. Though recorded at the beginning of the 19th century, it only became the official norm a century later (cf. Straka 1981:208–9). A recent survey of regional French (Walter 1982) revealed that it has not yet affected—at least systematically—most varieties of regional French in northern France (both west and east of Paris). If we exclude areas (mainly Picardy) where [ɔ] : [o] do not appear to be in phonological opposition, it is only in Île-de-France that it is regular.³

The change of [ɔ] to [o] is often assumed to be the result of a regular sound change referred to as the *loi de position*. In this paper, we shall re-examine and justify another explanation put forward by Rousselot & Laclotte (1913), who suggested that this change results from the generalization of plural forms. Their analysis would imply the existence of a sound change initiated by morphology. Although such cases have been reported, e.g., Rochet (1974) or Malkiel (1976), this last author later recognized that “a purely morphological motivation of a sound shift has yet to be demonstrated” (1982:248). Hooper (1976:91) makes similar observations and claims that phonologization—the loss of morphological conditions on morphophonological rules—is not a possible evolutionary development in the history of languages (cf. Hooper 1976:91).

1. Word-final O-tensing in Modern French. The lack of word-final [ɔ] in Modern French can be attributed to the existence of a synchronic rule (1) which tenses mid back rounded vowels in word-final position:⁴

(1) O → [+tense]/—]

The effects of this rule can be observed in word-formation processes and borrowings. Whenever [ɔ] becomes word-final in truncated forms, it shifts to [o], e.g., *métropolitain* [metrɔpɔlitɛ̃] > *métro* [metro], *vélocipède* [velɔsipɛd] > *vélo* [velo].⁵ A like shift occurs in any extracted syllable used in an echo word, e.g., *dormir* [dɔrmir] > *dodo* [dɔdɔ] or [dodo] (cf. Morin 1972), or when a syllable becomes word final in verlan (a secret language), e.g., *jobard*

2. We will see, however, that this is not always true for some speakers of Standard French, whom we will call “conservative” in section 6.

3. It should be emphasized that Walter’s survey is concerned with “regional French” and not “dialectal French.” The former refers to regional variants of the official language, as distinct from the speech of educated Parisians (cf. Morin 1987), whether or not influenced by the local dialect. The speakers interviewed in the survey in most cases did not speak the often dead or dying local patois. The wide-meshed survey included only three informants for Île-de-France. It is possible that a more intensive search would reveal that even in this area there are speakers who distinguish [o] and [ɔ] in word-final position.

4. The symbol] represents the right bracket of a lexical item, hence here, word-final position. We will see later (section 8) that the rule may be generalized to some word-internal constituents, e.g., prefixes such as *pseudo-agent* ‘pseudo-policeman’.

5. It is difficult, however, to decide in this case whether the final [o] is the result of (1) or simply the suffix -o which is often added to truncated words, e.g., *mécanicien* > *mécano*.

[ɔbar] > *barjot* [barzo] (cf. Tranel 1981:186, Walter 1984). Most speakers of Standard French fail to perceive the use of [ɔ] in word-final position, and will change [ɔ] into [o] when repeating unfamiliar words, as in the place names *Filot* or *Ramelot* (Province of Liège) which, though locally pronounced [filɔ̃] and [rāmlɔ̃] in conversation, would be automatically rendered by Parisians as [filo] and [ramlo]. Rule (1) is also often invoked to account for alternations in masculine/feminine pairs such as *sot* [so], fem. *sotte* [sɔt] and in noun/verb pairs such as *siróp* [siro], (*il*) *sirotte* [sirɔt], although it can also be argued that such alternations are suppletive rather than phonological (cf. Morin 1983).

Rule (1), however, is primarily a redundancy rule which specifies that the feature [+tense] is completely redundant in word-final matrices containing the features [+syll, -high, -low, +back]. It thus applies to all words where [o] does not alternate with [ɔ], e.g., *bateau*, *virago*, *courtaud*, *impôt* or *hublot*.⁶

2. Sound change or analogy? According to the prevalent view, the synchronic rule (1) is the result of a general historical sound change known as the *loi de position* (cf. Fouché 1935:46–47, Straka 1981:208).⁷ Although there are serious reasons to doubt that one can give a single simple explanation for all the changes the *loi de position* is supposed to cover (cf. Morin 1986a), the regularity with which [ɔ] becomes [o] in word-final position certainly suggests a regular sound change. In a small three-line paragraph at the end of a note, however, Rousselot & Laclotte took a completely different tack. They observed that their older informants in Paris distinguished the singular and plural of nouns and adjectives, e.g., *un marmouset* [ɛ] vs. *des marmousets* [ɜ], *un doigt* [a] vs. *des doigts* [ɑ], and that a similar distinction obtained outside of Paris for other vowels, e.g., *gigot* [ɔ] vs. *gigots* [o].⁸ Their

6. The status of rule (1) as a redundancy rule depends essentially on specific theories. In models with archiphonemic representations in the lexicon, e.g., Generative Phonology (Chomsky & Halle 1968), Lexical Phonology (Kiparsky 1985), or Hooper’s (1976) version of Natural Generative Phonology, the underlying representation of a word like *bateau* would be /batO/, with a partly unspecified final segment. Rule (1) then adds the feature [+tense], producing the output [o]. In models with fully specified underlying representations, e.g., Venneman’s (1971) version of Natural Generative Phonology (as quoted by Hooper 1976:116–17) or Linell (1979), rule (1) is interpreted as a well-formedness condition which forbids word-final [ɔ] in the lexicon.

7. Straka appears to hesitate between assuming a regular sound change and adopting the solution suggested by Rousselot & Laclotte. At one point, he only mentions the latter: “Féline, Lesaint (p. 87), Jullien (p. 83) ont déjà adopté [o] fermé au singulier par analogie du pluriel” (1981:208) but later adds that [ɔ]-raising is a regular sound change, though influenced by an analogical process: “Quoi qu’il en soit, -ot s’est progressivement fermé (outre l’action de la 2^e loi de position, il ne faut pas négliger l’influence analogique du pluriel)” (1981:209).

8. The singular ending [-ɔ] in Rousselot & Laclotte’s description is restricted to the French spoken outside of Paris (139); the plural ending [-o] given earlier (137) concerns Paris, but the absence of specific mention implies that it is also used elsewhere, as is indeed the case in most northern regional French, except in the East. The changes of vowel quality in the plural, whereby [ɛ] > [ɜ], [ɔ] > [o] and [a] > [ɑ], are the reflexes of earlier changes to be discussed later.

younger Parisian informants, however, appear to have generalized one of the two allomorphs for both numbers: "Mais ces distinctions [entre le singulier et le pluriel] s'effacent, et l'unification se fait entre le singulier et le pluriel. C'est le singulier qui l'a emporté dans les mots en *-at*, *-a*. Le pluriel triomphe dans tous les autres cas" (1913: 137–38). It is clear for them that (1) is not the result of a sound change, but rather of a generalization of the plural forms ending in [o]. They do not discuss, however, how such a change could also have affected invariable words.

3. Vowel length and tension in the plural. Prior to (1), there existed a morphophonological rule in the language which tensed the final [ɔ] of nouns and adjectives to mark the plural. This rule is the consequence of three distinct historical changes: (1) lengthening of stressed vowels in the plural, (2) loss of word-final consonants, and (3) tensing of long non-high vowels; we will summarize them here.

After the loss of case marking in Old French, the suffix [-s] was generalized as a plural marker for nouns and adjectives. This suffix was responsible for at least two internal sandhis: loss of a preceding stem-final obstruent, and lengthening of the preceding vowels, e.g., *croc* [krɔk], pl. *crocs* [krɔs], or *ami* [amɪ], pl. *amis* [amɪs]. When this suffix was the reflex of an earlier [-ts], however, the preceding vowel remained short, e.g., *pot* [pɔt], pl. *pots* [pɔs], *pie* 'pied' [pjɛ], pl. *piez* [pjɛs] (cf. Morin & Desaulniers Forthcoming).

In the 16th century, Lanoue (1596) described a language which reflected rather precisely this earlier stage, except that word-final consonants were often restored in the plural with concomitant lengthening of the stressed vowel, and plural [s] had become optional (and was soon to disappear from the standard language), e.g., *croc* [krɔk], pl. *crocs* [krɔs(s)] or [krɔk(s)]. Word-final [t], however, was always deleted in the plural. In the same period, two important changes began to take place: (1) the loss of the morphophonological rule responsible for the truncation of stem-final consonants in the plural, and (2) the lengthening of the stressed vowel in all plural nouns and adjectives. The first change came about either through the restoration of word-final consonants in the plural (as observed in Lanoue 1596), or the loss of word-final consonants in the singular, e.g., *croc* [krɔk] > [krɔ] pl. *crocs* [krɔs]. Words ending in [t], with very few exceptions, lost this consonant in the singular, e.g., *pot* [pɔt] > [pɔ]. The distribution in Modern French reflects this double treatment of final consonants, e.g., *pot(s)* [po], *croc(s)* [kro] vs. *coq(s)* [kɔk]. The second change, lengthening of stressed vowels in plural nouns and adjectives, probably took place slightly later. In particular, it affected all nouns and adjectives which ended with a [t], e.g., *pot* [pɔ], pl. *pots* [pɔ] > [pɔ̃].⁹

9. The evidence gathered by Morin & Desaulniers (Forthcoming) shows that this generalization was gradual. The lower short vowels [ɛ, ɛ̃, ɔ] were affected sooner than the higher ones

The third historical change, tensing of long non-high vowels, affected the vowels [ɔ̃] > [ō], [ā] > [ā̃] and [ē] > [ē̃]. Tensing was accompanied with non-uniform changes in the articulatory gestures: long [ɔ̃] was raised, long [ā] was backed, and long [ē] lowered. Conflicting explanations for this puzzling state of affairs have been offered by Martinet (1955: 245–56) and Straka (1981: 208, n. 227; 209, n. 233; 214, n. 245). Its dating is also controversial. Martinet and Straka assume that tensing took place before or while /s/ was reduced word-internally before a consonant, i.e., probably during the 12th century. Under this assumption, the lengthening of the stressed vowel in plural nouns and adjectives was always accompanied by a change of articulation for the vowels [ē], [ɔ̃] and [ā]. Martinet, however, later assumed (1969: 178) that the changes in the articulatory gestures only became important during the 18th century.¹⁰ In any case, there existed in the synchronic grammar of French at the beginning of the 18th century a morphophonological¹¹ rule (2) for the plural of nouns and adjectives—which we shall not try to formalize completely.¹²

[ē, ī, ŷ, ū]. The evidence also indicates that the norm was variable. While most grammarians after the 18th century report that all word-final [ɔ]s were lengthened and raised in the plural (cf. Thurot 1881–83, 2: 620–33), there are some discordant voices, e.g., Faure-Lacroze (1831: 59), who notes the short [ɔ] of *canots*, *flots*, *pots*, in contrast with the long [ō] of *canaux*, *fléaux*, *Paul*.

10. According to Millet (1933), Lancelot was the first grammarian to mention (in 1660) a difference in vowel quality between a short lax [ɔ] and long tense [ō] which corresponds to the modern distinction. Grammarians before this time observed only distinctions of length in those two vowels.

11. In this paper we adopt Hooper's (1976: 15) definition of morphophonological or morphophonemic rules: "Morphophonemic rules (MP-rules) change phonological features in environments described in morphosyntactic or lexical terms." Klausenburger (1979: 29–35) suggests a further distinction between what he calls "semi-morphological" and "morphological" rules.

The status of rule (2) as a morphophonological rule also depends on specific theories. In models where the lexicon is fully specified and includes all inflected forms, e.g., Lexical Phonology (Kiparsky 1985), or Lexical Functional Grammar (Bresnan 1982), rule (2) may be interpreted as a template for the formation of new plurals, as well as a well-formedness condition on plural nouns and adjectives and on singular/plural pairs. Exceptions such as *numéro(s)* are specifically learned as violations. Most other models postulate a lexicon which does not contain predictable forms nor, in particular, most inflected forms, e.g., Generative Phonology (Chomsky & Halle 1968) or Hooper's (1976) version of Natural Generative Phonology. For instance, the specifications for the noun *pot* could include an underlying form /po/ with no overt mention of number. Specific rules mark this noun as either [-plur] or [+plur]. In the first case, no rule modifies the underlying representation, which is thus realized as [po]. In the second, rule (2) applies, so as to yield [pɔ̃]. An invariable noun such as *numéro* is lexically specified as an exception to the rule: [-rule (2)]. Because such concepts as "rule loss," "rule inversion," "(morpho)phonologization"—which we use later—have been developed and defined within models with incompletely specified lexicons, we will assume this kind of organization in our presentation.

12. The evolution of mod. Fr. [œ] and [ø], corresponding to [ɔ̃] and [ō] in (2), is not yet well understood. The solution adopted here is only tentative. The formulation (2) also restricts lengthening to nouns and adjectives where the stressed vowel is followed by at most one consonant; the evidence seems to indicate that words such as *fisc* and *parc* were invariable when both consonants were pronounced in the plural.

$$(2) \begin{bmatrix} \bar{i}, \bar{i} \\ \bar{y}, \bar{y} \\ \bar{u}, \bar{u} \\ \bar{e}, \bar{e} \\ \bar{o}, \bar{o} \\ \bar{a}, \bar{a} \end{bmatrix} \rightarrow \begin{bmatrix} \bar{i} \\ \bar{y} \\ \bar{u} \\ \bar{e} \\ \bar{o} \\ \bar{a} \end{bmatrix} / \text{---} (C)]_{N,A [+plur]}$$

When length disappeared in word-final position (a phonetic change which probably began at the end of the 18th century), e.g., *saut* [sō] > [so] vs. *sot* [s̄] > [so], the differences in vowel quality—which originally were redundant—became the only overt marks for number. In the grammar of French, rule (2) was replaced by rule (3):¹³

(3)a N and A ending with [i, y, u, e, ø, ɜ, o, a] are invariable.

$$(3)b \begin{bmatrix} \bar{e} \\ \bar{o} \\ \bar{a} \end{bmatrix} \rightarrow \begin{bmatrix} \bar{e} \\ \bar{o} \\ \bar{a} \end{bmatrix} / \text{---}]_{N,A [+plur]}$$

Rule (2)—and later, rule (3)—had some exceptions: learned borrowings—mostly from Latin and Italian—were often invariant and usually kept a short (later lax) vowel in the plural. For instance, Lévizac (1797, but cited here from the 1822 ed., 1:185)—who elsewhere mentions the lengthening of final vowels of plural nouns and adjectives—observes that “[certains] mots transposés des langues étrangères” are invariable. Some of his examples include *des pater*, *des avé*, *des alibi*, *des in-folio*, *des in-quarto*, *des quiproquo*, *des ré*, etc. A similar observation can be found in Girault-Duvivier (1867:81) who borrows the following rule from d'Olivet (1783, inaccessible to us):

Toute syllabe masculine, brève ou non au singulier, est toujours longue au pluriel: des *sâcs*, des *sêls*, des *pôts*, etc.

Il faut excepter de cette règle les substantifs qui n'ont ni *s* ni *x* au pluriel: dans *numéro*, *te Deum*, *kirschwasser*, etc., la dernière syllabe n'est pas plus longue au pluriel qu'au singulier; c'est le *s* ou le *x* qui rend la syllabe longue. [The 1867 revisor adds]—L'académie admet aujourd'hui *numéros*.

There must have been considerable variation concerning the status of these borrowings. For instance, Lévizac excludes *numéro* from the list of invariable nouns, contrary to the practice of many dictionaries of the same period.¹⁴ Table 1 summarizes the evolution examined in this section:

13. It is likely that nouns and adjectives ending with a consonant were then invariable, except for a small class, e.g., *auf*, *bœuf*, where the final consonant is deleted in the plural.

14. Eventually, when graphic *s* ceased to mark lengthening or vowel quality, the orthographic rule excluding it in the plural of some learned borrowings remained in force as just another orthographic intricacy.

Table 1. Vowel length and tension in the plural

| sound change | grammar | examples | | | | | | |
|----------------------------|----------------------------------|----------------------------------|-------------------|---------|------|---------|------|-----|
| | | sg. pl. | | sg. pl. | | sg. pl. | | |
| tensing | complex plural formation | 16th century | | | | | | |
| | | gris | ī ī | gris | ō ō | gras | ā ā | |
| | | ami | ī ī | croc | ō ō | drap | ā ā | |
| | | lit | ī ī | sot | ō ō | chat | ā ā | |
| | vowel lengthening for plural | 17th century | | | | | | |
| | | gris | ī ī | gris | ō ō | gras | ā ā | |
| | | ami | ī ī | croc | ō ō | drap | ā ā | |
| | | lit | ī ī | sot | ō ō | chat | ā ā | |
| | rule (2) | early 18th century (or earlier?) | | | | | | |
| | | gris | ī ī | gris | ō ō | gras | ā ā | |
| | | ami | ī ī | croc | ō ō | drap | ā ā | |
| | | lit | ī ī | sot | ō ō | chat | ā ā | |
| | word-final length neutralization | rule (3) | late 18th century | | | | | |
| | | | gris | i i | gris | o o | gras | a a |
| ami | | | i i | croc | o o | drap | a a | |
| | | lit | i i | sot | o o | chat | a a | |
| no plural marking rule (1) | | 19th century | | | | | | |
| | | gris | i i | gris | o o | gras | a a | |
| | ami | i i | croc | o o | drap | a a | | |
| | lit | i i | sot | o o | chat | a a | | |

4. **Phonologization of a former morphophonological rule.** The preceding historical sketch allows us to understand better Rousselot & Laclotte's proposal (1913). We can abstract from (3) two rules (4) and (5) applying respectively to nouns and adjectives in [a]/[ɑ] and in [ɔ]/[o]:¹⁵

(4) [+low] → [+tense, +back]/---]N,A [+plur]

(5) O → [+tense]/---]N,A [+plur]

Rousselot & Laclotte (1913) argued that the singular form of nouns and adjectives ending in [a] was generalized to the plural: *doigts*, formerly pronounced [dwa], became identical to the singular *doigt* [dwa]. No systematic sound change was involved, since word-final [ɑ] was normally retained elsewhere. In particular, *gras* 'fat' remained [gra] both in the singular and the plural. This is a typical case of analogical change frequently referred to as rule loss, i.e., a change in two consecutive stages of the grammar of a language

15. For ease of exposition, the formulations of rules (2) and (3) were only partly formalized. However, formulas like “o → o,” for instance, are quite redundant. This last formula stands for “[+syll, -high, -low, +back, +round, -tense] → [+syll, -high, -low, +back, +round, +tense].” Simplicity criteria require that it should be expressed as “[+syll, -high, -low, +back] → [+tense],” i.e., “O → [+tense]” as in (5). Rule (5) thus expresses three different valid generalizations: (1) as a feature-changing rule “o → o,” it specifies that nouns and adjectives with a stem-final /o/ form their plural by changing /o/ to [o]; (2) as an invariant rule “o → o,” it specifies that nouns and adjectives like *saut* with a stem-final /o/ are invariable; and (3) as a redundancy rule, it specifies that the opposition between [o] and [ɔ] is neutralized in word-final position for plural nouns and adjectives.

Actually, rule (6)—which like (1) is both a feature-changing and a lexical redundancy rule—was not maximally descriptive. It turns out that there already were very strong lexical restrictions on the quality of verb-final vowels in French. In particular, no verb ended with a vowel [ɔ]—and actually only three with the vowel [o]: *clorre*, *éclore*, and *enclorre*, as in *je clos* (OFr. [klɔs] > [klo] and OFr. *il clort* [klɔt] > [klo]). Consequently, as the neutralization of word-final [o] and [ɔ] affected nouns and adjectives, it matched a preexistent neutralization in verbs—which, however, was probably not the object of a rule, due to the scarcity of pertinent forms. Thus, as soon as the [+plural] condition was removed from rule (5), the new generalization was not (6), but rather (7), which applies to all major syntactic categories, adverbs excepted.

(7) O → [+tense]/—]N,A,V

The domain of (7) is very large and includes most lexical items in the language. The extension of (7) to (1) involves the removal of the categorial constraints limiting (7) to nouns, adjectives, and verbs so that it applies to words from all categories, including adverbs.

We can summarize as follows the evolution we propose for word-final O-tensing: it began as a rule (5) of plural O-tensing, and was successively generalized as rule (7) and later as rule (1) through simplification of the morphological conditions. It must also be recalled that rule (5) had some lexical exceptions, in particular learned borrowings such as *numéro*; as we shall see later, some exceptions may have remained even as the rule was generalized, for instance, *numéro* may have constituted an exception to rule (7) as well as to rule (1). Only when rule (1) is further generalized to cover all earlier lexical exceptions can it be said to be fully phonologized.

The process we have described can be called “phonologization,” the progressive generalization of a morphophonological rule through deletion of the morphological specification limiting its range of application. This is the inverse of “morphologization,” where a formerly simple allomorphic distribution becomes governed by non-phonological properties—often morphological in character, cf. Hooper (1976: 84–91) and Klausenburger (1979). These authors, however, assume that phonologization is not possible:

the typical progression of rules through grammar is as follows: P[phonetically conditioned]-rules are modified to produce new alternations; these may lead to restructuring or the development of M[orpho]P[honological]-rules and via-rules; these in turn may be modified or lost. Other theoretically possible types of changes never occur: MP-rules do not become P-rules; via-rules do not become MP-rules or P-rules. (Hooper 1976: 91; similar statements can be found in Klausenburger 1979: 32)

Before we can conclude that “phonologization” is indeed a possible evolutionary development, we must show that our analysis of word-final O-tensing not only is possible—as we have attempted to do here, but also that it is the only reasonable solution.

5. Phonologization vs. innovation. It could be argued that rule (1), although very similar to rule (5), is nonetheless completely unrelated. Tensing of lax [ɔ] would have resulted from two independent sound changes: first, tensing of long vowels, and then tensing of [ɔ] in word-final position. It would be simply coincidental that (1) resembles a simplification of the morphophonological rule (5).

The end result of phonologization cannot be distinguished from a genuine phonological change. The overall effects would be the same if the rule appeared *tout d'un coup* in the language. The difference can only be observed in the progressive generalizations. If rule (1) had resulted from a regular sound change in which word-final [ɔ] becomes [o], all words would have been affected simultaneously, or—in the case of lexical diffusion—without regard to grammatical categories.¹⁹ One would not expect an independent sound change to affect predominantly singular nouns and adjectives which happen to have a plural ending in [o], and to be extended only later to invariable words. This is exactly the kind of progression one would expect, however, if rule (1) is a generalization of (5), whose domain is that very set of nouns and adjectives.

We surveyed 14 dictionaries in which word-final O-tensing was incomplete: (1) Féraud (1768), (2) Gattel (1819; 1st ed. 1797), (3) Catineau-Laroche (1817; 1st ed. 1802), (4) Rolland (1809), (5) Noël & Chapsal (1852; 1st ed. 1826), (6) Landais (1834), (7) Nodier (1836), (8) the *Dictionnaire des dictionnaires* (1837), (9) Féline (1851), (10) Littré (1863–73), (11) Hatzfeld & Darmesteter (1890–1900), (12) Michaelis & Passy (1897), (13) Barbeau & Rodhe (1930), (14) Martinet & Walter (1973).²⁰ In the last three dictionaries, the adverb *trop* is the only word with final [ɔ];²¹ it will be examined in section 6. The proportion of affected vowels appears in Table 2, which shows a regular progression in tensing except for Littré (1863–73) which is quite conservative. In the first four dictionaries, word-final O-tensing is almost non-existent. In the second (Gattel 1819 [1797]), tensing appears to have begun, but affects mainly learned words. The fourth (Rolland 1809) contains very few non-native words and the 3.8% figure probably overrepresents the importance of O-tensing, as there is only *one* learned word, *écho*, in which it is noted. In all other dictionaries, however, tensing in learned words always lags behind.

19. Labov (1981: 296, Table 11) does not exclude grammatical conditioning in lexical diffusion; however, an explanation is required when it occurs: one normally expects a sound change to apply uniformly across the lexicon—with or without diffusion.

20. These dictionaries have been entered into a computer data base (cf. Morin forthcoming), except for Noël & Chapsal (1852 [1826]) which was searched manually.

21. The 1914 edition of Michaelis & Passy also contains an alternative pronunciation [-ɔ] for most words ending with graphic *-ot*, *-oc* and *-op*, described as an archaism found in eastern France and Switzerland (1914: 319). Surprisingly, word-final *-o* is only given as [-o], which does not appear consonant with eastern usage (cf. Boillot 1929: 154, Galand 1968: 170, and Voillar 1971: 218–19). It is unlikely that Michaelis & Passy carried out any systematic inquiry; they no doubt deduced [-ɔ] on a purely orthographical basis.

Table 2. Word-final O-tensing

| | | Native words | Non-native words |
|--------------------------------|-----------|--------------|------------------|
| Féraud | 1768 | 1 % | 0 % |
| Gattel | 1797 | 2 % | 14 % |
| Catineau-Laroche | 1802 | 2 % | 0 % |
| Rolland | 1809 | 0 % | 3.8 % |
| Noël & Chapsal | 1826 | 69 % | 6 % |
| Landais | 1834 | 88 % | 48 % |
| Nodier | 1836 | 91 % | 53 % |
| <i>Dict. des dictionnaires</i> | 1837 | 99.6 % | 92.3 % |
| Féline | 1851 | *100 % | 90 % |
| Litttré | 1863–1873 | 0.5 % | 0.5 % |
| Hatzfeld & Darmesteter | 1890–1900 | 98.5 % | 96.5 % |
| Michaelis & Passy | 1897 | *100 % | 100 % |
| Barbeau & Rodhe | 1930 | *100 % | 100 % |
| Martinet & Walter | 1973 | *100 % | 100 % |

(*trop not included)

Noël & Chapsal (1852 [1826]) describe a variety of standard French where word-final O-tensing is not yet complete for the non-learned vocabulary: almost a third of the relevant entries are pronounced with an [ɔ], e.g., *abricot*, *accroc*, *bot*, *croc*, *idiot*, *trot*, as are almost all learned borrowings, e.g., *agio*, *allegro*, *casino*, *embargo*, *quiproquo*, *soprano*, *silo*, *subito*.²²

In Landais (1834) and Nodier (1836), word-final O-tensing is almost uniform in the non-learned vocabulary: roughly 10% are given with an [ɔ], e.g., *accroc*, *billot*, *cachalot*, *capot*, and *dodo* in Landais. Only approximately half of learned borrowings are entered with a final lax [ɔ], e.g., *allegro*, *embargo*, *virago*, and *zéro* in Landais.²³

22. Small figures may be less significant if we allow for possible typographical errors. The opposition [o/ɔ] is noted (ô/o) by most authors (the angle brackets indicate the actual phonetic transcription used by a given author), (ô/o) by Catineau-Laroche, (o'/o) by Féline, (ô/ô) by Hatzfeld & Darmesteter, and IPA (o/ɔ) by Michaelis & Passy, Barbeau & Rodhe, and Martinet & Walter. Unintentional omission of the diacritic in the representation of tense [o] ((ô), etc.) in most dictionaries, esp. in Noël & Chapsal, yields a spurious [ɔ] ((o)). Of the words ending in *-eau*, 4% of them are transcribed (o) (= [ɔ]), perhaps in error: *arbrisseau*, *bécesseau*, *caveau*, *closeau*, *bâteau*, *boisseau*, *borasseau*. The first four items, however, are transparent diminutives for which there was frequent variation between the suffixes *-ot* and *-eau*, as appears explicitly in graphic variations observed throughout the history of French: *cuisseau/cuissot*, now two "different" words in Standard French, *tuileau/tuilot*, *bardeau/bardot*. Errors are less likely for the 6% learned words represented with final (ô) (= [o]): *cacao*, *campo*, *crédo*, *Congo*, *Minho*, *tertio*, *verso*, and *vespéro*, since the appearance of a circumflex accent is less likely to be unintentional than its omission. Conversely, one could argue that the conventional orthography is responsible for the low proportion of word-final [o] in learned words, though spelling had no observable effect on their decision to assign the pronunciation [o] or [ɔ] to words ending in *-ot*. Evidently, orthographic conventions were not their sole guide.

23. In both dictionaries, the proportion of words ending in lax [ɔ] is higher at the beginning of the dictionary, both among learned and non-learned words. Their decreasing relative frequency in the latter portions of the dictionary may correspond to a change in the official norm as perceived by the authors while they were compiling their lexicon.

Though in the *Dictionnaire des dictionnaires* (1837) word-final O-tensing has reached near totality, differences between the two layers of vocabulary are still perceptible: 7.7% of the learned words have a lax [ɔ], e.g., *adagio*, *allégo*, *calypso*, *numéro*, but only one non-learned word (representing 0.4% of the pertinent forms): *abot* (a technical term recently borrowed from some rural dialect).²⁴

In Féline (1861), word-final O-tensing is virtually complete throughout the whole dictionary. The list of exceptions, *ab irato*, *adagio*, *allegretto*, *ex-professo*, *in-petto*, *lombagollumbago*, *memento*, *mezzo-tinto*, *Pierrot*, *pongo*, *trop*, *vertigo*, contains learned borrowings and two invariable words: *trop* and the apparent proper name *Pierrot*.²⁵

Finally, in Hatzfeld & Darmesteter (1890–1900) only very few words are listed with a final [ɔ]: *accot*, *habillot*, *mot*, *solo*, *vertigo*, and *virago*. One may add the learned word *pseudo*, which, though strictly speaking a prefix, behaves syntactically like a prenominal adjective (see §8, below). Surprisingly, there are almost as many non-learned forms as loanwords with final [ɔ]. The non-learned forms admit of individual explanations: *mot* is one of the few words ending in *-ot* to have kept its final [t] until recently, and was pronounced [mɔt] (another one is *dot*, which eventually became feminine). The remaining two words, *accot* and *habillot*, are little used technical terms that probably did not belong to the authors' active vocabulary. The pronunciation they indicate could well be that of some informant.

These dictionaries illustrate a clear progression. At the beginning, word-final O-tensing is practically limited to non-learned words, and has not yet affected learned borrowings which, we recall, tended to be invariable in the plural. In Landais (1834) and Nodier (1836), the phenomenon has affected most of the non-learned, but only half of the learned words. In the *Dictionnaire des dictionnaires* (1837), virtually all non-learned, and a very large proportion of learned words show final [o]. Finally, in Féline (1851) and Hatzfeld & Darmesteter (1890–1900), the residual survivors with final [ɔ] are almost exclusively learned borrowings and adverbs.

This pattern of lexical diffusion would be difficult to comprehend under the supposition that word-final O-tensing in Modern French results from a regular sound change rather than from a rule generalization. If the former had arisen in the 19th century, transforming word-final [ɔ] into [o], there is no reason why it would have at first modified the singulars of nouns and adjectives with plural ending in [o], and only later invariable words. It should have applied uniformly across the lexicon. The evidence presented here shows

24. Here also there is a marked difference between the beginning and the end of the dictionary. Words beginning with the letter A constitute 53% of the learned forms ending in [-ɔ] (but only 26% in Landais's dictionary, for instance). In any case, the historical change is apparent, since only 33% of the learned words beginning with A have retained [ɔ] in word-final position in the *Dictionnaire des dictionnaires* as compared to 70% in Landais's dictionary.

25. The lexicographer's orthography does not distinguish common and proper nouns; in any case, the common noun *pierrôt* 'kind of bird' is derived from the name.

that one essential factor in the early stages of word-final O-Tensing was the existence of plurals ending in [o]. The first words affected were those to which rule (5) of plural O-Tensing had also applied; ergo, word-final O-Tensing is best explained as a generalization of plural O-Tensing. Two kinds of generalization were possible: (1) loss of the morphological conditions attached to the rule itself and (2) loss of the lexical exceptions. The evidence gathered here shows that both generalizations proceeded simultaneously, and in particular that lexical exceptions to rule (5) may still be exceptions to the new generalized rule (1): in some of our dictionaries the adverbs *trop* or *ab irato* have acquired a final [o], but not yet the noun *concerto*, which still ends in [ɔ].

6. The history of *trop*. The evolution just examined concerns principally words which belong to large syntactic classes. It is not surprising, therefore, that the word *trop*—which is both very common and syntactically isolated—should have had a peculiar development. Although traditionally classified as an adverb, like the learned loanwords *subito*, *presto*, *primo*, *secundo*, *incognito*, *illico*, *ex abrupto*, which also ended in [ɔ] (new formations on this model, such as *mollo* or *reglo*, are too recent to concern us here), its syntactic distribution is quite different. The learned adverbs show the same development as other learned (invariable) nouns and adjectives. The adverb *trop*, however, sometimes keeps its final [ɔ] though all other lexical items have acquired final [o].

Trop with final [ɔ] is found not only in Féline (1851) where word-final O-tensing is almost complete, but also in later dictionaries where the change is otherwise uniform: Michaelis & Passy (1897), Barbeau & Rodhe (1930), and Martinet & Walter (1973). In the first two, the pronunciation [tro] is also given as a possible variant, but the authors clearly favor [trɔ] in all positions. Martinet & Walter (1973) is based on the speech of 17 informants, 3 of whom use [trɔ] in all positions. Walter (1977:41) mentions that “chez les 17 informateurs, on ne rencontre que des réalisations fermées [ø] et [o] dans cette position finale absolue (*feu, mot*).” This is only true if one excludes the exceptional word *trop*. Straka (1981:209, n. 229) claims that “la prononciation [trɔ] de *trop* (Féline; Passy, *Les sons*, § 156, 3; Grammont, p. 21; etc.) n’est pas une survivance d’un ancien [ɔ] ouvert, mais la forme inaccentuée, cf. *vous êtes trop aimable* (avec liaison de -p) en regard de *c’en est trop*.” Straka overstates the case. He correctly interprets Grammont (1914:21), who explicitly distinguishes two pronunciations for *trop*, [trɔ(p)] when it is “unstressed,” i.e., more accurately, “proclitic,” and [tro] when it is “stressed,” or more precisely, at the end of a major syntactic constituent: “à l’[o] de «il en a tr[o](p)» s’oppose l’[ɔ] de «il es tr[ɔ](p) tard, vous êtes tr[ɔ]p honnête».” Féline (1851) and Passy (1932:154), however, give the pronunciation [trɔ], without suggesting that it could not be used in all contexts. Both authors, furthermore, provide independent evidence showing that they really meant to say that [trɔ]

was the normal pronunciation for stressed *trop*. Féline adds at the end of his dictionary a series of exercises where *trop* is always transcribed [trɔp] or [trɔ], even in stressed position. Thus, besides proclitic *trop* in *Trop* [trɔ] *de crédulité mène à la stupidité* and *il est trop* [trɔp] *égoïste*, we also find *Nous crions beaucoup trop* [trɔ] (p. 12 of the exercises). Passy (1932:154) clearly opposed *trop* [trɔ] to other stressed words, among them to *trot* [tro], and only mentions that [tro] is a possible variant. Michaelis & Passy’s dictionary (1897) gives [trɔ] and [tro] as two possible pronunciations, again without suggesting that one was limited to certain contexts. Passy’s exercise book (1897) transcribes *vous aimez trop à rendre service* as [vuz e:me trɔ’ a rūd servis], where *trop* is explicitly marked as stressed [ɔ’] and followed by a pause before the remainder of the utterance. Finally, the fifth edition of Jean Passy & Adolphe Rambeau’s chrestomathy (1926) was revised by Paul Passy, brother of the first author, “en corrigeant toutes les fautes que j’ai pu découvrir” (viii). This book contains the following transcriptions: *c’est trop* (at the end of a sentence) [setrɔ] (32–33), . . . *quand il dépense trop* (also at the end of a sentence) [kāt i depā:s trɔ] (94–95); in both instances, [trɔ] is given in bold characters to indicate stress. Barbeau & Rodhe specify that the variant [tro] can only be found in stressed position, but clearly prefer [trɔ]. The specific examples they give are: *trop grand* [trɔgrā], *trop habile* [trɔpabil], *trop haut* [trɔo], and *j’en ai trop* [zānetrɔ] or [zānetro].

The resistance of *trop* to word-final O-tensing is quite strong. It clearly indicates that rule (1) is still not an exceptionless phonological rule for those speakers who say [trɔ], even if it is entirely isolated. This further supports the analysis of word-final O-tensing as a generalization of a morphophonological rule: *trop* is an exception because it belongs to an invariable category to which plural O-tensing did not apply and it remained an exception because of its high frequency. It is well known that frequently used words are less susceptible to regularization. On the other hand, if word-final O-tensing had resulted from a uniform phonetic shift, it would be much more difficult to explain why it failed to affect a frequent word.

The evolution of the adverb *trop* perhaps also reflects its ability to appear in various syntactic positions, i.e., at the end of a major syntactic constituent (where it may be stressed and followed by a pause) as in *c’en est trop*, but also as a proclitic element before a stressed head as in *trop cher* or *trop important*. All the observations we made before concern *trop* at the end of a major constituent. Elsewhere, its evolution may have been different. We find three typical patterns:

| | end of a major constituent | proclitic before C | proclitic before V |
|--------------|-------------------------------|-----------------------|-----------------------|
| | <i>c’en est trop</i> | <i>trop cher</i> | <i>trop important</i> |
| conservative | trɔ | trɔ | trɔp |
| intermediate | tro | trɔ | trɔp |
| innovative | tro | tro | tro(p) |

In all the descriptions where [trɔ] may appear at the end of a major constituent, it also occurs in the other environments (as noted in Passy's, Féline's, and Barbeau & Rodhe's examples above; this is also true for Martinet & Walter's informants); this represents the original situation. In some varieties of Standard French, which we label "intermediate," *trop* with tense [o] is found only at the end of a major constituent, but with lax [ɔ] elsewhere (Hatzfeld & Darmesteter 1890–1900, Grammont 1914:21, Fouché 1959:75, and four of Martinet & Walter's informants). In the last pattern—which appears to be the most innovative and now no doubt also the most common (it is documented in the response of the remaining 11 of Martinet & Walter's informants)²⁶—*trop* has a tense vowel [o] everywhere.²⁷

7. The phonological status of word-final O-tensing. Against our claim that the development of word-final O-tensing constitutes a genuine case of phonologization, it could perhaps be argued that this rule is still morphophonological.²⁸ Indeed, we argued earlier that it is not completely phonological for conservative speakers, if only because it had a single exception, *trop*, which they pronounce as [trɔ].

Word-final O-tensing for intermediate and innovative speakers satisfies most criteria for phonetically conditioned phonological rules (as defined, e.g., by Hooper 1976:13–22). It is quite regular, transparent, automatic, and productive. We have seen how it applies in word truncation, as in *metropolitain* [metrɔpolitɛ̃] > *métro* [metro], in echo-word formation, as in *dormir* [dɔrmir] > *dodo* [dɔdɔ] or [dodo], and in secret languages. The rule is un-suppressible in loans. Most innovative Parisian speakers of French find it very difficult to pronounce *vélo* [velɔ] with a final lax vowel, even after considerable prompting.²⁹

26. Some of them appear to use both the intermediate and innovative patterns.

27. Selkirk (1981:228–31[1972]) examines the distribution of [o] and [ɔ] in factitious adjective-noun constructions such as *sot ami* and *sot film*. As she admits, they "may not all be normal" (280, n. 17). Actually, the data on which this analysis is based—often repeated in subsequent studies—appear to be incomplete and somewhat misleading (cf. Tranel 1981:270, 1986:295 and Morin 1987:827–28).

28. A caveat is in order here. If one accepts Klausenburger's (1979:32) contention that "every allomorphic variation, by definition, includes some morphological conditioning, *always*," then any rule—even a true phonetically conditioned rule as defined by Hooper (1976:14)—responsible for allomorphic variations necessarily has some "morphological conditioning, inherent in allomorphy" (Klausenburger 1979:31). The fact that word-final O-tensing could "also function as a morphophonological rule of gender in pairs like *sot/sotte* and *idiot/idiote* today," as suggested by Klausenburger (personal communication) would not thus necessarily preclude it from being a phonetically conditioned rule. Morin (1983:140–43, 153–54 n. 13) prefers a suppletive analysis of such pairs.

29. Conservative speakers appear to be quite able to use [ɔ] in word-final position on demand. On one occasion, a conservative informant we interviewed realized that *trop* was the only word he could think of with a final [ɔ]. He then remarked on a supposed correspondence between sound and spelling in French, claiming that words ending in *-ot* such as *sot*, *trot*, or *gigot* should "normally" be pronounced "[sɔ], [trɔ], [ʒigɔ]" (his spontaneous rendition) rather than "[so], [tro], and [ʒigo]."

The way we formulated word-final O-tensing with a constituent bracket to represent a word-boundary makes it a sandhi rule in Hooper's model, i.e., a rule "intermediate between P-rules and MP-rules" (1976:17), but not a true phonetically conditioned rule which can only refer to phonological features, and in particular to "phonological boundaries" such as "syllable boundary and pause boundary" but not to "word boundary" (14). It is clear that word-final O-tensing is not really sensitive to phonetic pauses. Speakers are indeed capable of uttering a [ɔ] before a pause, as long as it occurs within a word. Thus, when asked to syllabify carefully a word like *vélocité*, they say *vé . . . l[ɔ] . . . ci . . . té*, even though a long pause separates each syllable. Indeed, one way to teach them to say [velɔ] for *vélo* is to tell them to stop after the second syllable of *vélocité*. Since word-final O-tensing is sensitive only to lexical boundaries, it constitutes, as noted above, a sandhi rule in Hooper's model. The development of a sandhi rule out of a morphophonological rule is **nonetheless** a phonologization which should be impossible. Recall her statement, cited at the end of section 4, that "theoretically possible changes [other than the 'typical progression of rules'] never occur."

8. The evolution of word-final O-tensing. The passage of plural O-tensing (repeated below as 8) to word-final O-tensing (repeated below as 9) is a development apparently restricted to the lexicon. Plural O-tensing was a lexical rule which applied to nouns and adjectives independently of their syntactic environments, and so is word-final O-tensing for innovative speakers of Standard French.

$$(8) O \rightarrow [+tense]/\text{---}]_{N,A [+plur]}$$

$$(9) O \rightarrow [+tense]/\text{---}]$$

Rule (9) is also lexical for conservative speakers, *trop* being simply an exception. What, however, is its status in the grammar of intermediate speakers, i.e., those who pronounce *trop* as [trɔ] at the end of a major constituent and [trɔ(p)] in proclitic position, e.g., in *trop cher* or *trop important*? One may propose that the underlying representation of *trop* in their grammar contains a lax /ɔ/ which undergoes a post-lexical rule of O-tensing sensitive to the syntactic environment.

Yet the grammar of intermediate speakers also contains a lexical rule of word-final O-tensing which applies to all words except *trop*, independently of the syntactic context. For instance, word-final [o] does not alternate with [ɔ] when unstressed and followed by an enclitic as in *cet idiot-là*, pronounced [setidjola] and not *[setidjɔla], even though [ɔ] is attested in *idiote* [idjɔt] and *idiotie* [idjɔsi]. In other words, if their grammar contained a rule of O-tensing sensitive to syntax, it would apply only to the word *trop*. The grammar would be simpler if we assumed a lexical split, such that *trop* has several variants: (1) proclitic /trɔp/ and /trɔ/, the latter being lexically marked

as an exception to word-final O-tensing,³⁰ and (2) tonic /tro/ elsewhere. Such lexical splits are not uncommon in French, cf. the pronoun *le* which is /lə/ with a deletable vowel when proclitic as in *tu le formes* [tyl(ə)fɔrm], but /lə/ with a stable vowel when enclitic as in *dis-le fort* [dilœfɔr]; *[dɪlfɔr] would be ungrammatical.

To explain the change from conservative to intermediate dialects, one cannot simply argue that *trop* lost its exceptional status in the grammar, as this would generalize [tro] to both proclitic and tonic variants. The first speakers of the intermediate dialects must have assumed that proclitic and tonic [tro]'s of conservative dialects were somehow different though phonetically similar, as they generalized rule (9) only to the latter. The innovative dialects represent a further step in generalization.

Word-final O-tensing also extended to forms not normally analyzed as words, which we will call here "quasi-adjectives." Traditional descriptions classify them as prefixes; they include *pseudo*, *micro*, *macro*, *crypto*, *co*, etc. They are syntactically and semantically close to prenominal adjectives, and, like some of them, do not occur in predicate constructions, e.g., *un pseudo-agent* 'a pseudo-policeman' is normal but not **cet agent est pseudo*. The adjective *ancien* 'former' has the same syntactic property: *un ancien agent* 'a former policeman' is grammatical but not **cet agent est ancien* 'this policeman is former,' unless the adjective means 'old'. Furthermore quasi-adjectives may be followed by a socially stigmatized plural liaison [-z], e.g., in *des pseudo-z-agents*, *des micro-z-ordinateurs*, *les co-z-accusés*; compare the socially acceptable liaison in *des ancien[z]-agents* 'former policemen'. Many innovative speakers thus distinguish *micro* with a lax [ɔ] when it is an ordinary prefix, as in *microscope* [mikrɔskɔp] (a 'microscope' is not some kind of 'small scope'), and a tense [o] when it is a quasi-adjective, as in *microspore* [mikrospɔr]. The same distinction is found between *cryptogame* [kriptɔgam] and *cryptocommuniste* [kriptokɔmynist], or between *pseudonyme* [psødɔnim] and *pseudo-prophète* [psødɔprɔfɛt]. O-tensing in quasi-adjectives probably results from an extension of word-final tensing to smaller units within the word. The fact that it does not apply uniformly to all prefixes indicates that they do not have the same status in the grammar. These differences can be associated with specific internal structures, e.g., *cryptogame* [kriptɔ+gam]_N vs. *cryptocommuniste* [[kriptɔ] [kɔmynist]_N]_N (cf. Chomsky & Halle 1968: 364–71, who propose three different word-internal morpheme boundaries). Rule (9) will only apply in the second case where underlying /ɔ/ is followed by a constituent bracket. More generally, Walter (1976: 258–70) notes a tendency to use [o] at the end of other prefixes, and not only quasi-adjectives, "lorsque le préfixe est senti comme une unité de sens indépendante," as in *bronco-pneumonie* or

30. We assume here that proclitic *trop* has two suppletive allomorphs: /tro/ before consonant and /trɔp/ before vowel (Morin 1986b: 193–94). For a summary of other analyses of liaison and [ɔ] ~ [o] alternations, mostly in factitious constructions, cf. Tranel (1986); none of them, however, is directly concerned with *trop*, nor with the absence of [ɔ] ~ [o] alternations before enclitics, as in *cet idiot-là*.

nitrocellulose; this tendency, however, may be inhibited by other factors; in particular, some specific stems such as *-mètre*, *-logie*, *-gène*, as in *audiomètre*, *ébulliomètre*, *gazomètre*, *manomètre*, *pifomètre*, *christologie*, *climatologie*, *lexicologie*, *nosologie*, or *allucinogène*, favor the usage of [ɔ]. The generalization of [o] at the end of such prefixes, as in the case of quasi-adjectives, may reflect the internal structure of the words in which it is attested. Speakers who have retained the historical [ɔ] in such derivatives, e.g., in [kriptɔkɔmynist] or *chimiothérapie* [ʃimjɔterapi], do not necessarily interpret their internal lexical structure in a markedly different way from speakers who use the innovative [o]. Rather, they have preserved rule (9) in its original form, the application of which is limited to actual word-final position.³¹

9. **Conclusion.** Word-final O-tensing is not the result of a regular sound change. Rousselot & Laclotte proposed that it represents an extension of the plural of nouns and adjectives. This conjecture is fully justified if we interpret it as a generalization of plural O-tensing. The passage of plural O-tensing to word-final O-tensing constitutes the phonologization of a morphophonological rule, a development ruled out by Hooper (1976:91). Plural O-tensing was restricted to words belonging to specific syntactic categories and having specific morphological markings; furthermore, it had many lexical exceptions. The modern rule of word-final O-tensing for most modern speakers (those we have called innovative) is now a completely regular sandhi (as defined in Hooper's model), very similar to many phonetically conditioned rules. We are left with no doubt that the evolution examined here is a genuine example of a change in which a morphophonological rule was progressively stripped of its morphological and lexical conditioning, so as to become maximally general on the phonological level. We suspect that close study of other apparently regular sound changes might reveal a similar pattern, i.e., phonologization of a morphophonological rule through progressive simplification.

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31. Lexical phonology (Kiparsky 1982, Mohanan 1986) distinguishes several strata in the lexicon for word-formation and phonological rules. In this model, one could distinguish at least three levels for French: (1) type-1 affixation (*micro-* in *microscope*, and before stems such as *-mètre*), (2) type-2 affixation (*nitro-* in *nitrocellulose*), compounding (*bronco-pneumonie*), and quasi-adjectives, and (3) final-lexical. The recent evolution of rule (9) could thus be described as follows: originally restricted to level (3), as it still is for some speakers of Standard French, it was eventually extended to level (2), but not to level (1). More detailed studies are required to account for the fact that in its passage from level (3) to level (2), rule (9) probably did not apply *en bloc* to all relevant forms.

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