Morphology (2016) 26:477–509
DOI 10.1007/s11525-016-9287-2

The gender assignment pattern of French nouns

Selection and allomorphy

Radwa Fathi[1] · **Jean Lowenstamm**[2]

Received: 8 April 2015 / Accepted: 9 March 2016 / Published online: 6 April 2016

Abstract Gender exponence in underived French nouns is particularly opaque. In this paper, we identify two subsystems of gender assignment: monogendered nouns, bi-gendered nouns; we show what they share and where they diverge. We show how the notorious floating final consonants of the language are handled in each subsystem for purposes of gender exponence. Our analysis and proposals develop in two steps: (a) we elaborate on the internal structure of $\sqrt{}$P, arguing that it is more richly articulated than had been assumed in previous work; (b) we propose that a gender feature sitting on *n* probes into its complement $\sqrt{}$P for valuation. Our proposal opens a range of selectional options of $\sqrt{}$P by *n*. These selectional options along with the probing device they feed, are shown to account for the French evidence.

Keywords Gender · French · Root phrase · Probing · Distributed Morphology · Nouns · Floating consonants

1 Introduction

Our objective in this paper is twofold. On the one hand, we want to elucidate the pattern whereby gender is assigned to French nouns. On the other hand, we want our account of the morphosyntax of gender to directly feed a natural interface scenario with phonology. Embick (2010) notes that "research in Distributed Morphology is more oriented towards syntax, [...]". We concur with Embick's understatement: the ultimate credibility of the framework may be partly bound to its ability to interface with a non *ad hoc*, non-mechanical phonological component.

✉ J. Lowenstamm
watsonmeldin@gmail.com

1 LLING, chemin la Censive du Tertre, BP 81227, 44312 Nantes Cedex 3, France

2 LLF, Case Postale 7031, 5, rue Thomas Mann, 75205 Paris Cedex 13, France

Embick (2010, 2014, 2015) forcefully argues that (phasal) cycles are key to a successful deployment of phonological operations. While we do not dispute Embick's theses, we propose in this paper that smaller domains than those defined by cycles are also necessary. We argue that these necessary subdomains can be defined in terms of the internal structure of the root phrase. The articulation of $\sqrt{P}$ opens a number of options for its selection by *n*. Depending on what root phrase configurations are selected, selection culminates in the production of pairs of nouns or singleton nouns. Pairs of nouns feed a probing mechanism whereby a gender feature on *n* seeks valuation inside its complement root phrase. Systematic gender assignment ensues. Singleton nouns fail to feed the probing mechanism, in which case gender is assigned in arbitrary fashion. The testing ground for our proposals will be the famous (and rare) phonological phenomenon of French 'floating' consonants so tightly bound to the expression of Gender and the realization of Agreement.

A minor concern of ours is the place of French with respect to typological generalizations such as have been brought to light in studies of universal scope, e.g. Corbett (1991) or Kramer (2015). The narrow scope of our paper will make it possible to address this issue in more detailed fashion than is possible in the framework of projects of wider coverage. For instance, we will see that French displays surface evidence of accommodating both natural and grammatical gender. As such, it might be viewed as a hybrid system. We intend to establish that in reality French squarely falls on the side of grammatical gender, natural gender merely riding the former.

In this paper, we attempt to work out a complete fragment of the grammar of French for the data considered therein. Because it is the first such attempt at simultaneously confronting the challenging morphosyntactic and phonological French evidence in a non-lexicalist framework, we have had in many cases to refine extant analytical tools and in some cases even to forge our own tools. We have made every effort to indicate, in each case, what was novel and what was not.

In Sect. 2, we present the data and define the descriptive and analytical challenges we will confront. In Sect. 3, we lay out our analytical tools and theoretical assumptions. In Sect. 4 we offer an account of gender assignment to underived nouns. Section 5 is devoted to a discussion of directly relevant efforts conducted in the same general framework. Our results are recapitulated in a brief conclusion.

2 The facts, the problem

In this introductory section, we have broken down the evidence into seven blocks which we review and discuss in turn.[1] In our discussion of the evidence, we will be referring to *one* vs. *two-gendered* (*underived*) *nouns*. One-gendered nouns are nouns which exist in one version only, either masculine or feminine. Two-gendered nouns are pairs of nouns sharing the same radical makeup and differing in gender only. By that definition, *lə kɔʁal* 'choral' and *læ kɔʁal* 'choir' are two-gendered nouns. By the same definition, *lə kænæʁ* 'duck' and *læ kæn* 'female duck', or *lə mætɛ̃* 'morning' and

[1] We will make use of two graphic conventions. First, because French spelling does not reflect pronunciation, all our examples are transcribed. Second, the gender of nouns may be indicated explicitly, e.g. 'masculine', 'feminine'; or by means of the definite article: *lə* (masculine) or *læ* (feminine).

læ mætine 'forenoon' are not two-gendered nouns: masculine *kænæʁ* involves one more morpheme than its feminine counterpart *kæn* (/kæn-æʁ/ vs. /kæn/); and feminine *mætine* involves one more morpheme than its masculine counterpart (/mætin-e/ vs. /mætin/). As well, *lə vis* 'vice' and *læ vis* 'screw' are not two-gendered nouns as they involve different (albeit homophonous) roots.

We will show that the possibility of identifying generalizations about gender assignment is directly linked to the one vs. two-genderedness distinction. Under two-genderedness, information about sex can be conveyed and correlations with phonology can be established. Under one-genderedness, idiosyncrasy and arbitrariness prevail.

2.1 Sound structure

We can see with the pairs of homophonous nouns in (1) that sound structure in no way affects the potential of each form of being the *signifiant* of either a masculine or a feminine noun.[2]

(1)

Masculine	Feminine	Masculine	Feminine
vis 'vice'	vis 'screw'	kɔl 'collar'	kɔl 'glue'
fil 'thread'	fil 'line, queue'	tuʁ 'turn'	tuʁ 'tower'
fwa 'liver'	fwa 'faith'	livʁ 'book'	livʁ 'pound'
sɛl 'salt'	sɛl 'saddle'	bæʁ 'pub'	bæʁ 'bar'
sɔl 'ground'	sɔl 'sole (fish)'	bæl 'dance'	bæl 'ball'

2.2 Denotation

Our second block illustrates how denotation is also irrelevant to the assignment of gender to inanimates. For instance, *sɔlɛj* 'sun' and *lyn* 'moon' are masculine and feminine respectively, but it could have been just the reverse. That denotation plays no role in the assignment of inanimate nouns to a specific gender is only expected, but we nevertheless document its irrelevance in (2).

(2)

Masculine	Feminine	Masculine	Feminine
sɔlɛj 'sun'	lyn 'moon'	ɔseã 'ocean'	mɛʁ 'sea'
twa 'roof'	pɔʁt 'door'	ʒuʁ 'day'	nɥi 'night'
klu 'nail'	vis 'screw'	sã 'blood'	lɛ̃f 'lymph'
pje 'foot'	mɛ̃ 'hand'	flœv 'stream'	rivjɛʁ 'river'
sabl 'sand'	tɛʁ 'dirt'	ʒy 'juice'	sos 'sauce'

2.3 Wavering gender

Further evidence documenting the irrelevance of denotation and sound structure comes from the fact that it is not always clear what the gender of a noun is. For

[2]Space limitations prevent us from discussing the claim in Tucker et al. (1977) to the effect that generalizations connect the phonetic profile of a noun and its gender, but cf. Sect. 2 of Lowenstamm (2012) for a brief rebuttal and Fathi and Lowenstamm (in preparation) for fuller discussion.

instance, for many speakers, the inanimate nouns in (3) could be either masculine or feminine.

(3) *tãtækyl* 'tentacle', *emisfɛʁ*, 'hemisphere', *petæl*, 'petal', *æprɛmidi* 'afternoon', *eflyv* 'exhalation', *bælystʁ* 'baluster', *kapʁ* 'caper', *ɔæzis* 'oasis', *æšɛlɛm* 'city council apartment', *klɔp* 'fag, smoke', *tæf* 'puff of cigarette', *šjɔt* 'toilet, loo (slang)', *tik* 'tick'

2.4 Loans

Likewise, we note how Québec French and European French have made different decisions as to whether the loans in (4) should be masculine or feminine. We see such cases as further documenting the point made in Sect. 2.3.

(4)

	Québec French	European French
gang	Feminine	Masculine
patch	Feminine	Masculine
party	Masculine	Feminine
job	Feminine	Masculine
toast	Feminine	Masculine
sandwich	Feminine	Masculine

Up to this point, the evidence we have reviewed seems to suggest that gender assignment is entirely arbitrary. Our next block documents a situation in which the economy of gender suddenly becomes systematic. It characteristically involves two-gendered nouns.

2.5 Animacy, sex

Natural gender is one possible criterion for gender assignment. In (5), we provide examples of French nouns whose gendering reflects biological sex.

(5)

Masculine	Feminine
lə kɔlɛg 'male/generic colleague'	læ kɔlɛg 'female colleague'
lə kæmæʁad 'male/generic comrade'	læ kæmæʁad 'female comrade'
lə ʁəbɛl 'male/generic rebel'	læ ʁəbɛl 'female rebel'
l(ə) æʁbitʁ 'male/generic umpire'	l(æ) æʁbitʁ 'female umpire'
lə šɛf 'male/generic boss'	læ šɛf 'female boss'
lə pʁɔf 'male/generic teacher'	læ pʁɔf 'female teacher'

We acknowledge the existence of a regularity whereby the feminine nouns in (5) refer to females whereas the masculine nouns refer to males or are interpreted generically. Moreover, when speakers are presented with pairs of nonce words, e.g. *lə tõbæl/læ tõbæl* or *lə ʁadig/læ ʁadig* and they are told that such nouns denote humans or sexed animals, they can immediately tell which is female, male or generic. Any account of French must make room for what is clearly a hard fact about what speakers know.

Yet, acknowledging what precedes does not amount to saying very much, for most if not all two-gender languages will make some room for the expression of sex (cf. Corbett 1991 and references therein). Of interest to us is exactly *how much* room French makes for such meaningful information as sex and whether the data in (5) is enough to view the system as sex based. Of course, one of our assumptions has to be made explicit: in order for the discussion to have content, it has to be the case that a language implements natural gender *or* grammatical gender, not a mix of both. Naturally, if a language can be assessed as implementing grammatical gender, a subsidiary task will be to explain how information about sex can nevertheless be conveyed in systematic fashion. While the evidence in (5) is critically relevant to deciding to which of the two types French belongs, it says nothing in and of itself of its own place and importance within the system. The only way to get some grip on the question is to compare French with a clear case of a system built on the expression of natural gender.

What can we expect of a two-gender language implementing natural gender? We expect the grammar to make its choice transparent. For natural gender to be transparent, it has to be the case that sex is the only source of bi-genderedness. Allowing for the odd exception, three consequences follow: (a) information about sex will not be distributed unsystematically, indeed must be implemented on *all* animates in the form of bi-genderedness, (b) inanimates can *never* be bi-gendered, (c) inanimates must default in regular fashion to *one* (crucially not to either) gender. As Kramer (2015) shows, Amharic is precisely of the type just described: except for a handful of animal species and inanimates which are uncharacteristically feminine, we can be confident that a feminine noun will denote a female and that a noun denoting a female will be feminine, everything else defaulting to masculine.

It is against this background that we review the rest of the evidence in this section. For purposes of deciding where French belongs, the important points are in (6):

(6) In two-gender languages implementing natural gender,

i. animates cannot fail to be bi-gendered
ii. inanimates cannot be bi-gendered
iii. inanimates have identical gender

We proceed to show that French does not pattern along the lines of (6). First, we saw in Sects. 2.1 and 2.2 that inanimates do not default to one of the two genders. Rather, inanimates are as likely to be feminine as masculine. We also saw in Sect. 2.3 that in some cases speakers can even accept either gender for the same noun; or, in Sect. 2.4 that the gender of a loan may vary across dialects. Evidently, French does not manifest the property in (6iii).

Second, bi-gendered nominals are not confined to sex differentiable animates as is the case in Amharic. The existence of two-gendered inanimates documented in (7) and further down in (14) leads us to conclude that French does not manifest the property in (6ii) either.

(7)

Masculine	Feminine
lə kɔʁal ‘choral’	læ kɔʁal ‘choir’
lə kɔkæ ‘Coca Cola’	læ kɔkæ ‘coca’
lə bæskɛt ‘basketball’	læ bæskɛt ‘sneaker’
lə pãdyl ‘pendulum’	læ pãdyl ‘clock’
lə kæʁtuš ‘cartouche’	læ kæʁtuš ‘cartridge’
lə fon ‘faun’	læ fon ‘fauna’

Third, consider the nouns in (8). They typically denote human activities or attributes, yet they rigidly remain one-gendered. Nouns of that type do not exist in Amharic.

(8)

Masculine	Feminine
lə ʒeni ‘male or female genius’	læ viʒi ‘male or female look-out’
lə tiʁã ‘male or female tyrant’	læ sãtinɛl ‘male or female sentry’
l(ə) ɛ̃dividy ‘male or female individual’	læ bʁyt ‘male or female brute’
lə mɔdɛl ‘male or female model’	læ pɛʁsɔn ‘male or female person’
lə pilɔt ‘male or female pilot’	læ sæʒfæm ‘male or female midwife’
lə kæpitɛn ‘male or female captain’	læ vədɛt ‘male or female star’

In (9a,b), we show how the nouns of (5) adjust to the gender of their referent. By contrast, the nouns of (8) are incapable of similar flexibility, as shown by the ungrammatical instances of agreement on the determiner in (9e) and (9h).[3] We take this to mean that French does not have property (6i).[4]

(9)

a. mõ fʁɛʁ et ɛ̃ ʒœn kɔlɛg	‘my_{masc} brother is a_{masc} young colleague’
b. mæ sœʁ et yn ʒœn kɔlɛg	‘my_{fem} sister is a_{fem} young colleague’
c. mõ fʁɛʁ et ɛ̃ ʒœn medsɛ̃	‘my_{masc} brother is a_{masc} young doctor’
d. mæ sœʁ et ɛ̃ ʒœn medsɛ̃	‘my_{fem} sister is a_{masc} young doctor’
e. mæ sœʁ et *yn ʒœn medsɛ̃	‘my_{fem} sister is a_{fem} young doctor’
f. mæ sœʁ et yn ʒœn viʒi	‘my_{fem} sister is a_{fem} young lookout’
g. mõ fʁɛʁ et yn ʒœn viʒi	‘my_{masc} brother is a_{fem} young lookout’
h. mõ fʁɛʁ et *ɛ̃ ʒœn viʒi	‘my_{masc} brother is a_{masc} young lookout’

Note moreover that a large number of nouns denoting animals are monogendered. Again, Amharic has no such nouns.

[3] ɛ̃ and *yn* are the respective versions of the masculine and feminine singular indefinite article.

[4] A reader notes that ‘in many languages (including French), animate nouns with a fixed gender unrelated to natural gender like those in (8) are much, much rarer than those in (5), blunting the force of this evidence’. We see things differently. While the examples in (8) may illustrate a numerically ‘minor’ pattern (though many more examples could have been adduced), no clear notion is available of what counts as critical mass in the relevant respect. In fact, it is often the case that minor patterns crucially determine the selection of an analytical option (cf. our discussion of Kramer (2015) in Sect. 4). Finally, we note that the pattern under discussion figures prominently both in descriptive discussions, e.g. Grevisse and Goosse (2007) to mention only one, and recent theoretical elaborations as well, e.g. Atkinson (2015), Ihsane and Sleeman (2016), and Kramer (2015).

(10)

Masculine	Feminine
lə kãguʁu 'kangaroo'	læ jɛn 'hyena'
lə leɔpæʁ 'leopard'	læ ʒiʁaf 'giraffe'
lə sɛʁpã 'snake'	læ tɔʁty 'turtle'
lə kɔʁbo 'crow'	læ suʁi 'mouse'

The nouns in (10) are rigidly locked in one-genderedness as shown by the pronominal reference they enforce and disallow. The subject pronouns *il* and *ɛl* (italicized in (11)) are masculine and feminine, respectively. By hypothesis, George and Vanessa in the examples in (11) are male and female pets, respectively. The sex of the pet has no impact on the selection of the pronoun.

(11) a. vwælæ mæ jɛn/ʒiʁaf /tɔʁty /suʁi… **il/ɛl* sæpɛl ʒɔʁʒ
'Here is my hyena/giraffe/turtle/mouse… *he/she is called George

b. vwælæ mõ kãguʁu/leɔpæʁ/sɛʁpã/kɔʁbo… *il/*ɛl* sæpɛl vænɛsæ
'Here is my kangaroo/leopard/snake/crow…he/*she is called Vanessa

When the behavior of French nouns is examined in the light of a comparison with Amharic, major differences arise. If Amharic implements natural gender, French clearly does not. It will be incumbent on us to articulate a proposal as to how French allows information about sex to surface nevertheless.

We now turn to a formal correlation between gender assignment and phonological behavior. We will see that both animates and inanimates participate in this subsystem. This correlation is the only exceptionless generalization of the gender assignment pattern of the language.

2.6 Full systematicity

In a set of nouns, a final consonant, absent from the masculine, is realized in the feminine (bold underscored italics in (12b,d)).[5]

(12)

a. Masculine		b. Feminine	c. Masculine		d. Feminine
ša	'cat'	šæ***t***	ʁənæʁ	'fox'	ʁənæʁ***d***
læpɛ̃	'rabbit'	læpi***n***	ljõ	'lion'	ljɔ***n***
sɛʁ	'serf'	sɛʁ***v***	lu	'wolf'	lu***v***
sælo	's.o.b.'	sælɔ***p***	fʁã	'Frank'	fʁã***k***

For that pattern, a clear correlation between the phenomenon just documented and the gender system can be established. Gender assignment becomes fully predictable, as *per* the generalization in (13).

(13) The short version (i.e. with the latent or "floating" consonant) *of a two-gendered noun* can only be Masculine, the long version can only be Feminine.

[5] In French, the latency of final {*n*, *m*, *ɲ*} is manifested in the form of the nasalization of the preceding vowel.

Alternations such as are displayed in (12) are not restricted to sexed species. Indeed, the phenomenon is of a strictly formal nature. In (14), we give examples that are formally similar to those in (12), but where animacy is not involved at all.

(14)

Masculine	Feminine
gʁɛ̃ ‘grain’	gʁɛ***n*** ‘seed’
glã ‘acorn’	glã***d*** ‘gland’
bʁa ‘arm’	bʁa***s*** ‘breaststroke’
flo ‘tide’	flɔ***t*** ‘navy’
pætɛ̃ ‘friction pad’	pæti***n*** ‘patina’
pwɛ̃ ‘fist’	pwæ***ɲ*** ‘handgrip’
ʁõ ‘circle’	ʁõ***d*** ‘round dance’

However, the picture would not be complete without the seventh block. We will see that while the generalization we just discussed is exceptionless where pairs are involved, it collapses under one-genderedness.

2.7 One-gendered nouns with a final floating consonant

The data in (15) corroborates the important proviso we italicized in (13): two-genderedness is a crucial part of that generalization. That is, the mere presence of a floating consonant at the end of a noun is not enough to make it Masculine: if the noun is one-gendered, it may equally well be Masculine or Feminine. We provide several examples of such nouns, masculine or feminine, in (15a,c) along with the derivatives evidencing the floating consonant (underscored and bold italics in (15b,d).

(15)

a. Masculine Noun	b. Derivative	c. Feminine Noun	d. Derivative
vã ‘wind’	vã***t***ø ‘windy’	dã ‘tooth’	dã***t***æl ‘dental’
sã ‘blood’	sã***g***inolã ‘bloody’	fo ‘scythe’	fo***š***e ‘mowed’
tʁwa ‘three’	tʁwa***z***jɛm ‘third’	kʁwa ‘cross’	kʁwa***z***e ‘crossed’
ʁɛ̃ ‘kidney’	ʁɛ***n***æl ‘renal’	tu ‘coughing’	tu***s***e ‘coughed’
fõ ‘bottom’	fõ***d***mã ‘foundation’	fɛ̃ ‘end’	fi***n***æl ‘final’
sizo ‘chisel’	siz***l***e ‘chiseled’	fɛ̃ ‘hunger’	æfæ***m***e ‘famished’
nõ ‘name’	nɔ***m***inæl ‘nominal’	po ‘skin’	pə***l***e ‘skinned’

Consequently, we paraphrase the generalization in (13) in the form of (16).

(16) A noun demonstrably endowed with a floating consonant will with certainty be Masculine, *iff* there exists a Feminine noun from the same root displaying that consonant.

The ingredients of our problem can thus be defined as in (17).

(17)
i. Why is two-genderedness so crucially involved in the only cases where generalizations are possible? Alternatively: why does one-genderedness inevitably give rise to arbitrary gender assignment?
ii. What is the difference between one and two-genderedness in the first place?

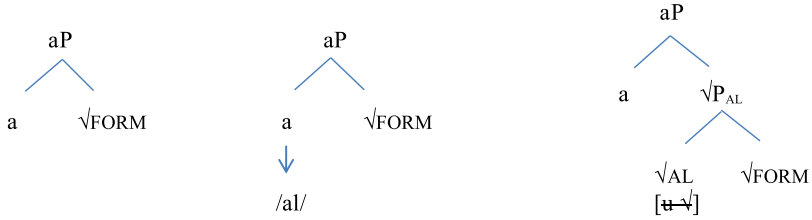
We can now turn to our framework.

3 Descriptive and analytical tools

3.1 Roots and clusters of roots

Following Borer (2005), Embick (2010, 2015) and references therein, we accept the existence of an inert lexicon comprising a list of roots. Only upon categorization by *n*, *a*, or *v* can roots become involved in the operation of the grammatical machine. This is illustrated in (18a). Root √FORM has been selected by *a*, and the ingredients of adjective *formal* are all in place. Only, at a late point in the derivation, will *a* 'spell out' as /al/, (18b).

(18) a. b. c.



We take a different view of affixation. We adopt the alternative pursued in Cremers et al. (2014), De Belder (2011), De Belder et al. (2015), Faust (2013), Faust and Hever (2010), Faust and Silber-Varod (2014), Lowenstamm (2011, 2013, 2015), Nevins (2015) whereby affixes are construed as roots themselves, 'bound' roots heading a complex root as in (18c). Their boundedness is encoded by the presence of an uninterpretable feature [u √] which requires them to merge a complement root. Only upon checking that feature, will the bound root project at the phrasal level and only then will further operations be allowed to take place. Thus, in (18c), √AL having checked its feature, the resulting √P can be selected by *a*.

Following Kihm (2005), we assume that roots cannot be selected until they have projected up to the phrasal level. The relevant statement in the context of this paper appears in (19).

(19) *n* selects √P

Under the second approach to affixation, the relationship whereby √AL *must* select a complement root is of the classical head/complement type. Now, if roots can combine as just described, it is expected that further relationships between roots will be identified; for instance merger of a root into the specifier position of another root or merger of a root as the adjunct of another root. The latter relationship, adjunction, lies at the heart of our proposal, as we now demonstrate.[6]

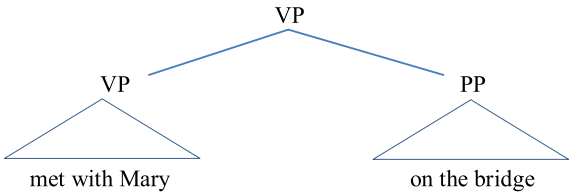
[6]With the remarks that follow on the adjunction of syntactic constituents, we make no claim to originality. Those remarks are merely intended as background for the presentation of our proposal.

3.2 Adjunction

Consider (20). (20b) includes a PP adjunct absent in (20a). (20b) is represented in (21).

(20) a. Jack met with Mary
b. Jack met with Mary on the bridge

(21)



We will restrict our comments to two classical observations familiar from the vast literature on adjunction. Then, we will show how similar generalizations inform root-to-root adjunction.

A major aspect of adjunction of interest to us here is that adjuncts are not heads. As such, they do not alter the categorial identity of the constituent hosting them. Two consequences follow. First, *the grammaticality of* $[_{VP}[_{VP}\ X][_{PP}\ Y]]$ *entails the grammaticality of* $[_{VP}\ X]$ (of course, the reverse is not true). Second, the distribution of $[_{VP}[_{VP}\ X][_{PP}\ Y]]$ and $[_{VP}\ X]$ is the same. For instance, both (20a) and (20b) occur in, and are barred from, the same environments as summarily documented in (22).

(22) a. Bill knows that/slept while {Jack met with Mary / Jack met with Mary on the bridge}
b. *the/*through/*not

The second aspect of adjunction we are interested in is the restrictive effect of the adjunct on the scope of the predication. Consider the two sentences in (20). Given a set of points in time and/or space at which a meeting between Jack and Mary may have taken place, (20a) says that *Jack met Mary* is true (or false) for at least one member of the set; (20b) says for which member. As such, the adjunct affects the scope of the predication in the manner of an operator of restriction.

This very cursory overview of the impact of an adjunct on the distribution and interpretation of its host will suffice for us to introduce the parallels we see in the organization of the root system.

3.3 Root adjunction, selection

We claim that some roots are associated with a certain property. That property is adjoined to the main root. Because the role of that property is discussed here in the context of a paper on gender assignment to nouns, we call it F (in reference to *Feminine*).[7] First, we discuss the identity and content of F. Then, we will show how its presence determines the range of possible selectional operations.

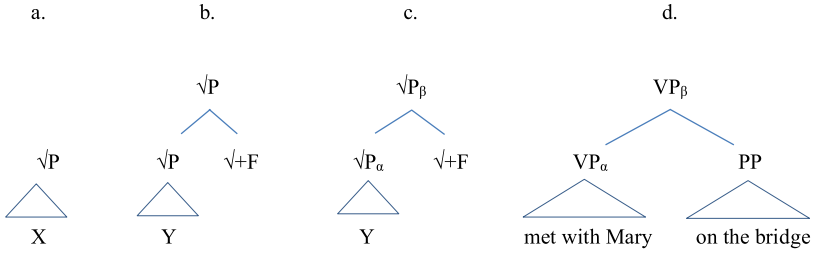
[7]To some extent, calling it F is a deliberate though harmless misnomer because the distribution of the property F denotes is in fact not limited to nouns. Indeed, in Sect. 5 we briefly review its pervasive presence in the agreement system of adjectives in gender and of verbs in number. In Fathi and Lowenstamm (in preparation), we simply call it Φ. In consequence of the cross-categorial distribution of the property un-

We describe its role and content in analogy with syntactic adjuncts. Much as the interpretation of a verb such as *meet with* requires its association with the set of possible meeting times and places, some roots—we claim—are associated with a certain set, the F set. That set comprises the range of possible values of a feature F, viz. {+F, −F}. In exact parallel to the relationship between verb *meet with* and the adjunct PP above, a member of the F set can be merged as an adjunct to the root. In principle, both +F and −F are possible adjuncts. We submit that French opts for +F.

Because it materially spells out at the interface, we construe the adjunct as a *bona fide* root. Its phonological behavior will be discussed below in Sect. 3.5. At this point, we merely indicate that +F spells out as a light CV templatic chunk and that it carries no phonological features of its own.[8] We note it $\sqrt{}$+F.

In (23a) a root phrase $\sqrt{}$PX is displayed on its own, in (23b) another root phrase $\sqrt{}$PY is modified by the adjunct $\sqrt{}$+F. For the sake of graphic clarity, we call $\sqrt{P}_{\alpha}$ the root projection *not* containing the adjunct and $\sqrt{P}_{\beta}$ the root projection containing it, (23c). Of course, both $\sqrt{P}_{\alpha}$ and $\sqrt{P}_{\beta}$ are headed by the same object (root Y) just as both VP projections in (23d) are headed by the verb.

(23)



We want to emphasize two consequences we attribute to the selectional mechanism. We call the first consequence *transitive* selection of $\sqrt{P}_{\alpha}$. We call the second consequence, *independent* selection of $\sqrt{P}_{\alpha}$.

Transitive selection denotes the fact that selection of a constituent with its adjunct implies the selection of the same constituent *without* the adjunct. This underlies the familiar notion that whatever operations put together the ingredients of *Jack met with Mary on the bridge* also put together the ingredients of *Jack met with Mary* in the process. Thus, when *n* selects (23c), a pair of objects, is thereby inevitably brought into the world of well-formed expressions (24).

(24) $[_{nP}\ n\ [_{\sqrt{P}}\ \sqrt{PX}_{\beta}]] \rightarrow \{[_{nP}\ n\ [_{\sqrt{P}}\ \sqrt{PX}_{\beta}]], [_{nP}\ n\ [_{\sqrt{P}}\ \sqrt{PX}_{\alpha}]]\}$

Put another way, selection of $\sqrt{P}_{\beta}$ carries validation of $[_{nP}\ n\ \sqrt{P}_{\alpha}]$. In a framework in which syntactic operations combine the ingredients of word formation, this can hardly be viewed as a conceptual stretch.

der discussion, no attempt will be made here at speculating on its possible contribution to the interpretation of nouns specifically, cf. Percus (2010) for such an effort.

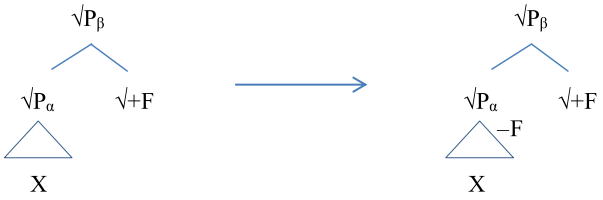
[8] Our proposal that F (or +F) spells out as CV can be viewed in two ways. It can be viewed as a descriptively adequate characterization of the object under discussion. More interestingly, it can also be seen to follow directly from the view that CV is the typical spellout of morpho-syntactic information, cf. Arbaoui (2010), Bendjaballah (2012, 2014), Guerssel and Lowenstamm (1990), Lahrouchi (2001), Scheer (2011, 2012, 2014).

Do non-trivial empirical consequences follow from transitive selection? Specifically, does the transitively selected [$_{nP}$ n [$_{\sqrt{P}}$ $\sqrt{PX_\alpha}$]] inherit properties that would distinguish it from an *n*P not resulting from transitive selection?

We claim that such is the case. The difference we see stems from our interpretation of the generation of a pair of nouns. We submit that when a pair is generated the contribution of the adjunct must be manifested in the form of a minimal difference between the noun including the adjunct in its root system and the noun built without the adjunct. As the feature in the adjunct carries the positive value of the F set, the host is redundantly marked for the other value of the same property, hence −F noted on $\sqrt{P_\alpha}$ in (25b).[9] In our view, the implementation of that difference is directly bound to the transitive character of the selection process itself.

(25) Redundant contrastive marking

a. b.

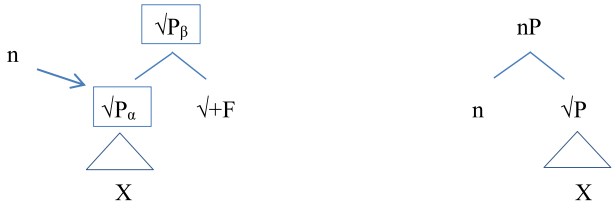


The property inherited by a transitively selected *n*P is indicated in (26a). An *n*P not resulting from transitive selection (26b) lacks that property.

(26) a. [$_{nP}$ n [$_{\sqrt{P}}$ $\sqrt{PX}$, −F]]
b. [$_{nP}$ n [$_{\sqrt{P}}$ $\sqrt{PX}$]]

We now turn to what we call *independent selection*. Since *n* selects $\sqrt{P}$, as per (19), both nodes boxed in (27) are in principle possible selectional targets.

(27) a. b.



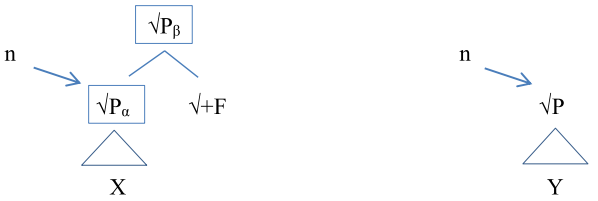
Suppose *n* directly selects the lower phrasal node, ignoring as it were the upper node. This move, *independent selection*, is a logical possibility. It is depicted in (27a). Naturally, we have to ask how independent selection would differ from the other two modes of selection we have considered up to this point, transitive selection and plain selection (27b).

[9] Had the adjunct been unmarked for any value, its mere absence on $\sqrt{P_\alpha}$ would have constituted a minimal difference.

The difference between independent and transitive selection is straightforward: the target of transitive selection is $\sqrt{P_\beta}$. Its consequences—the generation of a pair of *n*Ps differentially marked for F—were just reviewed. Independent selection, by contrast, targets a subconstituent of $\sqrt{P_\beta}$, namely $\sqrt{P_\alpha}$. As selection of $\sqrt{P_\alpha}$ has no transitive consequence (therefore does not trigger differential F marking), a single *n*P results.

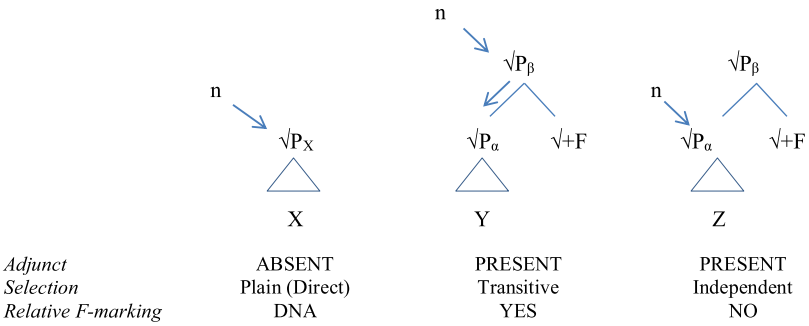
The difference between independent and plain selection is not as straightforward. Both modes of selection have been represented in (28a,b) respectively, and it is apparent that the *internal structure* of the target of independent selection (28a) is undistinguishable from that of the target of plain selection, (28b). The difference, therefore, must be that the former is a subconstituent while the latter is not. The obvious question is: how can the superconstituent make its presence felt in the context of a selectional scenario whose defining feature is precisely that it bypasses the adjunct? This question will be addressed later in this section, then in Sect. 4 when the interface with phonology is dealt with.

(28) a. b.



We conclude this subsection with an overview of the various *selectional schemes* we have been led to distinguish. In the next section, we will review the range of configurations they produce.

(29) a. b. c.



Next, we review our assumptions regarding the interface with phonology.

3.4 A brief point on the input to phonology prior to insertion

When the output of syntax is delivered to phonology, insertion of phonological material takes place. However, entire stretches of the syntactic terminals may remain

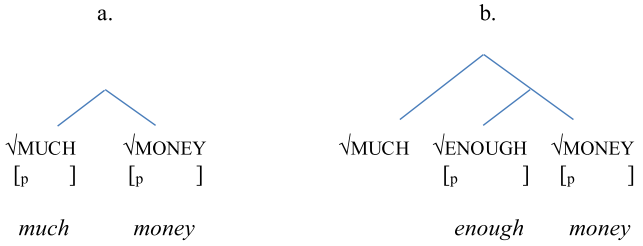
unpronounced. Consider for instance (30a,b). According to Kayne (2010), the difference between (30a) and (30b) involves more than the apparent difference between the quantifiers occurring before *money*. Indeed, Kayne argues that (31) underlies (30a), with an unpronounced **MUCH**.

(30) a. They have enough money
b. They have much money

(31) They have **MUCH** enough money

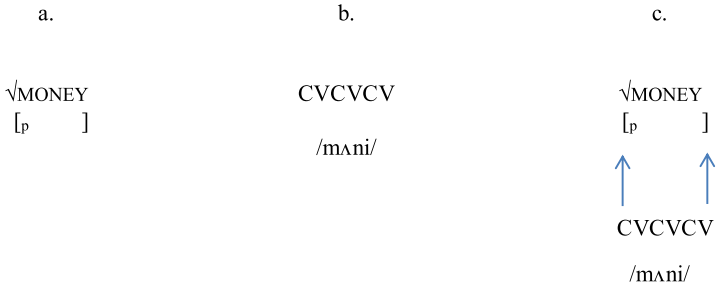
Why MUCH is pronounced in (30b) and unpronounced in (30a) pertains to the implementation of Kayne's program, and we have no specific contribution to make in this respect. Indeed, because we do not deal with (entirely) unpronounced terminals, the issue is orthogonal to the topic of this paper. The scope of our point is much more restricted: *assuming that Kayne's proposal is on the right track*, a minimal distinction must be drawn between those cases when a terminal of the morphosyntactic representation calls for insertion of phonological material and those cases when no insertion takes place. We propose to encode that distinction as shown in (32a,b), where the presence of square brackets labeled *p* (for phonological) indicates the sites where insertion must take place.[10] The absence of square brackets corresponding to √MUCH in (32b) singles it out as an item which will remain unpronounced.

(32)



Moreover, we assume that insertion operates as described in (33). Given the site of insertion for the root √MONEY in (33a) and the corresponding phonological representation in (33b), the match involves the alignment of the edges of (33b) with the edges of (33a), as shown by means of upward arrows in (33c).

(33)

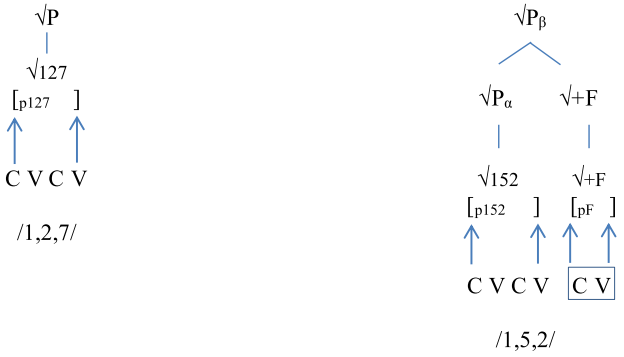


[10] Here and elsewhere in this paper, small upper case expressions denote roots, *not* their associated phonological matrices.

3.5 Root phrases at the interface

In (34), √127 and √152 are hypothetical roots. The former is of the type that does not merge an √+F adjunct. The latter is of the type that does merge an √+F adjunct. By hypothesis, √127, √152, and √+F will be sites of insertion of phonological material. This is indicated by the presence of the p-brackets now indexed so as to trigger insertion of the relevant matrices.

(34) a. b.



Again, the alignment between the edges of the site of insertion and the edges of the phonological representation is indicated with vertical arrows. /1, 2, 7/ and /1, 5, 2/ stand for the segmental equipment of the phonological representations corresponding to roots √127 and √152, respectively. As noted above, it is our claim that √+F spells out as a light CV syllable, boxed in (34b).

In the unmarked case the adjunct will be realized in the position indicated in (34b). That is, its eventual spellout will be concatenated as a suffix to the spellout of its host root, √152 in this case. If the template corresponding to hypothetical root √152 is [CVCV] and the template of √+F is [CV] as we propose, the resulting template will be [[CVCV] + [CV]].

But suffixal concatenation is only one facet of the realization of √+F. French also implements another scenario, which will be seen to account for floating consonants, a very rare phenomenon as we already pointed out. For lack of a better term, we call that second scenario *invasive infixation*. We see the difference between Classical and Invasive infixation as follows. Classical infixation of [CV] into [CVCV] will result in either one of (a) [[CV]CVCV], (b) [CV[CV]CV], or (c) [CVCV[CV]]. In all three cases just reviewed, infixation results in an increase of the size of its host.

Invasive infixation, we claim, has no such additive effect. Rather, the infix, √+F in this case, encroaches on the territory of its host marking the rightmost CV unit as its own, as in (35) where X stands for any number of CV units.

(35) $[_{host}\ XCV] + [_{adjunct}\ ] \rightarrow [_{host}\ X\ [_{adjunct}\ CV]]$

We submit that the two facets of the realization of $\sqrt{}$+F can be subsumed under (36).

(36) $\sqrt{}$+F → /CV/

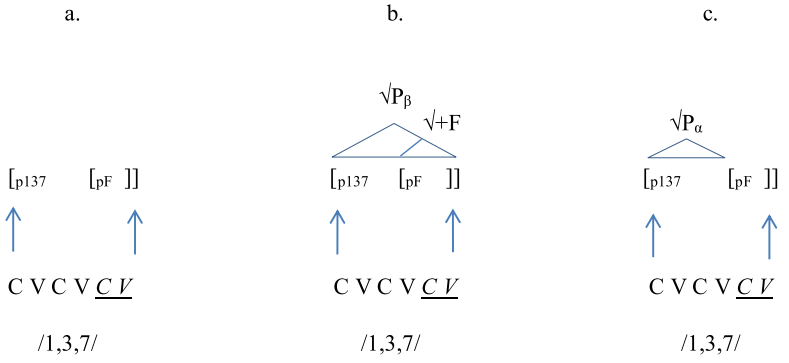
(36) can be construed as an output condition stating that $\sqrt{}$+F *must always be realized* as CV.[11] It can be satisfied in two ways. One way, is in the manner depicted in (34b) above, suffixal concatenation. The other way is as in (37), i.e. by means of invasive infixation. In sum, $\sqrt{}$+F has two positional allomorphs: one is internal to its host, the other external.

We illustrate invasive infixation in (37) with the example of hypothetical root $\sqrt{}$137: rather than being suffixed to its host, $\sqrt{}$+F has invaded it in quasi parasitic fashion. The important consequence is that the site of insertion for $\sqrt{}$137 now has internal structure.

(37) $[_{p137}\ ][_{pF}\ ] \longrightarrow [_{p137}\ [_{pF}\ ]]$

The phonological representation corresponding to $\sqrt{}$137 will align its edges with the edges of the site of insertion in the usual fashion (vertical arrows in (38a)). Of course, the rightmost CV portion of the template (underscored italics in (38)) is now reanalyzed as the domain of the invasive adjunct. The consequence is twofold: (a) the adjunct is internal to the territory of $\sqrt{}P_\beta$, (38b); (b) $\sqrt{}P_\alpha$ being the projection *not* containing the adjunct, its territory comprises the territory of $\sqrt{}P_\beta$ *minus* the territory claimed by $\sqrt{}$+F, (38c).

(38)



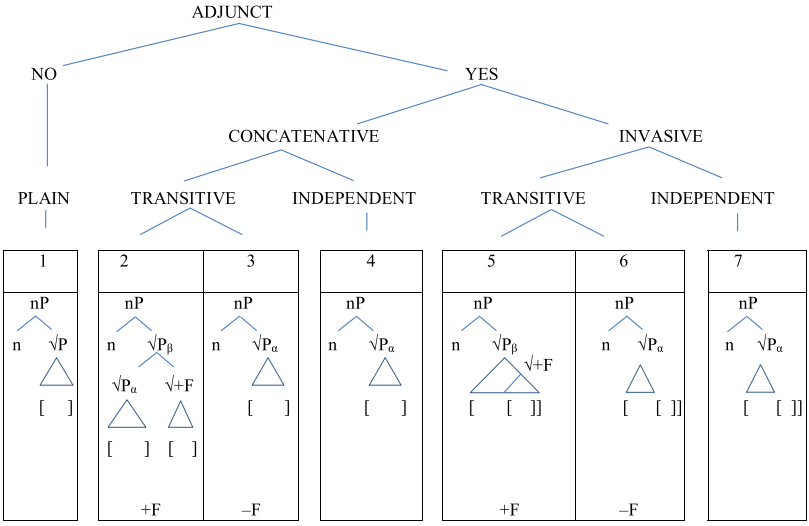
In sum, under 'normal' adjunction, $\sqrt{}P_\alpha$ dominates the entirety of the root's insertion site, as in (34b). Under 'invasive' adjunction, it no longer does. In all cases, whether adjunction is concatenative or invasive, the territory of $\sqrt{}P_\beta$ is larger than the territory of $\sqrt{}P_\alpha$.

Now that both types of adjunction have been introduced, we can present the entire set of configurations generated by our selectional mechanisms. In table (39), we indi-

[11] We do not doubt that a more insightful (representational) account of the ambivalent behavior of the adjunct will eventually be identified.

cate when pairs (with F-marking) or single nouns (without) arise, under both modes of realization of the adjunct.

(39)



In the next section we show how the probing mechanism operates based on the information present in the root phrase.

4 Gender assignment

4.1 Probing

We propose that Gender is represented as an unvalued feature F on *n*, as shown in (41). F on *n* is unvalued and probes down into its complement for valuation.[12] We conceive of probing (agreement) as proposed in Chomsky (2000, 2001) and as characterized in (40) following Pesetsky and Torrego (2007).

(40) i. An unvalued feature F (a probe) on a head H scans its c-command domain for another instance of F (a goal) with which to agree.

ii. If the goal has a value, its value is assigned as the value of the probe.

Two possibilities arise in consequence: either (a) probing results in valuation of the probe, e.g. +F in (41a); or (b) probing does not result in valuation due to absence of a valued goal (41b), in which case a value is assigned arbitrarily (noted ±). We return to arbitrary gender at the end of Sect. 4.

[12] As such, our proposal is part of a family of accounts including e.g. Atkinson (2015), Ihsane and Sleeman (2016), Kramer (2009), Picallo (2007, 2008), Steriopolo and Wiltschko (2010), cf. also Ritter (1993) for a seminal insight.

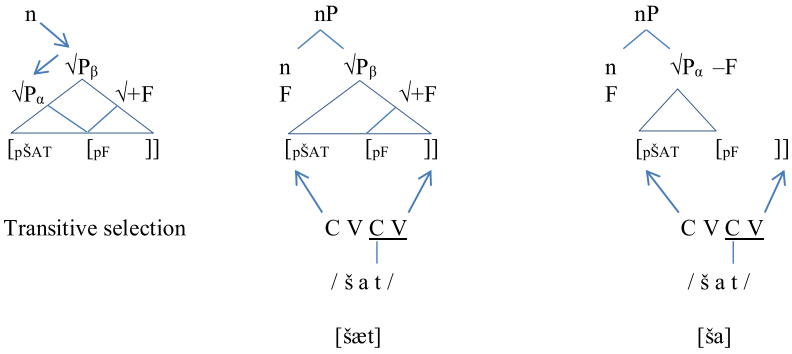
(41) a. b.

Given the probing mechanism, our typology of selectional operations and our proposals regarding the architecture of the root phrase, we expect the data to fall out into two sets: on the one hand, two-gendered nouns for which there is only one source (transitive selection); on the other hand, one-gendered nouns for which there is more than one source (direct and independent selection). We begin with two-gendered nouns.

4.2 Two-gendered nouns with a floating consonant and systematic gender

In this subsection, we illustrate a derivation involving transitive selection and invasive adjunction. This is case (5–6) of table (39). The example involves root √ŠAT 'cat' (42a). Transitive selection will culminate in the production of an allomorphic pair of nouns contrastively marked for F. At spellout, a phonological representation will be inserted in the usual fashion, i.e. aligning its edges with the edges of the site of insertion. The portion of the phonological representation dominated by the constituent selected by *n* will be pronounced. (42b) is unremarkable and the entirety of the representation is pronounced, [šæt]. On the other hand, the constituent (transitively) selected in (42c) dominates the same representation as (42b) *minus* the final CV. Consequently, the final consonant remains unpronounced, [ša].

(42) a. b. c.



Because of contrastive marking, the complements of *n* in both (42b,c) bear values for F. The probe on *n* therefore agrees with these values. The result appears in (43).

(43) n_{+F} [šæt]
n_{-F} [ša]

On this account, the shortened version of the noun (with floating consonant) will always be associated with the negative value of F (Masculine) while the unabridged version will always be associated with the positive value (Feminine).

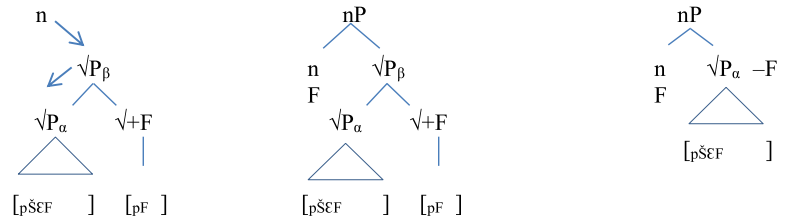
This was our first presentation of the mechanism whereby the final consonant of a noun is set afloat. In subsequent subsections, we pursue our discussion of its morphosyntactic conditioning in relation to selection and gender assignment.

We see the strength of our proposal in the fact that it specifies a necessary connection between masculine gender and the short version of a noun, and feminine gender and the long version. We saw earlier that it is a consequence of our proposal that the domain of the $\sqrt{P}$ including the adjunct is *always* larger than the domain of the $\sqrt{P}$ without the adjunct, whether the adjunct is internal or external. The length difference in the class just reviewed stemmed from internal adjunction. We should be able to replicate the same connective effect between gender and length when the length distinction stems from concatenative adjunction. This is what we show in the next subsection.

4.3 Two-gendered nouns under concatenative adjunction

Here, we turn to transitive selection and concatenative adjunction, case (2–3) of table (39). Roots $\sqrt{\text{ŠƐF}}$ 'boss' and $\sqrt{\text{ÆMI}}$ 'friend' are our illustrative examples. External adjunction of $\sqrt{}$+F culminates in plain concatenation as shown for *šɛf* in (44). In (44a), *n* has selected $\sqrt{P_\beta}$. By transitivity, bi-genderedness and contrastive F marking ensue (44b,c).

(44) a. b. c.



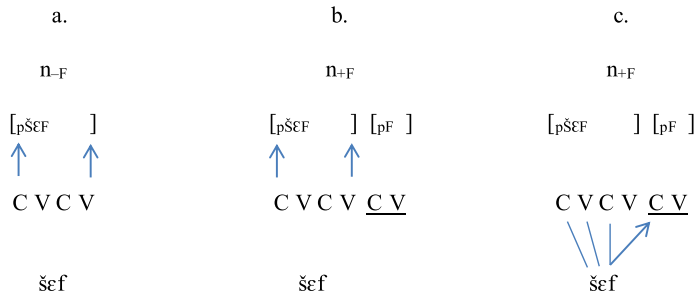
When *n* seeks valuation of its F feature, the corresponding values will be assigned to the probe in the usual way, +F in the case of (44b) and −F in the case of (44c), yielding the feminine/masculine allomorphic pair in (45).

(45) n_{+F} [$_{\sqrt{}}$ŠƐF][F]
n_{-F} [$_{\sqrt{}}$ŠƐF]

Of interest to us at this point is the operation of phonology in those derivations. We simplify representations accordingly, providing only the portions that are relevant for the input to phonology.

In (46a,b), we have represented the root configurations corresponding to the masculine and the feminine nouns respectively (for easier identification, we have mentioned the result of probing above each representation).

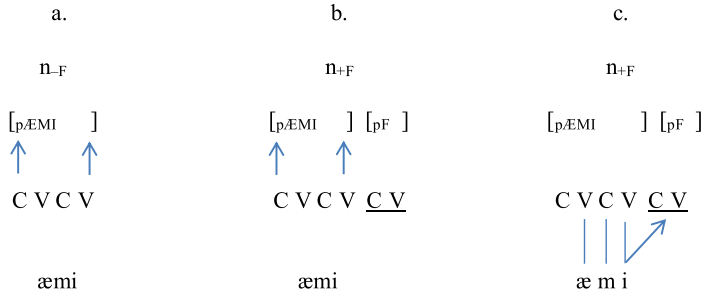
(46)



The phonological matrices corresponding to root √ŠƐF are aligned with the edges of their respective insertion sites (upward arrows in (46a,b)). The adjunct in (46b) spells out independently, CV as usual (underscored). The derivation in (46a) does not call for comment: the item can readily be pronounced, [šɛf]. The phonological derivation in (46b) on the other hand is not yet finished: the templatic portion corresponding to the adjunct requires identification. We submit that identification is provided by spreading as indicated by the arrow in (46c), hence /šɛff/. But, as French evidences no geminates on the surface, gemination remains virtual and the item is pronounced [šɛf] with no audible difference between masculine *lə šɛf* 'male (or generic) boss' and feminine *læ šɛf* 'female boss'.[13]

With our second example, √ÆMI, we will see how spreading is matched by an audible difference between the masculine and the feminine noun. The format of presentation in (47) is the same as above with the masculine in (47a) and the feminine in (47b). For the derivation of the feminine to be completed, the template of the adjunct must be identified. Spreading of the final vowel takes place as shown in (47c) and a long vowel is derived, /æmi:/. A contrast thus obtains between *æmi* 'male or generic friend' and *æmi*: 'female friend'.

(47)



While the length distinction illustrated in (47) lost ground in the course of the 20th century, it is still very much alive in most if not all of Wallonia, in several

[13] On virtual gemination, see Barillot (2002), Hammond (1997), Lowenstamm (1996), Ségéral and Scheer (2001).

Swiss cantons (Andreassen and Lyche 2009; Andreassen et al. 2010; Andreassen and Racine in press; Grosjean et al. 2007; Racine and Andreassen 2012) and in several areas of Northern France (Girard and Lyche 2003; Montreuil 1995, 2003). Moreover, it remains available for contrastive purposes *even for Parisians*. Thus, suppose that an individual named *dɔminik* 'Dominique' (a first name suitable for both males and females) is discussed in conversation and a doubt arises as to whether *dɔminik* is a man or a woman. A statement such as *dɔminik e mõn ami:* (with long i) 'Dominique is my friend' will immediately dissipate the doubt, *dɔminik* is a *she*.

In the next two subsections, we show how our system deals with one-gendered nouns.

4.4 One-gendered nouns with no floating consonants

This class of nouns comprises one-gendered nouns without a floating consonant, for example *lə ʁit* 'rite', *læ dɔt* 'dowry', *læ vədɛt* 'star', *læ viʒi* 'lookout', *lə ʒeni* 'genius', *lə pilɔt* 'pilot'. The challenge offered by those nouns is their characteristic analytical ambiguity. One first logical possibility, the simplest, is to view them as resulting from the absence of √+F in their makeup, case (1) of table (39). This is demonstrated in (48). √+F being absent from those representations, the probe on *n* will find no goal and arbitrary gender is the only possible outcome.

(48) a. b.

However, another option is possible, viz. the roots of those nouns have merged an adjunct in concatenative fashion, but *n* selects the projection *not* containing the adjunct (49). This is what we have called independent selection, case (4) in table (39). As independent selection does not result in F-marking, gender would be assigned arbitrarily in this case, too.

(49) a. b.

While this scheme is well within the range of analytical options open by our proposal, we expect that in the absence of compelling evidence to the contrary speakers will favor the more straightforward analysis in (48).

In fact, one may well ask what type of evidence could possibly lead the speaker to the hypothesis that such a marked mode of selection as independent selection is involved in the derivational history of a noun? Quite clearly, such evidence would have to be incompatible with the less costly analysis in (48). In the next subsection, with our fourth and final block we document evidence of that type.

4.5 One-gendered nouns with a floating final consonant

The three previous blocks were assessed in the same format. First, we asked whether an adjunct was present or not in the root system, then we showed how selection led (or did not lead) to bi-genderedness, relative F-marking, and ultimately to systematic or to arbitrary gender assignment. Finally, we demonstrated how phonology followed.

This time, we drop this mode of presentation and show how the existence and characteristics of our last block follow as a theorem from our proposals.

Our first block—*ša/šæt*—involved transitive selection and the presence in the root system of an invasive adjunct. Our second block—*æmi/æmi*:—also involved transitive selection but the presence of an external adjunct in $\sqrt{P}$. When discussing our third block—*ʁit/dɔt*—we contemplated the logical possibility that such cases might proceed from independent selection and the presence of an external adjunct. The relevant cross classification of parameters appears in (50).

(50)

	Transitive Selection	Independent Selection
External Adjunction	*æmi/æmi:*	*ʁit/dɔt*
Internal Adjunction	*ša/šæt*	

The empty cell in the chart in (50) defines the class of nouns resulting from the independent selection by *n* of a root phrase involving an invasive adjunct. It corresponds to case (7) in table (39).

Independent selection causes neither relative F-marking nor bi-genderedness. Gender will consequently be assigned in arbitrary fashion. Moreover, nouns of that class will display a final floating consonant on account of the internal adjunct in the $\sqrt{P}$. Both facets of the prediction are borne out: (a) the class just defined, introduced in Sect. 2.7, comprises both Masculine and Feminine nouns such as *læ dã* 'tooth' and *lə vã* 'wind'; (b) both Masculine and Feminine nouns involve a final floating consonant, ***t*** in the cases at hand, as evidenced by derivatives such as *dãtæl* 'dental' and *vãtø* 'windy'.

In our next subsection we wrap up pending issues.

4.6 Arbitrary vs. default gender, sex

There can be no doubt that Masculine is the default gender of French, in general, cf. Grevisse and Goosse (2007). Then, why don't all nouns default to Masculine when probing returns no value? Stringent space limitations prevent us from developing our answer to this question in the context of this article. We can only sketch out our

position here and we refer the reader to Fathi and Lowenstamm (in preparation) for elaboration.

Ongoing research in the framework we assume indicates that the domain defined by the first layer of categorization displays specific characteristics. For instance, meaning arising at that level may or may not be compositional. This is in sharp contrast with the more robust compositionality effects observed when further levels of structure are added. Thus, *feudal* is not compositional with respect to *feud*, though *feudalism* is compositional with respect to *feudal*. As we exclusively deal with underived nouns in this paper, our proposal concerns just that first level of categorization. There, just as meaning may or may not be compositional, gender can be assigned systematically (by means of probing) or unsystematically, i.e. arbitrarily. Beyond that first layer of categorization, arbitrary gender is no longer an option, full systematicity obtains and default effects will indeed be observed.

Arbitrary gender does not mean that speakers make a novel, discrete decision each time they want to use a noun of the kind under discussion. On the contrary, we expect the gender of such nouns to be entirely stable for any given speaker and inside a given dialect community: arbitrary gender, as other elements of unpredictable content located below the first categorial layer, has to be learned and committed to memory. Thus, the meaning of *feudal* has to be learned, it can be forgotten, learned again, etc. Similarly, the fact that *sabl* 'sand' and *tæbl* 'table' are masculine and feminine resp. is something which must be learned and remembered.

In sum, a noun will be feminine for two reasons: as the result of (a) probing, (b) arbitrary gender assignment. A noun may be masculine for three reasons: as the result of (a) probing, (b) arbitrary gender assignment, (c) default assignment (not discussed in this paper).

In this paper, we offered an account of gender assignment in which natural gender plays no role. We need to address the fact documented in Sect. 2.5 that French nevertheless allows information about sex to surface in systematic fashion. We submit that a redundancy rule interprets feminine animate nouns as referring to females. By making reference to $\sqrt{P}_\beta$ (hence transitive selection), the statement in (51) correctly restricts the scope of the redundancy rule to bi-gendered nouns, thus predicting that one-gendered animates such as *læ viʒi* 'lookout', *læ sãtinɛl* 'sentry' and the like will not be interpreted as referring to females.

(51) $+\text{F} \rightarrow \text{female} \;/\; [_{\text{n}}[_{\sqrt{\text{P}}\beta}\ \_\_]]$
$[+\ \text{animate}]$

Our next section is devoted to two alternative accounts of gender assignment.

5 Atkinson (2015) and Kramer (2015)

In this section, we discuss two studies devoted to the morphosyntax of Gender, Atkinson (2015) and Kramer (2015). Both are directly relevant, though in different ways. Atkinson (2015) is an article exclusively devoted to French. Moreover, it also involves a probing mechanism. In consequence, a comparison with our proposals will be straightforward. On the other hand, Kramer (2015) is a book-length monograph developing a proposal of universal scope for gender assignment and testing it against

a wide variety of language particular patterns. No section of Kramer (2015) is specifically devoted to French, though evidence from that language is discussed in several places of the book. To some extent, nevertheless, it is clear from Kramer's detailed discussion and analysis of the Spanish pattern how her proposals would carry over to French.

Of course, the comparison can only go so far as neither Atkinson nor Kramer tackle the behavior of French nouns at the interface with phonology.

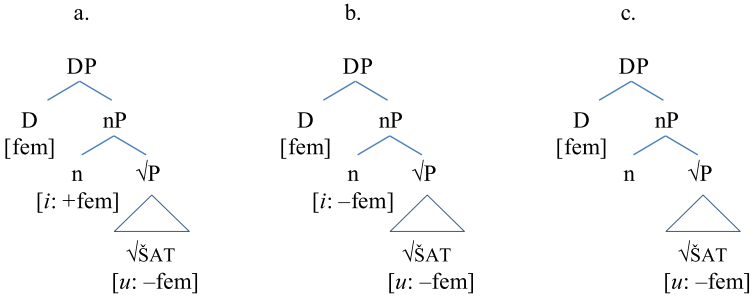
5.1 Atkinson (2015)

Borrowing from Kramer (2009), Atkinson proposes that sex is represented on *n* in the form of a valued interpretable feature, [*i*: +fem] or [*i*: −fem]; and grammatical gender in the form of a valued uninterpretable feature [*u*: +fem] or [*u*: −fem] on √. Moreover, a set of stipulations specifies which (grammatically gendered) roots are licensed under which (sex) configurations of *n*'s. A sample of the licensing conditions is given in (52).[14]

(52) a. Inanimates: n (absence of sex specification)
b. Bi-gendered animates: n[*i*: +fem], n[*i*: −fem], n
c. One-gendered animates: n

We demonstrate how Atkinson's probing system handles bi-gendered animates such as *læ šæt/lə ša* 'female cat/male or generic cat'. Root √ŠAT carries a [*u*: −fem] feature in conformity with the fact that masculine is the default gender. A probe, D in this case, seeks valuation for its unvalued [fem] feature. In (53a), it finds valuation as early as under *n*. Accordingly, a feminine DP emerges: *læ šæt* 'female cat'. On account of the [*i*: −fem] specification on *n* in (53b), the same probing scenario gives rise to a masculine DP: *lə ša* 'male cat'. In (53c), the absence of any feature on *n* forces the probe to seek valuation further down, i.e. on the root. The DP is ruled masculine, crucially not male because of the uninterpretability of the feature of the goal, and a generic interpretation emerges: *lə ša* 'the familiar furry feline pet'. [15]

(53)



An important portion of Atkinson's article is devoted to cases of conflict between natural and grammatical gender. Animate one-gendered nouns like those in (8) above do not allow for the expression of sex. Thus, a phrase such as *læ ply gʁãd vədɛt dy*

[14] We only provide the subset of Atkinson's licensing conditions relevant to the cases discussed here.

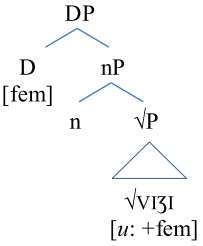
[15] Atkinson admits to remaining agnostic as to why the final consonant of √ŠAT floats in *lə ša*.

sinemæ ɛʒipsjɛ̃ 'the greatest star of Egyptian motion pictures' comprises a feminine noun (*vədɛt* 'star') as evidenced by the two instances of feminine agreement it triggers on the definite article *læ* 'the$_{\text{FEM}}$' and on the adjective *gʁãd* 'great$_{\text{FEM}}$'. Yet, a male or a female star could equally well be referred to in that phrase.[16]

Atkinson notes that some mono-gendered nouns, e.g. *læ viʒi* 'lookout' or *læ sãtinɛl* 'sentry' involve a paradox. They are feminine even though being a lookout or a sentry are (supposedly) typical male occupations. Similarly, she points out, *lə mænkɛ̃* 'fashion model' is a masculine noun in spite of the fact that modeling is a prototypical female activity.

In Atkinson's system, the fact that one-gendered animates offer no indication of sex receives a straightforward solution: if a [*u*: +fem] root such as √VIʒI is exclusively licensed under unspecified *n*, the only source of valuation for the probe will be the root's uninterpretable feature, feminine (crucially not female), as shown in (54).

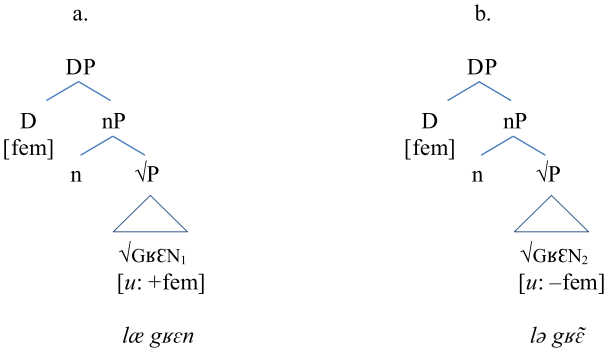
(54)



The exact same scenario, licensing under unspecified *n*, can account for one-gendered inanimate nouns such as *læ tæbl* 'table'.

A difficulty arises for Atkinson's scheme with two-gendered inanimates such as masculine *lə gʁɛ̃* 'grain' vs. feminine *læ gʁɛn* 'seed'. Such cases are not discussed in Atkinson (2015) and we extrapolate what their analysis would be. Obviously, pairs of the relevant type can only be licensed under unspecified *n* as their gender is uninterpretable in terms of sex. Consequently, the only possible source for the existence of a pair, i.e. both a masculine *and* a feminine noun, is to recognize two distinct roots, say √GʁɛN$_1$ and √GʁɛN$_2$, carrying different values for their uninterpretable feature. Probing will now return different values in (55a) and in (55b).

(55)



[16] Cf. Ihsane and Sleeman (2016) for discussion.

Recognizing two separate roots for *lə gʁɛ̃* and *læ gʁɛn* strikes us as unfortunate. Indeed, we know of no motivation for such a move. Moreover, this leads to positing two separate scenarios for pairs such as *læ šæt/lə ša* on the one hand and *læ gʁɛn/ lə gʁɛ̃* on the other hand. Yet, *læ gʁɛn* and *lə gʁɛ̃* from (putatively) different roots reproduce the same phonological behavior as *læ šæt* and *lə ša* from the same root. The prospect of capturing the fact that in both cases the feminine noun exhibits a final consonant absent from the masculine noun recedes accordingly. In sum, Atkinson's proposal misses a striking regularity of the system.

5.2 Kramer (2015)

The discussion of our extrapolation from Kramer's take on Spanish is divided into two subsections. In the first subsection, we offer an adaptation of her proposals to French in order to establish what ground they cover. In the second subsection, we outline a comparison of Kramer's approach and our own.

5.2.1 Our adaptation of Kramer (2015) to French

Kramer (2015) makes use of licensing conditions of the same ilk as in Kramer (2009) or Atkinson (2015). Unlike Kramer (2009) however, the system developed in Kramer (2015) now *exclusively* makes use of licensing conditions. That is, (a) gender is no longer marked on the root; (b) the only locus of gender specification is *n*; (c) a probing mechanism is no longer part of the scheme. In addition, the gender specifications on *n* now include a fourth item (56d), the role of which will become clear momentarily.

(56) Types of *n* in French nouns

a. n [*i*: +fem]
b. n [*i*: −fem]
c. n
d. n [*u*: +fem]

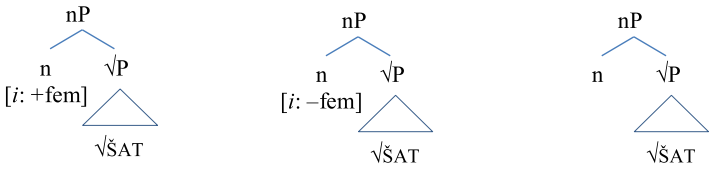
We now briefly run the reader through the same evidence as in the previous section, but this time in the framework of Kramer (2015).

√ŠAT and other bi-gendered animates are licensed under the following types of *n*:

(57) a. n [*i*: +fem]
b. n [*i*: −fem]
c. n

Under (57), all three configurations in (58) are validated. Note the absence of any gender feature on the root.

(58) a. b. c.



(58a,b) are straightforwardly interpreted as 'female cat' and 'male cat' respectively on account of the interpretable features. Grammatical gender is simply read off the features on *n*, viz. feminine and masculine. In the absence of any such features, (58c) can only be interpreted as unsexed and the generic interpretation arises in consequence. This time, grammatical gender can't be read off any feature. Instead, the object in (58c) will automatically default to masculine according to a robust generalization of the language.[17]

We now turn to one-gendered animates with two examples, masculine *lə mænkɛ̃* 'fashion model' and feminine *læ viʒi* 'lookout'. This is the point at which the fourth type of *n* in (56d) becomes relevant. By stipulation, the licensing conditions for √VIʒI and √MÆNKƐN are as in (59).

(59) √VIʒI : n [*u*: +fem]
√MÆNKƐN : n

In accordance with (59), the objects in (60) are validated.

(60) a. b.

The feature on *n* in (60a) is *un*interpretable. Consequently, no female interpretation will result, though (grammatical) gender will be read off the feature and the noun will be ruled feminine. *n* in (60b) carries no feature of any kind. As such, the noun automatically defaults to masculine.

Bi-gendered inanimates such as *lə gʁɛ̃/læ gʁɛn* 'grain/seed' which could only be handled at the cost of positing two different roots under Atkinson's proposal do not pose the same problem in Kramer's revised framework. Indeed, it is enough to say that √GʁƐN is licensed under the combined conditions of √VIʒI and √MÆNKƐN, viz. (61).

[17] This account represents our extrapolation from Kramer's treatment of Spanish and we do not know how she would handle the fact that the final consonant of feminine *šæt* is silent in masculine *ša*.

(61) Licensing conditions for √GʁɛN (and other bi-gendered inanimates)
√GʁɛN : n [*u*: +fem], n

For the sake of completeness, we indicate in (62) what structures arise from (61).

(62) a. b.

Neither object will be interpreted as reflecting sex. Grammatical gender will be assigned in the usual way: feminine because of the feature present in (62a), and default masculine in the case of (62b).

Inanimate singletons are gendered along the same lines. A root such as √DOT is licensed under *n*[*u*: +Fem] resulting in the feminine noun *læ dɔt* 'dowry', whereas a root such as √ʁIT, licensed under an unspecified *n*, will cause *lə ʁit* 'rite' to be masculine by default.

5.2.2 Comparing

Our approach and Kramer's are so fundamentally different that engaging in a discussion of their relative merits would only be artificial. Nevertheless some of the differences can be outlined fairly clearly.

At the end of Chap. 2 of Kramer (2015), a challenge is issued:

> *Those who want to argue that gender is on the root need to provide an argument showing why gender* ***must*** *be on the root, not just why it* ***may*** *be there.*

On the surface, it might seem that our insistence on the presence of a root √+F adjoined to head roots amounts to taking up that challenge. In reality, the two notions of a gender mark sitting inside the root phrase, the one we advocate and the one Kramer rejects, are not commensurable.

The marking discussed and rejected in Kramer (2015) is a feature purportedly representing the intrinsic gender of a root and serving as the goal of a probe. The presence of such a feature stands in the way of capturing the relatedness of inanimate masculine and feminine nouns from the same root such as *læ gʁɛn/lə gʁɛ̃*, as we showed in our discussion of Atkinson (2015). Eliminating that feature and exclusively resorting to licensing conditions as is done in Kramer (2015) makes for a smooth treatment of those cases and entails no loss of ground.[18]

We have our own reasons for maintaining that a mark albeit of a different nature must be present at the root level. Our narrow program can be defined as follows: (a) we accept the existence of a relationship between gender and the curious

[18]This pattern may be called 'minor' but it is very crucial to the point discussed here. Indeed, we know of no other evidence from French that would cause the learner or the analyst to decisively select a grammar organized along the lines of Kramer (2015) rather than along the lines of Atkinson (2015).

phenomenon of final floating consonants; (b) we develop a scenario for the interface between the relevant morphosyntactic structures and the pronunciation system; (c) the interface scenario, if successful, will carry validation of the hypothesized morphosyntactic structures which form a crucial part of it. In the course of working out the interface, we are led to posit the presence of an adjunct root modifying head roots. Crediting that object—$\sqrt{}$+F—with a role in the system assigning gender is in accordance with the scope of a paper confined to the architecture of nouns. However, our broader program involves a study of how the respective architectures of vP and aP interface with the pronunciation system.

And here, we are faced with the fact that a subset of French adjectives and verbs replicate the exact same phenomenology as a subset of bi-gendered nouns: the realization or non-realization of a floating consonant is conditioned by a φ-feature, *gender* in the case of adjectives (as nouns), but *number* in the case of verbs.

The behavior of adjectives being the same as that of bi-gendered nouns will not be illustrated beyond what appears further down in (64). But we document the behavior of verbs in a bit more detail. The stem of the verbs in (63a,b) is stable in all cells of the paradigm. In (63c,d) by contrast, the final consonant of the stem is realized in the plural forms only. In the singular forms, its pronunciation is suspended, as indicated by means of parentheses in (63c,d).

The reaction of verbs to Number which we document in (63) exactly mirrors the allomorphy-generating behavior of nouns under transitive selection.

(63)

	a. ‘carry’	b. ‘tuck in’	c. ‘go out’	d. ‘twist’
1sg.	pɔʁt	bɔʁd	sɔʁ(*t*)	tɔʁ(*d*)
2sg.	pɔʁt	bɔʁd	sɔʁ(*t*)	tɔʁ(*d*)
3sg.	pɔʁt	bɔʁd	sɔʁ(*t*)	tɔʁ(*d*)
1pl.	pɔʁt-õ	bɔʁd-õ	sɔʁt-õ	tɔʁd-õ
2pl.	pɔʁt-e	bɔʁd-e	sɔʁt-e	tɔʁd-e
3pl.	pɔʁt	bɔʁd	sɔʁt	tɔʁd

We sum up the cross-categorial regularity of the phenomenon in (64).

(64)

Nouns				Adjectives				Verbs			
Invariable		Variable		Invariable		Variable		Invariable		Variable	
M	F	M	F	M	F	M	F	Sg	Pl	Sg	Pl
gid ‘guide’		ša(*t*)	šæ*t* ‘cat’	vid ‘empty’		gʁa(*s*)	gʁa*s* ‘fat’	pɔʁt ‘carry’		sɔʁ(*t*)	sɔʁ*t* ‘go out’

In each category, the phenomenon distinguishes between those items that are susceptible to consonant-floating and those items that will remain invariable at all times. The important point is that *each category includes both types*.

For us, the fact that the relevant property is not confined to the marking of gender; rather, is distributed in total indifference to category membership, is a clear indication of its presence within the radical system.

The final point of difference we wish to highlight in this subsection has to do with the basic generalizations considered important. Kramer views Spanish and (we must assume) French as systems implementing natural gender. For us, grammatical gender is the key to the system. Natural gender is but an epiphenomenon redundantly interpreting grammatical gender.

This difference is directly reflected in our respective mechanisms. We, in this paper, set things up in such way as to sharply distinguish between bi-genderedness (irrespective of animacy) and one-genderedness, the former being the domain within which regularities can be detected, the latter being the realm of idiosyncrasy.

Kramer's array of licensing conditions is incapable of representing bi-genderedness and one-genderedness as natural classes, a desirable feature of a system which does not recognize such a distinction as centrally important.

To this point, most of the discussion on both sides has revolved around underived nouns in Spanish and French. We venture that joint consideration of both underived and derived nouns will be the testing ground.

6 Conclusion

This paper lies at the intersection of two independent concerns. The first concern was to provide an encompassing and technically explicit account of how gender is assigned to underived nouns in French.

Many two-gender languages mark gender on underived nouns in the form of specific affixes. In Egyptian Arabic, for instance, suffix $+a$ distinguishes a sizable number of feminine nouns from masculine nouns (e.g. *kalb* 'dog' vs. *kalba* 'female dog'). A pattern thus emerges whereby feminine nouns are longer than masculine nouns (of the relevant type) on account of the presence of that suffix. While French lacks a comparable suffix, the language with its intriguing system of floating consonants nevertheless manages to implement a similar pattern with feminine nouns longer than their corresponding masculines (e.g. *ša* 'cat' vs. *šæt* 'female cat').

In the absence of any affix, the source of gender marking in French could only be sought in the most basic material available, the root itself. Our hypothesis has been that the root projects at the phrasal level and that the root phrase can be as richly articulated as standard X-bar theory permits, including the possibility of hosting adjuncts. Various selectional options are consequently available at the point when *n* categorizes $\sqrt{P}$. We have explored the range of possible selectional scenarios and how they feed a probing mechanism. We conclude that they fit in exact fashion the behavior of French gender marking. We note that the natural scope of our proposal goes well beyond the grammar of gender for underived nouns. Indeed, it includes (a) the architecture of derived nouns, (b) the exponence of gender agreement on adjectives and number agreement on verbs, cf. Fathi and Lowenstamm (in preparation).

Moreover, we have offered an explicit scenario for the rise of one vs. two-genderedness and we have shown that the former is the domain of arbitrariness, whereas the latter is the domain of systematicity.

Finally, we have provided arguments to the effect that French, while it allows for the expression of natural gender, fundamentally implements grammatical gender.

Our second concern was of a more general nature. At the early stages of development of non-lexicalist approaches to word formation, phonology was viewed as taking the form of a trivial list of stipulative statements. But in later years, a more balanced and at the same time more sophisticated view emerged: the analysis of complex phonological phenomena sheds a unique light on the structure of the objects that serve as their input. We thus view our contribution as a modest step towards a more realistic appreciation of the significance of phonological evidence.

Acknowledgements We are grateful to Gilles Boyé, Noam Faust, Ruth Kramer and Jamal Ouhalla for valuable comments on an earlier draft of this paper. Thanks to Natascha Müller for inviting us to present our work at the *Gender and Number in Romance* Workshop at the University of Wuppertal (October 2015). Fathi is grateful to her colleagues in the OmanSaM Project (ANR-13-BSH2-0001, Sabrina Bendjaballah, Principal Investigator) for stimulation and support.

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