

French liaison: shape alternation, inflection, or both?

Olivier Bonami

Based on joint work with Anne Abeillé, Gilles Boyé, Elisabeth Delais-Roussarie,
Danièle Godard, Jesse Tseng

U. Paris-Sorbonne,
UMR 7110 "Laboratoire de Linguistique Formelle",
Institut Universitaire de France

South East Morphology Meeting
Guildford, April 8, 2011

Defining French liaison

Many French words have two phonological forms such that:

- Form₁, the **liaison form**, is longer than form₂, the **non-liaison form**.
- The liaison form is used
 - In specific syntactic and/or prosodic contexts
 - When the following word is vowel initial
- The non-liaison form is used elsewhere

- (1) a. petit ennui: **pətitãnyɪ**
 small.M.SG trouble[M]
- b. petit problème: **pətiproblɛm**
 small.M.SG problem[M]
- c. Paul est petit: **pɔlɛpəti**
 Paul is small.M.SG

NB1 There are word-internal sandhi phenomena related to liaison that we leave aside.

NB2 Weak form pronouns (*je, tu, il*, etc.) are best analysed as pronominal affixes (Stump, 1981; Miller, 1992; Bonami and Boyé, 2007)

☞ hence the notion of liaison does not (strictly) apply to them.

Today's argument

- French liaison is traditionally described as a phonological phenomenon.
- There are good reasons to think that this is not the right analysis: in Modern French liaison is not (plain) phonology.
- Thus French liaison is best seen as a shape alternation: a choice of form that is (partly) based on phonological properties of the context.
- In the particular case of masculine singular adjectives, liaison interacts in a subtle way with inflection
- ☞ arguably, the Masculine Singular Liaison Form is a distinct cell in the paradigm.
- Consequence: the boundary between the 'shape component' (Zwicky 1985) and inflection proper is not that clearcut.

Outline

- 1 Describing liaison
- 2 Shape alternations in French
- 3 Liaison with M.SG adjectives
- 4 Conclusions

Extent of the phenomenon

- Words of all part of speech give rise to liaison
 - N e.g. *livres* (books.PL): livʁ, livʁəz
 - V e.g. *mange-r-ont* (eat.FUT-3PL): mɑ̃ʒʁɔ̃, mɑ̃ʒʁɔ̃t
 - Adj e.g. *petit* (small.M.SG): pəti, pətit
 - Adv e.g. *bien* (well): bjɛ̃, bjɛ̃n
 - Prep e.g. *en* (in): ɑ̃, ɑ̃n
 - Det e.g. *un* (INDEF.M.SG): ɛ̃, ɛ̃n
 - Conj e.g. *mais* (but): mɛ, mɛz
 - Comp e.g. *quand* (when): kɑ̃, kɑ̃t
 - Pro e.g. *tout* (all): tu, tut
- Rough estimate: ~ 40% of French word forms

Liaison is not resyllabification

- In continuous speech, word-final consonants can be re-syllabified as onsets.
- Liaison consonants are often resyllabified, but:
 - Resyllabification is not limited to liaison consonant, but affects all word-final consonants.

(2) a. Ils sont très amis: il.sɔ̃.tʁɛ.za.mi
they are very friends
'They are good friends.'

b. Ils sont treize amis: il.sɔ̃.tʁɛ.za.mi
they are thirteen friends

- Liaison can occur without resyllabification (Encrevé, 1988)

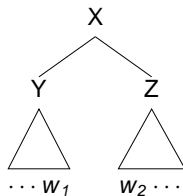
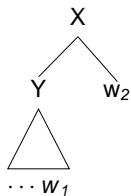
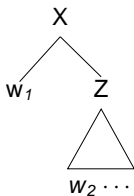
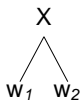
(3) Ils sont amis: il.sɔ̃.t.ʔami
they are friends

- Resyllabification is subject mostly to phonological constraints (rhythm, speech rate, etc.). In particular, no lexical conditioning.

Necessary conditions

Three necessary conditions for liaison to happen:

- w_1 has to possess a distinct **liaison form**
- w_1 has to be in a **liaison context**, i.e. one of the following schematic syntactic configurations.



- w_2 has to be a **liaison trigger**

Liaison forms

- The existence of an alternation between a liaison and a non-liaison form is not predictable by looking at surface phonology.
 - (4) a. petit 'small': pəti vs. pətɪt
 - b. insolite 'unusual': ɛ̃solit
 - c. joli 'cute': ʒoli
- Even orthography is unhelpful
 - (5) a. net 'neat': net
 - b. et 'and': e
 - c. discret 'discreet': diskʁɛ, diskʁɛt
- Long tradition (starting with Schane, 1968) of postulating abstract phonology to make the alternation predictable. In particular: protective schwas
 - No surface evidence can support such an analysis (Dell, 1995).
 - All existing proposals are at least partly ad-hoc

Liaison triggers

Liaison triggers can not be characterized in surface phonological terms:

☞ Even orthography is not a reliable indicator of trigger status.

	VOWEL	GLIDE	CONSONANT
TRIGGER	école ekɔl 'school' habit abi 'clothing' etc.	oiseau wazo 'bird' yeux jø 'eyes' etc.	***
NON-TRIGGER	onze ɔ̃z 'eleven' hache af 'axe' etc.	whisky wiski 'whisky' hyène jɛn 'hyena' etc.	bateau bato 'boat' zèbre zɛbɛ 'zebra' etc.

- There is a long tradition of postulating an abstract consonant at the start of vowel-initial nontriggers (e.g. Dell, 1985; Pagliano, 2003)
- However, there is little evidence for such a move (e.g. Tranel, 1981)
- Bonami et al. (2004a): liaison trigger status is best seen as a global property of the word.

Types of liaison contexts

- Provided that w_1 is followed by a liaison trigger in a liaison context, three possible outcomes:

- **Obligatory liaison**

(6) Les= enfants arrive-ront à l' heure
the.PL child[M].PL arrive-FUT.3PL at the.SG hour[F]
'The children will arrive on time.'

- **Impossible liaison**

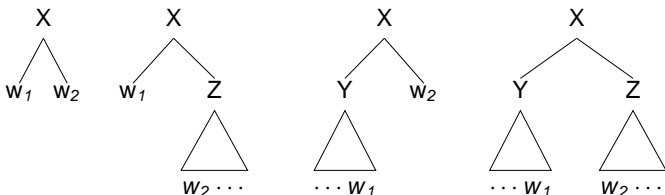
(7) Les enfants≠ arriveront à l' heure

- **Optional liaison**

(8) Les enfants arriveront• à l' heure

- Where liaison is optional, numerous factors influence its frequency
 - ☞ syntactic construction, token frequency of w_1/w_2 /the collocation of w_1 and w_2 , prosody, rhythm, style, speech rate, register, etc.
- Here we focus on categorical constraints making liaison impossible, possible or obligatory.

Types of conditions



- Documented categorical conditions on liaison:
 - Lexical phonological properties of w_1 : has to have a liaison form
 - Lexical phonological properties of w_2 : has to be a trigger
 - Construction type instantiated by X
 - ☞ In particular, syntactic functions of Y and Z
 - Construction type instantiated by Y
 - Syntactic category of Y
 - Morphosyntactic properties of w_1

Conditions on the construction: NPs

Sample of constraints on liaison from (Bonami and Delais-Roussarie, forthcoming):

- Obligatory after the specifier

(9) trois= amis de Marie
three= friend[M].PL of Marie

- Optional (but frequent; see Post, 2000) after a prenominal adjective

(10) un charmant• individu
INDF.M.SG charming.M.SG individual[M].SG

- Optional (but rare) after the head noun

(11) des amis• intimes
INDF.PL friend[M].PL intimate.PL

- Optional (but rare) among post-head constituents

(12) des= hommes• heureux• insupportables
INDF.PL man[M].PL happy.M insufferable.PL

Conditions on the construction: VPs

- In surface terms, the French VP can be divided in two zones, explicitly delimited by the past participle in periphrastic perfect forms.

☞ This is independently motivated, by word order and scope (see e.g. Abeillé and Godard, 2000; Bonami et al., 2004b)

- (13) Paul [a toujours tout expliqué à Marie
Paul have.PRS.3SG always everything explain.PTCP to Marie
soigneusement].
carefully
'Paul has always explained everything carefully to Marie.'

- Liaison is optional within the first zone, impossible in the second zone

- (14) a. Paul est● arrivé.
Paul is arrived
b. Paul est souvent● arrivé à l' heure.
Paul is often arrived at the time
- (15) a. Paul a expliqué ses succès≠ à Marie
Paul has explained his successes to Marie
b. Paul a parlé souvent≠ à Marie
Paul has spoken often to Marie

Conditions on the construction: Ss

- Liaison is possible after a complementizer

- (16) a. Je viendrai quand● on m' invitera.
I come.FUT when one 1.SG invite.FUT
- b. une solution dont● il est fier.
a solution of_which he is proud

- Liaison is possible after a fronted wh-word

- (17) a. Quelles● ont été vos conclusions?
which have been your conclusions
'Which conclusion did you reach?'

- Liaison is possible after a syntactic subject, provided it is not phrasal

- (18) a. Tout● est calme.
everything is calm
- b. Les enfants≠ arrivent
the children arrive

Conditions on the construction: coordination

- Within a coordination, liaison is possible after the penultimate conjunct or after the conjunction, but not between two conjuncts

- (19) a. les hommes● et les femmes
the men and the women
- b. Ils se sentent heureux● et fiers.
they REFL feel pleased and proud
- (20) Ils se sentent heureux mais● épuisés.
they REFL feel pleased but exhausted
- (21) Ils se sentent heureux≠ habiles et fiers.
They REFL feel pleased, clever and proud

Conditions on the phrase embedding w_1

- If w_1 is embedded in a head-complement phrase, liaison is not possible.

(22) un livreur [de journaux] ≠ efficace
a delivery_man of newspaper efficient
'an efficient newspaper delivery man'

- If w_1 is embedded in a clause, liaison is not possible.

(23) a. [Ils viennent] ≠ et ils repartent.
they come and they leave_again
'They come and leave.'

b. Entrez ≠ et fermez la porte!
come_in and close the door
'Come in and close the door.'

Morphosyntactic conditions on w_1

If w_1 is a singular noun, liaison is never possible.

- (24) a. un cas≠ intéressant
 INDF.M.SG case[M].SG interesting.M.SG
- b. des cas● intéressants
 INDF.PL case[M].PL interesting.M.PL

- ☞ Given our definitions, this is indistinguishable from saying that singular nouns have no liaison form.
- Still, it is striking that many nouns have a consonant-final stem that shows up in lexeme formation and would make for a perfectly good liaison form.

(25) *cas ka* 'case' > *casuel kaz-ʁɛl* 'case-related'

- Hence it is not a trivial property, and has to be stated somewhere in the grammar.

Interim conclusion: liaison is not (plain) phonology

- From the preceding discussion it should be clear that liaison can not be reduced to (plain) phonology.
 - The existence of a liaison form is not predictable from surface phonology
 - The presence of a liaison trigger is not predictable from surface phonology
 - The syntactic constraints on liaison are very intricate.
- ☞ Although it is in principle possible to encode exactly the right syntactic distinctions in a prosodic tree, this seems entirely ad-hoc.
- Alternative: we are dealing with (widespread) shape alternation.
- Of course we still want an account for the fact that thousands of French words have a regular relation between the liaison form and the nonliaison form.
- ☞ This is a different issue; see Bonami et al. (2004a, 2005) for specific proposals.

Outline

- 1 Describing liaison
- 2 Shape alternations in French**
- 3 Liaison with M.SG adjectives
- 4 Conclusions

Elision

- Some words lose their final vowel when followed by a vowel-initial word (in the right syntactic and/or prosodic context).
- Commonly described as complementary to liaison.
- This is a mistake, since elision is no unitary phenomenon.
 - Elision of the feminine definite article: obligatory, no conditions.

(26) a. la femme: **lafam**
the.F wife[F]

b. l' épouse: **lepuz**, ***laepuz**
the.F spouse[F]

- Elision of *si* 'if/whether': optional, only possible if the next morph is the weak form pronoun *il*.

(27) a. s' il vient: **silvjẽ**, **siilvjẽ**
if he comes

b. si Isabelle vient: **siizabelvjẽ**, ***sizabelvjẽ**
if Isabell comes

- Elision of *tu*: optional, stylistic condition.

(28) T' arrives quand? : **taʁivkã**, **tyaʁivkã**
you arrive when
'When will you be arriving?'

Anti-liaison

- A few items have an *anti-liaison* (Bonami and Delais-Roussarie (forthcoming)'s *contre-liaison*) form:
 - The liaison form is used in specific syntactic-prosodic contexts when the next segment is a vowel
 - The anti-liaison form is used in the same contexts when the next segment is a consonant
 - The non-liaison form is used elsewhere

- (29) a. Paul achète **si** livres
Paul buys six books
- b. Paul achète six **siz** oranges
Paul buys six oranges
- c. Paul en achète **sis**
Paul of-them buys six
'Paul buys six of them.'

☞ *six* 'six', *huit* 'eight', *dix* 'ten', *plus* 'more'

Portmanteaux with shape conditions

Celebrated portmanteau words of French:

à	le	→	au
at/to	DEF.M.SG		
à	les	→	aux
at/to	DEF.PL		
de	le	→	du
of/from	DEF.M.SG		
de	les	→	des
of/from	DEF.PL		
à	la	→	en
at/to	DEF.F.SG		(restricted to place names)

- The analysis of such forms is quite uncertain/disputed (Miller, 1992; Abeillé et al., 2006; Wescoat, 2007; Cabredo Hofherr, to appear)
- Empirical observations:
 - *aux*, *des* are definitely words, not shapes: they have a further distinction between a liaison and a nonliaison form.
 - *en* behaves like a liaison form: normally followed by a vowel.
 - *au*, *du* behave like anti-liaison forms: normally followed by a consonant.

Outline

- 1 Describing liaison
- 2 Shape alternations in French
- 3 Liaison with M.SG adjectives**
- 4 Conclusions

The classical generative analysis

lexeme	trans.	M.SG		F.SG	M.PL		F.PL	
		nonliaison	liaison		nonliaison	liaison	nonliaison	liaison
RAPIDE	'fast'	ʁapɪd	ʁapɪd	ʁapɪd	ʁapɪd	ʁapɪdz	ʁapɪd	ʁapɪdz
PETIT	'small'	pəti	pətɪt	pətɪt	pəti	pətɪz	pətɪt	pətɪz
BREF	'brief'	bʁɛf	bʁɛf	bʁɛv	bʁɛf	bʁɛfz	bʁɛv	bʁɛvz
PLEIN	'full'	plɛ̃	plɛ̃n	plɛ̃n	plɛ̃	plɛ̃z	plɛ̃n	plɛ̃nz

- Classical, abstract phonology analysis (e.g. Dell, 1985): uniform exponents, unitary underlying forms

Underlying forms		Exponents	Phonological rules
RAPIDE	ʁapɪdə	M ∅	$C \rightarrow \emptyset / _ \#$
PETIT	pətɪt	F ə	$v \rightarrow f / _ \#$
BREF	bʁɛv	SG ∅	$VN \rightarrow \bar{V} / _ \#$
PLEIN	plɛ̃n	PL z	Optionally, $\bar{ə} \rightarrow \emptyset / _ \#$

- Although the technical details have been updated, most phonologists still assume the same basic analysis.

Problem 1: suppletion

- When a lexeme is suppletive, the M.SG liaison form uses the otherwise feminine stem.

lexeme	trans.	M.SG		F.SG	M.PL		F.PL	
		nonliaison	liaison		nonliaison	liaison	nonliaison	liaison
BEAU	'beautiful'	bo	bɛl	bɛl	bo	boz	bɛl	bɛlz
NOUVEAU	'new'	nuvo	nuvɛl	nuvɛl	nuvo	nuvoz	nuvɛl	nuvɛlz
VIEUX	'old'	vjø	vjɛj	vjɛj	vjø	vjøz	vjɛj	vjɛz

- ☞ See Bonami and Boyé (2003) on the failure of attempts to account for these in OT terms as competition between phonology and agreement (Tranel, 1996; Perlmutter, 1998; Steriade, 1999).

Problem 2: non-alternations

- Some adjectives do not alternate despite the existence of a feminine form distinct from the masculine.

lexeme trans.	M.SG		F.SG	M.PL		F.PL	
	nonliaison	liaison		nonliaison	liaison	nonliaison	liaison
COURT 'short'	куњ	куњ	куњт	куњ	куњз	куњт	куњтњ
ÉPARS 'scattered'	ерањ	ерањ	ерањс	ерањ	ерањз	ерањс	ерањсњ

- Littré's law (Plénat, 1980): liaison forms do not end in a consonant cluster.
- In fact, Littré's law only applies to M.SG adjectives.

- (30) a. un **њњ**/***њњт** accent
a strong accent
- b. C' est **њњ**/**њњт** intéressant
it is very interesting

- (31) de **њњ**/**њњз** accents
INDF.PL strong.PL accent.PL

Problem 3: productive non-alternations

- Productive lexeme formation rules creating adjectives with a stem allomorphy between M.SG and F.SG

base	adjective	M stem	F stem
RÊVER 'dream'	RÊVEUR 'dreamy'	ʁɛvœʁ	ʁɛvøʁ
BATAILLER 'fight'	BATAILLEUR 'agressive'	batajœʁ	batajøʁ
TROMPER 'deveive'	TROMPEUR 'deceiving'	tʁɔ̃pœʁ	tʁɔ̃pøʁ

- For this whole open class of adjectives, the M.SG is unexpectedly nonalternating.

(32) le trompeur tʁɔ̃pœʁ/*tʁɔ̃pøʁ ami
the deveiving friend

Paradigm-based shape selection?

- A possible solution:
 - The **context of use** of the M.SG form is determined by a shape condition.
 - The **existence** of an alternation is determined by a paradigm-based rule
- ☞ If the ordinary M.SG form ends in a consonant, there is no liaison alternation in the M.SG. If it ends in a vowel, there is a liaison alternation, and the liaison form is identical to the F.SG.

lexeme	M.SG		F.SG
	nonliaison	liaison	
RAPIDE		ʁapɪd	ʁapɪd
PETIT	pəti	pətit	pətit
BEAU	bo	bɛl	bɛl
VIF		vif	viv
FORT		fɔʁ	fɔʁt
RÊVEUR		ʁɛvœʁ	ʁɛvøʁ

Problem 4: irregularity

- A few lexemes have an unpredictable masculine singular liaison form.

lexeme	trans.	M.SG		F.SG	M.PL		F.PL	
		nonliaison	liaison		nonliaison	liaison	nonliaison	liaison
GRAND	'large'	gʁɑ̃	gʁɑ̃t	gʁɑ̃d	gʁɑ̃	gʁɑ̃z	gʁɑ̃d	gʁɑ̃dz
GROS	'big'	gʁo	gʁoz	gʁos	gʁo	gʁoz	gʁos	gʁosəz
COMMUN	'common'	komɛ̃	komɛ̃n	komyn	komɛ̃	komɛ̃z	komyn	komynz

- Over the years, many attempts to derive these alternations as phonology

👉 In fact there are

- 4 alternating adjectives in **s** ~ **z**
- 3 alternating adjectives in **d** ~ **t**
- Commun* is a unique case

Problem 5: defectivity

As Morin (1992) notes, for many adjectives speakers avoid using a M.SG form

- (33) a. un entretien chaud
 INDF.M.SG interview[M].SG hot.M.SG
 ‘a difficult interview’
 b. *un chaud entretien
- (34) a. des entretiens chauds
 a.INDF.PL interview[M].PL hot.M.PL
 ‘difficult interviews’
 b. de chauds=entretiens
- (35) a. une entrevue chaude
 INDF.F.SG interview[F].SG hot.F.SG
 ‘a difficult interview’
 b. *une chaude entrevue

☞ The extent of the phenomenon is hard to evaluate in the absence of large spontaneous speech corpora. At least a few dozen adjectives are concerned.

Problem 6: limited distribution

- Where a M.SG liaison form exists, it has a more limited distribution than one might expect.

- Restricted to prenominal contexts:

- (36)
- a. un vieil=ami
INDF.M.SG old.M.SG=friend.[M].sg
 - b. *un ami vieil=et charmant
INDF.M.SG friend.[M].sg old.M.SG=and charming.M.SG
 - c. des amis vieux=et charmants
INDF.PL friend.[M].pl old.M.PL=and charming.M.PL

- Parallelism in coordination:

- (37)
- a. un nouvel=et charmant=ami
INDF.M.SG new.M.SG=and charming.M.SG=friend.[M].sg
 - b. *un nouvel=et charmant copain
INDF.M.SG new.M.SG=and charming.M.SG mate.[M].sg
 - c. *un nouvel mais charmant=ami
INDF.M.SG new.M.SG but charming.M.SG=friend.[M].sg

The solution: paradigm integration

- Morin (1992): French adjective paradigms do not have 4, but 5 cells: the M.SG liaison form has been morphologized as part of the paradigm.
 - ☞ accounts for the possibility of individual irregularity and defectivity
- The MSLF paradigm cell comes with its own featural description, as any paradigm cell (Bonami and Boyé, 2003).
 - ☞ In that particular case the condition on context is partly morphosyntactic, partly phonological.
- The form filling the MSLF cell is determined by an implicative rule making reference to the rest of the paradigm (Bonami and Boyé, 2005):
 - ☞ If the M.SG cell ends in a consonant, it is syncretic with the MSLF cell. Otherwise the MSLF cell is syncretic with the F.SG cell.

Outline

- 1 Describing liaison
- 2 Shape alternations in French
- 3 Liaison with M.SG adjectives
- 4 Conclusions**

Conclusions

On the basis of a reexamination of the relevant data, I have argued that:

- French liaison is not (plain) phonology: it is best seen as a surprisingly productive case of shape alternation.
- However, in the more interesting case of M.SG adjectives, the liaison alternation has been integrated in the inflectional system.
- This calls into question whether the contextual requirements of paradigm cells and shapes are of a distinct nature:
 - Conditions on general liaison are partly syntactic, partly phonological
 - Conditions on the MSLF go a bit further away from surface phonology, but still involve a kind of shape condition.

Selected references

- Abeillé, A., Bonami, O., Godard, D., and Tseng, J. (2006). 'The syntax of french à and de: an hpsg analysis'. In P. Saint-Dizier (ed.), *Dimensions of the Syntax and Semantics of Prepositions*. Springer, 147–162.
- Abeillé, A. and Godard, D. (2000). 'French word order and lexical weight'. In R. D. Borsley (ed.), *The Nature and Function of Syntactic categories*, Syntax and semantics. New York: Academic Press, Inc, 325–360.
- Bonami, O. and Boyé, G. (2003). 'La nature morphologique des allomorphies conditionnées : les formes de liaison des adjectifs en français'. In *Actes du troisième forum de morphologie*. Lille.
- (2005). 'Construire le paradigme d'un adjectif'. *Recherches Linguistiques de Vincennes*, 34:77–98.
- (2007). 'French pronominal clitics and the design of Paradigm Function Morphology'. In *Proceedings of the fifth Mediterranean Morphology Meeting*. 291–322.
- Bonami, O., Boyé, G., and Tseng, J. (2004a). 'An integrated analysis of French liaison'. In G. Jaeger (ed.), *Formal Grammar 2004 Preproceedings*.
- (2005). 'Sur la grammaire des consonnes latentes'. *Langages*, 158:89–100.
- Bonami, O. and Delais-Roussarie, E. (forthcoming). 'Syntaxe et prosodie: les phénomènes segmentaux'. In A. Abeillé, D. Godard, and A. Delaveau (eds.), *Grande grammaire du français*.
- Bonami, O., Godard, D., and Kampers-Manhe, B. (2004b). 'Adverb classification'. In F. Corblin and H. de Swart (eds.), *Handbook of French Semantics*. Stanford: CSLI Publications, 143–184.
- Cabredo Hofherr, P. (to appear). 'Preposition+determiner contractions in French and German'. In P. Ackema (ed.), *Papers from the 23rd Comparative Germanic Syntax Workshop, Edinburgh*.
- Dell, F. (1985). *Les règles et les sons*. Paris: Hermann.
- (1995). 'Consonant clusters and phonological syllables in french'. *Lingua*, 95:5–26.
- Encrevé, P. (1988). *La liaison avec et sans enchaînement*. Paris.
- Miller, P. (1992). *Clitics and constituents in Phrase Structure Grammar*. New York: Garland.
- Morin, Y.-C. (1992). 'Un cas méconnu de la déclinaison de l'adjectif en français: les formes de liaison de l'adjectif antéposé'. In *Le mot, les mots, les bons mots. Word, words, witty words. Hommage à Igor A. Mel'čuk*. Montréal: Les Presses de l'Université de Montréal.
- Pagliano, C. (2003). *L'épenthèse consonantique en français*. Ph.D. thesis, Université de Nice.
- Perlmutter, D. M. (1998). 'Interfaces: explanation of allomorphy and the architecture of grammars'. In S. G. Lapointe, D. K. Brentari, and P. M. Farrell (eds.), *Morphology and its relation to phonology and syntax*. Stanford: CSLI Publications, 307–338.
- Plénat, M. (1980). 'La loi de Littré'. *Cahiers de Grammaire*, 2:47–135.
- Post, B. (2000). 'Pitch accents, liaison and the phonological phrase in French'. *Probus*, 12:127–164.
- Schane, S. (1968). *French Phonology and Morphology*. Cambridge: MIT Press.
- Steriade, D. (1999). 'Lexical conservatism in french adjectival liaison'. In J.-M. Authier, B. E. Bullock, and L. Reed (eds.), *Formal perspectives on Romance linguistics*. Amsterdam: John Benjamins, 243–270.
- Stump, G. T. (1981). 'An inflectional approach to french clitics'. In A. M. Zwicky (ed.), *Ohio State University Working Papers in Linguistics, No 24: Clitics and Ellipsis*. Columbus: Ohio State University, 1–54.
- Tranel, B. (1981). *Concreteness in Generative Phonology: Evidence from French*. Berkeley: University of California Press.
- (1996). 'French liaison and elision revisited: a unified account within optimality theory'. In C. Parodi, C. Quicoli, M. Saltarelli, and M. L. Zubizarreta (eds.), *Aspects of Romance Linguistics*. Amsterdam: John Benjamins, 53–78.
- Wescoat, M. (2007). 'Preposition-determiner contractions: an analysis in optimality-theoretic lexical-functional grammar with lexical sharing'. In *Proceedings of the LFG07 Conference*.