

# What kind of species are Italian glides?

Martin Krämer  
 University of Tromsø / CASTL  
 martin.kraemer@hum.uit.no

## 1. The problem with Italian glides

### 1.1 The Italian sound inventory

#### (1) Italian consonant chart

	Labial	Alveolar/dental	Postalveolar	Palatal	Velar
stop	p, b, (p <sup>j</sup> , b <sup>j</sup> , p <sup>w</sup> , b <sup>w</sup> )	t, d, (t <sup>j</sup> , d <sup>j</sup> ) (t <sup>w</sup> , d <sup>w</sup> )			k, g, (k <sup>j</sup> , g <sup>j</sup> , k <sup>w</sup> , g <sup>w</sup> )
affricate		ts, dz	tʃ, dʒ		
fricative	f, v (f <sup>j</sup> , v <sup>j</sup> , f <sup>w</sup> , v <sup>w</sup> )	s, (z) (s <sup>w</sup> , z <sup>w</sup> ) (s <sup>j</sup> , z <sup>j</sup> )	ʃ		
lateral		l		ʎ	
nasal	m	n		ɲ	(ŋ)
rhotic		ʀ, (r)			
glide	w			j	

#### (2) Italian consonant phonemes (Vincent 1988:280)

	Labial	Labio-dental	Dental	Alveolar	Palato-alveolar	Palatal	Velar
stop	p, b		t, d				k, g
affricate				ts, dz	tʃ, dʒ		
fricative		f, v		s, (z)	ʃ		
nasal	m			n		ɲ	
lateral				l		ʎ	
rhotic				r			

Remarks on the system:

- 1) Voicing seems to be relevant only in stops.  
 The alveolar voiced fricative is allophonic in most varieties (except some places in Tuscany)  
 The only fricative with an apparently stable voicing contrast is the labial. /v/ could also be /v̥/, a glide
- 2) The voicing contrast in the alveolar affricate is instable.  
 Northern Italian has no voiceless /ts/ word-initially.
- 3) Palatal nasal and liquid almost exclusively occur word-internally and as long. Both are instable, also realised as [nj] / [lj] sequences
- 4) The velar nasal occurs only before velar stops
- 5) The rhotic is a tap or flap when short, a trill when long.

6.a) Glides /w,j/ only occur marginally in word-initial position

(3) Word-initial glides

uomo	wó:mo	'man'
whisky	wíski	'whisky'
iella	jélla	'bad luck'
iena	jé:na	'hyena'
iodio	jó:djo	'jodite'
iato	já:to	'hiatus'
yacht	jót	'yacht'
iuta	jú:ta	'jute'

Most of these are loanwords.

6.b) The glides above might as well be part of a diphthong, i.e., in the nucleus.

(4) The Italian vowel inventory

a. Single quality vowels

i	u
e	o
ɛ	ɔ
a	

b. Falling diphthongs (i.e., falling in sonority) (Mioni 1993)

(ej)	oj	ew
(ɛj)	ɔj	ɛw
	aj	aw

Remark: [ej] and [ɛj] occur only in derived environment (as in contraction of prep + det) + *lei* pronoun

Removing the derived diphthongs, the system is remarkably restrictive: Sonority rise + a front/back OCP, with /a/ compatible with both glides

c. Rising diphthongs (Mioni 1993)

	ju	wi	
je	jo	we	wo
jɛ	jɔ	wɛ	wɔ
	ja		wa

There are non-derived examples for each (i.e., disregarding the dittonghi mobili and other morphophonological catastrophes).

The system is remarkably unrestricted.

d. Triphthongs

Basically emerge in derived environments. Here, almost anything goes.

(5) Derived triphthong

seguiamo [segwja:mo] 'we follow'

Does the prosodification of glides have an impact on the segment inventory?

1.2 The choices for the two glides

Let's concentrate on 6).

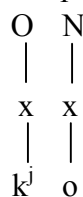
We have three choices:

- A. Glide is either part of a diphthong or a secondary articulation of a stop.  
There are no glides. Just high vowels. (as usual)
- B. Glides are always the weak part of a diphthong  
There are no glides. Just high vowels (as usual') (e.g., Vincent 1988, Mioni 1993)
- C. Glides are a separate species  
Glide has status as fully accredited autonomous segment in the system  
Only some glides emerge from underlying high vowels (Muljačić 1969, Bertinetto & Loporcaro 2005, van der Veer 2006)

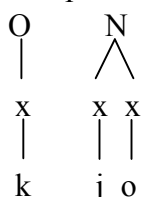
(6) Syllabic and moraic representations

chiociola 'snail'

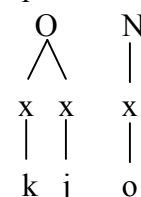
a. Complex consonant



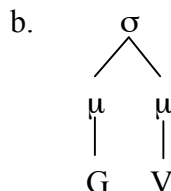
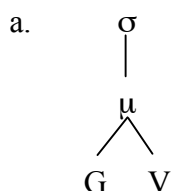
b. Complex nucleus



c. Complex onset



(7) Moraic theory provides two choices for (b) (van der Veer's 2006 solution)



The odds against /j/ and /w/ are 2:1.

The most recent descriptions and analyses, however, prefer to give glides lexical status (Bertinetto & Loporcaro 2005, van der Veer 2006).

## 2 The prosodification of Italian glides

### 2.1 The masculine definite article

#### (8) The masculine articles

a.	il duomo	i duomi	'the dome/s'
	il maschio	i maschi	'the male/s'
	il ladrone	i ladroni	'the villain/s'
	il bar	i bar	'the café/s'
b.	l'ottico	gli ottici	'the optometrist/s'
	l'asparago	gli asparagi	'the asparagus/es'
c.	lo spettacolo	gli spettacoli	'the event/s'
	lo straniero	gli stranieri	'the stranger/s'
d.	lo zaino [dʒ]	gli zaini	'the backpack/s'
e.	il gioco [dʒ]	i giochi	'the game/s'

#### (9) Masculine articles and glide-initial words (own data)

		l'	il	lo	gli	i	gloss
a.	uomo	√	*	*	√	*	'man/men'
b.	whisky	*	?	√			'whisky'
c.	weekend	*	√	*	*	√	'weekend'
d.	ione	√	*	√	√	*	'ion/s'
	iato	√	*	√	√	*	'hiatus'
e.	yoghurt	*	*	√	√	*	'yoghurt'
	yacht	?	*	√	√	*	'yacht'
	iodio	?	*	√			'jodine'

#### (10) But:

la iella / *l'	'bad luck'
la iena / *l'	'hyena'
la juta / *l'	'jute'
la Jugoslavia / *l'	'Yugoslavia'

Vocalic treatment completely out.

Preliminary conclusion: /#jV/ = C; /#wV/ = V or sC (free)

The use of *lo* and *gli* is a prescriptive norm.

My informant has serious problems with intuition, but definitely rejects *il* with glide-initial words (except for *weekend* and has doubts about *whisky*).

Mioni (1993):

For [j] treatment as a consonant cluster is on the rise.

For [w] in Italian forms the vocalic treatment is obligatory.

For [w] in loans the trend is to be vocalic or consonantal, but not a cluster.

van der Veer (2006:79f):

Word-initial glides are of extremely low lexical frequency.

"...the grammatical norm is not language-internally motivated, resulting in considerable variation in allomorph selection."

"It seems therefore difficult to use article allomorphy as a solid phonological argument for syllabification distinctions in word-initial glides..."

Conclusion on article distribution: More obfuscating than clarifying diagnostic.

## 2.2 Syllable size restrictions

### (11) Falling diphthongs

causa	'reason/cause'	*caussa
baita	'mountain hut'	*bainta

Syllables containing a falling diphthong are never closed by a consonant.

### (12) Rising diphthongs

soffietto	'bellows'	quello 'this'
biondo	'blonde'	quercia 'oak'

Syllables containing a rising diphthong can be closed by a consonant.

### (13) Noncontrastive vowel length

'ka:za	'house'
'kanto	'song'
'a'bile	'able'

Vowels are lengthened under stress to obtain an optimal bimoraic trochee.

Stressed vowels in closed syllables receive less lengthening. (D'Imperio & Rosenthal 1999 and previous studies cited there)

### (14) Vowel length and foot structure

('ka:) <sub>Ft</sub> <za>	'house'
('kan) <sub>Ft</sub> <to>	'song'
('a'bi) <sub>Ft</sub> <le>	'able'

### (15) Italian maximal syllable structure in moraic terms

a.	μ	μ	/	μ	μ	b.	*	μ	μ	μ
				∨						
	x	x		x				x	x	x

(See as well Morén 2001 and references cited there.)

### (16) As constraint ranking

WEIGHT-BY-POSITION, \*μμμ » FAITH-IO

Mezzanine conclusion: Prevocalic glides are not moraic (and maybe not in the nucleus).

### 2.3 Contrastive syllabification?

(17)

a.	fiala	[fjá:.la]	'vial'	a'.	viale	[vi.á:.le]	'avenue'
	diavolo	[djá.vo.lo]	'devil'		dialogo	[di.á.lo.go]	
	piano	[pja:.no]	'flat'		piano	[pi.'a:.no]	'of Pius'
	qui	[kwí]	'here'		cui	[kú:.i / kúj]	rel.pron.
	piovere	[pjó.ve.re]	'to rain'		pioniere	[pi.o.njé:.re]	'pioneer'
b.	fiat	[fi:.at]					
c.	baule	[ba.ú:.le]	'boot/trunk'	c'.	pausa	[páw.za]	'break'
	paura	[pa.ú:.ra]	'fear'		causa	[káw.za]	'cause'
					aura	[áw.ra]	'aura'
d.	Italia	[i.tá:.lja]	'Italy'	d'.	prosodia	[pro.so.dí:.a]	'prosody'
	invidia	[in.ví:.dja]	'envy'		María	[ma.rí:.a]	

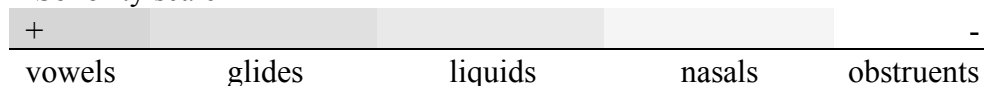
One of the very few very widespread agreements in phonology: Syllabification is never lexical, i.e., never contrastive (for an exception see Golston, to appear).

Lexical stress is associated to segments (explains c & d).

But what do we do with the (near) minimal pairs in (a)?

### 2.4 Onset types

(18) Sonority scale



(19) Licit onsets:

kj /kw; kr/kl; lw/lj; rw/rj; nw/nj  
 chiesa 'church', cuoco 'chef', credere 'to believe', classe 'class'  
 luogo, 'place', lieto 'happy'; ruota 'wheel'  
 nuotare 'to swim', niente 'nothing'

(20) Illicit onsets:

\*kn, kt/ks (stop-stop and stop-fricative onsets survive in Greek loans)  
 \*mr/ml

Glide formation from laterals in complex onsets as in *chiaro* (cf. *claro*) cannot be said to be active anymore due to a high number of C1 onsets.

If rising sonority determines onset phonotactics, /kw/ and /kj/ sequences are good onsets.

On the other hand: Glides combine with almost anything...

### 2.5 Morphophonological vowel-glide alternations

(21) Stressed vowel to unstressed glide (van der Veer 2006)

a.	av[ <i>'vi:.o</i> ]	'start'	b.	av[ <i>vja</i> ]ménto	'start'
	cir[ <i>'ku:.ito</i> ]	'circuit'		cir[ <i>kwi</i> ]tàle	'of a circuit'
	in[ <i>'vi:.o</i> ]	'sending'		in[ <i>vja</i> ]bilità	'sendability'

Full vowels can alternate with glides when stress is removed.

For the vocalic reflex stress does not have to be on the segment, but close:

(22) Pre-tonic vowel to glide (adapted from van der Veer 2006:75)

a.	b[ <i>i.ó</i> ]logo	'biologist'	b.	b[ <i>jo</i> ]logía	'biology'
	cl[ <i>i.é</i> ]nte	'client'		cl[ <i>je</i> ]ntéla	'clientele'
	cons[ <i>u.é</i> :]to	'usual'		cons[ <i>we</i> ]túdine	'habit'

(23) Post-stress glide to pre-stress vowel alternation

patria	[ <i>pá.trja</i> ]	'native land'
patriota	[ <i>pa.tri.ó.ta</i> ]	'patriot'

(24) Stressed vowel to unstressed vowel to glide

via	[ <i>ví:.a</i> ]	'away; street'
viale	[ <i>vi.á:le</i> ]	'avenue'
traviamento	[ <i>tra.vja.mén.to</i> ]	'distortion/corruption'

(25) Many glides never vocalize

[ <i>kj.ó.tʃo.la</i> ]	*[ <i>ki.ó.tʃo.la</i> ]	'snail'
[ <i>kw.ó.tʃe.re</i> ]	- [ <i>kw.ó.tʃjá.mo</i> ]	*[ <i>ku.ó / ku.o...</i> ] 'to cook / 1pl.'

### 3 What now?

We have to assume two distinct input representations (as van der Veer 2006):

- Underlying high vowels which alternate between glide and vowel according to syllable structure requirements
- Underlying glides, which don't alternate.

However, initial [j] and [w] do not have distinct status (as proposed for English by Davis & Hammond 1995).

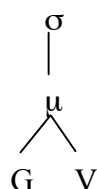
### 3.1 Representational issues

#### 3.1.1 Moraic affiliation

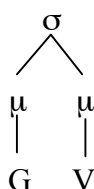
van der Veer assumes a restriction on stressed syllables to be bimoraic and proposes the following representations for GV sequences:

(26) Rising diphthongs according to van der Veer

a. Unstressed



b. Stressed



- Pre-penultimate syllables only show phonetic lengthening, while stressed penultima shows phonological lengthening (D'Imperio & Rosenthal 1999).

- Stressed pre-penults only show phonological lengthening when the penult is heavy. (Own measurements: /ɔ/ in (pó.li).po 'octopus' (with around 100 msec.) is significantly shorter than in (pó:).liz.za 'policy' (around 150 msec.). The latter has same length as /ɔ/ in pi.(lò:).ta 'pilot'. But, actually, this is a different paper...)

Italian foot structure is trochaic (everybody agrees).

Italian trochees are maximally bimoraic and optimally bisyllabic. (My own analysis, in prep.)

(26b) is an iamb.

(According to Kager (1999) even an impossible iamb. He analyses all heavy syllable iambs as micro-trochees (p. 173f))

Syllables with rising diphthongs can be closed by a consonant (see above).

Stressed penultimates containing rising diphthongs undergo phonological lengthening.

Italian syllables are maximally bimoraic (as feet are).

(26b) cannot be right.

Prevocalic glides are never moraic (in Italian).

#### 3.1.2 Segmental features

Distinctive feature theories usually ignore glides and represent them as underlying high vowels.

Italian calls for a representation that acknowledges the autonomous status of glides but still leaves room for high vowels to turn into glides when this serves prosody.

### 3.1.2.1 The Parallel Structures Model

(27) Morén (2003: 227):

Consonants:	Presence of a C-manner feature
Vowels:	Absence of a C-manner feature
Sonorants:	Presence of a V-manner feature
Obstruents:	Absence of a V-manner feature

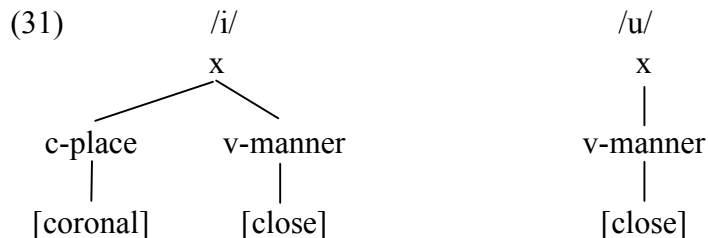
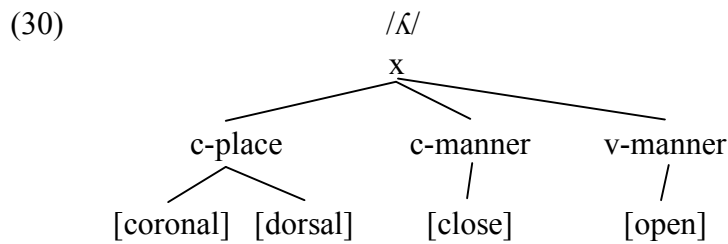
Read inversely: All vowels have a V-manner. All consonants have a c-manner.

(28) Italian consonant phonemes (revised)

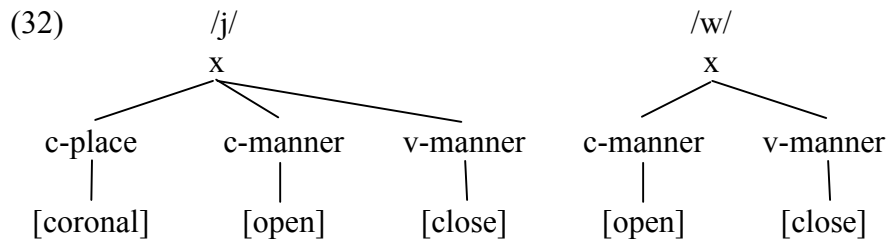
	Labial	Labio-dental	Dental	Alveolar	Palato-alveolar	Palatal	Velar
stop	p, b		t, d				k, g
affricate				ts, dz	tʃ, dʒ		
fricative		f, v		s, (z)	ʃ		
nasal	m			n		ɲ	
lateral				l		ʎ	
rhotic				r			
glide	w					j	

(29) Italian in PSM

	c-place			c-manner		v-manner		L
	lab	cor	dors	open	close	open	close	
p/b	✓				✓			∅/L
t/d					✓			∅/L
ts/dz		✓			✓			∅/L
tʃ/dʒ		✓	✓		✓			∅/L
k/g			✓		✓			∅/L
f	✓			✓				∅/L
s				✓				∅/L
ʃ		✓	✓	✓				∅/L
m	✓				✓		✓	∅/L
n		✓			✓		✓	∅/L
ɲ		✓	✓		✓		✓	∅/L
l					✓	✓		∅/L
ʎ		✓	✓		✓	✓		∅/L
r				✓		✓		∅/L
v (v)	✓							∅/L
w				✓			✓	∅/L
j		✓		✓			✓	∅/L
u							✓	∅/L
i		✓					✓	∅/L
o			✓					∅/L
ɔ			✓			✓		∅/L
e		✓						∅/L
ɛ		✓				✓		∅/L
a						✓		∅/L



To turn a vowel into a glide you add c-manner [open].



Advantages:

- A. The glides are separate without introduction of additional features (such as [glide] or [+consonantal]; see Levi 2004 for discussion)
- B. High vowels can easily turn into consonants by syllable margin affiliation.  
Glide-vowel conversion is blocked if we ban c-manner from nucleus position.  
Levi (2004) also argues for lexical glides as stable and vowels as instable.
- C. Fricatives have no voicing contrast. /s/ is the least-specified fricative.
- D. The place analysis gives us velar palatalisation as spreading of C-coronal from /i/ and /e/ to C-dorsal stops  
/sk/ -> /ʃ/; /lg/ -> /k/ (as in *cre[ʃ]ere* 'to grow', *cre[sk]o* (1sg.); *tol[k]ere* 'to remove' *tol[g]o* (1sg.)) works in the same way.
- E. The place analysis gives us /t/ -> [ts] before /i/ (but also before /e/).
- F. The palatal nasal is very marked. So what?
- G. The lax mid vowels are more marked than the tense mid vowels (unstressed syllable reduction = removal of v-manner [open] to avoid complexity in unimportant position)
- H. The manner analysis creates a sonority hierarchy which can be used to explain (onset) phonotactics: Constraint blocks combination of nasals with anything but glides.

(33) Deriving the sonority scale from manner specifications

Sonority		Low				High	
		c-manner		v-manner			
Low	Stops	[close]					
	Fricatives		[open]				
	Nasals	[close]		[close]			
	Laterals	[close]				[open]	
	Rhotic		[open]	[close]			
	Glides		[open]	[close]			
	High vowels			[close]			
High	Non-high Vowels					[open]	

I. /e/ is very unmarked and /t/ is very unmarked. (Epenthetic segments)

Oddities:

PSM does not allow complex segments if there is no less complex segment with the same features.

/ʃ/ and /ʎ/ each have two place features and there is no segment that has the same manner features but only one of the two place features.

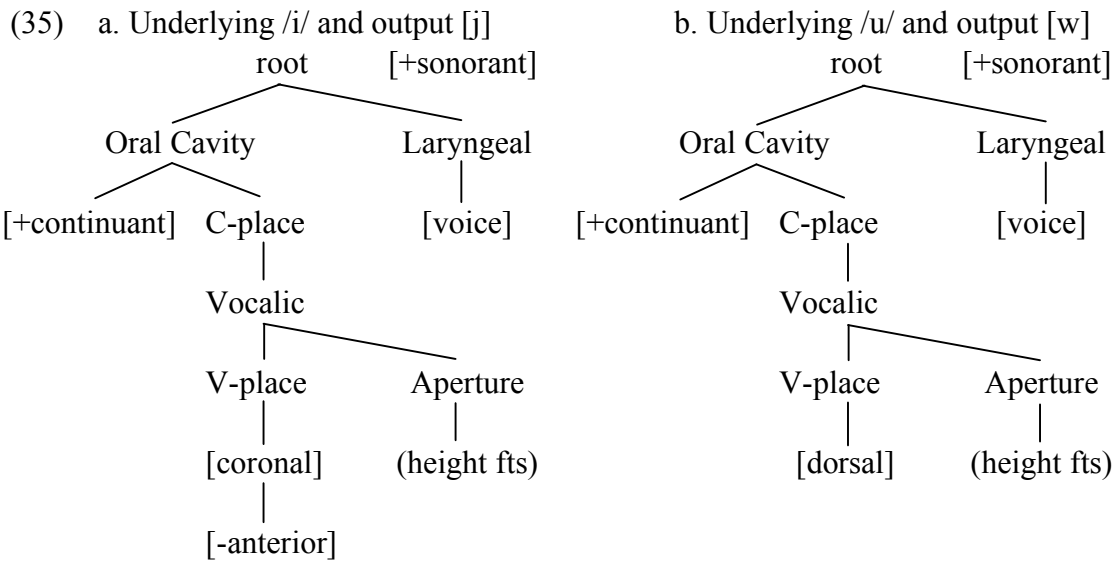
Apart from this there is no exhaustivity restriction built in: The features used here could be combined to segments that don't exist (e.g., voiced fricatives, low toned vowels or dorsal fricatives).

To be handled via OT markedness constraints:

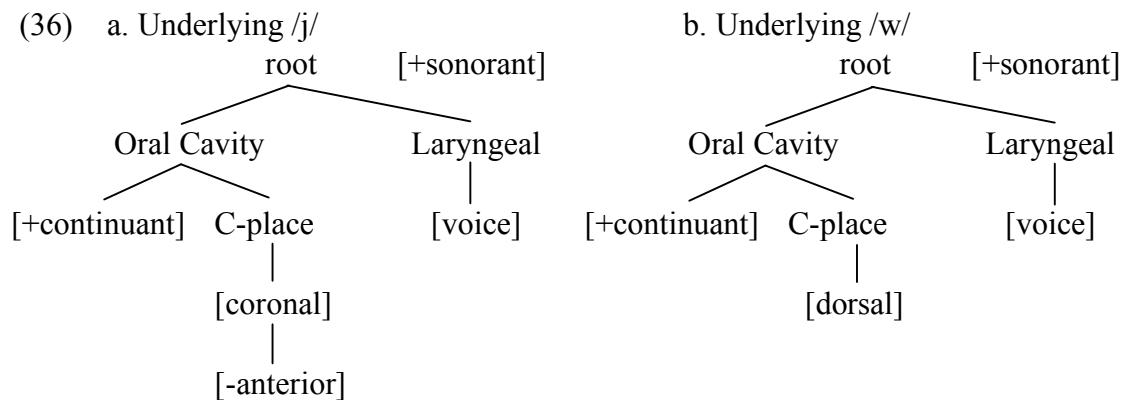
(34)

- a. \*C-manner[open] & \*L: No /v, z, ʒ/
- b. \*V & \*L: Vowels don't have tone.
- c. \*[dorsal] & \*C-manner[open]: No /x/.

3.1.2.2 Underlying glides in FG (Herman 1994, Hume 1995, Levi 2000) and in RAT (Levi 2004)<sup>1</sup>

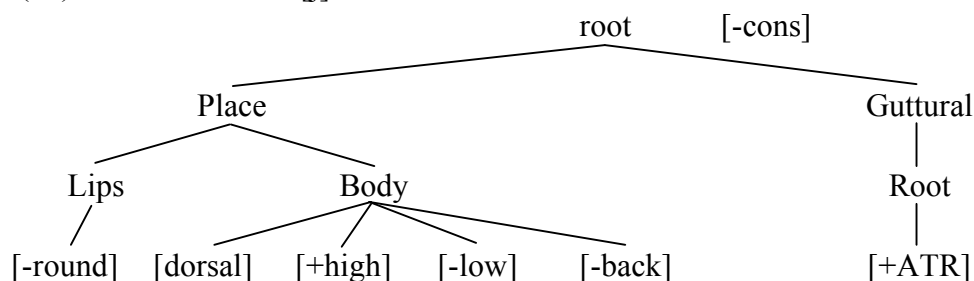


To change the input vowel into a surface glide representationally the only choice is to cut off the Vocalic node. This cuts off the place feature too.

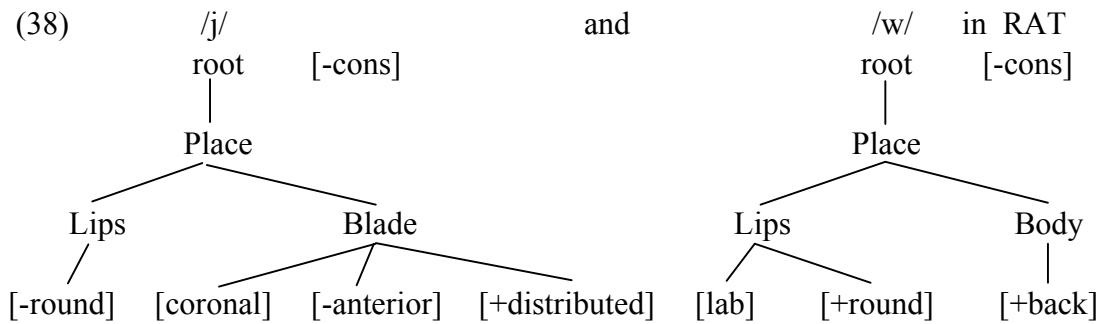


RAT: Revised Articulator Theory (Calabrese 1995, Halle, Vaux, Wolfe 2000)

(37) /i/ and derived [j] in RAT

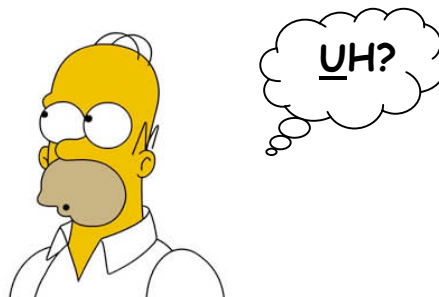


<sup>1</sup> FG = Feature Geometry; RAT = Revised Articulator Theory



Getting from an input vowel to a surface glide by changing the representation isn't a trivial operation here either.

### 3.1.2.3 Lexical glides in Element Theory



Element Theory (ET) (as presented in Harris & Lindsey 1995) does not make a representational distinction between glides and vowels.

### 3.1.2.4 Why does he show us all these trees?

- In both (FG and RAT) approaches derived glides = vowels
- There is a significant difference between /j/ and /w/ in RAT but not in FG.  
(Might be interesting for American English (cf. Davis & Hammond 1995), but beyond?)
- Both approaches assume universality: That's what it looks like everywhere on the planet.
- In PSM, high vowels as well as glides could be very different animals in another language/variety (e.g., one with vowel harmony/metaphony)  
(Is that a good thing or a bad thing?)
- RAT explicitly endorses cross-linguistic and cross-derivational full specification.  
(But then, where have all these features gone?)
- For ET, lexical glides don't exist.  
(Really?)

### 3.2 Constraint-based analysis of vowel-glide alternation

Details of stress grammar are omitted to keep tableaux manageable.

Glides have c-manner [open]. Vowels don't. For inputs to change according to position we need

- a. Positional markedness constraints that demand representational difference.
- b. Faithfulness constraints on representations.

a'. \*C-manner/nucleus 'No c-manner specification in nucleus position.'

b'. IO-MAX[c-manner]'σ

IO-DEP[c-manner]'σ

c. Vowels alternate, glides don't.

c'. IO-MAX[c-manner] » IO-DEP[c-manner]

(39)

	/kwɔko/	*C-man/nuc	IO-MAX [c-manner]'σ	IO-DEP [c-manner]'σ	PARSE-σ
a.	ku.(ɔ́:).ko				*!
☞ b.	(kwó:).ko				
c.	kw.(ɔ́:).ko	*!			

(40)

	/biɔlɔg -o/	*C-man/nuc	IO-MAX [c-manner]'σ	IO-DEP [c-manner]'σ	PARSE-σ
☞ a.	bi.(ɔ́.lo).go				*
b.	(bjó.lo).go			*!	

(41)

	/biɔlɔg -ía/	*C-man/nuc	IO-MAX [c-manner]'σ	IO-DEP [c-manner]'σ	PARSE-σ
a.	bi.o.lo.(dʒí:).a				****!
☞ b.	bjo.lo.(dʒí:).a				***

OT can only handle the vowel-glide alternation asymmetry if representations differ. That is, a glide has to change/lose a feature to become a vowel and vice versa.

RAT and FG have a problem in (40): An input vowel doesn't change when realised as a glide. Hence, (b) should win.

## 5 Conclusion

- Glides exist (old news, see Hume 1995, Levi 2004). At least in Italian.
- Can be captured representationally in an economic way in PSM.
- There is some (OT-infected?) suspicion that a derived glide is not just a vowel in the wrong place – vuol dire:
- Foot structure determines syllable constituent affiliation determines segmental representation.

## References

- Bertinetto, Pier Marco and Michele Loporcaro 2005. The sound pattern of Standard Italian, as compared with the varieties spoken in Florence, Milan and Rome. *Journal of the International Phonetic Association* 35: 131-151.
- Calabrese, Andrea 1993. Palatalization processes in the history of Romance languages: A theoretical study. In William J. Ashby, Marianne Mithun, Giorgio Perissinotto, Eduardo Raposo (eds.) *Linguistic perspectives on the Romance languages*. Amsterdam, Philadelphia: John Benjamins. 65-83.
- Calabrese, Andrea 1995. A constraint-based theory of phonological markedness and simplification procedures. *Linguistic Inquiry* 26: 373-463.
- D'Imperio, M. & S. Rosenthal 1999. Phonetics and Phonology of Main Stress in Italian. *Phonology* 16: 1-28.
- Davis, Stuart 1990. The onset as a constituent of the syllable: evidence from Italian. *CLS* 26:2. 71-79.
- Davis, Stuart and Michael Hammond 1995. On the status of onglides in American English. *Phonology* 12: 159-182.
- Golston, Chris to appear. Variables in Optimality Theory. In Sylvia Blaho, Patrik Bye and Martin Krämer (eds.) *Freedom of Analysis?* Berlin, New York: Mouton.
- Halle, Morris, Bert Vaux, Andrew Wolfe 2000. On feature spreading and the representation of place of articulation. *Linguistic Inquiry* 31: 387-444.
- Harris, John and Geoff Lindsey 1995. The elements of phonological representation. In Jacques Durand and Francis Katamba (eds.) *Frontiers of phonology: atoms, structures, derivations*. Harlow, Essex: Longman. 34-79.
- Herman, Rebecca 1994. "La double vie de w" or The status of [w] in Karuk. *Studies in the Linguistic Sciences* 24: 233.244.
- Hume, Elizabeth 1995. Representing the duality of glides. In G. Tsoulas and L. Nash (eds.) *Les actes du congrès: langues et grammaire*. Paris: Université de Paris VIII.

- Levi, Susannah V. 2000. Glides, laterals, and Turkish vowel harmony. MA thesis, University of Washington.
- Levi, Susannah V. 2004. *The representation of underlying glides*. Phd. dissertation, University of Washington. Seattle.
- Marotta, Giovanna, 1987. Dittongo e iato in italiano: una difficile discriminazione. *In Annali della Scuola Normale Superiore di Pisa* 17: 847-887.
- Marotta, Giovanna 1988. The Italian diphthongs and the autosegmental framework. In Pier Marco Bertinetto and Michele Loporcaro (eds.) *Certamen Phonologicum*. Torino: Rosenberg & Sellier. 389-420.
- Mioni, Alberto M. 1993. Fonetica e fonologia. In Alberto A. Sobrero (a cura di) *Introduzione all'italiano contemporaneo. Le strutture*. Roma: Editori Laterza. 101-139.
- Morén, Bruce 2001. *Distinctiveness, Coercion and Sonority. A Unified Theory of Weight*. New York and London: Routledge.
- Morén, Bruce 2003. The Parallel Structures Model of Feature Geometry. *Working Papers of the Cornell Phonetics Lab* 15.
- Muljačić, Žarko 1969. *Fonologia generale e fonologia della lingua italiana*. Bologna: Il Mulino.
- Nocchi, Nadia 2006. Phonetic cues for syllable structure? Evidences from labiovelars in Tuscany. Poster presented at the 14<sup>th</sup> *Manchester Phonology Meeting*.
- Veer, Bart van der 2006. *The Italian 'mobile diphthongs'. A test case for experimental phonetics and phonological theory*. Phd. dissertation, University of Leiden.
- Vincent, Nigel 1988. Italian. In Martin Harris and Nigel Vincent (eds.) *The Romance Languages*. London and New York: Routledge. 279-313.