Accent and tone: the double origin of the Paicî prosodic system

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Abstract

What happens when an accentual language develops a tonal contrast from laryngeal features: is the accent system kept alongside the new tone contrast? Is it lost? Do both prosodic systems merge? In this paper, I present the peculiar tone system of Paicî and its history, which illustrates the latter outcome. The prosodic system of Paicî seems to consist of two integrated subsystems, each one corresponding to the two prototypical word-prosodic systems defined by Hyman (2006): a purely tonal H vs. L contrast, and a typologically unusual metrically conditioned downstep, which, despite not being a *bona fide* accent system, stands out as having accentual properties. Building on work by Rivierre (1974, 1978), I show that a comparison with the neighboring language Xârâcùù, where accent is marked by a metrically conditioned downstep, offers an explanation for this apparently mixed system: the H vs. L tonal contrast of Paicî emerged through common tonogenesis in an already accentual language, where accent was marked by a downstep just like in Xârâcùù. This caused the former accentual downstep to be reinterpreted as an element of the tone system. The Paicî case is interesting for the study of the interactions between accent and tone, both in synchrony and in diachrony.

Keywords: tone, accent, downstep, Paicî, Xâracùù, Oceanic, New Caledonia

1 Introduction

Tone mostly originates from the phonologization of redundant f_0 differences caused by segmental laryngeal features – i.e., from non-prosodic features (Michaud & Sands 2020, a.o.). Languages where tone originates from prosodic features (e.g. accent) appear to be the exception rather than the rule (e.g., Scandinavian languages, cf. Kingston 2011, a.o.). What has yet to be fully documented is what happens when an accentual language develops a tonal contrast from laryngeal features: is the accent system kept alongside the new tone contrast? Is it lost? Do both prosodic systems merge?

In this paper, I present the peculiar word-prosodic system of Paicî (Oceanic, New Caledonia) and its history, which illustrates the latter outcome. The tonal inventory of Paicî includes two tones – high (H) and low (L) – and an underlying downstep /ˈ/. A fully predictable, metrically conditioned downstep is also attested. This system is particularly interesting because

it superficially seems to be split in two subsystem, each one corresponding to the two prototypical word-prosodic systems defined by Hyman (2006): The two tones H and L behave exactly as one would expect in a prototypical TONE system, while downstep, although demonstrably not a form of accent in synchrony, shares properties with *bona fide* ACCENT systems. Building on work by Rivierre (1974, 1978), I show that a comparison with the neighboring language Xârâcùù, where accent is marked by a metrically conditioned downstep, offers an explanation for this apparently mixed system: the H vs. L tonal contrast of Paicî emerged through common tonogenesis in an already accentual language, where accent was marked by a downstep just like in Xârâcùù. This caused the former accentual downstep to be reinterpreted as an element of the tone system.

The paper is structured as follows. Section 2 describes the main aspects of the Paicî word-prosodic system: its two contrastive tonesmes H and L, its metrically conditioned downstep, and its underlying downstep. Section 3 then describes the unusual Xârâcùù accent system and highlights the strikling points of resemblance it shares with the Paicî prosodic system. section 4 develops arguments in favor of viewing the Paicî downstep as originating from a similar accent system predating the independent innovation of a tonal contrast in Paicî. Finally, Section 5 concludes and highlights the relevance of the Paicî case for the diachronic study of prosodic systems.

2 The Paicî prosodic system: tone (and accent?)

Paicî is spoken in the north-central region of Grande Terre, New Caledonia's main island, and is one of the five tonal languages of New Caledonia, all Oceanic (Grace 1955; Haudricourt 1968, 1971; Rivierre 1993, 2001).[1] These languages are famous for being among the very rare Oceanic languages that have developed tone without any external influence.[2]

The Paicî data presented in this paper come partly from Rivierre's (1974, 1983) work, partly from my own fieldwork on the language in 2017 and 2019 with two native speakers: Hélène Nimbaye and Anna Gonari.[3] The recordings made in the field and their transcriptions are available in open access in the **[redacted for review]** online archive. References to this archived material is systematically given for every relevant example.[4] References to Rivierre's (1967) recorded text *Le Maître de Göbwinyârâ*, available in open access in the online Pangloss collection, are indicated with the initial G followed by the relevant time code.

2.1 Segmental inventory and phonotactics

The Paicî segmental inventory is given in (1) and (2) below.[5]

[1]The other four are Cèmuhî, Drubea, Numèè, and Kwényï.

[2]The languages of the Northern Huon linkage in Papua New Guinea are the only other known cases within Oceanic (cf. Ross 1993 and references therein).

[3]Speaker participation and informed consent were obtained in accordance with **[redacted for review]** University IRB protocol #10346.

[4]In the form DateYYMMDD-RecordingNumber-SpeakerInitials:AnnotationNumberInELAN, e.g. 191121-12-AG1:8.

[5]The consonant inventory could be analyzed as consisting of 13 rather than 18 phonemes. Indeed prenasalized and nasal stops are in complementary distribution: only prenasalized are found only before oral vowels, nasal stops only before nasal vowels, i.e. ^{*N}DṼ/NṼ and ^{N}DV/*NV (cf. Ozanne-Rivierre & Rivierre 1989)). Prenasalized and nasal stops can thus be viewed as allophones of the same phoneme – either a prenasalized stop fully nasalized

(1) Paicî vowel inventory (V̰ = nasalized vowel)

i	ɨ	u	ḭ	ɨ̰	ṵ
e	ə	o	ḛ	ʌ̰	o̰
ɛ	ʌ	ɔ			
	a			a̰	

(2) Paicî consonant inventory

Voiceless stop	p	pw	t	c	k
Prenasalized stop	b [ᵐb]	bw [ᵐbw]	d [ⁿd]	j [ᶮɟ]	g [ᵑg]
Nasal stop	m	mw	n	ny [ɲ]	ng [ŋ]
Approximant		w	r, l		

There are no codas or consonant clusters in Paicî, and sequences of up to four vowels are attested (e.g. /àùa̰à̰/ 'footprint'). The superficial impression is that only V and CV syllables are allowed. However, there is no independent evidence for the syllable in the language. It plays no role in the prosodic system, which, as we will see, refers to every prosodic category from the mora up to the prosodic word except the syllable. Vowel length cannot be used as an argument for the syllable either, since there are no arguments against treating long vowels as sequences of two identical vowels. An equally good account of the very restricted consonantal distribution would be the simple phonotactic constraint that a consonant must always be followed by a vowel (which would be both typologically and perceptually well-grounded).

2.2 Tonal inventory in lexical items

Paicî has arguably the most complex tone system in New Caledonia (Rivierre 1974, 1993, 2001).The tonal inventory found in lexical (i.e. non-grammatical) items is simple, with only two tonemes, H and L. 93% of lexical items are isotonic, i.e. carry the same tone throughout, as illustrated with the minimal pairs in (3).

(3)

1μ	/í/	'to cry'	/ì/	'louse'
	/mṵ́/	'smoke'	/mṵ̀/	'flower'
2μ	/kóó/	'humidity, cold'	/kòò/	'tree *sp.*'
	/pá̰dí/	'to hit, to thrash'	/pà̰dì/	'to divide'
3μ	/pwáái/	'to fill, to load'	/pwàài/	'tree *sp.*'
	/údʌ́rɨ́/	'to catch on fire'	/ùdʌ̀rɨ̀/	'to disjoin'
4μ	/tɔ́ɔ́wa̰ŕı̰́/	'to accompany (music) in rhythm'	/tɔ̀ɔ̀wa̰ı̰̀/	'to reimburse'

by a following vowel, or a nasal stop partially oralized before a oral vowel through 'shielding' (Stanton 2018). In this paper, I keep prenasalized and nasal stops distinct and adopt the New Caledonian tradition of not indicating prenasalization in phonological transcription (i.e. /b/ = [b]). Vowel nasalization is always be indicated, including after nasal consonants. Additionally, coronals are apico-postalveolar [t̰ d̰ n̰ ɾ̰ l̰]. /r/ is nasalized to [r̰] when wedged between two nasal vowels; this nasalization is not be reported in transcription. Finally, vowel nasalization is indicated with a subscript tilde [a̰] in order to leave room for tone marks above the vowel, and the high and mid interior vowels are transcribed ⟨ɨ ə⟩, instead of Rivierre's (1974) ⟨ɯ ɤ⟩, in accordance with their phonetic status as central vowels (cf. Gordon & Maddieson 2004). I keep the back unrounded symbol ⟨ʌ⟩ for the mid-low central vowel in order to avoid the potential confusion between the correct IPA symbol ⟨ɜ⟩ and the front vowel ⟨ɛ⟩.

A few non-isotonic lexical items are also attested. Many are likely frozen compounds, or recent loanwords, as shown in the examples in (4) and (5).[6]

(4) /ɛ́rɛ́wèʌ/ 'fish' (/ɛ́rɛ́/ 'contents' + /wèʌ/ (?))
/bwààwʌ́rɛ́/ 'bird *sp.*' (cf. /bwààmʌ̀tà/ 'bird *sp.*')

(5) /lààcí/ 'rice' (< English)
/mwə̀gàcʌ́/ 'store, shop' (< French *magasin*)

Tonal contrasts in lexical items are thus rather straightforward, and require only two tonemes: H vs. L.[7] The complexity of the prosodic system comes from the two types of downstep attested in Paicî: a fully predictable phonological downstep, and an underlying downstep found in about 19 tonal enclitics, both discussed in the next section.

2.3 Phonological downstep

In isotonic L-toned words of at least four morae, a downstep is inserted after the second mora, as illustrated in (7). This does not occur in L-toned words of 1 to 3 morae, as seen in (6).

(6) 1μ: /ù/ [ù] 'breath'
/pwʌ̀/ [pwʌ̀] 'turtle'
2μ: /nɛ̀ɛ̀/ [nɛ̀ɛ̀] 'name'
/cʌ̀mì/ [cʌ̀mì] 'to plant'
3μ: /pwàài/ [pwàài] 'tree *sp.*'
/ùdʌrɨ̀/ [ùdʌrɨ̀] 'to disjoin'

(7) 4μ: /àùkɔ̀ɔ̀/ [àù$^{\downarrow}$kɔ̀ɔ̀] 'kagu bird'
/pʌ̀jàjìì/ [pʌ̀jà$^{\downarrow}$jìì] 'molar teeth'
5μ: /ɛ̀ààràbwà/ [ɛ̀à$^{\downarrow}$àràbwà] 'crab *sp.*'
/pwèrètɔ̀ɔ̀tɨ̀/ [pwèrè$^{\downarrow}$tɔ̀ɔ̀tɨ̀] 'wind'

This is evidence that the tone bearing unit (TBU) in Paicî is the mora (μ), and that the downstep pattern is metrically condioned: a downstep is inserted between two L-toned bimoraic feet. This explains the 4-mora threshold: it takes at least four morae to parse two bimoraic feet. This analysis is illustrated in (8).

(8) a. 1μ: /ù/ [ù] 'breath'
2μ: /cʌ̀mì/ [(cʌ̀mì)] 'to plant'
3μ: /ùdʌrɨ̀/ [(ùdʌ)rɨ̀] 'to disjoin'
b. 4μ: /àùkɔ̀ɔ̀/ [(àù)$^{\downarrow}$(kɔ̀ɔ̀)] 'kagu bird'
5μ: /pwèrètɔ̀ɔ̀tɨ̀/ [(pwèrè)$^{\downarrow}$(tɔ̀ɔ̀)tɨ̀] 'wind'

[6] Non-isotonic items are also found in grammatical words (e.g. negation /cécàà/, disjunctive coordination /àí/) and interjections (e.g. /àípàà/ 'bravo!').

[7] A H vs. Ø analysis would be possible if it weren't for the marginal non-isotonic items and the predwonstepped L-toned enclitics, as discussed in section 4.1.

However, the bimoraic foot is not sufficient to account for the full range of metrically conditioned tonology in Paicî. Indeed, there is evidence that no foot structure is parsed in bi- and trimoraic words. This evidence comes from the realization of a grammatical H tone marking certain head + complement constructions, e.g. verb + incorporated object, genitive head + complement, derivational prefix + verb/noun, etc. This grammatical 'juncture' H tone is assigned to the initial mora of a $1\sim3\mu$ complement, to the initial foot if the complement has at least four morae. This is illustrated with the middle prefix /pì-^{H}/ in (9)a and b respectively, where the foot evidenced by the realization of the juncture H is indicated in parentheses.

(9)	a.	1μ	/pì-^{H}cɔ̀/	[pì-cɔ́]	'to move forward'	
		2μ	/pì-^{H}wa̱dò/	[pì-wa̱dò]	'to get drunk'	*[pì-(wa̱dó)]
		3μ	/pì-^{H}tʌ̀ma̱rì/	[pì-tʌ́ma̱rì]	'to give birth'	*[pì-(tʌ́ma̱)rì]
	b.	4μ+	/pì-^{H}na̱ɟà̱ìrì/	[pì-(na̱ɟá̱)ìrì]	'to curse'	*[pì-na̱ɟà̱ìrì]
			/pì-^{H}tɔ̱ɔ̱wa̱rì/	[pì-(tɔ́ɔ́)wa̱rì]	'to reimburse'	*[pì-tɔ́ɔ̱wa̱rì]

If the realization of the juncture H is taken as a diagnostic for the presence of foot structure, then one must account for the absence of foot structure in bi- and trimoraic words, despite the presence of enough morae to parse a bimoraic foot. This is accounted for if foot parsing is seen as licensed by a dipodic colon – a prosodic consitutent made of two feet. That is, one can parse a bimoraic foot only if there is enough material to parse a colon. This analysis, which explains the 4-mora threshold necessary for foot parsing, is illustrated in (10), where cola are shown in labeled parentheses $(...)_{\kappa}$.

(10)	a.	1μ	/pì-^{H}cɔ̀/	[pì-cɔ́]	'to move forward'
		2μ	/pì-^{H}wa̱dò/	[pì-wa̱dò]	'to get drunk'
		3μ	/pì-^{H}tʌ̀ma̱rì/	[pì-tʌ́ma̱rì]	'to give birth'
	b.	4μ+	/pì-^{H}na̱ɟà̱ìrì/	[pì-((na̱ɟá̱)(ìrì))$_{\kappa}$]	'to curse'
			/pì-^{H}tɔ̱ɔ̱wa̱rì/	[pì-((tɔ́ɔ́)(wa̱rì))$_{\kappa}$]	'to reimburse'

The domain of foot and colon parsing – i.e. the domain of application of this fully predictable downstep – is the prosodic word, which consists of a lexical item (the 'tonal nucleus') and all following suffixes and tonal enclitics (for the latter, see section 2.4). This is illustrated with the third person singular toneless suffix /-e/ 'its/her/his (inalienable)' in (11) and the toneless enclitic /=ke̱e̱/ 'its/her/his (alienable)' in (12), where it is seen that the mora count involved in determining downstep insertion includes the first mora of the enclitic. Note that, to alleviate transcriptions, cola are henceforth not indicated.

(11)	a.	/ma̱jòrò/	[ma̱jòrò]	'origin, reason'
	b.	/ma̱jòrò-e/	[(ma̱jò)$^{\downarrow}$(rò-è)]	'its origin, its reason' (Rivierre 1983: 142)

(12)	a.	/pwɛ̱ɛ̱dì/	[pwɛ̱ɛ̱dì]	'younger brother'
	b.	/pwɛ̱ɛ̱dì =ke̱e̱/	[(pwɛ̱ɛ̀)$^{\downarrow}$(dì =kɛ̀)ɛ̱]	'his younger brother' (G:07'31")

Phonological downstep applies within the prosodic word only. Long strings of L-toned morae with no downstep are possible, if each individual prosodic word within the string has a maximum of three morae. This is shown in (13) with an utterance consisting of eight independent mono- and bimoraic prosodic words, all but the last one L-toned. No downstep is inserted

in the sequence of 11 L-toned morae formed by the first seven prosodic words [gʌ̀ù nʌ̰̀bwè bàà gò ɟɛ̀ nìì̱ pò].

(13) /gʌ̀ù nʌ̰̀bwè bàà gò jɛ̀ nìì̱ pò^{H} mò̱ò̱/
[gʌ̀ù nʌ̰̀bwè bàà gò ɟɛ̀ nìì̱ pò mó̱ò̱]
you.two end because I PFV alas very cold
'Stop, for I am freezing.' (G:18'02")

However, an utterance may include more than one downstep, if it includes several L-toned prosodic words of at least four morae. This is illustrated in (14), which contains a total of four downsteps – including cases of underlying downsteps in the morphemes /=$^{\downarrow}$ì/ and /=$^{\downarrow}$wʌ/, which are explained in section 2.4 (prosodic word boundaries are shown with angled brackets ⟨...⟩).[8]

(14) /gɔ̀ =$^{\downarrow}$ì dà =ke̱e̱ =$^{\downarrow}$wʌ pwìrìdùà/
[⟨gɔ̀ =$^{\downarrow}$ì⟩ ⟨(dà =ke̱)$^{\downarrow}$(e̱ =wʌ̀)⟩ ⟨(pwìrì)$^{\downarrow}$(dùà)⟩]
on =DET spear =his =SBJ (name)
'Pwiridua [adjusts the propeller] on his spear.' (G:06'40")

Each downstep lowers the register ceiling by one step, yielding the terracing effect typical of downstep (cf. Connell 2011 and references therein).

2.4 Underlying downstep in tonal enclitics

Paicî has a total of 80 tonal enclitics, i.e. prosidically weak function words which cannot head their own prosodic word, and are systematically integrated into the preceding prosodic word. Evidence for prosodic integration is twofold: most enclitics, being toneless, receive their tonal specification from the preceding prosodic word, and the domain of colon- and foot-parsing within a prosodic word extends to the following enclitics (as shown in (17)). These tonal enclitics come in three types: (i) toneless enclitics (61 out of 80), already illustrated in 12 above with possessive /=ke̱e̱/; (ii) downstepped toneless enclitics (11); and (iii) downstepped L-toned enclitics (8).

Downstepped toneless enclitics are realized H after a H-toned nucleus, and downstepped $^{\downarrow}$L after a L-toned nucleus. The tone of the tonal nucleus spreads to the toneless enclitic. If that tone is L, the underlying downstep of the enclitic is realized. If the tonal nucleus is H-toned, the downstep is deleted, by virtue of a general tonotactic constraint against the coexistence of H and downstep (*H/$^{\downarrow}$), which suffers no exception. This is illustrated (15)a and b with the preposition/=$^{\downarrow}$wʌ/ introducing the subject.[9]

[8]Unmarked declarative clauses in Paicî are verb-initial and subject-final. Only the adjunct ('on his spear') and the subject ('Pwiridua') are shown in (14), the verb and object ('adjusts his propeller') at the beginning of the clause being omitted for lack of space.

[9]Many of the tonal enclitics of Paicî, such as the subject marker /=wʌ/ in (15) or the determiner /=$^{\downarrow}$i/ in (16), are 'ditropic' enclitics (Cysouw 2005: 18; Spencer & Luis 2012; Himmelmann 2014), i.e. they are morphosyntactically grouped with the following morpheme or phrase (often their complement), but prosodically integrated into the preceding prosodic word.

(15) a. /á̱ è =↓mwà̱à̱^{H} ínʌ̱́ =↓wʌ pwìrìdùà.../
[á̱ è =↓mwà̱à̱ ⟨ínʌ̱́ =wʌ́⟩ pwìrì↓dùà...]
and (s)he =PCT say =SBJ (name)
'And Pwiridua then said...' (G:16'19")

b. /è tɔ̀ =↓wʌ dùì/
[è ⟨tɔ̀ =↓wʌ̀⟩ dùì]
(s)he enter =SBJ (name)
'Dui comes/goes in.' (201121-04-AG1:5)

Finally, downstepped L-toned enclitics are also attested, which are always realized at a lower pitch as the preceding TBU: L after a H-toned nucleus (the downstep being deleted by virtue of the same *H/↓ constraint as above), and ↓L after a L-toned one. This is illustrated with the determiner /=↓ì/ in (16)a and b respectively.

(16) a. / nʌ̱́ =↓ì àu-^{H} ítʌ́ jàwè
[⟨nʌ̱́ =ì⟩ àù- ítʌ́ ɟàwè]
in =DET place.of- run water
'in the waterhole' (171228-01-HN1:197)

b. /gɔ̀ =↓ì jɛ̀^{H} dìtʌ̀-rʌ bwə̀/
[⟨gɔ̀ =↓ì⟩ ɟɛ̀ dítʌ̀-rʌ̀ bwə̀]
on =DET INDF branch-of banyan
'on a the branch of a banyan tree' (171228-02-HN1:136)

The downstep in the latter two types of enclitics has to be analyzed as underlying, because it is not predictable. In particular, it is realized even when the 4-mora threshold is not met, as shown in (15)b and (16)b above.

Finally, the enclitic status of the downstepped toneless and downstepped L-toned enclitics is evidenced by the fact that they count toward the 4-mora threshold at work in the phonological downstep insertion process described in section 2.3. This is shown in (17), where the downstep between [=mɛ̱̀] and [=nì̱] in (17)a and in [mwà̱↓rà̱] in (17)b can only be phonological, i.e. metrically derived. This means that the subject marker /=↓wʌ/ in (17)a and determiner /=↓ì/ in (17)b constitute the fourth mora of the prosodic words headed by /tɔ̀/ 'to enter' and /tà̱/ 'to fly' respectively.

(17) a. /è tɔ̀ =mɛ̱̀ =nì̱ =↓wʌ dùì/
[è ⟨(tɔ̀ =mɛ̱̀) ↓(=nì̱ =wʌ̀)⟩ dùì]
(s)he enter toward.here =here =SBJ (name)
'Dui comes in here.' (191121-04-AG1:7)

b. /è tà̱ =mwà̱rà̱ =↓ì mʌ̀rɨ̱̀/
[è ⟨(tà̱ =mwà̱)↓(rà̱ = ì)⟩ mʌ̀rɨ̱̀]
it fly =again =DET bird
'The bird flies off again.' (171228-02-HN1:145)

Notice that the underlying downstep in /=↓wʌ/ and /=↓ì/ is not realized in the two examples in (17). This fact illustrates a very interesting property of downstep: its culminativity within

the prosodic word. Indeed, only one downstep is allowed within the prosodic word. Whenever more than one downstep is present in a L-toned prosodic word, only the leftmost downstep is kept, all following downsteps being deleted. This is the case in the two examples in (17) above, where the prosodic words headed by /tɔ̀/ in (17)a and /tə̀/ in (17)b both contain two sources of downstepped: a downstepped enclitic (/=$^{\downarrow}$wʌ/ and /=$^{\downarrow}$ì/ respectively), and the conditions for application of phonological downstep (they both contain four morae). As seen in both cases, the phonological downstep, which precedes the underlying downstep of the enclitic, is the only one that is realized.

The existence of these two types of underlyingly downstepped enclitics is evidence that downstep is its own phonological object in Paicî, independent of tone. There are thus three tonemes (or 'lexical prosodemes') in Paicî: /H/, /L/, and /$^{\downarrow}$/.

2.5 Accentual properties of the Paicî downstep

The Paicî downstep has many typologically rare properties. As we saw, it affects only L tones, and is incompatible with H tones, contrary to what is seen in most languages with downstep. It is also mostly autonomous from lexical tone – and not derived through tonal interaction like most other languages (cf. Connell 2011 and references therein). We have also seen that it is (partly) metrically conditioned and culminative within the prosodic word. The latter two properties are typical of accent systems, and give the impression of two parallel prosodic systems in Paicî: a H vs. L tonal contrast, and a downstep-based accent.

'Accent' is typically conisdered to combine three core properties: (i) CULMINATIVITY, i.e. there is at most one accent per word; (ii) DEMARCATIVITY, i.e. accent marks the edge of a prosodic constituent; and (iii) OBLIGATORINESS, i.e. every lexical word must have at least one accent (cf. van der Hulst 1999, 2002, 2006; Hyman 2006; van Zanten & Goedemans 2007; Downing 2010; a.o.).[10]

We have seen already that downstep is culminative in Paicî. This culminativity conspires with the metrical conditioning of phonological downstep to make it demarcative as well. Indeed, downstep is always found within the first three morae of the prosodic word (any downstep further into the prosodic word is trumped by the phonological downstep systematically triggered when the 4-mora threshold is reached), thus highlighting its left edge – mostly its initial foot or mora.[11]

However, downstep fails to meet the obligatoriness criterion – which Hyman (2006) considers to be definitional of accent. Indeed, downstep is only ever found in L-toned prosodic words that reach the 4-mora threshold or include a downstepped enclitic. Notably, downstep never affects H-toned words, which constitue about one third of lexicon. Downstep is thus not a form of accent.

There are two additional reasons for which downstep cannot be viewed as an accent system

[10]Hyman (2006, 2011) shows that culminativity and obligatoriness are not specific to accent systems, and are found in some tonal languages as well.

[11]Predowntepped enclitics are occasionally found utterance-initially, in which case their downstep is realized as a falling contour on the initial mora.Downstep is thus found exclusively on either the first mora (in the case of utterance-initial downstepped enclitics), on the second mora (when the second mora of the prosodic word is a predownstepped enclitic), or on the third mora of the prosodic word (in all other cases of L-toned prosodic words of at least four morae).

separate from tone. First, metrical conditioning is not characteristic of downstep only, but also plays a role in the realization of the juncture H-tone, as we saw in (10) above. Secondly, downstep and tone interact, as clearly shown by the mutual incompatibility of H and downstep (*H/↓) and the resulting downstep deletion rule illustrated in (15)a and (16)a above. Far from being independent of the tone system, downstep is thus integrated into it.

I show in section 4 that the accentual flavor of downstep in Paicî is likely due to its accentual origin, which is revealed by a comparison with the neighboring Xârâcùù language. Before this can be demonstrated, however, the prosodic system of Xârâcùù must be presented, which is the focus of the next section.

3 The Xârâcùù accent system

Being familiar with Paicî, whose tone system he was the first to describe and analyze (in Rivierre 1974), Jean-Claude Rivierre was struck by the similarities he noticed with the prosody of Xârâcùù, which he briefly describes in Rivierre (1978). Xârâcùù [xa̰a̰ca̰↓cɨ̰ɨ̰] is another Oceanic language of New Caledonia, spoken in the south-central region of Grande Terre. Apart from Rivierre's (1978) article, no description or analysis of the phonology of the language exists.[12] As shown by Rivierre, Xârâcùù is not a tonal language, but has a very intriguing accentual system.

In this section I propose a description of the relevant aspects of the Xârâcùù prosodic system, based on both Rivierre's (1978) published article and his original field recordings with native speaker Gui Tamai (Rivierre & Tamai 1977a,b), openly accessible in the online Pangloss collection. (Reference to these recordings will use the abbreviations 'RT1' and 'RT2' respectively, followed by the time code of the point in the recording where the relevant example can be found.)

The segmental inventory of Xârâcùù is given in (18) and (19).

(18) Xârâcùù vowel inventory (V̰ = nasalized vowel)

i	ɨ	u	ḭ	ɨ̰	ṵ
e	ə	o			
ɛ	ʌ	ɔ	ɛ̰	ʌ̰	ɔ̰
	a			a̰	

(19) Xârâcùù consonant inventory

Voiceless stop	p	pw	t	c	k	kw
Prenasalized stop	b [ᵐb]	bw [ᵐbw]	d [ⁿd]	j [ᶮɟ]	g [ᵑg]	gw [ᵑgw]
Nasal stop	m	mw	n	ny [ɲ]	ng [ŋ]	
Fricative	f, v		ʃ	ç	x	xw
Approximant		w	r	y [j]		

3.1 Metrical conditioning of the Xârâcùù accent

Every lexical word in Xârâcùù is marked by a pitch drop at the left edge of the word. This pitch drop occurs after the first mora in zords of less than four morae, after the second mora in words

[12] For a description of Xârâcùù syntax, see Moyse-Faurie (1995). Two dictionaries are available: Grace (1975) (Xârâcùù-English) and Moyse-Faurie & Néchérö-Jorédié (1989) (Xârâcùù-French).

of four morae and above. This is illustrated in (20) and (21) respectively, where I transcribe the accentual pitch drop as a downstep, in accordance with the analysis I propose in the remainder of this section. Note that, as expected, accent is audible on monomoraic words in isolation, for lack of a second mora to realize the downstep. However, it is realized in "coupled" constituents, discussed in section 3.2 below. I accordingly represent the accentual downstep in parentheses in phonetic transcriptions of monomoraic words in isolation.

(20)	1μ	/nu̱/	[nu̱(ꜜ)]	'coconut tree' (RT1: 2'01")
	2μ	/bwii/	[bwiꜜi]	'taro var. ' (RT1: 0'13")
		/toa/	[toꜜa]	'to arrive' (RT1: 15'33")
		/katɔ/	[kaꜜtɔ]	'support' (RT1: 17'51")
	3μ	/dɔyaa/	[dɔꜜyaa]	'whale' (RT1: 17'21")
		/pooɸi/	[poꜜoɸi]	'pocket, bag' (RT1: 00'25")
		/ka̱mu̱ru̱/	[ka̱ꜜmu̱ru̱]	'person' (RT1: 17'02")
(21)	4μ	/mɛɛgɛɛ/	[mɛɛꜜgɛɛ]	'yam var.' (RT1: 01'17")
		/waapune̱/	[waaꜜpune̱]	'yam var.' (RT1: 00'30")
		/kɔrɔpaa/	[kɔrɔꜜpaa]	'outrigger boat' (RT1: 07'31"; Rivierre 1978: 417)
		/pɛtɛɛtɛ/	[pɛtɛꜜɛtɛ]	'potato' (RT1: 00'30")

The parallel with the Paicî phonological downstep is striking. I contend that it invites a similar, metrically conditioned analysis: the accent-marking pitch drop occurs between the first two bimoraic feet within the word, or between the first two morae if there is no foot structure. Like in Paicî, feet may be parsed only if they are part of a colon. This explains why the pitch drop occurs after the first mora (and not the first foot) in bi- and trimoraic words, in which there is not enough material to parse a colon. This analysis is illustrated in (22) below (cf. (10) above).[13]

(22)	1μ	/nu̱/	[nu̱(ꜜ)]		'coconut tree'
	2μ	/katɔ/	[kaꜜtɔ]	*(katɔ)	'support'
	3μ	/ka̱mu̱ru̱/	[ka̱ꜜmu̱ru̱]	*(ka̱mu̱)ꜜru̱	'person'
	4μ	/kɔrɔpaa/	[((kɔrɔ)ꜜ(paa))$_\kappa$]		'outrigger boat'

The accentual pitch drop satisfies all three of the accent-defining criteria discussed in section 2.5 above. As shown by Rivierre, it is culminative (there may only be one per word) and obligatory (every lexical word has one). It is also demarcative, as it highlights the left edge of the word – specifically the intial mora or foot. It is thus unambiguously accentual. It is also fully predictable and postlexical.

[13]One may argue that the colon is unnecessary if the accent placement rule is stated as above, i.e., as occurring between two bimoraic feet. Indeed the environment of the rule is not met in bi- and trimoraic words where there is not enough material to parse the second foot. However, it would be hard to explain why accent placement is blind to foot structure in a form like /ka̱mu̱ru̱/ → [(ka̱ꜜmu̱)ru̱]. It is much more likely that foot structure is entirely absent from such a form, which is explained if foot parsing is licensed only within a colon.

3.2 Xârâcùù accent as downstep: "coupling" and prosodic integration

Evidence in favor of the analysis of this pitch drop as a downstep comes from one of the most interesting aspects of Xârâcùù grammar, at the interface between morphosyntax and prosody: what Rivierre (1978) calls "coupling" (*couplage*). The detailed analysis of the syntactic properties of coupling has yet to be carried out, and is beyond the scope of the present paper (as it was beyond the scope of Rivierre's original article). "Coupling" consists in marking certain morphosyntactic dependencies by integrating the head and its dependent (or modifier) into one single prosodic phrase. These dependency relations are similar to the ones involving the juncture H tone in Paicî (cf. (9) & (10) above and surrounding prose): derivational prefixes and the root they combine with, some tense-aspect markers and the following verb, the head of a genitive construction and its complement, the noun and its following modifying adjective, some prepositions and their complement, among others (see Rivierre 1978 for more examples). This is ilustrated in (23) below with two examples of a noun + modifying adjective structure. Coupling is indicated with a "+" sign between the coupled elements, and the prosodic phrase formed by the coupled elements is represented with braces {...}. To alleviate the transcription, metrical structure is no longer indicated. Relative pitch realization is transcribed using a 1-to-5 scale, with 1 representing the lowest point.

(23) a. /xwa̱kwe + mɛ̱gi/
{xwa̱$^{5\downarrow}$kwe^{3} + mɛ̱$^{3\downarrow}$gi^{1}}
spring hot
'hot spring' (RT1: 11'27")

b. /ka̱ra̱mɛ̱ -rɛ + kɔ̱dɔ/
{ka̱^{5}ra̱$^{5\downarrow}$mɛ̱^{3} -rɛ^{3} + kɔ̱$^{3\downarrow}$dɔ^{1}}
eye -his/her blue
'his blue eyes.' (RT1: 49'16")

As can be seen, the main characteristic of the prosodic phrase created by coupling is that the words it is made of are realized within the same register. Note that each word keeps its accent: the accentual pitch drop is heard in both [xwa̱$^{5\downarrow}$kwe^{3}] and [mɛ̱$^{3\downarrow}$gi^{1}] in (23)a, in both [ka̱^{5}ra̱$^{5\downarrow}$mɛ̱^{3}-rɛ^{3}] and [kɔ̱$^{3\downarrow}$dɔ^{1}] in (23)b. However, the accented initial mora or foot of the second word (dependent or modifier) is realized at the same pitch as the (non-accented) end of the immediately preceding word: the modifying adjectives [mɛ̱$^{3\downarrow}$gi^{1}] in (23)a and [kɔ̱$^{3\downarrow}$dɔ^{1}] in (23)b both start with the same pitch height of 3 as the unaccented half of the preceding nouns [xwa̱$^{5\downarrow}$kwe^{3}] and [ka̱^{5}ra̱$^{5\downarrow}$mɛ̱^{3}-rɛ^{3}], and not a higher pitch. The effect of coupling is thus not to delete the accent of the non-head element, but to subordinate it to the accent of the head, by integrating it into the same register, in which the head is prosodically "dominant" and the dependent "recessive", to use the apt terminology proposed by Rivierre (1978). I will accordingly call these coupled prosodic phrases REGISTER SPANS.

An utterance may consist of more than one register spans, each new span being marked by register resetting, i.e., raising of the register ceiling back to a higher pitch. Register resetting or its absence can thus be used as a diagnostic for prosodic integration (coupling) or lack thereof. Absence of prosodic integration of the noun and the following adjective in the two examples in (23) above would yield a predicative interpretation of the adjectives (there is no prosodic integration between the subject and the predicate). This is illustrated in (24)a-b, which constitute

prosodic minimal pairs with (23)a-b respectively. As can be seen in these two examples, the register is reset to the highest pitch of 5 on the initial mora or foot of the predicative adjective, indicating that the adjective is not recessive, but prosodically independent (register resetting is represented with the symbol "⇑").[14]

(24) a. /xwa̱kwe mɛ̱gi/
{xwa̱$^{5\downarrow}$kwe^{1}} ⇑ {mɛ̱$^{5\downarrow}$gi^{1}}
spring hot
'The spring is hot.' (RT1: 11'30")

b. /ka̱ra̱mɛ̱-rɛ kɔ̱dɔ/
{ka̱^{5}ra̱$^{5\downarrow}$mɛ̱^{1}-rɛ^{1}} ⇑ {kɔ̱$^{5\downarrow}$dɔ^{1}}
eye-his/her blue
'His eyes are blue.' (RT1: 49'09")

Note that the exact realization of accent under coupling is complex, and was not entirely elucidated by Rivierre himself. When the dominant element is monomoraic, its accent is realized on the initial mora or foot of the following recessive element, as in /de + ka̱mu̱ru̱/ → {de + $^{\downarrow}$ka̱$^{\downarrow}$mu̱ru̱} (another + person) 'another person' (RT1:07'35") (see also (26) below). Words of four morae and above robustly keep their accent in all positions, e.g. /kɔrɔpaa + kɛrɛnãwã/ → {kɔrɔ$^{\downarrow}$paa + kɛrɛ$^{\downarrow}$nãwã} (outrigger + yellow) 'yellow outrigger boat' (Rivierre 1978: 420). Bimoraic words, however, are much less regular, and seem to undergo optional accent displacement or deletion. For example, a sequence of two coupled bimoraic words may be realized with their expected respective accents, as schematized in (25)a and illustrated in (23)a above; or as in (25)b, where the accent of the recessive word is not realized; or as in (25)c, where not only the recessive accent is not realized, but the dominant one is displaced to the juncture between the two words.[15]

(25) /μμ + μμ/ → a. {μ$^{\downarrow}$μ + μ$^{\downarrow}$μ}
b. {μ$^{\downarrow}$μ + μμ}
c. {μμ + $^{\downarrow}$μμ}

An exact description of the realization of accent under coupling, for which more data is needed than is currently available, is beyond the scope of this paper, and will be the object of future research. Whatever the details of accent realization, prosodic integration into register spans or lack thereof (as indicated by regiser resetting) is always clear, and is what matters for the present paper.[16]

[14]Note that register resetting does not always bring the ceiling back up to the highest pitch level: the reset pitch ceiling is often less high than that of the preceding register span, as could be expected.

[15](25)c is what one would expect from a tetramoraic word, with parsing of a dipodic colon and accent placed after the first foot. That is, it looks like the two coupled bimoraic wordswords are integrated, not only in the same register span, but in the same accentual domain, or prosodic word. Although more data is necessary to fully explore this analysis, the fact that it clearly does not apply to coupled tetramoraic words seems to indicate that it might not be generalizable to all cases. In general bimoraic recessive words have a strong tendency to lose their accent under coupling, as in {...kɔ^{3}rɔ$^{3\downarrow}$pa^{1}a^{1} + pwa̱^{1}ra̱^{1}} in (26) (instead of {...kɔ^{3}rɔ$^{3\downarrow}$pa^{2}a^{2} + pwa̱$^{2\downarrow}$ra̱^{1}}).

[16]As noted by Rivierre, accent is less and less perceptible as one moves away from the first word in long register spans involving multiple level prosodic embedding. The first accentual downstep usually already takes the speaker down to the lower half of their pitch range, which leaves very little room for any further downward contrasts.

Register spans are characterized by a stricly downward melody, which falls in successive stages corresponding to the successive accent-marking pitch drops, producing the terracing effect typical of downstep (cf. Connell 2011, a.o.). Crucially, the pitch may never go up within a register span. Upward pitch movement can only be triggered by register resetting, when a register span boundary is crossed. This is straightforwardly explained if accent is indeed analyzed as a downstep.[17] The terracing effect is also clearly at work in register spans consisting of several embedded "coupled" elements – another argument in favor of the downstep analysis. This is shown in (26), where the dominant morpheme /dɛ/ 'another' is coupled with the phrase /dɔ + kɔrɔpaa + pwa̱ra̱/, itself made of the dominant morpheme /dɔ/ 'true, genuine' coupled to the noun + modifying adjective couple /kɔrɔpaa + pwa̱ra̱/. As seen, this whole phrase is integrated into one single register span with as many successive pitch drops, i.e., downsteps, as there are accented morae or feet within the span (cf. Rivierre 1978: 420).

(26) /dɛ + dɔ + kɔrɔpaa + pwa̱ra̱/
{dɛ^{5} + ↓dɔ^{3} + ↓kɔ^{2}rɔ^{2}↓pa^{1}a^{1} + pwa̱^{1}ra̱^{1}}
another true outrigger.boat white
'another true white outrigger boat' (RT1: 14'01")

4 A history of the Paicî prosodic system

As seen in the preceding section, and as already noted by Rivierre (1978), the accentual downstep of Xârâcùù bears a striking resemblance to the phonological downstep of Paicî: both are metrically conditioned, with a unique four-mora threshold involving the parsing of a crosslinguistically rare dipodic colon. Following Rivierre (1978), I argue that this is no coincidence: the two systems are historically related, and the appartent bipartite prosodic system of Paicî is explained by its double historical source: tonogenesis (section 4.1) and a preexisting accent system (section 4.2).

4.1 Tonogenesis: the origin of the H vs. L contrast

We have seen that, while the downstep pattern of Paicî has many crosslinguistically rare properties, the H vs. L tonal contrast on the other hand is typologically rather unsurprising. This is true of its history as well. Indeed, as demonstrated by Rivierre (1993, 2001), the H vs. L tonal contrast in Paicî originates in the transphonologization of a former aspiration contrast on voiceless stops (C^{h} vs. C) and voicing contrast on sonorants (N̥ vs. N) (C^{h} and N̥ are henceforth referred to as "aspirated consonants").[18] The coarticulatory f_0 raising effect caused by former

[17] As opposed to, e.g., a tonal analysis whereby accent marking would consist in the assignment of a H tone to the initial mora or foot of the word, or a HL melody to the entire word with anchoring of the H on the initial mora or foot. Such an analysis, while not strictly speaking impossible, would less straightforwardly account for the pitch terraces and strictly descending melody within "coupled phrases". There is no room in this paper for a detailed comparison of these two analyses, which is to a large extent orthogonal to the main point of the paper.

[18] Haudricourt (1968) was the first to establish a regular correspondence between H tones in Paicî and Cèmuhî, aspirated stops and voiceless sonorants in other Northern New-Caledonian languages, and reduplicative forms in other Oceanic languages. He hypothesized that reduplicated forms changed to word-initial geminates (*$C_1V_aC_1V_a$ > *$C_1C_1V_a$), which were the direct origin of both the aspirated stops (*$C_1C_1V_a$ > *$C_1^hV_a$) and the H tones (*$C_1C_1V_a$ > *$C_1\acute{V}_1$). Rivierre (1993, 2001) demonstrates that the geminates had already changed into

aspirated consonants on a following vowel was reinterpreted as a contrastive pitch difference on the vowel. The aspiration contrast was subsequently lost, the contrast being transferred onto the vowel through the innovation of a H tone. This scenario, which is the is one of the most cross-linguistically frequent types of tonogenesis (cf. Hombert 1978; Hombert et al. 1979), is summarized in (27).[19]

(27)	a.	Aspiration contrast:	*CʰV & *N̥V	vs.	*CV & *NV	
	b.	H vs. Ø:	CV́ & NV́	vs.	CV & NV	(innovation of H)
	c.	H vs. L:	CV́ & NV́	vs.	CV̀ & NV̀	(tonemicization of L)

This scenario involves two steps: the innovation of a H tone in (27)b, and the tonemicization of the L tone in (27)c. The last step is justified by the fact that in present-day Paicî, L must be recognized as an underlying toneme in at least two types of morphemes, as mentioned in note 7. The first type is non-isotonic words. Indeed, a word like [pwa̱a̱dà] 'end' cannot be analyzed as underlyingly H or HØ, since this underlying representation would produce an all-H realization by virtue of the unbounded rightward tone spreading at work within the prosodic word. Such words must be analyzed as having both a H and a L tone underlyingly: /pwa̱a̱dà/. The second type of morpheme that justifies the contrastive, tonemic status of L is downstepped L-toned enclitics, which must be underlyingly specified as L, as we saw in section 2.4, e.g., the determiner /=↓ì/ illustrated in (16) and (17) above.[20]

Evidence for this tonogenesis scenario comes from regular correspondences between H-toned TBUs in Paicî and syllables starting with an aspirated consonant in other languages of Northern New Caledonia which have maintained the aspiration contrast among voiceless stops and the voicing contrast among sonorants (cf. (Ozanne-Rivierre 1995)). This is briefly illustrated in Table 1 with regular correspondences between Paicî and Nemi.[21]

Table 1: Segmental ∼ tonal correspondences between Nemi and Paicî

Nemi Cʰ/N̥ ∼	Paicî H		Nemi C/N ∼	Paicî L	
tʰi-	tíí	'to strip bark'	tii	tìì	'letter, book'
hi- (<*cʰi)	í̱	'hand'	cin	ì̱	'breadfruit'
hwa-(n) (<*pʰwa)	pwá̱	'(his) mouth'	pwe-(n)	pwà̱	'(his) fruit'
m̥eek	mé̱é̱	'*Acacia spirorbis*'	maa-	mè̱-	'tip'
n̥it	ní̱	'blow (nose)'	nuup	nù̱	'to light (fire)'
w̥e-	wá̱-	'(be) like'	we	wè	'water'

aspirated stops and voiceless sonorants in Proto-New-Caledonian, and that the H tones of Paicî and Cèmuhî are the result of the transphonologization of the aspiration contrast.

[19]Although aspirated consonants are also known to have a depressor effect on f_0 in some languages (cf. Michaud & Sands 2020 for a recent overview)

[20] Whether isotonic L-toned lexical items are to be analyzed as underlyingly toneless (with postlexical default L insertion)or as underlyingly specified as L, (through generalization from the non-isotonic words and downstepped L-toned enclitics) is unclear, and mostly a matter of analytical preference. It is also unclear whether step (27)b necessarily preceded step (27)c, or whether both occurred at the same time.

[21]Cf. Rivierre (1975) and Haudricourt & Ozanne-Rivierre (1982) for more detail on the phonology of Nemi, and Rivierre (1993, 2001) for further tonal comparative data. The Proto-North-New-Caledonian reconstructions in Table 1 are from Ozanne-Rivierre (1995).

4.2 From accent to tone: tonogenesis in an accent system

Building on Rivierre (1978), I contend that the resemblance noted above between Xârâcùù and Paicî strongly suggests that the phonological downstep of Paicî derives from a former accent system very similar (if not identical) to that of Xârâcùù.

In this scenario, Pre-Paicî (i.e., Paicî prior to tonogenesis) had (i) the same aspiration contrast as the other Northern New Caledonia languages, and (ii) the same downstep-based accent system as present-day Xârâcùù, with the same metrical conditioning. The tonogenesis process described above then took place, thus "removing", so to speak, the innovated H-toned lexical items from the accent system – which explains the *H/$^{\downarrow}$ constraint and the deletion of downstep in H-toned words in present-day Paicî. At this stage, accent was only marked on the prosodically non-innovative, Ø-toned lexical items, thus losing its accentual status by no longer satisfying the crucial obligatoriness criterion. The tonemicization of the L tone (either simultaneously or at a later stage) then definitively entrenches the reanalysis of downstep as a phonological object conditioned by the L tone, i.e. as an (non-accentual) element of the tone system. This scenario is schematized in Figure 1.

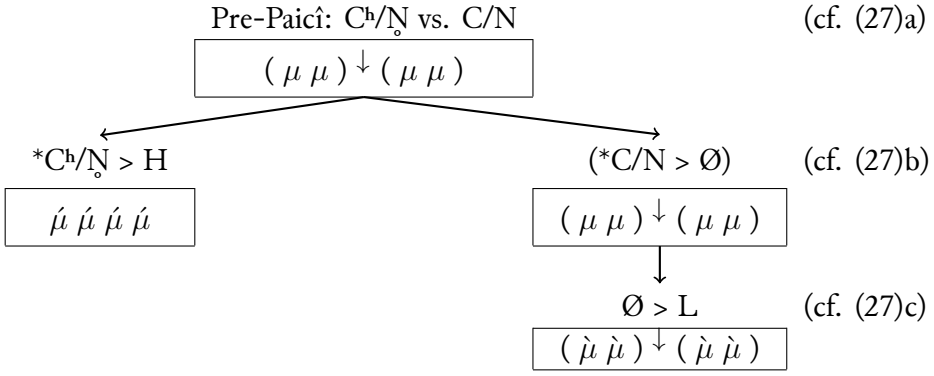

Figure 1: From accent to tone through "accidental" tonogenesis in Paicî

This diachronic path explains many of the quirky properties of both downstep and L in Paicî:

(i) the accentual properties of downstep, discussed in (2.5);

(ii) its semi-autonomy from lexical tone (H vs. L), and its incompatibility with H tones;

(iii) the relative weakness of the contrastive status of L: only the rare non-isotonic lexical items and the eight downstepped L-toned enclitics justify positing an underlying L.

A phenomenon similar to the Xârâcùù "coupling" might also have been present in Pre-Paicî, and might be the origin of the underlying downstep present in the 19 downstepped enclitics described in section 2.4. Indeed, as already briefly suggested by Rivierre (1978: 430) himself, these enclitics correspond to grammatical words that are typically recessive in Xârâcùù, i.e. are realized either lower than or at the same pitch as the end of the preceding dominant word (depending on how long the dominant word is), which is excactly the realization of downstepped toneless enclitics. This parallel is clearly illustrated in (28) with the punctual markers /+maa/ in Xârâcùù and /=$^{\downarrow}$mwàà^{H}/ ∼ /=$^{\downarrow}$màà^{H}/ in Paicî, which are likley cognates.[22]

[22]Rivierre (1978: 430) illustrates this with the same Xârâcùù marker /+maa/ (which he transcribes *maa* with oral

(28) a. Xârâcùù: /ɛ + mą̱ą̱/ → {ɛ ↓mą̱ą̱} (Rivierre 1978: 430)
b. Paicî: /è =↓mẁą̀ą̀^{H}/ → ⟨è =↓mẁą̱ą̀⟩ (191121-12-AG1:52)
(s)he PCT

As can be seen, the subject pronoun + punctual marker sequences in both languages are prosodically identical, with the same downstep affecting the aspectual marker. More research is needed to determine why only a subset of tonal enclitics follow this pattern in Paicî, and what diachronic process explains the difference between downstepped toneless and downstepped L-toned enclitics.

Note that this specific example could also explain the juncture H tone found after the punctual marker /=↓m(w)ą̀ą̀^{H}/ in Paicî, which is otherwise inexplicable. Indeed, the juncture H tone, which in general marks a dependency relation in Paicî, is only assigned by prosodically independent monomoraic morphemes.[23] The Paicî marker /=↓m(w)ą̀ą̀^{H}/ is exceptional on two accounts: it is both prosodically weak (it is a tonal enclitic) and bimoraic. Interestingly, its cognate in Xârâcùù, /+mą̱ą̱/, not only is recessive (i.e. forms a register span with the preceding subject) but does not prosodically incorporate the following word, i.e. it is always the last element in its register span. The register is thus always reset after /+mą̱ą̱/, which produces exactly the same prosodic profile as that of Paicî /=↓m(w)ą̀ą̀^{H}/, as shown in (29).

(29) a. Xârâcùù: /dui + mą̱ą̱ kuka/
{du^{5}i^{5} ↓mą̱ą̱^{1}} ⇑ {ku^{5}↓ka^{1}}
Dui PCT cook
'Dui cooks for the first time.' (RT1: 16'08")
b. Paicî: /rʌ̀ =↓mą̀ą̀^{H} wą̀dò.../
[rʌ̀^{5} =↓mą̀ą̀^{1} wą́^{5}dò^{1}...]
they PCT drink
'They drink [coffee].' (171228-02-HN1:61)

5 Conclusion

In this paper, I have shown that the Paicî prosodic system seems to consist of two distinguishable but intertwined subsystems: a purely tonal subsystem contrasting two tonemes H and L, and a downstep with conspicuous accentual properties and whose behavior is tied to tone despite being semi-independent from it. While the H vs. L contrast is very common, both in its

vowels and analyzes as an imperfective marker (*inaccompli*)), and the Paicî imperfective marker /=↓bwaa/, which he seems to suggest is cognate with Xârâcùù *maa*. Moyse-Faurie transcribes the Xârâcùù marker with nasal vowels (*mââ* /mą̱ą̱/) and analyzes it as a punctual marker (although she does not use this term, the translations she provides justify its use: 'having just done something' or 'starting to do something', cf. Moyse-Faurie (1995), Moyse-Faurie & Néchérö-Jorédié (1989)). On the basis of Moyse-Faurie's translation and phonological transcription (which I agree is correct), it appears that the Paicî cognate of Xârâcùù /+maa/ is actually the punctual marker /=↓m(w)ą̀ą̀^{H}/. (If Xâracùù were to have a cognate of Paicî /=↓bwàà/, it would indeed be *maa*, without vowel nasalization, as in Rivierre's transcription; cf. Ozanne-Rivierre & Rivierre 1989).

[23]The importance of the monomoraicity of the H-assigning head is demonstrated by the fact that transitive verbs, which assign a junture H tone to their incorporated object, are systematically reduced to their initial mora under object incorporation.

historical origins and its typological properties, the downstep is characterized by many very unusual properties. making the Paicî prosodic system a tonological rarum.

Following Rivierre (1978), I have shown that a comparison with neighboring Xârâcùù, a non-tonal, accentual language which shares many quirky properties with the Paicî downstep, explains all the exceptional characteristics of the Paicî system, by illuminating its double origin. Before being a tonal language, Paicî had an accent system very similar if not identical to that of Xârâcùù, where accent was marked by a metrically conditioned downstep. The language then independently developed a tonal contrast through garden-variety tonogenesis. The result was not the total abandonment of the former accent system, but its integration into the innovated tone system – an integration that has left downstep with many of its accentual properties.

Paicî is thus interesting for the study of the synchronic and diachronic relation between accent and tone, the two prototypical word-prosodic systems defined by Hyman (2006). In synchrony, it shows not only that languages may 'freely 'pick and choose' between the prototypical properties of ...accent systems vs. tone systems' (Hyman 2006: 226), but also that different areas within one single word-prosodic system may be characterized differently with respect to these two prototypes, as is the case with prototypically tonal H/L contrast vs. the almost accentual downstep.

From a diachronic perspective, the Paicî prosodic system shows that tonal reanalysis of accentual phenomena, as is attested in a few languages (e.g., Scandinavian, cf. Riad 1998; Kingston 2011, a.o.), is not the only way in which tonal contrasts may appear in an accentual language. Independent tonogenesis is another option. In the particular case of Paicî, this results in the loss of the former accent system (although not of all its properties) and its gradual integration into the tone system. It remains to be seen what alternative outcomes can result from the same change in other languages, for which more research on prosody-independent tonogenesis in accentual languages is needed.

Acknowledgements

Abbreviations

Abbreviations follow the Leipig Glossing Rules, except PCT punctual.

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Résumé

Zusammenfassung

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