LADINO'S QUIRKY VOWEL RULE: ALTERNATIONS BETWEEN DIPHTHONGS AND MONOPHTHONGS IN VOWELS ARISING FROM THE SHORT MID VOWELS OF LATIN*

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1. INTRODUCTION

This paper provides an introduction to Ladino, then looks at the vowels arising from the short mid vowels of Latin, which have interesting alternations between diphthongs and monophthongs. I propose a rule to account for the alternations and examine the possible phonological motivations for the rule. I also provide an OT account for the data.

2. BACKGROUND

As a result of the Spanish inquisition in the late fifteenth century, the Jews of Spain[2] were either forcibly converted to Christianity or expelled from the country. Harris 1994 estimates the number of Jews who fled the country to be somewhere around 175,000. Of those, the majority – about 125,000 (Kiddle 1978) - settled in various regions of the Ottoman Empire at the invitation of Sultan Bayezid II.

Juderías – Jewish ghettos – were nearly universal during the Diaspora. Harris 1993 writes,

> For religious reasons (such as the need to be in walking distance of the synagogue), for social convenience, or by edict of the country in which they lived, the Jews inhabited quarters in close proximity to each other and separate from the non-Jewish population. These Juderías (or *mahalles* in Turkish) were on the whole pleasant, cheerful places, as opposed to the Ashkenazic ghettos of Eastern Europe.
>
> Each Judería had its own synagogues, schools, and civil services with a religious leader who was usually the officially designated representative of the government. Thus the Jews were not only physically, but also socially and culturally, isolated from the rest of society. This social and cultural isolation served as the perfect environment for the maintenance of Judeo-Spanish in the Ottoman Empire.

Judeo-Spanish[3] became a prestige language within the Ottoman Empire. The Sephardim were prominent in the areas of medicine, business, and printing. It was the Sephardic Jews who introduced the printing press to the Ottomans. Ladino was such a high prestige language that, as Harris 1993 writes, "The Sephardim were able to impose their language not only no non-Sephardic Jews of Greek, Italian, or German origin, but also among the neighboring gentiles as well... Members of the non-Sephardic community felt the need to imitate the Sephardim in order to benefit from the latter's prestigious position."

While few Christians were literate during the middle ages, many Spanish-speaking Jews were. In general, the Christians who *were* literate at the time were monks, and they tended to write in Latin, looking on early Spanish as merely *bad* Latin. For the most part, the best written sources of early Spanish that exist today come from Moorish and Jewish writers.

At this point, an important question arises: Before their expulsion from Spain in 1492, were the Jews in Spain speaking the same Spanish as the Christians, or was there already a difference between the dialects of the Christians and the Jews? There are differing theories on this issue. Harris 1994 has a good discussion (Chapter 4 – The language of the Jews in pre-expulsion Spain: Did a Sephardic Spanish exist?). She lists viewpoints from several authors, arguing for both sides of the issue. One thing is relatively clear: before the expulsion, Jews in Spain tended to live in their own neighborhoods, separated from the non-Jewish population. Also, the majority of

* I would like to thank the participants of the 2003 NWLC for their helpful comments after my talk. I also would like to thank Jim Harris, Ellen Kaisse, and Susannah Levi for their suggestions. All errors are my own.
[1] I would love comments and suggestions – my email address is amdailey@u.washington.edu.
[2] Also referred to as Sephardic Jews, or Sephardim, from the Hebrew word for Spain, *Sepharad*.
[3] The language we are looking at is referred to as either Ladino or Judeo-Spanish.

Christians at the time lived in rural areas and were not well educated, while most Jews lived in the cities, were involved with commerce, and were generally highly educated, so certainly that may have provided some amount of difference.

Harris 1994 (p. 55-56) lists several texts by Jews in pre-Expulsion Spain that do show some differences from standard Spanish of the time, including Hebrew loan words. Many such loan words were given Spanish affixes, such as verb endings. The Hebrew word for 'slanderer' is malshin~malsin. Pre-expulsion Judeo-Spanish has the word malsinar 'to slander'. We also see words with the –ado participle ending, such as enhermado 'excommunicated' from the Hebrew 'herem'. There are many other such examples, as well as ones with Arabic borrowings. It does appear that mostly we are dealing with the borrowing of vocabulary, and not grammar. It is hard to know whether the pronunciation was exactly the same[4].

Certainly, though, the Spanish Jews had much contact with the Christians, as Jews were prominent in fields such as medicine, law, and money lending. There were many Jewish merchants doing business with Christians. All this would imply that they had a multitude of dealings in which they communicated with the non-Jewish population, so their dialect must have been at least mutually intelligible with that of the Christians. Again, Harris 94 has an excellent chapter on this topic, so I encourage the reader to check there for more discussion.

After their expulsion from Spain in 1492, the Sephardim continued to speak Spanish. However, they had almost no contact with the rest of the Spanish-speaking world. The language spoken in Spain and the new world continued to evolve, changing a great deal. However, for whatever reason, the Sephardic Jews were extremely conservative with their language[5], now called Ladino or Judeo-Spanish. It is much closer to Medieval Spanish than other dialects.

Ladino is particularly interesting and important for several reasons. First, since the majority of the people in Medieval Spain were not literate, stories were often passed down in the form of ballads. Nearly all of these were eventually lost over time. The main exception is that the more literate Jewish population wrote many of the ballads down, and we know them today only via Ladino. Therefore, scholars of early Spanish literature and ballads find Ladino to be a rich source of information[6].

Second, Ladino is a good source of information for historical linguists, as well. It preserves many of the characteristics of the Castilian of the late fifteenth century. Many of the sound changes that have happened in Standard Spanish did not take place in Ladino, so Ladino seems almost to be a stepping-stone between Latin and Modern Standard Spanish. Take for example, the Latin word for 'son' *filius*. In Modern Spanish, it is *hijo*. In Ladino the word is *fišu*.

Third, Judeo-Spanish is also noteworthy for the Turkish, Slavic, Italian, Greek, and Hebrew influences that have modified it. Linguists interested in the results of language contact will find Ladino a rich source of information.

Finally, Ladino is also an endangered language. Penney 2000 writes,

> After surviving for more than five centuries, Judeo-Spanish is on the point of extinction. North African Judeo-Spanish survives today only in a traditional repertoire of ballads, wedding-songs, etc., and

[4] This is of course due to the frustrating lack of digital recording equipment during the Middle Ages.

[5] I am never sure whether to refer to Ladino as its own language or as a dialect of Spanish. The mutual intelligibility issue is muddled by the fact that a large portion of the vocabulary of Judeo-Spanish has been borrowed from the languages spoken in the various places where the Sephardim fled (Turkish, for example), as well as quite a bit of Hebrew. Not including the non-Latinate vocabulary, I am still not convinced about the mutual intelligibility of Ladino and Modern Spanish. While much of the language is understandable to Spanish speakers, I'm not sure whether I would say that enough of it is intelligible to count as a dialect. Therefore, simply because I [a non-native speaker of Spanish] find Ladino difficult to follow/understand, I'll refer to it as its own language and not a dialect. [Of course, my favorite test for language vs. dialect is "Does it have its own army and navy?" By this test, Ladino is most certainly a dialect…]

[6] One interesting source is the 1950 University of Washington M.A. thesis of David Romey: A study of Spanish tradition in isolation as found in the romances, refranes, and storied folklore of the Seattle Sephardic community.

> already in the nineteenth century the Judeo-Spanish of the ex-Ottoman Empire began to be ousted under pressure from the national languages of the states that emerged from the Ottoman world – Serbo-Croatian, Romanian, Bulgarian, etc. In the twentieth century, large numbers of speakers were still to be found in Salonica, Istanbul, and Izmir (Smyrna), but the events of the Second World War caused the near-destruction of these communities; those not killed mostly emigrated to Israel, New York, San Francisco, and other cities, where the Judeo-Spanish of the emigrants is not being passed on to the younger generations of these families.

Harris 1994 estimated that there were only 60,000 speakers left. Keep in mind that the quote is from 1994, so that number has surely dropped much lower by now. She also wrote that there are no mono-lingual Ladino speakers left, and virtually no speakers under the age of 40. (The informant for this paper is a rare counter-example – he is in his twenties) Hence, Judeo-Spanish should be documented as much as possible while it still exists.

Now that we know something about the background of the language, let us go over the phonological inventory. After this brief introduction to Ladino, I now turn to the vowel problem...

3. PHONOLOGICAL INVENTORY[7]

3.1 Vowels

Ladino has five vowels – a high and a mid front vowel, as well as a high, mid, and low back vowel. Like many Romance languages, the low back vowel has a quality that is not as far back as the English vowel /a/. The Ladino vowels are similar to the corresponding sounds in modern Spanish, except for the /e/, which in some dialects seems to be a bit toward the /ɛ/. The informant in this particular study has an [e].

Table 1 - Monophthongs[8]

Vowels		Example
a	low central unrounded	abashar 'to go down', barva 'beard'
e	mid front, unrounded	dert 'worry', ken 'who'
i	front high, unrounded	imán 'belief', inuerno 'winter', ispinu 'thorn'
o	mid back, rounded	otro 'other', prove 'poor'
u	high back rounded	mundo 'world', eskuma 'foam'

There are eight ascending diphthongs and five descending ones.

Table 2 - Ascending Diphthongs – see above for place of articulation descriptions.

ia/ya	iaga 'wound', yamar 'call', yave 'key', estoria 'story'
ie/ye	ielado 'cold', adientru 'inside', biervo 'verb'
ii/yi	yirrar 'make a mistake', ayi 'there'
io/yo	dió 'God', yolyero 'jeweler', piojo 'louse'
iu/yu	yuláf 'oat', piú 'at most'
ua/wa	gwadrar 'watch', mengua 'less', kuatro 'four',
ue/we	pwerta 'door', buendád 'goodness', mueve 'nine', dospués 'after'
uo/wo	menguó 'diminished', anti(g)uo 'antique'

Table 3 -- Descending Diphthongs – see above for place of articulation descriptions.

ai	áiri 'air', bailar 'dance'
ei	azéiti 'oil', peynar 'comb'
eu	reumatismo 'rheumatism', reushir 'be successful'
oi	oyda 'hearing', boylí 'tall'
ui	fui 'I have been', guizar 'cook'

There are two triphthongs, /uei/, and /uai/.

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[7] See Sala 1971 for more examples.

[8] Data for the examples of phonemes comes mainly from Sala 1971, but also from various Ladino dictionaries as well as discussion with my informant.

Table 4 -- Triphthongs – see above for place of articulation descriptions.

uei/wey	buey 'beef'
uai/way	gway 'woe'

3.2. Consonants

3.2.1 Stops

There are six stops in Ladino - voiced and voiceless versions occurring in the articulation points of bilabial, alveolar, and velar. Unlike English, the voiceless stops are unaspirated in all contexts.

Table 5 -- STOPS

IPA	Ladino transcr.	Description	Examples
p	p	voiceless unaspirated bilabial stop	polpa 'pulp, replikar 'replicate', top 'cannon'
t	t	voiceless unaspirated alveolar stop	tadri 'late', patladear 'explode', shabat 'Saturday'
k	k	voiceless unaspirated velar stop	kada 'every', arko 'arc', kaik 'rowboat'
b	b	voiced bilabial stop	bien 'well', bivda 'widow', shabat 'Saturday', kebab 'kebab'
d	d	voiced alveolar stop	datle 'date (fruit)', kaldu 'soup', sivdad 'city'
g	g	voiced velar stop	gante 'glove', regalo 'gift', makatrég 'troublemaker'

3.2.2 Affricates

There is some dispute about the existence of affricates in Ladino. Sala 1971 includes them in the phoneme inventory. However, Dailey McCartney (in press) argues that in fact they are simply sequences of stop + fricative. Evidence for this comes from an apparent exception to the general quirky vowel rule to be discussed in section 5.

Table 6 -- AFFRICATES (if they do exist)

IPA	Ladino transcr.	Description	Examples
tʃ	č/ch	voiceless post-alveolar affricate	čapato 'shoe', noči 'night', givéč 'meat and vegetable stew'
dʒ	ĝ[9]	voiced post-alveolar affricate	ĵeneral 'general', anĵel 'angel'
ts	ç	voiceless dental affricate	tsigára 'cigar', mitsva 'good action', hamets (or χamets) 'leavened bread'
dz	ž[10]	voiced dental affricate	dodzena 'dozen', katórdzi 'fourteen'

3.2.3 Fricatives

Ladino has seven fricatives: a voiced and voiceless labiodental (f and v), a voiced and voiceless alveolar (s and z), a voiced and voiceless post-alveolar (ʃ and ʒ), and a voiceless uvular (χ).

Table 7 -- Fricatives

IPA	Ladino transcr.	Description	Examples
f	f	voiceless labio-dental fricative	fábrica 'factory', bafu 'breath', azer kef 'to have a good time'
v	v	voiced labio-dental fricative	vaka 'cow', saver 'to know', kavsa 'cause', lulav 'bundle of palm, myrtle, and willow"
s	s[11]	voiceless alveolar fricative	sién 'hundred', skalera 'stairs', asno 'donkey', atrás 'backward'

[9]According to Sala 1971, this sound does not occur in coda position.
[10] According to Sala 1971, this sound appeared only in interior position, between vowels or in a group of consonants.
[11] There is some evidence of s and z freely alternating in word final (and perhaps even more generally in coda) position.

z	z	voiced alveolar fricative	zeloso 'ambitious', ermozu 'beautiful', azlaha 'prosperity'
ʃ	š, sh	voiceless post-alveolar fricative	(many borrowings from Turkish and Hebrew) ʃavon 'soap', peʃkar 'to fish', seʃ 'six', ʃabat 'Saturday', ʃaed 'witness', ʃakera 'hoax', ʃaʃear 'to confuse, astonish', ʃaʃkin 'astounded'
ʒ	ž	voiced post-alveolar fricative	ʒurar 'to swear', oʒa/foʒa 'leaf', kuráʒ 'courage'
χ	x[12]	voiceless uvular fricative	χotel 'hotel', raχmán 'charitable', maláχ 'angel'

3.2.4 Nasals

Ladino has two nasal phonemes: a voiced bilabial (m) and a voiced alveolar or dental (n).

Table 8 -- NASALS

m	m	voiced bilabial nasal	menora 'menorah', χamét 'leavened bread', purím 'Purim'
n	n	voiced alveolar (or dental) nasal	niévi 'snow', dengún 'nobody'

3.2.5 Taps and laterals

Ladino also has a voiced apico-alveolar lateral (l) and a voiced alveolar flap (P).

Table 9 - taps and laterals

l	l	voiced apico-alveolar lateral	lago 'lake', ala 'wing', kazál 'village'
P	r	voiced alveolar flap	red 'fish net', karo 'expensive', bokeár 'to speak'

Finally, we can start looking at vowel alternations.

4. THE QUIRKY VOWELS

The short mid vowels of Latin -- /o/ and /e/ as well as /ae/, are not well behaved as they percolate into the modern Romance languages[13]. In Spanish, the descendents of these vowels generally diphthongize in stressed position and remain monophthongs in atonic position giving us examples such as llover/llueve, negar/niego, sentir/siento, and poder/puedo. [French and Italian have other interesting diphthongization rules – see Klausenburger 2001 for examples.]

Not all the o's and e's of Spanish are subject to the diphthongization rule – only those which evolved from the short mid vowels of Latin, that is, from the lower mid vowels of Vulgar Latin.

This paper deals with the vowels arising from Latin short o, short e, and ae[14]. Because they have merged completely (in some environments, at least) with the Spanish e's and o's arising from Latin short i, long e, oe, and short u, long o, and au, I will call them the QUIRKY VOWELS (henceforth QV's) to differentiate them. These same vowels behave "quirkily" (though differently than in Ladino) in Spanish, French, Italian, Catalan, and a number of other modern Romance languages.

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[12] This sound corresponds more or less to the Spanish 'j'. Judeo-Spanish orthography makes things slightly confusing for people who are more familiar with Spanish. In Ladino, the character 'j' is generally used for the phoneme /ž/, and 'h' for /χ/.

[13] ***Important***: Note that not *all* of the stem-changing vowels of Spanish are descended from Latin's /ŏ/, /ĕ/, and /ae/ phonemes. There are some cases of stress-based diphthongization where we do not expect it – from Latin /ĭ/ and /ŭ/ in words such as *llover/llueve* 'to rain', from Latin *plŭ(v)ĕre* and *comenzar* 'to begin', from vulgar Latin *cŏmĭntĭāre*, which in turn comes from Latin *ĭnĭtĭāre*. In general, though, the stem changing vowels have evolved from the /ŏ/, /ĕ/, and /ae/ of Latin. When I looked at the Ladino data, I included the examples from / ĭ/ and /ŭ/ that are involved in stress-based diphthongization in Spanish because they seem to behave like the /ŏ/, /ĕ/, and /ae/ examples in Ladino as well as Spanish.

[14] Again, a reminder: there are a few words that have vowels descended from /ŭ/ and /ĭ/ which still participate in the alternation. Be sure you read footnote number 14.

At this point, it is important to point out that there are various dialects of Ladino. I am most familiar with those that are spoken in the two Sephardic synagogues in Seattle. One synagogue has people whose ancestors went from Spain to Rhodes (and then eventually to America) and the other has people whose families went to Turkey. The dialects are fairly similar – enough so that there are Ladino conversation groups attended by members of both synagogues. Unfortunately for me (or perhaps fortunately, depending on how one looks at it, because it means there is more to study), one way in which the two dialects do seem to differ is with regard to the quirky vowels. This paper will deal with the Turkish/Syrian dialect only. Examples come from informant D.C., a male in his 20's who grew up in Los Angeles, bilingual with English and Ladino.

Returning to the vowel question, when the quirky vowels surface in Modern Spanish, they undergo diphthongization if they are stressed. When they are not stressed, they remain monophthongs. This gives us examples like cerrar/cierro 'to close/I close', doler/duele 'to hurt/it hurts', and colgar/cuelgo 'to hang up/I hang up'.

The reader should keep in mind that there exist diphthongs in Ladino and Spanish which do not monophthongize when not stressed Therefore, it is not possibly to analyse all diphthongs as arising from quirky vowels that undergo stress. (If this were the case, we could say they are underlyingly diphthongs that monophthongize when they are NOT stressed.) Examples of un-stressed dipthongs include: *alguien* 'someone' and *nadie* 'nobody'.

The situation is even messier in Ladino. We get sets like those found in Table 1. The vowels in question in all of these words are quirky vowels. In some dialects of Ladino, we see a complete loss of alternations – true leveling – in which the quirky vowels appear to lose their quirkiness and stop alternating altogether. The exciting question with that particular dialect is how the vowel decides whether to be a diphthong or a monophthong, as the vowels don't all do the same thing.

In this speaker's dialect, quirky vowels in some words undergo diphthongization and raising while others do not alternate at all.

From as early as 1930, the quirky vowels have been a mystery in Judeo-Spanish.

Luria 1930 writes:

> Tonic e normally diphthongizes in the dialect.
> The following cases of non-diphthongization have been noted. [examples]
> Tonic o normally diphthongizes in the dialect.
> The following cases of non-diphthongization have been noted. [examples]

Adatto 1935 writes [Note: I added the English glosses...]:

> The tendency is to keep the diphthong throughout all the forms where it regularly occurs: pueder/puediendo/puederé ['to be able/being able/I will be able'], bueno/buendad ['good/goodness'].
>
> The loss of the diphthong is also consistent: querer/quero/queren ['to want/I want/they want'] and quen (by analogy?) ['who'], cativo/cativa ['captive'].
>
> Diphthongization sometimes occurs where it does not occur in Modern Spanish:
> biervo [(cf Spanish verbo 'word'], arientro [cf. Spanish dentro 'inside'].

Although several authors mention vowel leveling and the quirky vowels, no analysis of the subject has been published. Clearly, much confusion remains about the subject.

5. THE QUIRKY VOWEL RULE

The majority of DC's data fall into a nice system, with three rules:

Keep in mind that I am referring to etymological short o and e as well as ae as the quirky vowels. However, ae and short e have identical surface forms. Let us refer to these as quirky E (capital to show that we mean ae and short e both).

Rule 1 – Examples of quirky vowels in closed syllables

If quirky E and O occur in a closed syllable, they surface as [e] and [o].

Table 10 presents data for quirky vowels in closed syllables.

Table 10 - Quirky Vowels do not alternate in closed syllables

Ladino	English	Spanish	Latin
a.çer.tar/a.çer.to[15]	to ascertain/I ascertain	acertar/acierto	a+certus
ab.sol.ver/ab.sol.vo	to absolve/I absolve	absolver/absuelvo	absŏlvĕre
al.mor.çar/al.mor.ço[16] (sometimes the l turns to r)	to eat lunch/I eat lunch	almorzar/almuerzo	vulg. latin: admŏrdium
co.men.çar/co.men.ço[17]	to begin/I begin	comenzar/comienzo	vulg. latin: cŏmĭntĭāre -- from lat. ĭnĭtĭāre
con.tar/con.to	to tell/I tell	contra/cuento	cŏmpŭtāre
des.per.tar/des.per.to	to wake up/I wake up	despertar/despierto	vulg latin: ĕxpĕr(c)tūs, ĕxpĕrgĭscĭ
en.çen.drer/en.çen.dro	to light/burn/ I light/burn	encender/enciendo	ĭncĕndĕre
en.con.trar/en.con.tro	to encounter/I encounter	encontrar/encuentro	Vulg. Latin incŏntrāre
en.ter.der/en.ten.do	to understand/I understand	entender/entiendo	
go.ver.nar/go.ver.no	to govern/I govern	gobernar/gobierno	gŭbĕrnāre
pen.sar/pen.so	to think/I think	pensar/pienso	pĕnsāre
re.sol.ver/re.sol.vo	to resolve/I resolve	resolver/resuelvo	resŏlvĕre
sen.tar.se/me sen.to	to sit down/I sit down	sentarse/me siento	adsĕdĕntāre
tem.blar/tem.blo	to tremble/I tremble	temblar/tiemblo	Vulgar Latin: trĕmŭlāre from Latin trĕmŭlus
ten.der/ten.do	to tend to/I tend to	tender/tiendo	tĕndĕre
ten.tar/ten.to	to intend to/I intend to	tentar/tiento	tĕmptāre
col.gar/col.go	to hang/I hang	colgar/cuelgo	cŏllŏcare 'to place' – derived from locus 'place'
sen.tir/sen.to	to feel/I feel	sentir/siento	sĕntīre

Rule 2 – quirky vowels in stressed open syllables

If quirky E and O occur in an open tonic syllable, they diphthongize into [ie] or [ue].

Rule 3 – quirky vowels in unstressed open syllables

If quirky E and O occur in an open atonic syllable, they raise to [i] and [u].

Table 11 - Examples of Quirky Vowels alternating in open syllables

Ladino	English	Spanish	Latin
du.ler/due.lo	to hurt/I hurt	doler/duelo	dŭlēre
em.pi.sar/em.pie.so	to begin/I begin	empesar/empieso	derived from pieza, from celt. pettia

[15] Keep in mind that the existence of affricates will be called into question later. Given that ç might be re-evaluated as ts , the words could be syllabified as at.ser.tar and at.ser.to.

[16] As in footnote 13, these might be syllabified as al.mort.sar and al.mort.so.

[17] As in footnote 13, these might be syllabified as co.ment.sar and co.ment.so.

ilar/ielo[18] (Speaker varied opinions from one day to the next)	to freeze/I freeze	helar/hielo	Latin gĕlāre[19]
fi.rir/fie.ro	to wound/I wound	herir/hiero	fĕrīre
mi.gar/mie.go	to negate/I negate	negar/niego	nĕgāre
mu.rer/mue.ro	to die/I die	morir/muero	mŏri [vulg. latin: mŏrīre]
mu.ver/mue.vo	to move/I move	mover/muevo	mŏvēre
pu.der/pue.do	to be able to/ I can	poder/puedo	pŏsse [vulg. latin: potēre]
shu.ver/shue.ve	to rain/it rains	llover/llueve	plŭĕre [vulg. latin: plŭvĕre]
vu.lar/vue.lo	to fly/I fly	volar/vuelo	vŏlāre
su.ñar/sue.ño	to dream	sonar/sueño	sŏnāre

Representing Rules 1, 2. and 3 in a chart, we get the following

Table 12 -- Rules 1, 2. and 3 as a chart

THE QVR	tonic syllable	atonic syllable
open syllable	diphthong [ie] and [ue]	raising to [i] and [u]
closed syllable	monopthong [e] and [o]	monopthong [e] and [o]

When quirky E and O occur in a closed syllable, there is no alternation. When they occur in an open syllable, there is alternation, depending on stress. A number of apparent exceptions to the Quirky Vowel Rule are discussed in Dailey McCartney (in press). Several new phonological rules are proposed to account for the problematic examples – including several rules that seem to group together as trying to avoid C1.C2 where both phonemes are alveolar stops, but interestingly, they seem to go about it in very different manners – the first is a rule of metathesis of r.d to .dr; the second is a rule of d-deletion, and the third is a very specific case where examples of the string .ver.t become .vre.t. The data presented also call into question Sala 1971's argument for the existence of a voiceless dental affricate t^{s}.

6. ANALYSIS

Why do we get the vowel changes of the QVR? The first and second rules are fairly easy to motivate: we can say that Ladino stressed syllables prefer to have two moras. In open stressed syllables, the quirky vowels become diphthongs, thereby making the syllable bi-moraic. In closed syllables (both stressed and unstressed) the coda consonant is moraic. Therefore, the quirky vowel is not required to diphthongize.

The tricky issue is why the quirky vowels raise in unstressed open syllables. Although I do not have an obvious motivation for it, there seems to be "sporadic evidence of a drift toward a three vowel system"[20]. This was occurring in early Spanish even before the Jews were forced to leave.

Penny 1991 writes (about Medieval Spanish atonic vowel development),

> Although in most cases the system of initial vowels has proved stable (the five vowels of late VL persisting unchanged, and with the same incidence, through Old Spanish to the modern language), there is some sporadic evidence of a drift towards a three-vowel system. There are few cases of minimal pairs in which initial /u/ and /o/ or /i/ and /e/ are the differentiating elements and historically there has been some unconditioned drift from /o/ to /u/. In the following cases, initial /o/ was normal in Old Spanish, usually until the fourteenth century, but was gradually replaced by /u/: jogar > jugar 'to play'; logar > lugar 'place', polgar > pulgar 'thumb', roido > ruido 'noise'. (p. 48)

The quirky vowels are not the only example of Ladino having a higher vowel than the corresponding Spanish vowel. Penny also writes: "In the Judaeo-Spanish of the Balkans, the system of final vowels is /i/ - /a/ - /u/, similar to that of Portuguese and like many varieties of Leonese and *unlike* Castilian /e/ - /a/ - /o/." (p. 22) This is borne out by the present informant.

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[18] Speaker also said yelar/yelo during another session – could be problematic.
[19] Mideval Spanish *ĕlar*
[20] Penny 1991

Why, though, does the quirky vowel raise in the atonic open syllable and not in the closed syllables? This is a difficult question. For some (mysterious) reason, the closed syllable seems to make the vowel more stable, and less likely to raise. Alternately, we could say that we get diphthongization in ALL open syllables, and then in the unstressed open syllables, the diphthong neutralizes to a high vowel,. However, this seems somewhat unlikely, as there are other diphthongs not arising from quirky vowels that do not become high monophthongs in unstressed syllables

In any case, we can define the following constraints (which we apply only to the Quirky Vowels, as the non-Quirky Vowels behave differently) and look at the data in an OT framework:

Table 13 - QVR restated as OT constraints.

QV Stress-to-Weight[21] (STW)	If a syllable is stressed, it is heavy.
QV Raising	QVs raise in open syllables.
QV-Ident-IO(weight)[21]	No lengthening, no shortening of QV's
QV-Ident IO(heght)[21]	No raising, no lowering of QV's.

Tableau 1 shows the infinitive of the verb 'to hurt'. Candidates include the correct form, duler, which has the raising; doler, which has a mid vowel (no raising, no diphthongization), dweler, with diphthongization, and daler, which I included to show that the QV does not lower.

Tableau 1 - Open, unstressed QV

dO.**ler**	Stress-to-Weight	QV Raising	QV Ident-IO(height)	QV-Ident-IO(weight)
→ du.**ler**			*	
do.**ler**		*!		
dwe.**ler**		*!		*
da.**ler**		*!	*	

Tableau 1's open, unstressed case gives us the necessary ranking that QV Raising outranks QV Ident-IO(height) and QV Ident IO(weight).

Tableau 2 looks at the verb pOder 'to be able to', in the first person. The QV occurs in an open, stressed syllable.

Tableau 2 - Open, stressed QV

pO.do	Stress-to-Weight	QV Raising	QV IdentIO(height)	QV-Ident-IO(weight)
→**pue**.do		*		*
po.do	*!	*		
pu.do	*!		*	
pa.do	*!	*	*	

Tableau 2 shows us that stress to weight must outrank QV raising, or we would get pu.do instead of the correct form pue.do.

Tableau 3 looks at the verb pEnsar 'to think', with the QV occurring in a closed, unstressed syllable.

Tableau 3 - Closed, unstressed QV

pEn.**sar**	Stress-to-Weight	QV Raising	QV Ident IO (height)	QV-Ident-IO(weight)
→pen.**sar**				
pien.**sar**				*!
pin.**sar**			*!	
pan.**sar**			*!	

[21] From Kager 1999.

Tableau 4 looks at the verb pEn.so "I think", with the QV occurring in a closed, stressed syllable.

Tableau 4 - Closed, stressed QV

pEn.so	Stress-to-Weight	QV Raising	QV Ident IO(height)	QV-Ident-IO(weight)
→**pen**.so				
pien.so				*!
pin.so			*!	
pan.so			*!	

The closed examples in Tableau 3 and Tableau 4 don't give us any rankings. We end up with:

QV Stress to weight >> QV Raising >> QV Ident IO(weight), QV Ident IO(height)

7. CONCLUSION

The quirky vowel rule accounts for most of the data. However, there are several groups of apparent counter examples, for which the rule is not surface true. These are dealt with in Dailey-McCartney (in press).

The Ladino QVR is somewhat reminiscent of Italian's system, in which the [–ATR] vowels (which correspond to Ladino's Quirky Vowels) diphthongize in open stressed syllables and become [+ATR] when unstressed[22]. There are two main differences: A) Italian has a seven vowel system with ATR distinction in the mid vowels while Spanish and Ladino have a 5 vowels system. B) Foot structure plays a role in Italian: mid [-ATR] vowels diphthongize only when they occur in open stressed syllable in penultimate position. However, in antepenultimate position they do not diphthongize.

There is also the interesting case of Eastern Catalan[23] -- where unstressed mid front Vs (tense and lax) in both open and closed syllables merge with /↔/, and the back ones (tense and lax) merge with /u/. E.g. standard Spanish *puede* and *podemos* are Eastern Catalan *p[ò]t* (stressed lax) and *p[u]dem*, respectively.

According to Jim Harris, Romance is a "hotbed of strange vowel events" (p.c.) and that Murphy's Law seems to be true – every weird thing that could happen with the vowels that descended from the Latin short mid vowels does in some Romance language or another. This one dialect of Ladino provides another strange set of vowel events and there are other Ladino dialects that do other strange and interesting things with the same set of vowels. including complete leveling of alternations. The Quirky Vowels in Ladino certainly warrant further investigation.

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[22] Many thanks to Andrea Calabrese for the insight on Italian.
[23] Many thanks to James Harris (pc) for the insight on Catalan and lots of other very helpful suggestions.

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APPENDIX - LADINO ORTHOGRAPHY

The following notes on orthography are from Ladino Komunitá – an online Ladino language circle, which can be found on the web at: http://groups.yahoo.com/group/ladinokomunita/

LA ORTOGRAFIA ke estamos uzando es la de "Aki Yerushalayim[24]".

NO UZAMOS: Q,X,W,C (aparte de en nombres propios).

Para el sonido de la C ke se sona komo [s] uzamos la S, si se sona komo [k] uzamos la K. Y es konsonante solo (yerno, yorar, etc.); no se uza sola. Uzamos "i" para el konjunktivo ("y" en Kasteyano, "and" en Inglez), no "y".

Abasho reprezentamos los sonidos del alfabeto aziendo apareser detras de kada letra un nombre konosido: A-ALBERT, B-BARUH, CH-CHARLIE (en Inglez), D-DAVID, DJ-(pronunsado komo JOE en Inglez), E-ESTER,

[24] This is a Ladino language newspaper.

F-FRANKO, G-GALANTI, H-HAYIM, I-IZAK, J-JACQUES (en Fransez), K-KADEN, L-LEON, M-MIRIAM, O-ORO, P-POLA R-ROZA, S-SALAMON, SH-SHEMUEL, T-TUVI, U-UZIEL, V-VITALI, Y-YAVUZ, Z-ZAKUTO.