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Luxembourgish

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1 Introduction

Luxembourgish (local language name: Lëtzebuergesch ['lətsəbuəjəʃ], French name: Luxembourgeois, German name: Luxemburgisch) is a small West-Germanic language mainly spoken in the multilingual speech community of the Grand Duchy of Luxembourg, where it is one of the three official languages alongside German and French. Being the first language of most Luxembourgers it also has the status of the national language (since 1984). Although in its origin Luxembourgish has to be considered as a Central Franconian dialect, it is nowadays regarded by the speech community as a language of its own. It is used very frequently in day-to-day oral communication at all social levels; it is very common on local radio and television; it is the only language spoken in parliament sessions and it is also very often used at the workplace. It has its own orthography and German is considered a different language. Although the vocabulary of Luxembourgish has a substantial number of loan words from French and German, the morpho-syntax follows Germanic patterns. Luxembourgish today has approximately 400,000 speakers, including many L2 speakers (around 43 % of the population does not have the Luxembourgish nationality).

Luxembourgish has various regional dialects located in the north, east, south and center of the country (Schmitt 1963). The phonetic system presented in this article is based on the central Luxembourgish variety, which is seen as the emergent standard language (Gilles 1999, Gilles & Moulin 2003) and which also represents the basis for the orthography and for dictionaries (Newton 2000). Alongside the phonetic transcription, example words are also presented in official orthography.

2 Consonants

With the exception of the alveolo-palatal fricatives and the approximant [w], the consonant inventory of Luxembourgish is quite similar to Standard German.

Table 1. Consonants of Luxembourgish.

	Bilabial	Labio-dental	Alveolar	Post-alveolar	Alveolo-palatal	Palatal	Velar	Uvular	Glottal
Plosive	p b		t d				k g		
Nasal	m		n				ŋ		
Trill								ʀ	
Fricative		f v	s z	ʃ ʒ	ç ʒ			χ ʁ	h
Affricate			ts	tʃ					
Approximant						j	w		
Lateral approximant			l						

Similar to Standard German, voiced obstruents cannot occur syllable-finally and will be devoiced (‘Auslautverhärtung’). Likewise, the voiceless plosives [p t k] are aspirated in most positions. The phonologically voiced plosives [b d g] are in fact often realized as devoiced plosives. Thus, the phonological opposition is established by a fortis/lenis distinction. In contrast to German, the glottal stop [ʔ], although observable in some speaking styles, does not form part of the phonological system. [g] is found only word-initially and banned in all other positions, where the successors of historical [g] are realized as fricatives [ç ʒ χ ʁ] or have disappeared.

The main variant of /r/ in pre-vocalic position is the trill [ʀ], the lesser used variant is the fricative [ʁ]. Elder speakers pronounce [ʀ] or [ʁ] also word-finally (*Bir* [bi:ʀ] ‘pear’) whereas younger speakers often show *r*-vocalization and produce central [ə] or [ɐ] instead ([bi:ə] for *Bir*). Between short vowels and consonants /r/ is spirantized, either to a voiced [ʁ] as in *Parmesan* [ˈpɑʁməza:n] ‘Parmesan cheese’ or to an unvoiced [χ] as in *parken* [ˈpɑχkən] ‘to park’. Thus, whether /r/ shows up here as voiced or unvoiced fricative depends on the voicing feature of the following consonant.

Fricatives exist at six places of articulation, all but one having a phonological voicing opposition. Among the fricatives, [ç] and [ç̥] are allophones of one single phoneme /ç/. The same holds for their voiced counterparts [ʁ] and [ʁ̥] with the latter allophone appearing only in few words, however. The selection of the allophone is determined, as in German, by the preceding context ([ç ʁ̥] after phonologically back vowels, [ç̥ ʁ] elsewhere). An increasing number of speakers no longer distinguish between the alveolo-palatal and the post-alveolar fricatives, i.e. between [ʃ] and [ç̥] on the one hand and between [ʒ] and [ʁ̥] on the other. The progression of the sound change may eventually lead to a phoneme merger thus reducing the number of the fricatives.

Frequently, [j] is substituted with [ʒ] (*Juni* ['ju:ni:] or ['ʒu:ni:] 'June') (Newton 1993). The labial-velar approximant [w] has to be regarded as an allophone to the voiced labio-dental fricative [v] with the former only occurring after [ʃ] (*schwammen* ['ʃwamən] 'to swim'), [ʦ] (*zwee* [ʦwe:] 'two') and [k] (*Quatsch* [kwatʃ] 'nonsense') and the latter occurring elsewhere.

Table 2. Example words for each consonant.

[p]	['pa:kən]	paken	'to pack'	[b]	['ba:kən]	baken	'to bake'
	[pɑp]	Papp	'father'		['labə]	labber	'lax'
[t]	[tʰɪ]	Téi	'tea'	[d]	['dæ:ɪvəl]	Däiwel	'devil'
	[blut]	Blutt	'blood'		['brudə]	Brudder	'brother'
[k]	[ke:s]	Keess	'cash office'	[g]	[ge:s]	Geess	'goat'
	['kukən]	kucken	'to look'		['go:ən]	goen	'to go'
[f]	[fəʃ]	Fësch	'fish'	[v]	['vəʃən]	wëschen	'to wipe'
	['pæfə]	Peffer	'pepper'		[vɑ'kants]	Vakanz	'holiday'
[s]	[ta:s]	Taass	'cup'	[z]	['ta:zən]	Tasen	'cups'
	[glas]	Glace	'ice cream'		['zumə]	Summer	'summer'
[ʃ]	[bi:ʃt]	Biischt	'brush'	[ʒ]	['ʒu:li:]	Juli	'July'
	[ʃte:n]	Steen	'stone'		['ʒæ:ɪtsən]	jäizen	'to shout'
[ç̥]	[li:et]	liicht	'light'	[ʁ̥]	['hʒɪzən]	héijen	'high'
	[biəç̥]	Bierg	'mountain'		['ʃpizəl]	Spigel	'mirror'
[ç]	[kuç]	Kuch	'cake'	[ʁ]	['kuʁəl]	Kugel	'ball'
	[a:çt]	aacht	'eight'		['ju:ʁənt]	Jugend	'youth'
[h]	[hɑɪ]	hei	'here'				
	[hɑst]	haut	'today'				
[ʦ]	[tsuç]	Zuch	'train'	[ʧ]	['rəʃən]	rëtschen	'to slide'
	['ʃwætsən]	schwätzen	'to talk'		[dæ:ɪʃ]	däitsch	'German'
				[w]	[ʃwa:çts]	schwaarz	'black'
					[kwæl]	Quell	'source'
[m]	[mam]	Mamm	'mother'	[l]	[loft]	Loft	'air'
	[ha:m]	Ham	'ham'		[kil]	kill	'cool'
[n]	[man]	Mann	'man'	[j]	[jo:]	jo	'yes'

	[nuəs]	<i>Nues</i>	‘nose’		[jo:ɐ]	<i>Joer</i>	‘year’
[ŋ]	[kæŋ]	<i>keng</i>	‘nobody’	[ʀ]	[ʀəʊ]	<i>Rou</i>	‘silence’
	[jonk]	<i>jonk</i>	‘young’		[ɑri've:]	<i>Arrivée</i>	‘arrival’

3 Vowels

The vowel inventory contains the phones [i: i e: e ə ε: æ a: ɑ o: o u: u] as monophthongs. In addition Luxembourgish has a set of eight diphthongs, which is considerably larger than the Standard German one (eight compared to three).

3.1 Monophthongs

In order to give a better overview of the monophthongs in Luxembourgish, the schematic, auditorily based system (Fig. 1) is accompanied by a formant chart using the Bark scale, which provides a perceptually more realistic acoustic representation of vowel realisations (Fig. 2).

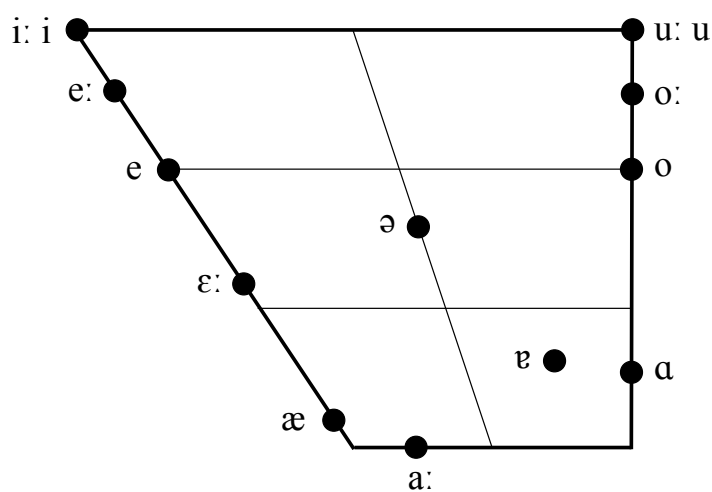


Figure 1. Auditorily based chart of the monophthongs in Luxembourgish.

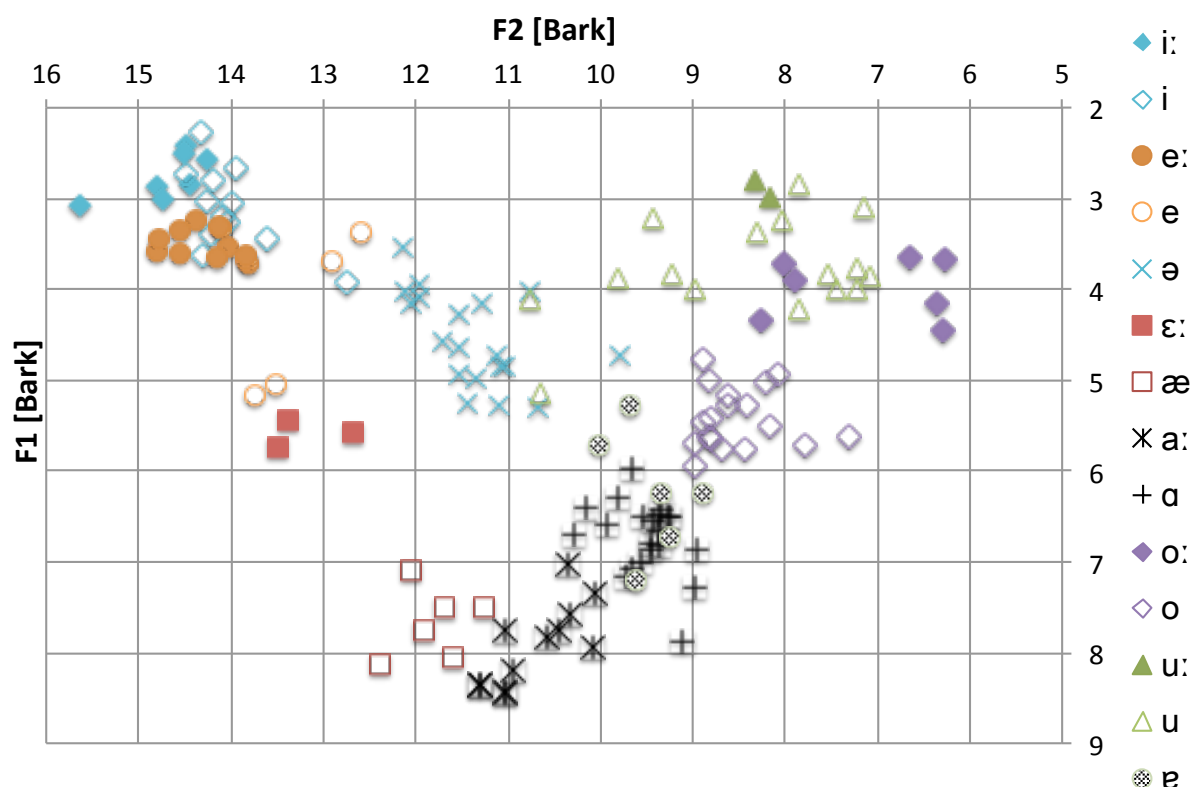


Figure 2 Formant chart of the monophthongs in Luxembourgish (based on the accompanying sound recordings of this article, younger male speaker from the central Luxembourgish region)

Table 3. Example words for each monophthong.

[i:]	[li:ɛt]	<i>liicht</i>	‘light’	[i]	[mit]	<i>midd</i>	‘tired’
	[ˈri:zœ]	<i>riseg</i>	‘huge’		[ˈhivəl]	<i>Hiwwel</i>	‘hill’
[e:]	[ke:s]	<i>Keess</i>	‘cashier desk’	[ə]	[dɔn]	<i>dënn</i>	‘thin’
	[ˈmɛ:tɐ]	<i>Meter</i>	‘meter’		[nɔt]	<i>net</i>	‘not’
[ɛ:]	[ˈʃtɛ:rɔn]	<i>Stären</i>	‘stars’	[e]	[mek]	<i>Méck</i>	‘fly’
	[ˈkɛ:rɔn]	<i>Kären</i>	‘cores’		[kɛŋ]	<i>kéng</i>	‘audacious’
				[æ]	[hæɪ]	<i>hell</i>	‘bright’
					[ˈmænɐ]	<i>Männer</i>	‘men’
[a:]	[ka:p]	<i>Kap</i>	‘cap’	[ɑ]	[kap]	<i>Kapp</i>	‘head’
	[a:χt]	<i>aacht</i>	‘eight’		[blɑn]	<i>blann</i>	‘blind’
[o:]	[ʃpro:χ]	<i>Sprooch</i>	‘language’	[o]	[ʃpro:χ]	<i>Sproch</i>	‘saying’
	[ʃo:f]	<i>Schof</i>	‘sheep’		[loft]	<i>Loft</i>	‘air’
[u:]	[du:ft]	<i>Duuscht</i>	‘thirst’	[u]	[gut]	<i>gutt</i>	‘good’
	[tu:t]	<i>Tut</i>	‘plastic bag’		[kuχ]	<i>Kuch</i>	‘cake’
[ə]	[ˈfudəlɔn]	<i>fuddelen</i>	‘to cheat’	[ɐ]	[ˈkanɐ]	<i>Kanner</i>	‘children’
	[ˈʃampəs]	<i>Schampes</i>	‘champagne’		[ˈaʊɐ]	<i>Auer</i>	‘hour’

Like most other Germanic languages Luxembourgish distinguishes short and long vowels. Short [i] and [u] as in *vill* [fil] ‘many’ and *Kuch* [kuχ] ‘cake’ mainly differ in length from their long counterparts [i:] and [u:] as in *Zil* [tsi:l] ‘goal’ and *Tut* [tu:t] ‘plastic bag’. As the formant chart in Fig. 2 shows, the acoustic difference between these vowel sets is minimal. Short [e] and [o] are also realized rather closed and are thus similar to long [e:] and [o:], respectively. Depending on regional accent and speaker age, more open variants [ɛ] and [ɔ] can be found frequently, especially when followed by the vibrant /r/.

The long front vowels [e:] and [o:] are realized very close and may even show overlap with [i] and [u], respectively. In a phonemic perspective, the vowel /e:/ has two contextually conditioned allophones: when preceded by the vibrant /r/ in simplex words an open [ɛ:] is realized (*Kär* [kɛ:ə] ‘core’); in all other contexts a closed [e:] (*Keess* [ke:s] ‘cash register’) is realized.

Unlike German, the schwa sound also appears regularly in stressed syllables or root syllables. The short vowels [ə] and [ɐ] are complementary distributed allophones of the same phoneme /e/. [ɐ] (with a more open [ɛ] alternative realization) appears only before velar consonants as in *Méck* [mek] ‘fly’ or *zéng* [tseŋ] ‘ten’, whereas [ə] appears in all other positions. Luxembourgish schwa is realized frequently with light lip rounding and compared to [e] this vowel is strongly centralized.

In contrast to Standard German the opposition between the long and short open vowels (as in German *Schal* ‘scarf’ vs. *Schall* ‘sound’) is manifested in Luxembourgish in quantity *and* quality, viz. [a:] and [ɑ]. Furthermore, the long and front [a:] (*Sak* [za:k] ‘bag’) is close to the quality of short [æ] (*hell* [hæɫ] ‘bright’, *Decken* [ˈdækən] ‘blanket’) and sometimes the two even merge qualitatively.

The schwa sounds [ə] and [ɐ] are high-frequency vowels in unstressed position. In contrast to German, where it is usual to omit [ə] in closed syllables, schwa is retained in Luxembourgish (e.g., *setzen* [ˈzætsən] ‘to put’ in Luxembourgish vs. [ˈzetsŋ] in German).

3.2 Diphthongs

Luxembourgish has eight diphthongs (see Fig. 3 and Table 4).

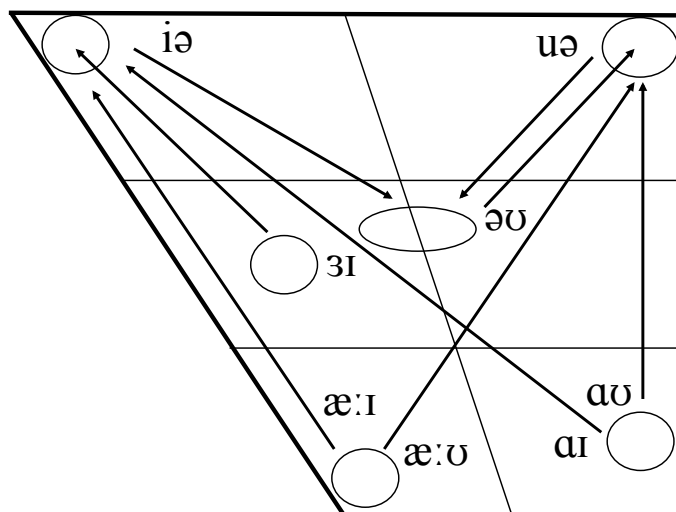


Figure 3. Diphthongs in Luxembourgish.

Table 4. Example words for each diphthong.

[iə]	[hiən]	<i>hien</i>	‘he’	[uə]	[‘buədəm]	<i>Buedem</i>	‘soil’
	[‘viədə]	<i>Wieder</i>	‘weather’		[vuət]	<i>Wued</i>	‘calf’
[ɜɪ]	[frɜɪ]	<i>fréi</i>	‘early’	[əʊ]	[ʃəʊl]	<i>Schoul</i>	‘school’
	[ʃɜɪn]	<i>schéin</i>	‘nice’		[okɑˈzjəʊn]	<i>Okkasioun</i>	‘occasion’
[æ:ɪ]	[tsæ:ɪt]	<i>Zäit</i>	‘time’	[æ:ʊ]	[Ræ:ʊm]	<i>Raum</i>	‘room’/’space’
	[væ:ɪs]	<i>wäiss</i>	‘white’		[læ:ʊs]	<i>Laus</i>	‘louse’
[ɑɪ]	[laɪt]	<i>Leit</i>	‘people’	[ɑʊ]	[‘rɑʊmən]	<i>raumen</i>	‘to clean’
	[vaɪs]	<i>Weis</i>	‘manner’		[‘ɑʊto:]	<i>Auto</i>	‘car’

For four diphthongs the schwa region is of special relevance: The diphthongs [ɜɪ] (frequent variant [əɪ]) and [əʊ] have centralized onsets and represent more or less the inverted versions of [iə] and [uə], respectively, which end in the schwa region. The diphthongs [æ:ɪ] and [æ:ʊ] are characterized by lengthening of the onset (Bruch 1954), which enhances the contrast to the qualitative close diphthongs [ɑɪ] and [ɑʊ], respectively. The lengthening can disappear in fast speech forms or in unstressed syllables. All remaining diphthongs have a vowel length similar to the long monophthongs.

Similar to Standard German (Kohler 1999), secondary diphthongs arise after vocalization of tautosyllabic /r/ after long monophthongs. This results in centering *r*-diphthongs like *Dier* [di:ə] ‘door’, *Joer* [jo:ɐ] ‘year’ and *Kär* [kɛ:ə] ‘core’ in contrast to the consonantal appearance

due to resyllabification in the corresponding plural forms *Dieren* ['di:.RƏn] ‘doors’, *Joeren* ['jo:.RƏn] ‘years’ and *Kären* ['kɛ:.RƏn] ‘cores’. For many speakers word-final /r/ in French loans like *classeur* ['klasɛ:.R] ‘folder’ is also realized consonantal.

3.3 Foreign and rare sounds

Due to many loan words from French and modern Standard German on the one hand, and the Luxembourgish’s linguistic competence in speaking both these languages on the other, we find several sounds which historically do not belong to the Luxembourgish sound system.

Table 5. Example words for each of the foreign and rare vowels.

[y:]	['zy:dən]	<i>Süden</i>	‘south’	[y]	[hyl]	<i>Hüll</i>	‘envelope’
[ø:]	[blø:t]	<i>blöd</i>	‘stupid’				
[œ:]	['ɛ:təriœ:R]	<i>Interieur</i>	‘interior’	[œ]	['œfəntleɛ]	<i>ëffentlech</i>	‘public’
[oi]	['oiro:]	<i>Euro</i>	‘Euro’				
[ɛ̃:]	[dɛ̃:t]	<i>Dinde</i>	‘turkey’	[ã:]	[ʃã:s]	<i>Chance</i>	‘opportunity’
[õ:]	['kõ:twa:R]	<i>Comptoir</i>	‘bar’				

As to the affricates, the affricate [dʒ] only appears in English loans like *Jeans* [dʒi:ns] and [pf] only in a few German loans like *Kampf* [kampf] ‘fight’ whereas [dz] occurs only in few words such as *spadséieren* [ʃpa'dzɛɪRƏn] ‘to go for a walk’.

4 Stress and intonation

The lexical tone contrast from the Central Franconian tonal accents (Gussenhoven & Peters 2004) has completely disappeared from Luxembourgish (Gilles 2002). This development gave rise to the already mentioned two sets of diphthongs with [ɑɪ] and [ɑʊ] associated with the former Accent 1, and [æ:ɪ] and [æ:ʊ] associated with the former (lengthened) Accent 2, respectively.

The word accent in Luxembourgish may fall on the antepenultimate, the penultimate or final syllable, with the penult as the most common stress pattern, which frequently also applies to French loans *Parfum* ['pɑʃfɛ̃:] ‘fragrant’, *Dekolleté* [de:'kolte:] ‘décolleté’. Although schwa syllables normally avoid word stress (*Atelier* ['atɛlje:] ‘workshop’), disyllabic words with an

initial schwa syllable nevertheless can attract word stress (*Tëlee* ['təle:] ‘television’) (Gilles 2009).

Little is known yet about intonation, but a typical intonational feature of Luxembourgish is the rising-mid-falling nuclear tune, which serves to signal continuation.

5 Cross-word phenomena

There are various obvious phonological alternations of sounds operating at a supra-segmental level. Syllable-final *-n* is subject to phonologically conditioned *n*-deletion (Gilles 2006): In external sandhi, all final *-n* are deleted unless the following syllable starts with a vowel or the consonants [h d t ts n] (except in some well-defined special cases). Thus, the final nasal in the article *den* is retained in *den Dësch* [dən dəʃ] ‘the table’ whereas it is deleted in *de Schaf* [də ʃa:f] ‘the cupboard’. Since Luxembourgish has a lot of words ending in an alveolar nasal, *n*-deletion occurs quite often.

Unusual consonant clusters arise postlexically due to cliticization of the definitive article *d'* (for feminine, neuter and plural forms) as in *d'Land* [dlant] ‘the country’ or *d'Kräiz* [tkræ:its] ‘the cross’. Voicing of the consonant for *d'* depends on the following context.

Resyllabification and voicing of voiceless obstruents (indicated with ‘*˘*’) occurs across word boundaries when the following phonological word starts with a vowel, such as *eng interessant Iddi* [eŋ intræ'sand ˘idi] ‘an interesting idea’ but also in compounds like *mateneen* [mad ˘ə'ne:n] ‘together’ (Goudaillier 1987, Gilles *in print*). In all these cases, final devoicing is blocked and the obstruent is realized voiced.

6 Transcriptions of the recorded passage

The following translation of ‘The North Wind and the Sun’ in Luxembourgish orthography was read by a younger male speaker from the central region of Luxembourg. The broad phonetic transcription is based on this version. Stress marks apply to phrasal rather than to

word level here. Intonational phrasing is indicated by [] ('minor phrase') and [||] ('major phrase').

Den Nordwand an d'Sonn

An der Zäit hunn sech den Nordwand an d'Sonn gestriden, wie vun hinnen zwee wuel méi staark wier, wéi e Wanderer, deen an ee waarme Mantel agepak war, iwwert de Wee koum. Si goufen sech eens, dass deejéinege fir de Stärkste gëlle sollt, deen de Wanderer forcéiere géif, säi Mantel auszedoen. Den Nordwand huet mat aller Force geblosen, awer wat e méi geblosen huet, wat de Wanderer sech méi a säi Mantel agewéckelt huet. Um Enn huet den Nordwand säi Kampf opginn. Dunn huet d'Sonn d'Loft mat hire frëndleche Strale gewiermt, a schonn no kuerzer Zäit huet de Wanderer säi Mantel ausgedoen. Do huet den Nordwand missen zouginn, dass d'Sonn vun hinnen zwee de Stärkste wier.

dən 'nɔxtvant an 'dzon

an dɛ 'tsæ:ɪt | hun zæ dən 'nɔxtvand _ an 'dzon gə'ʃtrɪdən ||
 viə fun hinən 'tswe: | vuəl 'mɜɪ ʃta:k vi:ɐ ||
 vɜɪ ə 'vandərə ||
 de:n an ə 'va:mə 'mantəl 'agəpa:k va: ||
 ivət də 've: kəʊm ||
 zi: gəʊfən zəz _ 'e:ns ||
 das 'de:ʒɪnəzə fɪə də 'ʃte:əkstə gələ zolt ||
 de:n də 'vandərə fə'sɜ:ərə gɜɪf ||
 zæɪ 'mantəl 'æʊstədo:ən ||
 dən 'nɔxtvant huət mat 'alə 'fɔ:z gə'blo:zən ||
 'a:və va:t ə mɜɪ gə'blo:zən huət ||
 va:t də 'vandərə zæ 'mɜɪ a zæɪ 'mantəl 'agəvekəlt huət ||
 um 'æn huət dən 'nɔxtvant zæɪ 'kambv _ 'ɔpɪn ||
 dʌn huət 'dzon | 'dloft mat hiərə 'frəntləə 'ʃtra:lə gə'vi:əmt ||
 a ʃon no: 'ku:ətsə 'tsæ:ɪt ||
 huət də 'vandərə zæɪ 'mantəl 'æ:ʊsgədo:ən ||
 'do: huət dən 'nɔxtvant misən 'tsəʊɪn ||
 das 'dzon fun hinən 'tswe: | de: 'ʃte:əkstə vi:ɐ ||

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References

- Bruch, Robert. 1954. *Das Luxemburgische im westfränkischen Kreis*. Luxemburg.
- Gilles, Peter. 1999. *Dialektausgleich im Lëtzebuergeschen. Zur phonetisch-phonologischen Fokussierung einer Nationalsprache*. Tübingen: Narr.
- Gilles, Peter. 2002. Einflüsse der Rheinischen Akzentuierung auf die segmentelle Ebene. Evidenz aus dem Luxemburgischen. In: Auer, Peter, Gilles, Peter & Spiekermann, Helmut (eds.) *Silbenschnitt und Tonakzente*, 265-282. Tübingen: Niemeyer.
- Gilles, Peter. 2006. Phonologie der n-Tilgung im Moselfränkischen ('Eifler Regel'). Ein Beitrag zur dialektologischen Prosodieforschung. In: Moulin, Claudine & Damaris Nübling (eds.) *Perspektiven einer linguistischen Luxemburgistik*, 29-68. Heidelberg: Universitätsverlag Winter.
- Gilles, Peter. 2009. Wie Französisch, nur Ton 1 – Der Wortakzent des Deutschen und Luxemburgischen im Kontrast. In: Dammel, Antje, Kürschner, Sebastian & Damaris Nübling (eds.) *Kontrastive germanistische Linguistik*, 109-140. Hildesheim: Georg Olms Verlag.
- Gilles, Peter. *in print*. Phonological domains in Luxembourgish and their relevance for the phonological system. In: Caro Reina, Javier, Szczepaniak, Renata (eds.) *Phonological Typology of Syllable and Word Languages in Theory and Practice*. Berlin/New York: de Gruyter (linguae & litterae).
- Gilles, Peter & Moulin, Claudine. 2003. Luxembourgish. In: Deumert, Ana & Vandebussche, Wim (eds.) *Germanic Standardizations. Past to Present*, 303-329. Amsterdam - Philadelphia: Benjamins.
- Goudaillier, Jean-Pierre. 1987. Einige Spracheigentümlichkeiten der lëtzebuergeschen Mundarten im Lichte der instrumentellen Phonetik. In: Goudaillier, Jean-Pierre (ed.) *Aspekte des Lëtzebuergeschen*, 197-230. Hamburg: Buske.
- Gussenhoven, Carlos & Jörg Peters. 2004. A tonal analysis of Cologne Schärfung. In: *Phonology* 21, 251-285.
- Kohler, Klaus. 1999. German. In: *IPA: Handbook of the International Phonetic Association*, 86-89. Cambridge: Cambridge University Press.
- Newton, Gerald. 1993. Allophonic variation in Luxembourgish palatal and alveolar-palatal fricatives: Discussion of an areal survey taken in 1979. In: Flood, John L. et al (eds.) *"Das unsichtbare Band der Sprache". Studies in German Language and Linguistic History in Memory of Leslie Seiffert*, 627-656. Stuttgart.

- Newton, Gerald. 2000. The spelling of Luxembourgish : Systems and developments since 1824. In: Newton, Gerald (ed.) *Essays on politics, language and society in Luxembourg*, 135-162. Lewiston: Edwin Mellon Press.
- Schmitt, Ludwig Erich. (ed.) 1963. *Luxemburgischer Sprachatlas. Laut- und Formenatlas von Robert Bruch. Für den Druck vorbereitet von Jan Goossens*. Marburg: Elwert (Regionale Sprachatlanten 2). [online available at <http://www.luxsa.info>]