# "Uyghur umlauting": Characteristics, diachronic aspects, consequences and triggers

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This paper discusses four important topics concerning the "Uyghur umlauting": its characteristics, historical development, effects and triggers. It describes the so-called "Uyghur umlauting" as two different phonological processes, namely (i) the raising of the low vowels /a/ and /ä/ due to the regressive assimilation of the following high vowels in closed syllable and (ii) the reduction of low vowels mainly due to the shift of the primary accent. The former is actually part of a General Vowel Raising process that signals the separation of Uyghur from other closely related old and modern Central Asian Turkic languages. Diachronically, the raising is earlier that the reduction; the latter did not develop into an automatic phonological process until the 1950s. The raising umlaut affected the phoneme inventory of modern Uyghur, altering the distribution of some phonemes, while the reduction gave rise to considerable composite suffixes. This paper rejects the claims considering the "Uyghur umlauting" a result of the merge of *i and *ï in modern Uyghur, and argues that the major motivation for development of the "Uyghur umlauting" as a postlexical phonological process was not the Iranian influence on Uyghur. It considers "the Uyghur umlauting" as an inner-Uyghur development of two autonomous phonological processes, i.e. the raising and reduction that might also be expected in any other language of the Turkic family of languages.

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The so-called "Uyghur umlauting" is often considered one of the most striking linguistic features of Modern Uyghur in contrast to other languages in the Turkic family of languages. The phonological process in question has been discussed by various scholars since the second half of the nineteenth century; however, many important aspects of this phonological process still remain unexplored. First of all, as Johanson (1993a: 100) pointed out, most analyses are in fact based upon materials from the written language, and therefore the characteristics of the phonological process in question were not appropriately discussed in much of the linguistic literature. Secondly, systematic research on the historical development of the process in question is missing. Moreover we also know very little about its recent development in the spoken language. Thirdly, the effect of the "Uyghur umlauting" on the entire phonological system of the modern Uyghur language was never carefully investigated. Fourthly, concerning the triggers of the Uyghur umlauting, scholars suggest

fairly contradictory explanations: some of them consider it a result of internal pho-
nemic merging, while others ascribe it to the influence of certain contact languages.
Fifthly, most scholars believe that the phonological process in question originally
was a feature of the northern dialects; however they do not explain how this phono-
logical process was introduced to the written language and regional dialects. Finally,
divergent attitudes in the treatment of the phenomenon in morphosyntactic analyses
have raised a set of crucial problems, but none of them has yet been seriously taken
into consideration. As the title of this paper shows, this paper briefly addresses some
basic questions closely relating to the first four topics, namely the characteristics,
historical development, consequences and triggers of the "Uyghur umlauting", while
some facts dealing with the umlaut in Uyghur morphosyntax are discussed in Yakup
(forthcoming).

## 1. Description and characterization of the phenomena

The so-called "Uyghur umlauting" actually refers to the following two distinct
phonological processes:

(i) Raising of low vowels /a/ and /ä/ due to the regressive assimilation of the
following high vowels, as seen below in (1), and

(ii) Reduction of the two low vowels mainly because of the shift of the primary
accent—a few instances due also to the shift of the secondary accent—to the follow-
ing syllables, as exemplified in (2).[1]

(1)  /baš/ 'head' + {(X)m} '1sg POSS' → /bešim/ 'my head'
     /bar-/ 'to go' + {(X)p} 'CONV' → /berip/ 'going'
     /ät/ 'meat' + {(s)I} '3sg POSS' → /eti/ 'his/her/its meat'
     /käl-/ 'to come' + {(X)ŋ} '2sg PERS' → /keliŋ/ '(you) come'
     /yazɣan/ 'having written' + {(X)mIz} '1pl POSSS → /yazɣinimiz/

(2)  /orda/ 'palace' + {(s)I} '3sg POSS' → /ordisi/ 'her/his palace'
     /bala/ 'child' + {lAr} 'Pl' → /balilar/ 'children'
     /ätä/ 'tomorrow' + {(s)I} '3sg POSS' → /ätisi/ 'next day'
     /hämmä/ 'all' + {GA} 'DIR' → /hämmigä/ 'to everything'

Both phonological processes illustrated above were described by Radloff (1882: 63-
65, 289) as "Rückwirkung des engen Vocales *i*" or "die palatalisierende Rück-
wirkung", having been considered a phenomenon that completely corresponds to the
German *Umlaut*. G. Raquette points out some facts that exhibit umlaut, but does not
describe them with any specific term (Raquette 1912-1914: 126, 157). It was the
eminent Swedish Turcologist Gunnar Jarring who systematically investigated the

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[1]  All examples in (1) and (2) are taken from the written form of Standard Uyghur, and
     therefore are given in phonemic representations. The abbreviations are basically after
     Johanson & Csató (eds.) 1998: xxiii.

phonological process; he characterized it as "*i*-Umlaut" (Jarring 1933: 90-94). Since then most scholars use "umlaut" as a standard term to describe the phonological process in discussion; see Talipov 1987: 18-19, Hahn 1991: 51-52. Indeed, some Russian scholars prefer other terms; see Kajdarov 1969: 34; Sadvakasov 1988: 63-65. The Chinese and native Uyghur scholars basically describe the two processes using the terms 弱化 *ruohua* and *ajizlišiš*, both denoting 'weakening, reduction'; see Zhao & Zhu 1985: 22-25, Yi 1985, Polat 1995 and ITL 22-23. What should be paid attention to is the term "Uyghur umlauting" suggested by Lars Johanson (1993a: 100-101), which especially emphasizes the difference between the German umlauting and the "Uyghur umlauting".

Some scholars make rather clear differentiation between the two phonological processes; Borovkov 1935: 7-8, Pritsak 1959: 538; Hahn 1991: 51-54; Johanson 1993a: 100 and Zhang 1999: 91-92. However, in a considerable amount of Turcological literature both processes are simply considered as the same sound change; see Zhao & Zhu 1985: 22-25, Adamović 1993:1, Taklimakanli 2002. There are also some scholars who intend to differentiate them through the monosyllabic or polysyllabic structure of the lexemes subject to umlauting; see Friederich 2002: 5-6; De Jong 2007: 16-17. Throughout the paper I use "raising" or "raising umlaut" to describe the phonological process exemplified in (1) and "reduction" to describe the phonological process exemplified in (2).

In general, the phonological process observed in (2), namely the centralization/ reduction, diverges from the first one, namely the raising, at least with regard to the following two perspectives:

(i) The raising basically is an assimilation process resulting from the regressive assimilation of low vowels in closed mono- or polysyllabic words to high vowels in the following suffixes, whereas the reduction does not necessarily condition the following suffix to begin with a high vowel, since it results from the shift of the primary, and occasionally also the secondary, accent in open dis- or polysyllabic lexemes;

(ii) As a result of the raising, low vowels shift or raise to high or higher vowels, but in the case of the reduction, low vowels are basically neutralized to central vowels or simply deleted.

The first phonological process might be formally described as below in (3), and the second one as in (4):

$$(3) \quad \begin{bmatrix} -\text{consonantal} \\ -\text{high} \end{bmatrix} \rightarrow [+\text{high}] / - \{\text{suffix}\}[+\text{high}]$$

$$(4) \quad \begin{bmatrix} -\text{consonantal} \\ -\text{high} \end{bmatrix} \rightarrow [+\text{central}] / - \{\text{suffix}\} \quad /\{\text{enclitics}\}$$

The first phonological process described in (3), which might also be called "front raising", actually is part of a General Vowel Raising process (GVR) characterized by the raising of both back and front vowels in height. Besides the raising umlaut or "front-raising" illustrated above, GVR also includes a "back-raising" as seen in /aš/ 'to increase' + {(X)K} 'denominal suffix' → /ošuq/ [ušuq] 'extra, superfluous' /qol/ + {(X)m} '1sg POSS' → /qolum/ [qulum] 'my hand'. The "front-raising" also includes the raising process as seen in /köz/ 'eye' + {(X)ŋIz} '2sg POSS' → /közüŋüz/ [küzüŋüz] 'your eye', etc. The "back-raising" is often considered a regressive labial harmony (regressive Rundungsharmonie) by some scholars; however, if one views its recent development it is not difficult to figure out that it is actually a change in height. The same also goes for the change from *közüŋüz* to *küzüŋüz*, but here first the stem progressively assimilates the suffix and then the suffix involving front high labial vowel causes the stem vowel to change in height.

Diachronically, in the "front raising" first the back vowel *a* changes to the front open vowel *ä* [æ] and then *ä* resulting from this fronting raises further to ɛ and e, while *ä* in front-syllabic lexemes first also raises to *ɛ* and *e* and then reaches the high front vowel *i*. In the "back-raising" first the low back vowel undergoes raising, presumably first reaching a position close to the open-mid back vowel [ɔ], and then shifts further to the close-mid back vowel [o] and later reaches the position of [u] as seen in /qomuš/ [qumuš] 'reed' (compare Old Turkic *qamïš*). The "back-raising" should have started approximately at the same time as the "front-raising"; nevertheless, Jarring's materials from the 1920s and 1930s exhibit examples of both "back-raising" and "non-back-raising" of *a*, e.g. *jarut- ~ jarut- ~ jorut-* 'to light, lighten' (Jarring 1964: 150). Since the raising of low and close-mid vowels to *i* and *u* was not reflected in the orthography, it has simply been ignored. Some examples for the raising of *e* to *i* in the spoken language are given in Taklimakanli 2002: 131. However, in the case of *qeni qiziq* 'rash (lit. hot blood)' and *beši čoŋ* 'too daring (lit. big head)', etc. the close mid vowel *e* in the word forms *qeni* and *beši* and does not change to *i*, as Taklimakanli claims. The GVR in modern Uyghur could be illustrated as below in Figure 1.



Figure 1: General Vowel Raising (GVR) in Uyghur

Formal representation of this phonological process might be as below in (5).

(5)   [+ low, -high] → [-low, +high] / {suffix} [+high]

The suffixes triggering the raising umlaut (= "front-raising") are restricted to the limited number of suffixes initiating with the high front vowel /i/, including its back realization *ï* [ɯ]. That is, the raising umlaut is triggered not only when the suffixes begin with front high vowel *i* [i] but also when the suffixes beginning with its back pair *ï* [ɯ] are added to the closed monosyllabic lexemes containing low vowels; see Johanson 1993a: 100. In the case of suffixes with fourfold vowels, only the variants initiating with front and back high unrounded vowels may trigger the raising umlaut. Below is a list of umlaut-causing suffixes in modern Uyghur.

A. Inflectional suffixes
    a. the possessive suffixes: *-(X)m, -(X)ŋ, -(X)ŋIz, -(X)ŋlar, -(s)I*;
    b. the converbial suffix *-(X)p*;
    c. the evidential suffix *-(X)ptu*;
    d. the verbal noun suffixes in *-(X)š*;
    e. the verbal noun suffix *-(X)GlIK*;
    f. the second person imperative suffixes *-(X)ŋ, -(X)ŋlar, -(X)ŋizlar* and *-(X)š*;
    g. the suffix *-(X)l* of the passive voice;
    h. the vying and cooperating suffix *-(X)š*.

The personal suffixes signalling inter-terminality as seen in *barimän* 'I go' and the actionality suffix *-(I)vär* resulting from rather complex phonological processes also belong to this group.

B. Derivative suffixes
    a. the denominal suffix *-(X)K* as observed in *ač-* 'to open' + *-(X)K* → *ečiq* [ečɯq] 'open';
    b. the denominal suffix *-(X)m* as observed in *bas-* 'to press' + *-(X)m* → *besim* [besɯm] 'pressure';
    c. the denominal suffix *-(X)n* as seen in *aq-* 'to flow' + *-(X)n* → *eqin* [eqɯn] 'river';
    d. the denominal suffix *-(X)ndi* as seen *baq-* 'to take care of' + *-(X)ndi* → [beqɯndɯ] 'dependent';
    e. the deverbal suffix *–(X)štur-* as observed in *al-* 'to take' + *-(X)štur-* → *eližtur-* [elɯžtur] 'to mix';
    f. the deverbal suffix *-(I)q* as seen in *bas-* 'to press' + *-(I)q* → *besiq-* [besɯq] 'to subside';
    g. the deverbal suffix *-IK* as seen in *käč* 'late' + *-IK* → *kečik* [kičik] 'to be late';
    h. the deverbal suffix *-IrKA* as observed in the examples *yat* 'foreign' + *IrKA*→ *yetirqa-* [yetɯrqɑ] 'to feel foreign', *äs* 'memory' + *-IrKA* → *esirkä-* [isirkæ] 'to worry'.

The raising umlaut in Uyghur occurs at the right edge of the morphological base; meanwhile it also occurs in plain roots, e.g. *qari* [qɑrɯ] → *qeri* 'old' [qerɯ], *qašuq* → *qošuq* 'spoon' [qošuq] ~ [qušuq], etc., perhaps by analogy. In the case of some

lexemes, both umlauted and non-umlauted forms exist side by side, e.g. *eүiz* [eɣuiz] 'mouth' (compare Old Turkic *aүïz*) but *aүzim* [aɣzuim] 'my mouth', *aүziŋ* [aɣzuiŋ] (ITL 829), *beүir* 'liver' (compare Old Turkic *baүïr*) but *baүrim* [baɣruim] 'my liver', *baүriŋ* [baɣruiŋ] 'your liver' (ITL 159), etc. Thus, Uyghur umlaut involves lexical listing. However, the Uyghur raising umlaut is, in general, not morphologically or lexically but rather phonologically conditioned.

In contrast to the suffixes causing the raising umlaut, the number of morphological and lexical elements triggering reduction is fairly large. Basically, all suffixes and clitics added to open dis- and polysyllabic lexemes or units ending in low vowels may trigger it. Thus, the reduction might be triggered in the unstressed second and third syllables, following the shift of the secondary stress to the third and fourth syllable. In polysyllabic lexemes, all low vowels in unstressed open syllables are the subject of reduction as exemplified in (6).

(6)  /bala/ 'child' + {lAr} 'Pl' + {(X)mIz} '1Pl POSS' → [balələrumuiz] 'our children'
/mähällä/ 'village' + {dA} 'DIR' + {la} 'enclitic' → [mähällidila] 'only in the village'
/ojna-/ 'to play' + {mA} 'NEG' + {sA} 'COND' + {mu} 'enclitic' → [ojnəməsəmu] 'even one does not play'

A similar process may also take place in morpheme boundaries in compounds as well as in word boundaries in various phrases as seen in (7).

(7)  /ata/ 'father' + /ana/ 'mother' → [atə ana] 'parents'
/taχta/ 'board' + /müšük/ 'mouse' → [taχtə müšük] 'mousetrap'
/öjgä/ 'to the home/house' + /bar-/ 'to go' → [öjgɨ va] 'go to the home'

The reason for the confusing of raising and reduction is not quite clear; the orthographical presentation of the central vowels [ə] and [ɨ] resulting from the reduction process using the same letter usually used to represent the front high vowel *i* might have led to this confusion. The difference between raising and reduction becomes more apparent if we present them in a more accurate phonetic transcription. That is, the more precise presentation of the reduction, namely the phonological process exemplified in (2) in narrow phonetic transcription might be as below in (8).

(8)  /orda/ 'palace' + {(s)I} '3sg POSS' → [ordəsui] 'her/his palace'
/bala/ 'child' + {lAr} 'Pl' → [balələar] 'children'
/ä:tä/ 'tomorrow' + {(s)I} '3sg POSS' → [æ:tɨsi] 'next day'
/hämmä/ 'all' + {GA} 'DIR' → [hæmmɨgɛ] 'to every one'

It is worth noting that the raising is blocked when the low open stem vowels are long, e.g. *yar* 'lover' ( < Persian *yār*) + *-(X)m* → [ja:rum] 'my lover' (not *\*yerim*), *nam* 'name' (< *nam*) + *-(s)I* → [na:mui] 'its/her/his name' (not *\*nemi*). In very limited examples umlauted and non-umlauted forms co-exist, e.g. *san* 'number' + *-(s)I* → [sa:nui] / [senui] 'its/her/his number'. Amongst the frequently cited examples for

exceptions i.e. *γāz* 'goose' → *γāzi* / *γāzim* 'her/his goose' / 'my goose' (Hahn 1991: 52, Hahn 1998: 383, Comrie 1997: 919), *pēr* 'feather' (sic! the correct form must be *päy* or *pey*) → *peri* (Hahn 1991: 52, Hahn 1998: 383), *par* 'steam, heater' → *pari* (Yi 1985: 22) actually an umlauting process takes place, e.g. *γaz* + *{(s)I}*→ [γezï], *päy* + *{(s)I}* → [peji], *par* +*{(s)I}*→ [perɯ]. Moreover, the vowel in *γaz* is not long in Modern Uyghur as in its Persian original.

In certain instances both non-umlauted and umlauted forms exist side by side. To take one example, as the possessive forms of *san* 'number' we find *sanimiz* [sa:numɯz] 'our number', *saniŋlar* [sa:nuŋla:] 'your number' and *sani* [sa:nɯ] 'her/his/its/their number' but also the forms displaying umlauting, e.g. *senimiz* [senɯmɯz], *seniŋlar* [senuŋla:] and [senɯ]. However, the non-umlauted and umlauted forms of certain words express different lexical meaning, e.g. the non-umlauted *xanim* has the meaning 'Mrs' or 'Madame' (in the Kashghar dialect it means 'female teacher'), while the umlauted form *xenim* refers to young ladies.

Nevertheless, in the case of Uyghur, "umlaut" in the sense of the first phonological process clearly refers to the raising of vowels, but not fronting like the German umlaut (Johanson 1991: 85), if we ignore the change from *a* to *ä* in the initial stage. Interesting are the possessive forms of *su* 'water', e.g. *süyüm* [süjüm] 'my water', *süyimiz* [süjimiz] 'our water', *süyüŋlar* [süjüŋla:] 'your water', [süji] 'her / his / its / their water', etc. They seem to be based on the archaic form *suv* 'water', reflecting a rather complex phonological process closely associated with diachronic properties of the lexeme in question. I shall refrain from discussing this phenomenon here in detail.

Contrary to the raising, final high vowels in some lexemes have changed to low vowels in modern Uyghur, e.g. *toγrï* 'correct' → *toγra*, *qamčï* 'whip'→ *qamča*, *böri* 'wolf' → *börä*, etc. In the actual orthography of modern Uyghur, this sound change is fully reflected although it is not always consistent. This should be a diachronic sound change that happened over the last sixty years, since the lexemes mentioned above were written with high vowels in the first half of the 1950s; see Najip 1954: 159, 173, 178. Interesting is, however, that the original final high vowels appear when suffixation occurs, e.g. *qamča* + *(X)mIz* → *qamčimiz* [qamčumɯz] 'our whip', *börä* + *lAr* → *börilär* [börilä:] ~ [bürilä:] 'wolves', etc. Clearly, here the opposition between high and low vowels is neutralized. It is not adequate to count these examples as "umlauting", as is often the case in some Turcological publications.

## 2. Diachronic aspects of the "Uyghur umlauting"

Some forms in Old Turkic are often given as examples for "umlauting", e.g. *elig* vs. common *älig* 'hand', *ešid-* / *ešit-* vs. *äšid-* 'to listen', *arïčï* 'intercessor" (< *ara* + *čï*), *övkilä-* 'to be furious' (< *övkä* 'lung, anger' + *-lä*), etc.; for an analysis see Erdal 2004: 88, 92. Actually, the case of *elig* vs. *älig*, *ešid-* vs. *äšid-* basically constitutes the neutralisation of the two front vowels *e* and *ä* in word-initial position. A similar

neutralisation process is also observed in Khwarasm Turkic and Chaghatay in the same or similar lexemes; for details see Eckmann 1959: 144-145. According to J. Németh (1939: 518, 520), "in Fällen, wo das urtürk. *ä im Tschagataischen durch ڭ bezeichnet wird, die der Bezeichnung zugrunde liegende Aussprache nicht ä, sondern e oder i gewesen ist." Nevertheless, in both cases the phonological process in question operates only within limited lexemes and seems to have strongly relied on specific properties of individual words in both periods. As for arïčï 'intercessor" (< ara + čï) and övkilä- 'to be furious' (< övkä 'lung, anger' + -lä), etc. where Old Turkic is concerned, the quality of the resulting vowels is not back or front as transcribed by scholars but should be given as central vowels or reduced vowels, as is the case in modern Uyghur. Although some modern Turkic languages other than Uyghur, namely Iranian Azeri (see Dehghani 2000: 51-52), Salar (see Lin 1985: 16), Yakut (see Erdal 2004: 88), Yellow Uyghur (see Roos 2000: 43-44) as well as some dialects of Uzbek (Atamirzaeva 1974: 21-22) also display very similar sound changes in similar phonological environments; however, the two phonological processes in question have developed as automatic phonological processes in none of the afore-mentioned language varieties. This is also true of Old Turkic and Chaghatay. Thus, Modern Uyghur became the only Turkic language which systematically applies "umlauting" to low vowels if we use "umlauting" as a cover term for the two phonological processes. The question is: When and how did the "umlauting" become established as a postlexical, common phonological process in Modern Uyghur?

## 2.1 Written sources

According to Kajdarov (1969: 33-34), the earliest written source that rather frequently exhibits "umlauting" is a poem by the Kashgharian poet Abdurahim Nizari compiled between the late 18th and early 19th centuries in Kashghar. One of the representative examples cited by Kajdarov is the following verse of this poem (the transcription is after Kajdarov 1969: 34, the "umlauted" forms are given in cursive, as in Kajdarov 1969):

> (9)  tä'älluq umurida qatti *bešim*,
> atam mätämidä eqip köz *yešim*...
> kelip yänä turmay öyigä *qečip*,
> qara äbr yäŋliɣ yäšini *sečip*...
> saŋa birsi ämdi vafa *qilmidi*,
> hävadarlar birsi *tapilmidi*... (Kajdarov 1969: 34)

Obviously, the cited lines exhibit several examples of both raising and reduction, e.g.: *bešim* 'my head' (< baš 'head' + -(X)m), *yešim* 'my tear' (< yaš 'tear' + -(X)m), *qečip* 'escaping' (< qač- 'to escape' + -(X)p), *sečip* 'pouring' (< sač- 'to pour' + -(X)p), *qilmidi* 'did not do' (< qïl- 'to do' + -mA + -DI), etc. Once, in the fourth line of this poem, we find that a is only raised to ä in the same word, i.e. *yäšini*.

Interestingly, examples for "not-umlauting" were overwhelming in another poem by the same poet, e.g. *arasida* 'amongst them' (< *ara* 'between, among' + *-(s)I* + *-DA*), *qašïya* 'to his side' (< *qaš* 'side' + *-(s)I* + *-GA*), *bašïya* 'to his head' (< *baš* 'head' + *-(s)I* + *-GA*), *malïya* 'to his treasure' (< *mal* 'treasure' + *-(s)I* + *-GA*), etc.; see Kajdarov 1969: 34. According to Kajdarov's explanations, in the case of the poems exhibiting raising and reduction the poet has represented features of the spoken language used in northern regions, whereas in the poems not displaying umlauting the poet has followed the rule of the written language based on the dialect spoken in Kashghar; see Kajdarov 1964: 34-38. Recently, Taklimakanli claims that the umlauting existed in the spoken language but was not reflected in the language that he calls *Çaǧatay Uygur dili* (lit. Chaghatay Uyghur language), but he does not offer any example to prove this claim; see Taklimakanli 2002: 131-132. On the other hand, while Kajdarov's analyses are based on the transcription of the poems mentioned above, the accurate representation of the phenomena in the original manuscript remains unclear. As far as we know, both written texts and spoken dialects in the south-western and eastern parts of present-day Xinjiang display rare examples of reduction and back-raising, e.g. *nemärsigä* (Falnama 76b6, < *nemärsägä*), *oruq* 'thin' (Falnama 81a8, < *aruq*);[2] for further examples see below. Even the quintolingual comparative dictionary of Manchu Wuti Qingwenjian 五体清文鉴, whose Uyghur part was supplemented at the end of the 18th century, contains very limited examples of "umlauting", e.g. *čeqïlyu* 'flash' (< *čaqïl-* 'flash' + *-Gu*), *čeqïlyan* 'having flashed' (< *čaqïl-* 'flash' + *GAn*).

In general, the written sources do not provide precise information for judging the accurate pronunciation of the raised and reduced vowels; in some instances the raised vowels were not reflected in the orthography at all, the same sound being represented by different letters in some other cases. For instance, the raised *é* was not reflected in the orthography of the word *lečïn* 'falcon', represented with *alif* as the text included in Le Coq 1911 shows (see Le Coq 1911: 34, 210); the sound *ä* was written with different letters in the words *däsäṅg* 'if you say' (Le Coq 1911 46, 308), *yégän* 'having eaten' (Le Coq 1911: 46, 305), *bäšïṅg* 'your head' (Le Coq 1911: 46); the same letter *alif* represents both the back low vowel *a* and the open front low vowel *ä*.

## 2.2 The case of transcription texts

Unlike the written sources, the transcriptions of dialect texts recorded in different parts of Xinjiang since the beginning of the 19th century provide precious material for investigating the phenomenon. Below is a brief description and analysis of the "umlauting" reflected in the dialect texts published by Russian and West European scholars since the 19th century.

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2     For examples from the *Falnama*, a Chaghatay manuscript preserved in Paris, I express my thanks to Professor Mutsumi Sugahara, Tokyo University of Foreign Studies.

### 2.2.1 Raising of low vowels

Judging from a word list published by Klaproth (1814), the low vowel *a* had not yet undergone raising to *e* in the Turfan region at the beginning of the 19th century, e.g. *jašïl* 'blue' (*jaschil* 498) and *tün jarïm* 'midnight' (*tjun = jarim* 498). However, Katanov's and Malov's materials recorded in Qomul and Turfan at the end of the 19th century and the beginning of the 20th century, respectively, display examples for the raising of *a* to the front close vowel *e*, e.g. *beši* 'his head' (Menges 1943, XLVIII) ← *bašï*, *qeri* 'old' (Menges 1943, XXXIX 15) ← *qarï*, *elip* 'taking' (Menges 1943, XXXVIII 45) ← *alïp*, *nenini* 'its bread' (Malov 1961: V, 4/5) ← *nanini*, *tepip* 'finding' (Malov 1961: V, 32) ← *tapïp*. On the other hand, Le Coq's records from Qomul and Turfan exhibit examples of frequent raising of *a* to the front half-open vowel *ä* but very seldom to the front close vowel *e*, e.g. *ätïŋ* 'your horse' (Le Coq 1911: 10, 34) ← *atïŋ*, *bäšiŋ* 'your head' (Le Coq 1911: 40, 46) ← *bašïŋ*, *sečïm* 'my hair' (Le Coq 1911: 3) ← *sačïm*, *älip* 'taking' (Le Coq 1911: 33) ← *alïp*, etc.

On the northern dialect regions we only have Radloff's materials recorded in Ili from the so-called Taranchi dialect at the end of the 19th century. In Radloff's texts the low vowel *a* in closed monosyllabic words rather frequently raises to the front close vowel *e* when a suffix beginning with a high vowel (both front *i* and back *ï*) is added, e.g. *beliq* 'fish' (1886: 5) ← *balïq*, *tešida* 'at the outside' (1886: 1) ← *tašïda*, *elip* 'taking' (1886: 39) ← *alïp*, occasionally also changing to *ä* as seen in *tärip* 'cultivating' (1886: 112).

The earliest linguistic material published on the south-western dialects is H. W. Bellew's comparative vocabulary of some language varieties spoken in the area of Yarkand at the end of the 19th century; see Bellew 1875. It includes the items *egil* 'cow stall' (541) ← *ayïl* and *teriq* 'millet' (550) ← *tarïγ*, etc. (see Bellew 1875: 534-561), in which the "umlauting" takes place. The Swedish scholar G. Raquette, who published a rather systematic grammar of the south-western dialect spoken in Kashghar and Yarkand also pays attention to the phonological process and describes it as follows:

"When a monosyllabic word with the vowel *a* or *ạ* has a possessive suffix that begins with a vowel added to it, those vowels (*a* or *ạ*) are often changed to *ä* or *ạ̈* (in speaking). If the word is compound one only the last vowel is changed." (Raquette 1912-1914: 126, 157)

Basically, Raquette's examples and description are compatible with the description and documentation of the south-western dialects made by G. Jarring in the 1930s. Put differently, according to Jarring's data and his analysis, *a* not only frequently raises to *æ* in the south-western dialects as seen in *bäšïŋ* 'your head' ( < *baš* 'head' + *-(X)ŋ*, Jarring 1946-1951, II 45: 194), *bärïp* 'going' (< *bar-* 'to go' + *-(X)p*, Jarring 1946-1951, II 40: 35), *jätip* 'lying down' (< *jat-* 'to lie down' + *-(X)p*, Jarring 1946-1951, I: 68), but also to the more close front vowel *ɛ*, e.g. *jɛniŋni* 'your life' (< *jan* 'side' + *-(X)ŋ* + *-nI*, Jarring 1946-1951, II 28), *tɛmitip* 'dripping' (< *tam-*

'to drip' + -*(I)t* + -*(X)p*, Jarring 1946-1951, II 41), etc. For Jarring's analysis see Jarring 1933: 59-60. It is worth noting that Jarring describes *æ* as a back, velar vowel and *ε* as a front, palatal vowel; see Jarring 1933: 92. This indicates that the phonological process in question from the very beginning was a process of raising but not fronting. Note also that the raising of the low vowel *a* to the close front vowel *e* is rare in Jarring's materials, especially in contrast to Taranchi and the eastern dialects (Qomul and Turfan), and it is mostly triggered in the inflection of certain verbs, e.g. *ečip* 'opening' (< *ač-* to open' + -*(X)p*, Jarring 1946-1951, II 30), *elip* 'taking' (< *al-* 'to take' + -*(X)p*, Jarring 1946-1951, II 29).

All transcription texts, on the other hand, also display some examples in which the low vowel *a* does not undergo "umlauting", e.g. *alip* 'taking' (Radloff 1886: IV, 3: 171), *baqip* 'seeing' (Malov 1961: I, 6), *yanïp* 'returning' (Le Coq 1911: 3), *qašïyä* 'to his side' (Jarring 1946-1951, II 33). However, such examples are exceptional in the Taranchi and Turfan texts, but fairly frequent in Jarring's materials recorded from Kashghar and Khotan. Perhaps this is why Le Coq lists umlauted examples from Turfan as one of the important features of this dialect in contrast to the Kashghar dialect (Le Coq 1911: 3).

To sum up, the raising became dominant in the northern dialect represented by Radloff's Taranchi-texts already at the end of the 19th century, whereas in the eastern dialects spoken in Qomul and Turfan it did not develop as an automatic phonological process until the first decade of the 20th century. However, in the south-western dialects, especially in the Kashghar and Khotan regions, non-raised, *ä*-raised and *e*-raised situations existed side by side until the 1930s, though the raising of *a* to *ä* heavily predominated. Interestingly, only two decades later when Tenishev and Chinese scholars came to do fieldwork on various dialects of Uyghur in the 1950s, had the raising of *a* to the front close vowel *e* already become a common postlexical phonological process throughout the major Uyghur dialects except for the Lopnor dialect, while the occasional raising of *a* to *ä* and the exceptions for "non-raising" survived only in very limited examples as the substrata of earlier periods. It is likely that the full representation of the raising in the written language that was gradually established based on the northern dialects from the 1920s on should have played a crucial rule in speeding up this phonological process in the south-western dialects. At any rate, in this entire historical development, the raising of the low vowel *a* to the half-open *ä* was the first step; then the *ä* resulting from this raising seems to have raised further to the more open front vowel *ε*, and finally the front open-mid *ε* further to the front close-mid vowel *e*. Perhaps only the first step might be called "fronting umlaut", but the entire process is characterized by a change of the vowel heights (see Johanson 1993a: 100). It is difficult to give the whole process as a single rule since the vowel subject to raising first changes from [+low] to [-low], and then from [-high] to [+high]. A possible formal description might be as following:

(10) [ɑ] → [æ] → [ε] → [e]

The characteristics and history of the *ä*-raising are different than those of the raising of *a*. First of all, unlike the *a*-raising, there is no an initial stage characterized by fronting in the case of the *ä*-raising, as we have mentioned in the previous section. In the case of the *ä*-raising, first the low front vowel raises to the front close-mid vowel and then the front-mid vowel to the close front vowel *i*; Secondly, the *ä*-raising was obviously established much later than the *a*-raising; at least it was not so common at the end of the 19th century. In Radloff's Taranchi materials *ä* basically does not raise to *e* when it is preceded by suffixes with initial high vowels, e.g. *äridin* 'from her husband' (III 3,32) *kälip* 'coming' (III 1,6), *täšip* 'piercing through' (III 3, 17), whereas the raised forms as seen in *kiliŋlär* 'you come' (III 19,67) are occasional. Note also that the raising of *ä* to [i] is seen only in the inflection of the verb *käl*-in Radloff's Taranchi materials. The dialect materials published by Jarring (1946-1951), Le Coq (1911, 1918-1919) and Malov (1961) display a fairly similar situation. Presumably, systematic application of the *ä*-raising in all dialect regions should have happened after the 1950s though data from the 1950s do not provide precise information in this regard.

## 2.2 Reduction of low vowels

The historical development of another phonological process, namely the reduction of the low vowels *a* and *ä* in unstressed open syllables, is rather different from the raising. First, let us see how different scholars present the outcome of the *a*-reduction in the transcription texts.

Table 1: Presentation of reduced vowels in transcription texts

| Texts | Presentation | Examples |
|---|---|---|
| Radloff 1886 | e, ĭ, y | *atlerī* 'horses' (8), *balīleridīn* 'from their wives' (6), *barĭdu* 'he goes' (39), *surĭyan* 'have asked' (138), *tapalmīsaŋ* 'if you can't find' (144), *tamɣylīɣelī* 'in order to mark' (18) |
| Hartmann 1903-1905 | e | *anesi* 'his mother' (40) |
| Kúnos 1906 | e, ė | *aŋledė* 'he heard' (306,4), *barėmen* 'I go' (320, 9), *qalmėdɪ* 'didn't remain' (305,12) |
| Bellew 1863 | i | *dada-áylisi* 'paternal' aunt, (538), *sárghiyip* 'jaundicing' (537) |
| Menges 1954 (A), Menges 1976 (B) | e | *baⱡeni* (B: XLV 6), *ajeɣida* 'at the end' (A: V 28), *qurseɣidin* 'from the stomach' (A: XXVI) |
| Le Coq 1911 | ä, ï, í | *bǎläsi* 'his father' (18,81), *oínäɣán* 'having played (54), *qárïsí* 'its dark' (10,26), *álmɪ́saŋ* 'if you don't take' (20,103) |

| Malov 1954 (A), Malov 1961 (B) | e, ï | *baleniŋ* 'of the child' (B: 55), *ayïlarïŋa* 'to your elder brothers' (A 64), *qalmedi ~ qalmadi* 'didn't remain' (B: 59), *axtïxanïya* 'to the stable' (A 76) |
|---|---|---|
| Jarring 1933 | æ, a̲e̲, ɛ, ᵋ | *akæsï* 'her brother' (II: 41), *bolmæsæ* 'if not' (I: 4), *balalœyœ* 'to the children' (1933: Anhang 44) |
| Jarring 1946-1951 | ɛ, ᵋ | *dadɛsi* 'their father' (I: 38), *baⁱˢi* 'his child' (I: 66) |
| Tenishev 1984 | i, e, y, ï | *anisi* 'her mother' (11,16), *toxtiyan* 'having stopped' (77), *baredu* 'they go' (1,7), *paxtyya* (2,9), *aŋlimïdoq* 'we didn't hear' (37) |

As we have seen in Table 1, the transcriptional presentation of this process differs from text to text and scholar to scholar. Presumably, *ä* in the examples cited from Le Coq 1911 and the letters *æ, œ* and *ɛ* found in Jarring's texts represent a reduced vowel. Perhaps, the quality of this reduced vowel was similar to the open central vowel [ɐ] or open-mid central vowel [ɜ]. The remaining letters *e, ï, e, i, ï*, etc. used to represent reduced vowels by other scholars stand for different reduced vowels, not only for [ɐ] or [ɜ] but also for other central vowels, e.g. [ə], [ɵ], [ɨ], etc., but certainly not for front vowels since, as Jarring has pointed out, the place where the reduced vowel was presented with different letters by different scholars is not a phonological environment for fronting but for reduction or neutralization (1934: 32). If not, it is difficult to understand why a low back vowel changes to the front vowels *ä, e* or *i* in this phonological environment except in the case of some words to which suffixes with an initial high vowel are added. Unfortunately, the definite quality of the vowels resulting from the reduction of the low vowel *a* is difficult to determine because reduced vowels are not so accurately recorded in most transcription texts.

As for the diachronic development of the reduction, it seems to be that first the low vowel was neutralized to the open central vowel [ɐ], and then, perhaps to the mid-open central vowel [ɜ], later to schwa ([ə]) or more-closed central vowels, i.e. [ə], [ɨ]. Although the resulting vowel in the same phonological environment is represented orthographically by the same letter as the one for the high front vowel *i* in the written language, the actual pronunciation in question is not front high in modern Uyghur. The 'Dictionary of Modern Uyghur Orthography and Pronunciation' (ITL) clearly notes that the pronunciation of the vowel resulting from the sound change (referring to the centralization—my addition) as seen in *ballya* 'to the child', *qaɣïla:* 'crows' and *arIda* 'between that' (capital *I* represents the reduced vowel) is not the same as the pronunciation of the front high vowel *I*; however, the dictionary offers a very curious description *qisqa, säl til käyni, päsräk* "short, a little back and a little low" for the reduced vowel; cf. ITL, pp. 42-43.

Clearly, the neutralization or reduction of the low vowel *a* in such a phonological environment occurred much later than the raising. The low vowel *a* basically re-

mained unchanged in the transcription texts except for the Taranchi materials. On the other hand, even in the Taranchi texts the reduced and non-reduced forms exist side by side, e.g. *maŋmïyan* 'hasn't gone' (Radloff 1886: 48), *qilmïsun* 'may not do' (Radloff 1886: 50), *bolmasa* 'if not' (Radloff 1886: 48), *čiqmayan* 'didn't come out' (Radloff 1886: 59), *tapalmadyq* 'we were not able to find' (Radloff 1886: 137), etc. In the texts from other regions examples of non-reduction are more common than examples in which the low vowel undergoes reducing, e.g. *páχlanïm* 'my lamb' (Le Coq 1911: 58), *baradï* 'he goes' (Menges 1976: XXXIV 30), *ormaya* 'to the summer harvest' (Malov 1954: 53), *tapalmasa* 'if he could not find' (Malov 1961: 43). Unlike the case of the *a*-raising which had become established as a postlexical phonological process by the 1950s, the reduction of the low vowel *a* to central vowels was still restricted to limited cases until the 1950s. This point is especially obvious in the texts recorded around the 1950s in Qomul, Kucha, Aqsu, Kashghar and Khotan. It spread to all Uyghur dialect regions as a frequent phonological process, following the popularization of both written and spoken standards of Uyghur since the end of the 1950s, and had also become dominant in all Uyghur dialects when Jarring visited Xinjiang a second time in 1978; for a description of this phonological process in 1978 see Jarring 1981: 238.

Reduction of *ä* to [ɨ] or other central vowels in unaccented open syllables must have happened fairly late: it is only observed in extremely limited examples until the first two decades of the 20th century, e.g. *ärtisigä* 'next day' (Radloff 1886: 49), *mínmisäm* 'if I don't ride' (Le Coq 1911: 14, Nr. 49). According to Tenishev's records, *ä* did not undergo reduction in very many cases until the 1950s in most regions except for Yarkand and Khotan, e.g. *ädämlärimiz* 'our people' (1984: 2), *tügädi* 'completed' (1984: 21), *kelädo* 'comes' (32). Its application to a large number of examples must have happened after the 1950s. Nevertheless, the whole "umlauting" process might be understood as having become established when it also came to be applied rather systematically in the Lopnor dialect around the 1980s due to the popularization of both written and spoken standards of modern Uyghur. It is the manifestation of a typical linguistic innovation originating in one dialect and then spreading to neighbouring varieties, namely the neighbourhood effect. Presumably, it was first triggered in the speech of some bi- or multi-lingual speakers of different Uyghur dialects in the Ili valley, and through their medium spread to the entire northern dialect-speaking regions.

## 3. Consequences of the Uyghur umlaut

The raising umlaut, including the raising of back vowels in height, clearly affected the phoneme inventory of modern Uyghur, causing an increase in the overall number of phonemes. Until the beginning of the twentieth century, Uyghur had 7 vowel phonemes, namely /a/, /ä/, /o/, /ö/, /u/, /ü/ and /i/. Old Turkic *e* used to occur as allophones of /ä/ in word-initial position remained, but *e* occurring in closed monosyllabic lexemes is lowered to *ä* in modern Uyghur, e.g. *äl* 'country, people' (compare

with Old Turkic *el*), *bär-* 'to give' (compare with Old Turkic *ber-*). However, *e* resulting from the *a*-raising also gained phonemic status, forming a clear opposition to the high front vowel /i/ in some instances, e.g. *qeni* [qenɯ] 'where' vs. *qini* [qɯnɯ] 'its sheath/scabbard', *qeri* [qerɯ] 'its snow' vs. *qiri* [qɯrɯ] 'its edge'. In some instances, the raising-umlaut also created a phonological environment for the contrast between *ä* and *e*, the two vowels that in general are in complementary distribution, e.g. /bäšimiz/ 'we five' ← /bäš/ 'five' + -*(X)mIz* vs. *bešimiz* 'our head' ← /baš/ 'head' + -*(X)mIz*. Note, however, that the modern Uyghur *bäš* 'five' is actually the development from Old Turkic *beš*.

More apparently, the raising-umlaut in Uyghur clearly altered the distribution of the phonemes /a/, /ä/, /e/ and /o/. Both /a/ and /ä/ in nominal and verbal stems that originally could occur with /i/ in the next syllable, as seen in *sarïγ* 'yellow', *käligmä* 'one who comes', now no longer allow /a-i/, /ä-i/, /a-u/ combinations in native closed-syllable lexemes. Hence, the corresponding forms of the words for 'yellow', 'one who comes' and 'bright' are *seriq* [serɯq], *kelidiyan* [kilidɯyan] and *yoruq* [yoruq] ~ [yuruq] in modern Uyghur, respectively. Where a combination /a-i/ does exist, in general the first vowel is clearly a long vowel. The new phoneme /e/ that originally could not occur with back unrounded high vowels now may occur with them, e.g. /eriq/ [erɯq] 'ditch', /qeri/ [qẹrɯ] 'old' and /teriŋ/ [tẹrɯŋ] 'please cultivate'. It is worth noting that the output of the umlauted *a* is not always the close-mid front vowel [e], it is certainly fairly retracted in the lexemes /qelin/ 'thick', /yešil/ 'green', /berip/ 'going', etc., whose accurate pronunciation in spoken Uyghur seems to be [qẹlɯn], [jẹšɯl] and [bẹrɯp], respectively. As for *i* resulting from the *ä*-raising, basically it merged with /i/, forming a clear opposition between *e* and *i* in some instances in spoken Uyghur, e.g. /berip/ [berɯp] 'going' vs. /birip/ 'giving', /tepip/ [tepɯp] 'finding' (< *tap-* to find + -*(X)p*) vs. /tipip/ 'kicking'(< *täp-* to kick + -*(X)p*), etc. Based on the orthographic representation, one may come to the conclusion that the considerable number of lexemes mentioned above are disharmonic, and that the vowel harmony has been destroyed due to the umlauting. It is true that the aforementioned words do not have the same phonological structure they used to have, but they are not disharmonic as some scholars tend to believe, since the back vocalic nature of both syllables remains unchanged in actual pronunciation. This is because the *e* resulting from the *a*-raising in the afore-mentioned lexemes is basically neutral with regard to vowel harmony.

The raising umlaut also altered the incidence of /a/. This becomes apparent if we compare modern Uyghur forms of some lexical and grammatical items with the languages of previous stages, e.g. Old Turkic and Chaghatay as well as with other modern Turkic languages. Table 2 illustrates the change in the distribution of /a/ in some lexical items, while Table 3 provides examples for divergences between Old Turkic and Turkish in the distribution of /a/ with regard to some inflectional processes.

Table 2: Umlaut-induced change in the incidence of the phoneme /a/

| Modern Uyghur | Old Turkic | Turkish | Gloss |
|---|---|---|---|
| teriq [terɯq] | tarïɣ | darı | millet |
| qelin [qelɯm] | qalïn | kalın | thick |
| eɣir [eɣɯr] | aɣïr | ağır | heavy |
| očuq [očuq] ~ [učuq] | ačïq | açık | open |
| qošuq [qošuq] ~ [qušuq] | qašuq | kaşık | spoon |

Table 3: Umlaut-induced divergences between Uyghur and some old and modern Turkic languages

| Modern Uyghur | Old Turkic | Turkish | Gloss |
|---|---|---|---|
| teɣi [teɣɯ] | taɣï | dağı | his/its mountain |
| qenim [qenɯm] | qanïm | kanım | my blood |
| berip [berɯp] | barïp | varıp | going |
| eliŋ [elɯŋ] | alïŋ | alın | take/please take |
| yezil- [yezɯl] | yazïl- | yazıl- | to be written |

Another consequence of the raising umlaut is that it pushed the close-mid vowel [e] resulting from the *ä*-raising to undergo further raising to the high vowel [i], as observed in /kelip/ [kilip] 'coming', /beriŋ/ [biriŋ] 'please give', though this sound change is not reflected in the orthography. Motivation for this change was perhaps originally 'one meaning—one form'; nevertheless as a result some confusion caused by the raising-umlauting are eliminated, e.g. /beriš/ [berɯš] 'going' vs. /beriš/ [biriš] 'giving'.

Another effect of the raising umlaut is that it produced a certain number of compound suffixes, e.g. *-GIlI* (cf. Old Turkic and Chaghatay *-GAlI*).

The effect of the reduction was also obvious. It did not only affect the distribution of the phonemes /a/ and /i/, but also gave rise to a large number of compound suffixes in modern Uyghur, e.g. *-Idiɣan* (< vowel converb + *turɣan*), *-Ivär* (vowel converb + the postverb *bär-*), etc. This phenomenon is discussed in detail in another paper; see Yakup (forthcoming).

## 4. On the triggers of the "Uyghur umlauting"

Concerning the factors that motivated the "Uyghur umlauting", basically there are two different explanations: (i) it results from the merge of *\*i* and *\*ï* and (ii) Iranian influence is responsible for the phonological process. Below we discuss these two explanations in order.

### 4.1 Effect of the merge of *\*i* and *\*ï*?

The Russian linguist E. D. Polivanov was the first scholar to consider the "Uyghur umlauting" as a result of the merge of *\*i* and *\*ï* into *i*, claiming that if Uyghur had retained *ï*, the regressive assimilation of vowels would have been impossible; see

Polivanov 1934: 149. Later this idea was supported by T. Talipov, Yi Kenxiu and A.
P. Taklimakanli; see Talipov 1987: 18-19, 66-68; Yi 1985: 21; Taklimakanli 2002:
130. Bernard Comrie appears to accept this opinion; he writes: "A more thoroughgo-
ing breakdown of vowel harmony as a result of diachronic change is to be found in
Uygur, where Proto-Turkic *ɨ and *i merge as i everywhere, giving rise to such
forms as anisi 'his mother', cf. ana 'mother'" (Comrie 1981: 65).

It is true that ï does not have phonemic value in modern Uyghur in the sense of
being distinctive; however it is still active in modern Uyghur and its dialects, basi-
cally showing different distributional features than the front i, as its back counter-
part; for description and analysis see Pritsak 1959: 537; Zhang & Meng 1982 and
Hahn 1986. Some scholars even consider i and ï in modern Uyghur to be different
phonemes; see Hahn 1998: 380-381. The representation of at least four different
vowels, front high vowel [i], back high vowel [ɯ] and the central vowels [ə] and [ɨ]
using the same letter <ىِ> or <i> and <ﯗ> might be the main reason for such a
misunderstanding. Actually, in the scripts of old Turkic languages both front i and
the back high vowel ï are represented by the same letter. A possible opposition be-
tween /i/ and /ï/ in native Old Turkic lexemes is questionable, and even if it used to
exist, would have been very marginal, which is why some scholars deny the opposi-
tion /i/ vs. /ï/ in Old Turkic; see Pritsak 1963: 52; Johanson 1993b: 87; Röhrborn
1996: 181. For the same reason, the editors of the English translation of the Dīwān
Luɣāt at-Turk present both the front and back high vowel with the same letter i. R.
Dankoff and J. Kelly write: "There is positive evidence that there was no phonemic
opposition /i:ï/ in the language of the Diwan, but only one neutral phoneme /i/ (and
the corresponding long vowel /ī/) which could take velar or palatal suffixes. This is
reflected in our transcription, which has only i and ī." (Dankoff 1982-1985: 61) The
same goes for Chaghatay, a Central Asian Islamic literary language used by various
Turkic-speaking ethnic groups from the 14th century until the end of the 19th cen-
tury. Moreover, the opposition of /i/ vs. /ï/ in some modern Turkic languages in
which the back ï has phonemic value is only observable in very limited lexemes, e.g.
Kazakh is 'work' vs. ïs 'smoke'. On the other hand, as Johanson once called to our
attention, the Uyghur umlauting might be triggered regardless of backness or front-
ness of the initial high suffix vowel, e.g. tœy-ï 'its mountain' ← tay 'mountain'
(Jarring 1933: 91-92), beš-iŋ 'your head' (Yakup 2005, 42:17) ← baš 'head'. The
back quality of ï in the afore-mentioned examples becomes more apparent when we
add further suffixes to these word forms, e.g. bešïm-da 'at my head', bešïm-ɣa 'to
my head'. However, this does not mean that there is a systematic phonemic contrast
between i and ï in modern Uyghur. What we want to stress is that the back ï neither
disappears nor merges with i in modern Uyghur, or, put differently, there is no evi-
dence to believe that the status of ï made the characteristic change either in its ortho-
graphical representation or its phonetic nature from the historical written Central
Asian Turkic languages to modern Uyghur. The known analysis is essentially based
on an inadequate phonological interpretation of historical sources and mechanical
transcription (correctly, transliteration) of written Uyghur data. This certainly leads

the scholar in the wrong direction when studying Uyghur phonology, including the "Uyghur umlauting".

## 4.2 On the Iranian influence view

Another widespread opinion on the Uyghur "umlauting" is that the "Uyghur umlauting" results from Uyghur contact with foreign languages. In his review of Radloff's monograph *Vergleichende Grammatik der nördlichen Türksprachen* (see Radloff 1882), V. D. Smirnov claims that the regressive assimilation, namely the "umlauting" existing in the Taranchi dialect, appeared under the influence of foreign languages having a different structure (Smirnov 1884: 87); however, he does not indicate which foreign language might be responsible for this sound change. Following the discovery of the same phenomena all over the local Uyghur dialects in the region, later also in the written language, most scholars avoided connecting the "Uyghur umlauting" to foreign influence; Bang & Marquart 1914: 1-9, Jarring 1933: 90-94, Polivanov 1934: 149. Interestingly, an opinion similar to Smirnov's was again suggested in O. Pritsak's well-known article on the modern Uyghur language, which appeared five decades after Smirnov's review, in 1959. After having briefly outlined the history of the Uyghurs, O. Pritsak writes the following:

> "Schon dieser kurze Überblick zeigt, wie kompliziert die Ethnogenese der heutigen Uiguren ist. Man kann auch ohne weiteres annehmen, daß für die regressive Assimilation der Vokale in den eigentlichen neuuigurischen Dialekten (*e-* und *o-*Umlaut) ein nichtaltaisches Substrat verantwortlich ist." (Pritsak 1959: 527)

Like Smirnov, Pritsak does also not specify which "non-Altaic substrata" might be responsible for the "Uyghur umlauting". T. Talipov, on the other hand, rejects possible involvement of foreign influence in this sound change. Regrettably, he also does not discuss the problem in detail; see Talipov 1987: 178-181.

M. Adamović is the first scholar to extensively discuss the influence problem. According to him, the absence of umlauting in most Turkic languages is to a great extent typologically conditioned. He writes:

> "Ein Sprachtypus nämlich, der die progressive Vokalassimilation zum dominierenden Gesetz seiner Phonetik entwickelt hat, schließt einen Umlaut grundsätzlich aus. Wenn sich im Uigurischen trotzdem ein Umlaut durchsetzen konnte, dann müssen die Hintergründe dieser Sonderentwicklung sehr spezifisch gewesen sein, wobei auch eine Beeinflussung von Seiten der indogermanischen Sprachen nicht von vornherein ausgeschlossen werden kann." (Adamović 1993: 2)

Furthermore, Adamović specifically makes reference to the change of Ancient Iranian ā to ē in Sogdian when the following syllable contains i (or y), which he considers an interesting parallel to the "Uyghur umlauting". He extends his discussions with similar linguistic materials from another Old Iranian language Khotanese

(Saka) as well as two modern Iranian languages Yaghnōbī and Yazghulāmī. Finally, Adamović comes to the following conclusion:

> "...der vorliegende Umlaut hätte nicht aus dem einen Sprachmedium in das andere eindringen können, wenn der Kontakt zwischen den Uiguren einerseits und den iranischen Altbewohnern andererseits etwa kurzfristig oder auf einen geringen geographischen Raum beschränkt gewesen wäre." (Adamović 1993: 2-3)

It is true that one of the basic phonotactic phenomena of the Turkic languages is the so-called vowel harmony characterized by the front/back classification of syllables (Johanson 1991: 80; Erdal 2004: 86-87), if the term progressive vowel assimilation (progressive Vokalassimilation) mentioned by Adamović refers to the intersyllabic front vs. back vowel harmony. However, as is well known, the backward fronting observed in *bo kün* 'today' → *bökün* was relevant for Old Turkic; see Erdal 2004: 88, 92. There are known examples, albeit fairly rare, where regressive assimilation of both vowels and consonants takes place in modern Turkic languages, e.g. Turkish *yeni* 'new' (compare with Old Turkic *yaŋï*), Kazak *bäri* 'all' (< *bar* + *-(s)I*, compare with modern Uyghur *barï*), Yakut *ilī* 'hands' (compare Old Turkic *älig* 'hand'), Tatar *ešle-* 'to work' → *ešli(y)säŋ* 'you work', etc. In Turkish regressive assimilation, actually a palatalization process, is frequently triggered when suffixes with initial *-(y)A* are added to a stem ending in a low vowel, e.g. *diyen* 'the one who says' (< *de-* 'to say' + *-(y)An*), *almïyan* 'not taking' (< *alma-* 'not take' + *-(y)An*), *bekliye-cek* 'will wait' (< *bekle-* 'wait' + *-(y)Acek*); see Csató & Johanson 1998: 206, Göksel & Kerslake 2005: 20, 82. This means that the Turkic languages do not exclude regressive vowel assimilation although progressive vowel assimilation is the basic type. Thus, the phonological processes, i.e. the vowel raising and reduction of vowels, are to be expected in any Turkic languages. The question is only whether these sound changes increase in frequency and develop into postlexical phonological processes.

Definitely, this does not mean that we deny the existence of umlauting in Iranian languages. Most impressive evidence for Iranian umlauting might be the change *\*a* > *e* observed in the development of Avestan (Gathan or Old Avestan and Late Avestan) vowels, in which *\*yadi* 'when' has developed into *ye(i)δi* in Late Avestan and the relative pronoun *\*yahya* to *yehiiā* in Gathan. It triggers when *\*a* is preceded by *y-/-ii* and followed by one of the palatal elements or a front vowel, unless *r, uu* or *hm* intervenes; see Testen 1997: 589-590. According to N. Sims-Williams, "the tendency towards palatalization, both of consonants and of vowels, is much more marked in Eastern than in Western Middle Iranian. The details, however, differ from one language to another. Thus the OIran. Prep./postp. *\*pati* gives Khot. *väte*, Bactr. πιδο, with umlaut of *\*a*, but (as preverb) Sogd. *pač-* (beside *pat-*), Chor. *pc-*, with palatalization of *\*t*" (Sims-Williams 1989b: 168). The so-called Khotanese *i*-umlaut (palatalization) is triggered by the effect of a following *-i-* and *-y-*; as a result the long *ā* was replaced by the *e*, while normal *a* was replaced by several sounds, *ä, i*

and *ī*, and so on; see Bailey 1958: 139-140; Emmerick 1989: 210. However, the examples from Khotanese actually reflect a diachronic sound change from Old Iranian (Avestan) to Khotanese which actually happened before it reached the form as found; see Bailey 1958: 139. The case of Sogdian, Yaghnōbī and Yazghulāmī is of the same nature, and it might only be concluded when we compare them with Avestan or older stages of these languages; see Sims-Williams 1989b: 180, OIJ: 352-353, 653-654. It is worth noting, by the way, that most evidence from Khotanese presented by Adamović seems to reflect complicated processes, not only palatalization but also other sound changes, e.g. the loss of vowels, contraction, etc.; see Bailey 1958: 141, Emmerick 1989: 210-211.

At first sight, the phonological environment of the afore-mentioned sound change in the Iranian languages would seem to be fairly similar to the case of the raising of low vowels in modern Uyghur. However, as soon as we start looking at the Iranian sound change in more detail, we find this superficial similarity evaporates. Besides crucial differences in the characteristics of umlauting between the Iranian languages and modern Uyghur, they differ with respect to one further important point: the "Uyghur umlauting" is a synchronic postlexical phonological process that systematically operates not only in spoken standard Uyghur but also in its regional varieties, while the palatalization found in the Iranian languages reflects a diachronic sound change. As we have mentioned, there is no evidence to prove that it was a systematic synchronic phonological process in any known languages in the Iranian language family in any specific period; this is especially true of Khotanese and Sogdian, the main historical contact languages of Turkic until the thirteenth century when New Persian became one of the most influential languages on many Central Asian Turkic varieties.

Even though the palatalization might have been systematically exhibited in Khotanese and Sogdian, its possible influence on Turkic is expected to have been established before both languages were completely assimilated to Turkic and neighbouring languages between the eleventh and thirteenth century. The fact is that the establishment of umlauting in modern Uyghur as a postlexical phonological process certainly subsided during the second half of the 19th century, because, as we have mentioned, in the quintolingual comparative dictionary of Manchu *Wuti Qingwenjian*, whose Uyghur part was supplemented at the end of the 18th century, we only find very rare examples for umlauting. Klaproth's Turfan dialect word list from the beginning of the 19th century also does not display examples of umlauting as a postlexical phonological process. Kajdarov claims the existence of considerable umlauted and non-umlauted examples side by side in some poems composed during the 18th and 19th centuries (Kajdarov 1969: 34-35). However, as mentioned earlier, the accurateness of the transcription of these poems on which Kajdarov's conclusion was based, is quite questionable, since the texts recorded by M. Hartmann, G. Jarring and others in the same region after more than 100 years mostly exhibit examples of umlauting of *a* to *æ* but very seldom to *e*.

Furthermore, the rather systematic application of the "Uyghur umlauting", especially the raising of the low vowel *a* to *e* preceded by high vowels in closed syllabic words, was known first in the Ili valley, whose main Uyghur population was forced to migrate to this region by Jungarians. They migrated mostly from the regions Aqsu, Kashghar, Üchturpan and Yarkand, and later from the same regions as well as other parts of Xinjiang since the second decade of the 18th century in order to secure the food supply of nomadic Jungarians (Saguchi 1986: 236-245). According to Chinese and Turkic sources, besides the Kazakhs and Uyghur farmers who migrated from different parts of Xinjiang, only Manchu bannermen, Mongolians, Chinese merchants and labourers, and a small number of Bukharian merchants had existed in Ili (Cao et al., comps. 1965: 68, 9b, Millward 1998: 136-137, Radloff 1886, texts III 1, III 7, III 8, III 14). However, there are no records of the existence of any significant Iranian-speaking groups in the Ili valley. As far as we know, the influence of modern Iranian languages on Uyghur since the 18th century was very marginal; the region where modern Iranian languages, i.e. Sariqōlī and Wakhī, could come into contact with Uyghur was mainly restricted to the Zeravshan valley, particularly certain villages around Yarkand and Qarhgaliq. Although the Yaghnōbī dialect spoken in Yaghnōbī province around the headwaters of the Zeravshan valley used to be bounded roughly by Yarkand and Kashghar in the East, a possible direct influence of Yaghnōbī and the other Iranian language Yazghulāmī, mainly spoken in the valley of the river Jazgulēm, on Uyghur during the last two centuries is questionable. Interestingly, in contrast to the northern and eastern parts of Xinjiang, the southwestern regions, where the local Uyghur varieties spoken had some contact with certain modern Iranian varieties, e.g. Sariqōlī and Wakhī, show fairly conservative behaviour with regard to the umlauting.

The Iranian influence view is more problematic than the conclusion itself with respect to further crucial points. First of all, it tries to take known common historical contact between Iranian and Uyghur as evidence for a very recent phonological process which hardly could have resulted from the known historical contact. Secondly, it rejects the temporal and geographical separation of levels in the argument, comparing Iranian data from the middle ages with a very recent modern Uyghur process. If the Uyghur contact with the modern Iranian languages Yaghnōbī and Yazghulāmī were responsible for the process in question, the scholars who are of this opinion also do not specify when, where and how the Yazghulāmīs, who are mainly distributed in Pjandž of western Pāmir, and the Yaghnōbīs, who live in Central Tajikstan, came into contact with the Uyghurs in the Ili valley, where the "Uyghur umlauting" was first established as a postlexical phonological process. Thirdly, the Iranian influence view only takes account of the part of the Uyghur umlauting, i.e. *a*→*e*, that displays some similarity to the known diachronic development in the history of some old and modern Iranian languages, but ignores other important developmental stages of the "Uyghur umlauting", i.e. *a*→*ä*, *ä*→*e*, *e*→*i*. Altogether, the base of the Iranian influence view on the Uyghur umlauting is non-temporalized, non-localized, partial comparative evidence.

In point of fact, the so-called Uyghur umlauting is an inner-Uyghur phonological process. It refers to two natural autonomous phonological processes, namely the regressive assimilation of low vowels to high vowels in closed syllabic words and the reduction of low vowels in unstressed open syllables. Even if seeds of both phonological processes existed in Old Turkic and Chaghatay, they were merely applied to a very limited number of lexemes, and operated on the lexical level.

We cannot reasonably ascertain at present which factor led to the GVR, including the "Uyghur umlauting" in modern Uyghur. However, certainly the so-called Taranchi dialect, a simplified homogeneous mixed local Uyghur variety that formed since the 18th century and is based on the southern and eastern dialects made the establishment and development of this phonological process possible. This process developed rapidly following the introduction of this simplified mixed local dialect to all parts of Xinjiang due to the central position of the region since the Qing control of Xinjiang. Soon it spread through the literary works written in this dialect first in the region, and later also in other areas. The development of this process was further accelerated by the strongly supported popularization of a standard language based mainly on this mixed dialect over all the Uyghur-speaking regions. It is basically, but not only partially, as J. Rentzsch (2008: 212) recently suggests, an inner-Uyghur process, which actually is not impossible for any Turkic language. As Johanson (1993: 101) convincingly pointed out, even if we accept an Iranian substrata influence in this respect, it is certainly not decisive for this phonological process.

Iranian and Turkic languages have been in intensive contact for many centuries. Iranian copied lexemes are relevant in the so-called Orkhon Turkic written in runiform script. Manichean Turkic, early translations of the Koran, and in particular Chaghatay literature, etc. show that Iranian influence on Turkic also extended to other levels of the language. As M. Adamović argues, the important role of many Indo-European-speaking people, especially Sogdians, Sakas, and Tocharians in the formation of Uyghurs in the region is also well known. However, the structural influence of Sogdian on Old Uyghur and New Persian influence on Chaghatay from which basic norms of the modern Uyghur literary language developed, certainly varied with regard to different forms of the language. It is likely that it was relatively heavy on the written form of the language, perhaps on the speech of religious and educated people, but fairly slight on the oral language spoken by a large number of uneducated people, much like the Arabic influence on Urdu (Comrie 1981: 48, Thomason & Kaufmann 1988: 79). Full consideration of Turkic-Iranian contact phenomena in the analysis of phonological, lexical and morphosyntactic aspects of modern Uyghur is essential. Nevertheless, one should also keep in mind that similarities observed between different languages may also ascribe to reasons other than contact, i.e. to chance or independent inner-language development. The case of "Uyghur umlauting" belongs to the latter.

## 5. Conclusions

The so-called "Uyghur umlauting" actually refers to two different phonological processes, namely (i) the raising of the low vowels /a/ and /ä/ due to the regressive assimilation of the following high vowels in closed syllable and (ii) the reduction of low vowels mainly due to the shift of the primary accent—in a few instances due also to the shift of the secondary accent—to the following syllables in open syllabic words or units. The first one is part of a GVR which actually reflects a push-chain development. As an automatic synchronic sound change, GVR basically comprises the "front-raising" and the "back-raising". The establishment of the GVR marks the separation of Uyghur from other closely related old and modern Central Asian Turkic languages i.e. Chaghatay, Uzbek and Tatar, signalling the formation of Modern Uyghur.

The low back vowel *a* first is raised to *ä*, also indicating a fronting; meanwhile it is also raised to *o*, perhaps in the beginning to *ɔ*, and then its outputs *ä* and *o* are raised one height further to *e* and *u*, respectively. Later, *e* is raised further to *i*. The outcomes of the reduction are basically central vowels, most often the mid central vowel (schwa) in the case of the *a*-reduction, whereas the output of the *ä*-reduction is the high central vowel [ɨ], but certainly not the front vowel *i*, as many scholars haven believed. Diachronically, the raising of *a* to *ä* and *o* is earlier that the *ä*-raising. The history of reduction is fairly late: it did not develop into an automatic phonological process until the 1950s, as linguistic materials from this period show that it had not taken place in a considerable amount of examples.

The effect of the raising umlaut on the phonemic system of modern Uyghur was significant. First of all, it affected the phoneme inventory of modern Uyghur, giving rise to the new phoneme *e*; secondly, it altered the distribution of the phonemes /a/, /ä/, /o/, /ö/, and /i/. Meanwhile, it also changed the incidence of some phonemes in a significant number of lexical and grammatical items. The reduction also had some effects, giving rise to considerable composite suffixes.

It is not adequate to claim that the "Uyghur umlauting" (= "front-raising") results from the merge of *i* and *ï* in modern Uyghur. First of all, both front *i* and back *ï* still exist in modern Uyghur though they are different realizations of the same phoneme, and represented with the same letter. Secondly, the umlauting is also triggered when the closed mono-syllabic lexemes take suffixes with the initial back high vowel *ï*. The major motivation for the development of the "Uyghur umlauting" as a postlexical phonological process was not the Iranian influence on Uyghur. The phonological process in question has taken place so recently that we have rather detailed data indicating its staging. It is an inner-Uyghur development of two autonomous phonological processes, i.e. the assimilation of low vowels to high vowels in closed syllables, and the reduction of low vowels in open unstressed syllables, which might also be expected in other Turkic languages. It was the special linguistic situation of the Ili valley around the eighteenth and nineteenth century that made the development of this phonological process possible.

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