QO‘QON DAVLAT PEDAGOGIKA INSTITUTI ILMIY XABARLARI
(2026-yil 10-son)
FILOLOGIYA
PHILOLOGY
https://doi.org/10.70728/b.series.fil.v08.i10.182

SYLLABLE STRUCTURE AND CONSONANT CLUSTERS IN ENGLISH AND UZBEK

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Abstract: This article compares the phonotactics of English and Uzbek, the level at which the two languages differ most even where their segment inventories overlap. English allows onsets of up to three consonants and codas of up to four, whereas native Uzbek words have simple onsets and a restricted set of coda clusters with falling sonority. The article describes the syllable types of both languages from published sources, classifies clusters by sonority profile, and analyses how each language repairs sequences its system disallows, using a small set of ranked Optimality-Theoretic constraints. Three hypotheses emerge: Uzbek is stricter at the left edge of the syllable than at the right; Uzbek repairs by insertion where English historically repaired by deletion; and the ranking in Uzbek loanwords has shifted toward faithfulness to the source form. The examples are illustrative and not corpus-based, so the hypotheses require testing.

Keywords: phonotactics; syllable structure; consonant clusters; sonority; Optimality Theory; epenthesis; prothesis; English; Uzbek.

Аннотация: В данной статье сравнивается фонотактика английского и узбекского языков, уровень, на котором эти два языка наиболее сильно различаются, даже там, где их сегментные инвентари перекрываются. В английском языке допускаются начальные согласные звуки до трех и конечные согласные звуки до четырех, тогда как в исконно узбекских словах начальные согласные звуки простые, а набор конечных кластеров с нисходящей сонорностью ограничен. В статье описываются типы слогов обоих языков на основе опубликованных источников, кластеры классифицируются по профилю сонорности и анализируется, как каждый язык исправляет последовательности, запрещенные его системой, используя небольшой набор ранжированных ограничений теории оптимальности. Выдвигаются три гипотезы: узбекский язык более строг на левом краю слога, чем на правом; узбекский язык исправляет звуки путем вставки там, где английский исторически исправлял звуки путем удаления; и ранжирование в узбекских заимствованных словах сместилось в сторону верности исходной форме. Примеры носят иллюстративный характер и не основаны на корпусе, поэтому гипотезы требуют проверки.

Ключевые слова: фонотактика; структура слога; кластеры согласных; звучность; теория оптимальности; эпентезис; протезис; английский; узбекский

Annotatsiya: shbu maqola ingliz va o‘zbek tillarining fonotaktikasini taqqoslaydi, bu ikki tilning segment inventarizatsiyasi bir-biriga mos keladigan joylarda ham eng ko‘p farq qiladigan darajasi. Ingliz tili uchtagacha undosh tovushlar va to‘rttagacha kodlar bilan boshlanishiga ruxsat beradi, mahalliy o‘zbek so‘zlari esa oddiy boshlanishi va sonorligi pasaygan cheklangan kod klasterlariga ega. Maqolada nashr etilgan manbalardan olingan ikkala tilning bo‘g‘in turlari tasvirlangan, klasterlar sonorlik profili bo‘yicha tasniflangan va har bir til o‘z tizimi taqiqlagan ketma-ketliklarni qanday tiklashi, optimallik-nazariy cheklovlarning kichik to‘plamidan foydalangan holda tahlil qilingan. Uchta gipoteza paydo bo‘ladi: o‘zbek tili bo‘g‘inning chap chetida o‘ngga qaraganda qattiqroq; ingliz tili tarixan o‘chirish orqali tuzatilgan qo‘shish orqali tuzatilgan o‘zbek tili; va o‘zbek tilidan olingan qarz so‘zlardagi reyting manba shakliga sodiqlikka o‘tgan. Misollar illyustrativ bo‘lib, korpusga asoslangan emas, shuning uchun gipotezalar sinovdan o‘tishni talab qiladi.

Kalit so‘zlar: fonotaktika; bo‘g‘in tuzilishi; undosh klasterlar; sonorlik; optimallik nazariyasi; epenteza; protez; ingliz tili; o‘zbek tili

Introduction

Languages with similar consonant inventories can differ greatly in the sequences they allow. English *strengths* and *texts* contain sequences with no counterpart in native Uzbek words, while Uzbek has final clusters as in *to‘rt* ‘four’. Cross-linguistically, the order of segments in the syllable tends to follow the sonority hierarchy (stops < fricatives < nasals < liquids < glides < vowels), so that sonority rises through the onset and falls through the coda (Selkirk, 1984; Clements, 1990). The best-known exception is /s/ plus a stop. Optimality Theory analyses such patterns as the result of ranked, violable constraints, with languages differing in ranking (Prince & Smolensky, 2004; Kager, 1999). It suits phonotactics and loanword repair well, because a foreign sequence the native ranking disallows must be altered in the least costly way (Paradis & LaCharité, 1997).

Methods

English syllable structure is described by Roach (2009): onsets of up to three consonants, as in *spring*, and codas of up to four, usually through suffixes, as in *texts*. For Uzbek, Sjoberg (1963), Boeschoten (1998) and Johanson (2021) give the native syllable types as V, CV, VC, CVC and, restrictedly, CVCC, with no initial clusters. Uzbek- and Russian-language handbooks should be consulted for details. The study is descriptive and formal, based on secondary sources and illustrative examples with no new data, and the rankings proposed are accounts of the examples and not statistical results.

Syllable types and clusters. Table 1 summarises the comparison.

Property	English (RP)	Uzbek (native words)
Maximal onset	CCC (/s/ + stop + liquid or glide)	C
Maximal coda	CCCC (with suffixes)	CC (restricted)

Property	English (RP)	Uzbek (native words)
Nucleus	Vowel, diphthong or syllabic consonant	Vowel only
Examples	*strengths*, *texts*, *bottle*	*to‘rt*, *qirq*, *dost*, *maktab*

Table 1. Syllable properties of English and Uzbek.

English onsets combine obstruents with liquids or glides (/pl-/, /br-/, /tw-/), following the sonority principle, together with /s/-initial clusters that do not and are usually treated as a special case. English codas combine nasals or liquids with obstruents (/nd/, /lt/) and obstruents with obstruents (/kt/, /ks/), with suffixal /s t d θ/ often analysed as extrasyllabic. Uzbek codas, where they are clusters, are described as sonorant plus obstruent (/rt/, /rq/) or fricative plus stop (/st/, /qt/), so they also fall or plateau in sonority. The languages are alike in the shape of coda clusters and differ in their maximum length and variety; the asymmetry lies at the left edge, where Uzbek permits no clusters at all in native words.

Results

Six constraints are used: *COMPLEXONSET (at most one consonant in the onset), *COMPLEXCODA (at most one in the coda), SSP (sonority rises in the onset and falls in the coda), MAX-IO (no deletion), DEP-IO (no insertion) and I-CONTIG (no insertion inside the input string, though insertion at an edge is allowed; McCarthy & Prince, 1995). In English, MAX and DEP outrank *COMPLEXONSET and *COMPLEXCODA, with SSP restricting the cluster types, so clusters are tolerated. In native Uzbek, *COMPLEXONSET outranks MAX, which outranks *COMPLEXCODA, giving simple onsets and permitted coda clusters. In the older layer of loans, *COMPLEXONSET, MAX and I-CONTIG outrank DEP, so initial clusters are repaired by prothesis, as in *istakan* from Russian *stakan* and *ustol* from *stol* (Table 2). The vowel quality is not accounted for by these constraints.

Input /stol/	*COMPLEXONSET	MAX	I-CONTIG	DEP
[stol]	*!			
[tol]		*!		
[sitol]			*!	*
→ [istol]				*

Table 2. Evaluation of candidates for a loan with initial /st/ in the older layer.

In the recent layer, in which MAX, DEP and I-CONTIG outrank *COMPLEXONSET, the faithful form wins, as in *sport*. The shift from older to recent layer is therefore a demotion of *COMPLEXONSET, a plausible result of exposure to languages with clusters and of a script that makes the source form visible. This is a hypothesis requiring dated data.

Uzbek loans are repaired by insertion, either at the edge (prothesis) or between consonants (epenthesis). English historically repaired difficult initial clusters by deletion: Greek-origin /ps-/ and /pn-/ in *psychology* and *pneumonia* are reduced to /s-/ and /nj-/, *tsunami* often begins with /s/, and native /kn- gn- wr-/ were lost in Early Modern English. The difference is one of ranking: DEP is low in Uzbek, and MAX is low, in these cases, in English. For Turkic generally, prothesis is reported for /s/-initial clusters and internal insertion for others, but this

needs checking for Uzbek. Perception may also play a part, since listeners can hear a vowel in a cluster their language disallows (Dupoux et al., 1999; Kabak & Idsardi, 2007). Medial clusters are divided between syllables in Uzbek (*mak.tab*), where English tends to maximise the onset.

Discussion

The main finding is an asymmetry of margins: Uzbek is categorical at the left edge for native words and permissive within limits at the right. This means that the main difficulty for Uzbek in absorbing English words lies at their beginnings. The analysis also suggests that differences between Uzbek layers are differences in ranking, so that the history of contact can be modelled as constraint reranking without any change in the segment inventory. Together with the segmental comparison, which shows convergence in consonants, the result supports the view that the languages differ more in the organisation of sounds than in the sounds themselves. Applied implications are acknowledged but not developed. The account depends on secondary descriptions; the status of final clusters in Uzbek, the quality of inserted vowels and the rankings need testing with a dated corpus of loanwords and with production and perception data.

Conclusion

English and Uzbek differ more in phonotactics than in inventory. English allows complex onsets and codas within the limits of sonority, while native Uzbek allows only simple onsets and a limited set of falling-sonority coda clusters. Uzbek has repaired disallowed sequences by insertion and English historically by deletion, and the change between older and recent Uzbek loans can be modelled as demotion of the constraint against complex onsets. Corpus, acoustic and perceptual data are the next step.

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