Background: Vowels alternating with zero have received a lot of attention in the literature on Government Phonology (GP; Kaye, Lowenstamm & Vergnaud 1990) and Strict CV (Scheer 2004), for instance, the Slavic *yers* (Scheer 2005, Scheer & Ziková 2010) or schwa in Moroccan Arabic (Kaye 1990). Such alternations are not always completely automatic: the distribution of schwa is sometimes influenced by the morphological context. The most useful theoretical tool of GP for these phenomena is Government: if a vowel is properly governed, it can be silenced.

There is a schwa-zero alternation in Khanty (<Ugric<Uralic) as well. Nikolaeva (2000) claims that the Obdorsk Khanty schwa is an epenthetic vowel, which is inserted in CCC clusters (VCCCV → VCCəCV). This analysis is not applicable to the Kazym dialect of Khanty, where schwa is at least partially morphosyntactically conditioned (Egorov 2022).

Data[1]: Kazym Khanty tense suffixes and agreement markers can appear with or without schwa. In the absence of overt agreement morphology in 3SG, schwa appears before the tense suffix *-s* 'PST', however, this schwa is lost as soon as an agreement marker is attached. Schwa never appears before *-λ* 'NPST'. Verbal bases differ as well. They come in three types: with no schwa at all, with an alternating schwa and with stable non-alternating schwa. The pattern is summarised in the table below.

Form	No schwa	Alternating schwa	Stable schwa
	ort- 'divide'	ir(ə)t- 'turn'	orət- 'drag'
NPST	ort-əλ ∼ orλ	irət-λ	orət-λ
PST	ort-əs	irt-əs	orət-s
NPST-2SG	or-λ-ən	irt-λ-ən	orət-λ-ən
PST-2SG	or-s-ən	irt-s-ən	orət-s-ən

(1) *arij-s* 'sing-PST'
ari-s-ən 'sing-PST-2SG'

I-final bases trigger glide insertion when the agreement ending is null but not when it is overt (1). Bases ending with other vowels such as *a* or schwa itself do not require the glide before the tense suffix, erasing the pre-tense schwa altogether (2). Note that the agreement suffix loses its schwa too.

The nominal inflection paradigm exhibits another curious pattern: there are two superficially similar suffixes with different alternating schwas: *-(ə)n* 'LOC' and *-(ə)t* 'PL'. As shown in the table below, the schwa of the locative *-(ə)n* only appears after C-final bases and triggers glide insertion after /i/-final bases. The schwa of the plural *-(ə)t*, however, is retained in C# and əC# contexts but coalesces with base-final /i/.

Form	Ci#	C#	əC#
	wuλi 'deer'	χot 'house'	sumət (sumt) 'birch'
LOC	wuλi-jn	χot-ən	sumət-n
PL	wuλet	χot-ət	sumt-ət

(2) *χunta-s* 'run-PST'
χunta-s-n 'run-PST-2SG'

Problem: I aim to find out, how many different schwas are there in Khanty and how to derive the correct surface forms without allomorphy. It is tempting to postulate allomorphy of the alternating morphemes, namely, that each of them has a schwa variant and a null variant, especially since the presence of schwa seems to depend on the morphological context, e.g. with tense markers *-s/-λ* (Egorov & Tjutjunnikova 2023 actually do utilise allomorphy). Nevertheless, an allomorphy-free phonological analysis, if possible, should be preferred for the sake of economy. I claim that such an analysis is feasible in the framework of Strict CV phonology.

[1]Egorov (2022) is to be credited for the data and observations related in this section.

Analysis: There are tree types of schwa: (a) a genuine vowel that never alternates with zero; (b) a floating alternating schwa that can only associate to an ungoverned slot; (c) epenthetic schwa that is inserted in ungoverned empty V-slots.

Several other assumptions need to be made. First, final empty nuclei (FENs) can only govern empty V-slots in Khanty but not V-slots with floating melody. Then, as noted by Tjutjunnikova (2022), alternating schwas can give away their prominence to the preceding full vowel and disappear, so I will suppose that alternating and epenthetic schwas can be deleted after full vowels, even when ungoverned. Finally, there is a phase boundary between the plural and the possessive (see Chomsky (2000) on Phase theory and Scheer & Ziková (2010) on phasal morphemes applied to alternating vowels in Strict CV).

The stable schwa enters the computation already associated and acts as a regular vowel. It can govern and does not disappear when unstressed: it can be found, for instance, in *orət-* 'drag'. The alternating schwa occurs, for example, in *-(ə)s* 'pst' and can disappear due to government, like in *irt-s-ən* 'turn-pst-2sg', where the alternating schwa of the agreement suffix associates to its V-slot, which is not governed by the FEN, and itself governs the schwa of the tense suffix.[2] Also, the schwa in emph-(ə)s 'pst' can be silenced via prominence incorporation, like in *xunta-s* 'run-pst'.

The difference between *-(ə)n* 'loc' and *-(ə)t* 'pl' is captured if a phase boundary is assumed in between the base and the locative, but not the plural, which is traditionally lower in the functional sequence (Longobardi 2001). Both suffixes contain floating alternating schwas. Suppose Ci# bases have a final floating glide /j/, which can only associate to an ungoverned C-slot. The base-final empty nucleus in *wʉλi-jn* would then be a FEN and unable to govern, so the glide would associate (3). Not so in the absence of the phase boundary: the schwa of the plural is free to associate and govern the C with the floating glide. The account of *sʉmət-n/sʉmt-ət* 'birch-loc/pl' alternation is similar: in the locative form, the alternating schwa of the base is already associated when the suffix is attached and cannot be governed (4).
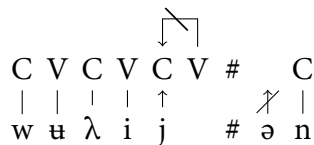
(3) *wʉλi-jn* 'deer-loc'   (4) *sʉmət-n* 'birch-loc'
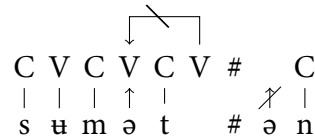
Summary: In the case of Kazym Khanty, schwa is neither epenthetic, nor alternating, nor a regular vowel, but all three at the same time. Three kinds of schwa might seem superfluous, however, they are not represented by three distinct segments but rather by different configurations of the same segment: associated, floating and epenthetic. With the right representations, the surface forms can be derived correctly without postulating any allomorphy.

Selected references ❖ Egorov, I. 2022. De schwa ostiaco. Talk at the Khanty fieldwork group seminar. ❖ Egorov, I. & V. Tjutjunnikova. 2023. /ə/ v kazymskom xantyjskom: meždu fonetikoj i morfonologiej [Schwa in Kazym Khanty: between phonetics and morphophonology]. Talk at Minor Languages in Big Linguistics. ❖ Nikolaeva, I. 2000. The status of schwa in the phonological description of Northern Ostyak. *Finnisch-ugrische Mitteilungen* 23. 121–148. ❖ Scheer, T. & M. Ziková. 2010. The Havlík Pattern and Directional Lower. In ed. by W. e. a. Browne, *Formal Approaches to Slavic Linguistics. The Second Cornell Meeting, 2009*, 471–486. Ann Arbor: Michigan Slavic Publications. ❖ Tjutjunnikova, V. 2022. Udarenie v kazymskom xantyjskom [Stress in Kazym Khanty]. Fieldwork report.

---

[2]The base-internal V-slot, where schwa only appears in *irət-λ* 'turn-npst', is ungoverned in *irt-s-ən* 'turn-pst-2sg' and therefore requires schwa epenthesis. I stipulate that this epenthetic schwa disappears due to prominence incorporation, which in *irət-λ* would produce an illicit consonant cluster and is therefore avoided.