

# TURKIC DATIVE PRONOUN ALTERNATION: DIACHRONIC TYPOLOGY & FAITHFULNESS HIERARCHIES<sup>1</sup>

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## 1 Introduction

A multitude of Turkic languages have a stem alternation of singular pronouns triggered by dative case, which involves backing of front stem vowels /e/→/a/, velarization of stem final /n/ into [ŋ] or [ɣ], and a /nK/ cluster simplification at the morpheme boundary, as in Table 1.<sup>2</sup> Crucially, this alternation does not happen for any plural pronouns, or any nouns. This paper presents an internal survey of the Turkic language family, builds a typology of the phenomenon, proposes a unified phonological Optimality Theory analysis with morpho-syntactically indexed constraints comprising a common Turkic Nominal Faithfulness Hierarchy, and sketches a set of diachronic changes that derive the family-internal typology.

language	non-dative stem	dative suffix	dative form
Standard Turkish	ben-	-a	baŋa
Gaziantep Turkish	ben-	-a	baŋa
Cyprus Turkish	ben-	-a	baŋa
Ardahan Turkish	ben-	-a	baŋa
Ottoman Turkish	ben-	-a	baŋa
Turkmen	men-	-a	maŋa
Uyghur	men-	-Ka	maŋa
Chaghatay	men-/min-	-Ka	maŋa
Orkhon Turkic	ben-/men-	-Ka	baŋa/maŋa
Khwarezmian Turkic	män-	-Ka	maŋa
Codex Cumanicus	men-	-Ka	maŋa~maɣa
Karakhanid Turkic	män-	-Ka	maŋa
Kirgiz	men-	-Ka	maɣa
Crimean Tatar	men-	-Ka	maɣa
Nogay	men-	-Ka	maɣa
Kazakh	men-	-Ka	maɣan

Table 1: 1.sg pronoun alternation

This dative form alternation has the following unexpected properties: (i) it is morphosyntactically restricted to singular pronouns and triggered only by dative case, (ii) the suffix conditions the stem

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<sup>2</sup> /K/ = dorsal obstruent. [k]~[q] and [g]~[ɣ] alternations are independently explained by voice/place assimilation.

form, and (ii) stem changes are phonologically uniform and systematic. I argue against a contextual allomorphy account and develop an Optimality Theory account based on a structurally indexed faithfulness constraint hierarchy which results in phonological changes to the singular pronoun stems in the manner of *emergence of the unmarked*.

## 1.1 Family Internal Typology

The dative pronoun alternation occurs in a majority of Turkic varieties surveyed. The evidence comes from pronoun paradigms in grammars, attested forms in texts, and online corpus results in for Azerbaijani. Modern varieties with the alternation include Turkish varieties (Standard, Gaziantep, Ardahan, Cyprus), Turkmen, Uyghur, Kazakh, Kirgiz, Crimean Tatar, and Nogai; historical varieties include Ottoman Turkish, Chaghatay, Khwarezmian, Karakhanid, Codex Cumanicus, and Orkhon Turkic.<sup>3,4</sup> The two languages that lack the alternation are Azerbaijani and Uzbek (Baisa & Suchomel 2012, Kononov 1960, Sjoberg 1963, Guljamov 1968). The dative pronoun alternation is overwhelmingly a shared phenomenon of the language family which splits into multiple typological groups based on minute differences in (i) distribution, (ii) the form of the dative suffix, and (iii) the realization of /n/ velarization; selected varieties in Table 2.

group	language	vowel alt.	/n/ alt.	distribution	dative suf.
A	Standard Turkish	✓	✗	1.sg & 2.sg	-a
A	Gaziantep/Ardahan/Cyprus Tur.	✓	[ŋ]	1.sg & 2.sg	-a
B	Turkmen	✓	[ŋ]	all sg.	-a
B	Ottoman Turkish (14-20 c.)	✓	[ŋ]	all sg.	-a
C	Uyghur	✓	[ŋ]	all sg.	-Ka
C	Chaghatay (14-19 c.)	✓	[ŋ]	all sg.	-Ka
C	Orkhon Turkic (9th c.)	✓	[ŋ]	all sg.	-Ka
D	Kazakh	✓	[ɣ]	all sg.	-Ka/-Kan
D	Kirgiz	✓	[ɣ]	all sg.	-Ka
D	Nogai	✓	[ɣ]	all sg.	-Ka
E	Azerbaijani	✗	✗	none	-a
E	Uzbek	✗	✗	none	-Ka

Table 2: Dative Alternation Typology

## 2 Alternation Typology

Group A contains modern Turkish varieties: Standard, Gaziantep, Ardahan, and Cyprus Turkish. The alternation is constrained to *singular participant* persons, i.e. *1.sg* and *2.sg*. These varieties have a dative suffix /-a/, and velarization results in stem-final /n/ → [ŋ], except for Standard Turkish, which independently levels all underlying and derived [ŋ] into [n].<sup>5</sup>

Group A: Gaziantep Turkish	NOM	ACC	GEN	DAT	INSTR/COM
1.SG	ben	ben-i	ben-im	baŋa	be-nim=le
2.SG	sen	sen-i	sen-iŋ	saŋa	se-niŋ=le
3.DIST.SG	ol	on-u	on-uŋ	on-a	o-nuŋ=la
3.PROX.SG	bu	bun-u	bun-uŋ	bun-a	bun-uŋ=la
1.PL	biz	biz-i	biz-im	biz-e	–
2.PL	siz	siz-i	siz-iŋ	siz-e	–
3.DIST.PL	on-lar	on-lar-ı	on-lar-ıŋ	on-lar-a	–

Table 3: Gaziantep Turkish Pronoun Paradigm (Günşen 2009)

<sup>3</sup> Thackston 1993, Akalın 1997, Krippes 1997, Buğday 1999, Bodrogligeti 2001, Kara 2003, Tömür 2003, Erdal 2004, Kabataş 2006, Siegel 2007, Günşen 2009, Kavitskaya 2010, Demirci 2014, Csató & Karakoç 2015, Kerslake 2015, Kirchner 2015ab, Muhamedowa 2015, Öztürk 2015, Schönig 2015a.

<sup>4</sup> Potentially also Chulym, Altay, Khakas, Shor, Tuvan, and Tofa (Berta 2015, Schönig 2015b).

<sup>5</sup> Modulo place of articulation assimilation. /n/+velar clusters still cause place of articulation assimilation: /n/ → [ŋ].

Group B contains Ottoman Turkish and Turkmen, where the alternation is constrained to singular pronouns. These varieties have a dative suffix */-a/*, and this suffix velarizes stem-final */n/*→[ŋ].

<i>Group B: Ottoman Turkish</i>	NOM	ACC	GEN	DAT
1.SG	ben	ben-i	ben-im	baja
2.SG	sen	sen-i	sen-iŋ	saja
3.DIST.SG	ol	an-ı	an-iŋ	aŋa
3.PROX.SG	bu	bun-ı	bun-iŋ	buŋa
1.PL	biz	biz-i	biz-im	biz-e
2.PL	siz-(ler)	siz-(ler)-i	siz-(ler)-iŋ	siz-(ler)-e
3.DIST.PL	an-lar	an-lar-ı	an-lar-iŋ	an-lar-a

Table 4: Ottoman Turkish Pronoun Paradigm (Buğday 1999, Kerslake 2015)

Group C contains Uyghur, Chaghatay, and Orkhon Turkic, where the alternation is constrained to singular pronouns. These varieties have a velar dative suffix */-Ka/*, and velarization yields */n/*→[ŋ].

<i>Group C: Chaghatay</i>	NOM	ACC	GEN	DAT	INSTR/COM
1.SG	män	men-i	me-niŋ	maŋa	me-niŋ bilä(n)
2.SG	sän	sen-i	se-niŋ	saja	se-niŋ bilä(n)
3.DIST.SG	ol	a-nı	a-niŋ	aŋa	a-niŋ bilä(n)
3.PROX.SG	bu	mun-ı	mu-niŋ	muŋa	mu-niŋ bilä(n)
1.PL	biz	biz-ni	biz-niŋ	biz-ge	biz-niŋ bilä(n)
2.PL	siz-(lär)	siz-(lär)-ni	siz-(lär)-niŋ	siz-(lär)-ge	–
3.DIST.PL	a-lar	a-lar-nı	a-lar-niŋ	a-lar-ŋa	–

Table 5: Chaghatay Pronoun Paradigm (Bodrogligeti 2001, Boeschoten & Vandamme 2015, Thackston 1993)

Group D contains Kazakh, Kirgiz, and Nogai, where the alternation is constrained to singular pronouns. These varieties have a velar dative suffix */-Ka/*, and velarization yields */n/*→[ŋ].

<i>Group D: Kazakh</i>	NOM	ACC	GEN	DAT	INSTR/COM
1.SG	men	me-ni	me-niŋ	maŋan	me-ni=men
2.SG	sen	se-ni	se-niŋ	sayan	se-ni=men
3.DIST.SG	ol	o-nı	o-niŋ	oŋan	o-nı=men
3.PROX.SG	bul	bun-ı	bu-niŋ	buyan	bu-nı=men
3.MED.SG	sol	son-ı	so-niŋ	soŋan	so-nı=men
1.PL	biz	biz-di	biz-diŋ	biz-ge	biz=ben
2.PL	siz-der	siz-der-di	siz-der-diŋ	siz-der-ge	siz-der=men
3.DIST.PL	o-lar	o-lar-dı	o-lar-niŋ	o-lar-ŋa	o-lar=men

Table 6: Kazakh Pronoun Paradigm (Krippes 1997, Muhamedowa 2015)

Group E contains Azerbaijani and Uzbek, which lack the alternation. In Azerbaijani, singular stem forms are invariable *mən-/sən-/on-*, and the dative suffix extends stem harmony, yielding *mənə/sənə/ona* (Baisa & Suchomel 2012, Siegel 2007). Uzbek singular stem forms are also invariable *men-/sen-/un-*, but the dative suffix does not harmonize with the stem, yielding dative forms 1.sg *menga*, 2.sg *senga*, and 3.sg *unga* (Kononov 1960, Sjoberg 1963, Gulyamov 1968).

### 3 Dative Alternation = Phonology + Faithfulness Hierarchy

#### 3.1 Suppletion Misses the Mark

Pronoun suppletion, i.e. contextual allomorphy of the pronoun stem triggered by dative case head, misses the mark on two grounds. Firstly, stem allomorphy triggered exclusively by dative case is a theoretically impossible \*ABA allomorphy pattern according morphological case hierarchies, which argue on the basis of case syncretism patterns that *comitative* and *instrumental* cases properly contain the features of lower-level cases such as *dative* (Blake 1994, Caha 2009, Moskal 2015, Smith et al. 2019). In contextual allomorphy, a contextually more specific form blocks less

specific forms in a structure (Bobaljik 2012), and therefore the insertion of a suppletive form triggered by *dative* case features would also block the realization of the *elsewhere* stem form in *instrumental* and *comitative* pronouns. However, *instrumental* and *comitative* forms do not have stem alternation in Turkic, so suppletion cannot derive the attested alternation patterns.

However, more importantly, suppletion has no sensitivity or explanation power for phonological form; suppletive forms commonly have no relation to other forms, ex. English *go/went*, *good/better*; Russian *xorošo/lučše* (good/better), *čelovek/ljudi* (person/people). If the dative alternation is stem suppletion, any phonological correspondence between dative pronoun stems and their other forms must be a complete coincidence; for example, the correspondences between Group C *1.sg* /men-/ vs. *1.sg-dat* /maŋa/ is simply coincidental. These patterns being replicated in all Group ABCD varieties is also unexplained, since suppletion is lexical item specific. In essence, suppletion misses all core inter- and intra-language generalizations about the alternation except for its distribution.

### 3.2 Nominal Structure

The alternation's distribution is defined by three morpho-syntactic criteria: (i) pronoun vs. noun structure, (ii) sg vs. pl number, and (iii) case feature on K. Thus, I assume the pronoun and noun structure in Figure 1 which make all the relevant distinctions via structural heads and their features (Moskal 2015).

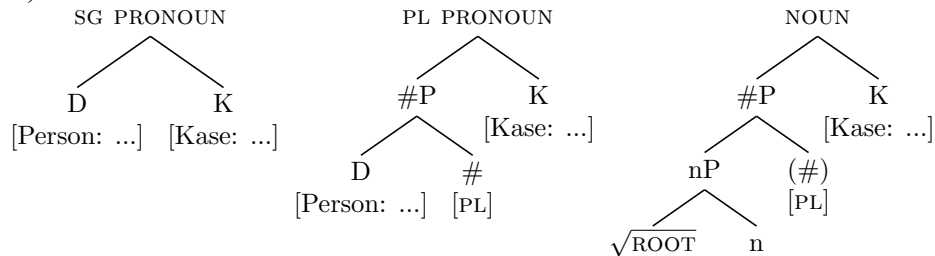


Figure 1: Nominal structures

### 3.3 Turkic Nominal Faithfulness Hierarchy

The distribution shows that phonological changes are sensitive to nominal structure size and features: plural pronouns and nouns have typical left-to-right and stem-to-suffix vowel harmony, while the dative alternation shows us a case of right-to-left application of vowel harmony exclusively for the dative case. Therefore, I propose that (i) dative case has a phonological trigger not found in other case suffixes, (ii) the dative suffix lexically has higher *faithfulness* than other case suffixes, and (iii) phonological faithfulness is indexed to nominal structure. This phonological trigger is a [Dorsal:[+back]] feature on the suffix, and whether this feature results in a stem change is mediated by a structurally-indexed *Turkic Nominal Faithfulness Hierarchy* in (1), where FAITH(XP) is a placeholder slot for any category-indexed *faithfulness* constraint.

(1) *Turkic Nominal Faithfulness Hierarchy*:

$$\left\{ \begin{array}{l} \text{FAITH}(nP) \\ \text{FAITH}(\#P) \end{array} \right\} \gg \text{FAITH}(\text{dative}) \gg \text{FAITH}(D) \gg \text{FAITH}(KP)$$

### 3.4 Vowel Backness Harmony

Turkic vowel backness harmony generally enforces that vowels in a phonological word match in *backness* features, typically by changes to suffix vowels, i.e. operating left-to-right or stem-to-suffix. However, I argue that (i) dative case has a [+back] vowel, and (ii) backness harmony is not

directional. The dative suffix vowel must be underlyingly [+back], since dative case causes /e/→/a/ in singular stems: front vowel Uyghur stem /men-/ becomes [maŋa], not \*[mene], etc. Since 1.sg and 2.sg stems only have front vowels, the [+back] feature must originate from the dative. Additionally, a direction-sensitive harmony mechanism cannot derive the attested patterns; vowel harmony spreads the dative's [+back] feature leftwards to singular pronoun stems and rightwards otherwise. Thus, I assume the direction-agnostic harmony constraint SPREAD(F) in (2) (Walker 1998, Padgett 2002), which derives the distribution when combined with the faithfulness hierarchy. (3) is the realization of the faithfulness hierarchy for vowel harmony via the faithfulness constraint IDENT(F).

(2) *Vowel Harmony Constraints* (Padgett 2002, Walker 1998)

- a. Color: Feature class of [±round] and [±back]
- b. SPREAD(Color): Penalize each Color feature [F] that is linked to one, but not all syllable nuclei in a phonological word.

(3) *Vowel Harmony Constraint Ranking*<sup>6</sup>

IDENT(nP,bk) ≫ HARMEXCEP ≫ SPREAD(Color) ≫ IDENT(#P,bk) ≫  
IDENT(dat,bk) ≫ IDENT(D,bk) ≫ IDENT(KP,bk)

The ranking in (3) derives the distribution and form: stems don't harmonize in nouns since IDENT(nP,bk) outranks SPREAD(Color); stems don't harmonize in plural pronouns because IDENT(#P,bk) outranks IDENT(dative,bk) and IDENT(KP,bk); but singular pronoun stems *do* harmonize with the dative suffix because IDENT(dative,bk) outranks IDENT(D,bk).

### 3.5 Floating Dorsal Features on the Dative Suffix

/n/ velarization in Groups CD is cluster simplification, since stems end in /n/ and the dative suffix is /-Ka/, however dative pronoun forms do not have /nK/ clusters. I propose that the simplification is deletion of /n/ from the stem in Groups CD. In Group D, this deletion is complete, leaving /K/ unaffected, so it is realized as [ɣ] due to independent phonological processes.<sup>7</sup> In Group C, /n/ deletion is *partial*, such that the [+nasal] feature of /n/ survives and floats to /K/, deriving [ŋ]. This is derived by a cluster markedness constraint \*NK fitting into the faithfulness hierarchy in (4).

(4a) Group C

$$\left\{ \begin{array}{l} \text{MAX(nP)} \\ \text{MAX(\#P)} \\ \text{MAX(dative)} \\ \text{UNIF} \\ \text{MAX(Nas)} \end{array} \right\} \gg *NK \gg \left\{ \begin{array}{l} \text{MAX(D)} \\ \text{MAX(KP)} \\ \text{IDENT(Nas)} \end{array} \right\}$$

(4b) Group D

$$\left\{ \begin{array}{l} \text{MAX(nP)} \\ \text{MAX(\#P)} \\ \text{MAX(dative)} \\ \text{UNIF} \\ \text{IDENT(Nas)} \end{array} \right\} \gg *NK \gg \left\{ \begin{array}{l} \text{MAX(D)} \\ \text{MAX(KP)} \\ \text{MAX(Nas)} \end{array} \right\}$$

Velarization in Groups AB is more mysterious, since their dative suffixes lack a velar; however, the non-AB majority have a velar dative, and reconstructed Proto-Turkic dative also has a velar \*-kA or \*-gA (Doerfer 1975, Erdal 2004). Thus, I propose that Group AB datives have historically *partially* lost this velar, which has left a floating [Dorsal:[+bk]] feature on the suffix. This remnant feature only surfaces in singular pronouns via /n/→[ŋ] due to the low ranking of FAITH(D) in the Turkic Nominal Faithfulness Hierarchy, wherein it is a floating feature on the dative /-a/ that attaches to stem-final /n/. It floats because /a/ comes already associated with a [Dorsal:[+bk]] since it is a [+back] vowel, and vowel backness is the same Dorsal feature according to Halle (1995). So, the remnant [Dorsal:[+bk]] feature of the lost velar searches for a new host, derived by the

<sup>6</sup> HARMEXCEP = all constraints deriving language-specific harmony exceptions (disharmonic morphemes, etc.).

<sup>7</sup> Via intervocalic voicing, or the [+voice] feature of /n/ surviving deletion and floating to /K/.

\*MULTASSOC(F) constraint, which enforces only a single F feature is associated with a given host.<sup>8</sup> In nouns and plural pronouns, the high ranking of IDENT(nP,Dors) and IDENT(#P,Dors) results in this floating feature being deleted. The restricted distribution of [ŋ] to 1.sg and 2.sg pronouns in Group A is due to this group innovating a faithfulness distinction between D heads with [+participant] person features vs. the demonstrative [-participant] 3rd person D heads, as in (5b).

(5a) Group B

$$*MULTASSOC(Dors) \gg \left\{ \begin{array}{l} ID(nP,Dors) \\ ID(\#P,Dors) \end{array} \right\} \\ \gg MAX(Dors) \gg ID(D,Dors)$$

(5b) Group A

$$*MULTASSOC(Dors) \gg \left\{ \begin{array}{l} ID(nP,Dors) \\ ID(\#P,Dors) \\ ID(D_{[-part]}P,Dors) \end{array} \right\} \gg \\ MAX(Dors) \gg ID(D_{[+part]},Dors)$$

## 4 Conclusion: Diachronic Derivation of Typology

I have argued that both the reverse harmony and the /n/-velarization patterns can be explained as simple phonological phenomena, i.e. directionless vowel backness harmony, cluster simplification, and floating features, if we apply a simple structural-size indexed faithfulness hierarchy for Turkic nominals to each phonological mechanism. In Figure 2 below, I schematize how a few simple diachronic phonological changes can derive the full proposed typology.

Proto-Turkic alternation is identical to Group C; unsurprisingly, this group also contains the oldest attested variety Orkhon Turkic as well as modern varieties. Reverse vowel harmony is shared, and therefore I argue, present from Proto-Turkic onwards due to the faithfulness hierarchy. The first split is between Groups AB and CD, where Proto-Group AB partially loses \*K in the dative, resulting in them having a floating [Dors[+bk]] feature that derives /n/→[ŋ]. Group A and B split when Group A further restricts the alternation to singular [+participant] pronouns by splitting FAITH(D) into [□participant] variants. Groups C and D split when Group D shuffles the ranking of FAITH(nas) constraints, resulting in [+nasal] no longer surviving cluster simplification and yielding the /n/→[ɣ] alternation. Azerbaijani either splits from Group A or Proto-Group AB when it loses the alternation via losing the floating [Dors[+bk]], and Uzbek loses the alternation when it loses vowel harmony and /nK/ cluster simplification, likely through reranking of FAITH(D).

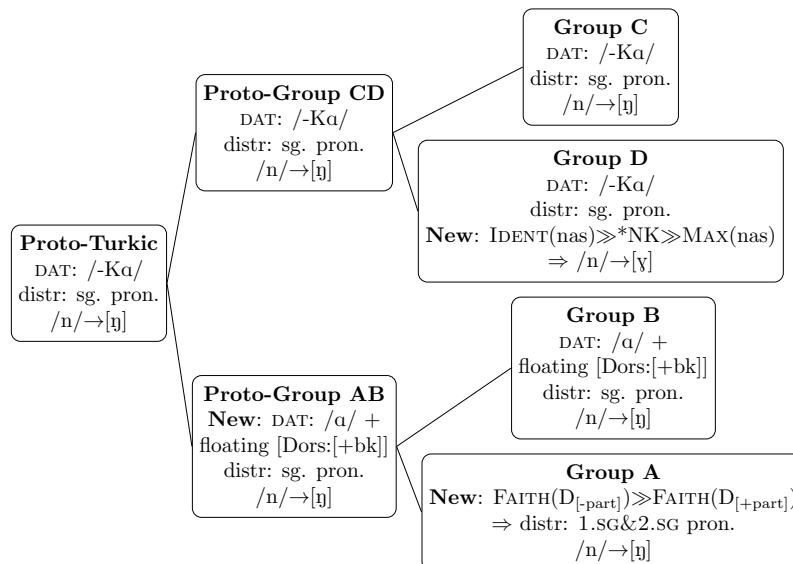


Figure 2: Diachronic Derivation of Typology

<sup>8</sup> Adapted from tone float constraint \*U□U by Zimmerman (2012).

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