

No small endeavor: The diachrony of diminutives and the nominal spine

Laura Grestenberger
Laura.Grestenberger@oeaw.ac.at

Diachronic Generative Syntax 24
Université Paris Cité

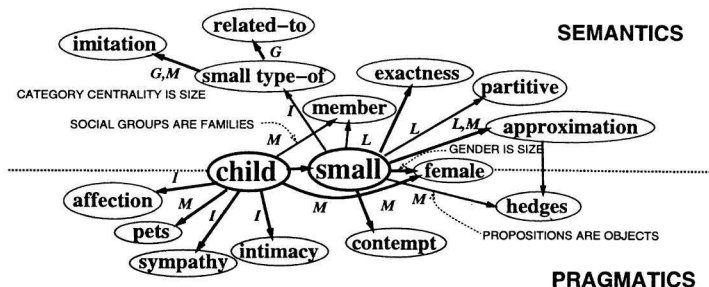
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Diachrony of diminutives

- ▶ Typological generalization: Nominal diminutives arise via a grammaticalization path CHILD > SMALL > DIM (Jurafsky 1996; Kuteva et al. 2019: 88–90).
 - ▶ Kuteva et al. (2019: 90) suggest a related grammaticalization path CHILD > PARTITIVE, but: “More examples from other language families are needed to substantiate this grammaticalization”
- ▶ Jurafsky (1996): unidirectional path CHILD > DIM > PARTITIVE.

Diachrony of diminutives

- (1) Universal semantics of diminutives (Jurafsky 1996: 542)



Today's puzzle: IIr. *-ka-* and its function(s)

A possible counterexample:

- The Indo-Iranian nominal suffix *(*)-ka-* (< PIE **-ko-*) that is often characterized as diminutive, based on examples like (2).

(2) Vedic *-ka-*stems

- a. *putrá-* m. 'son' : *putra-ká-* m. 'little son'
- b. *pāda-* m. 'foot' : *pāda-ká-* m. 'little foot'
- c. *vamrá-* m. 'ant' : *vamra-ká-* m. 'little ant' (PN)
- d. *jyā-* f. 'bowstring' : *jyā-kā-* f. 'little bowstring'

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Problems:

- ▶ *-ka-/*-ko-* doesn't come from an element that means 'child' in any (reconstructable) way
- ▶ It is controversial whether diminutive meaning should be reconstructed for PIE:
 - ▶ Mostly absent from the Avestan evidence, so uncertain even for Proto-Indo-Iranian
 - ▶ It also forms relational adjectives/partitives in other IE languages
- ▶ In the Middle Indic and Middle Iranian languages, *-ka-* moreover develops into a plain nominal suffix and eventually a nominal declension class marker — does this development follow from or presuppose a prior diminutive meaning?

Diachrony of diminutives: problems

- ▶ Jurafsky actually uses PIE **-ko-*/Indo-Iranian (IIr.) **-ka-* to argue *against* the alternative (and more or less standard) analysis PARTITIVE (“part of”, “relational”) > DIMINUTIVE.
 - ▶ Most of the older literature on PIE **-ko-*/IIr. *-ka-* actually argues in favor of PARTITIVE > DIMINUTIVE, e.g., Brugmann 1892; Edgerton 1911.

“The abstractionist reconstruction implies an unnatural semantic shift from an abstract quality (‘related to’) to a concrete, real-world natural kind (‘child’). This violates the unidirectionality hypotheses (...) discussed in §2, and is a shift unparalleled in other languages.”
(Jurafsky 1996: 567)

Diachrony of diminutives: problems

- ▶ But there is no violation of unidirectionality — **-ko-* never meant ‘child’ or anything concrete and was never restricted to diminutive formations (more below), so there was no purported development of abstract > concrete
- ▶ “unparalleled in other languages” is also not true — at least in the IE languages there are plenty of parallels for the development “genitival”/partitive > diminutive (Nussbaum 2009)
 - ▶ **Latin:** both **-ko-* (= IIr. *-ka-*) and **-lo-* (> Lat. *-lus*, *-u/olus* (< **-e-los*), & *-culus* (< **-ke-los*) > diminutiveness > plain nominalizers/*n* (e.g., It. *orecchio* ‘ear’ < Late Latin *ōri-c(u)lum*, *specchio* ‘mirror’ < *spe-c(u)lum*, etc.).
 - ▶ **Germanic:** New High German *-(e)l-* < Old High German *-il(a)* (< PIE **-elo-*, **-ilo-*); originally also formed nouns and adjectives of appurtenance, e.g., *Arm* ‘arm’ → *Ärm-el* ‘sleeve’ (*‘belonging to/having to do with the arm’); *Eiche* ‘oak’ → *Eich-el* ‘acorn’ (*‘belonging to/of the oak’); and here too there’s some evidence that the adjectival function was older (Weiss 2020)

Obviously more cross-linguistic evidence from other language families is needed, but “unparalleled” clearly not true.

Roadmap

The goal of this talk is to argue that the development of IIr. *-ka-*

1. instantiates a grammaticalization path
(RELATIONAL >) PARTITIVE > DIMINUTIVE > NOMINALIZER > INFL
2. shows that morphosyntactic reanalysis is unidirectional, and
3. follows from more general principles governing morphosyntactic reanalysis (“grammaticalization”); cf. Grestenberger (2023).
4. provides a glimpse into the diachrony of noun phrase structure

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Roadmap:

- ▶ Background: Nominal diminutives, heads vs. modifiers
- ▶ Arguments for directionality of morphological reanalysis/change
- ▶ Development of “diminutive” **-ka-* in Indo-Iranian
- ▶ Analysis
 - ▶ Proposed grammaticalization path:
Partitive → Diminutive → *n* (Nominalizer) → Inflectional morpheme
- ▶ Implications & conclusion

Reanalysis & directionality

Which direction of change should we expect for the reflexes of **-ka-*? Is morphosyntactic reanalysis directional?

Reanalysis & directionality

Which direction of change should we expect for the reflexes of **-ka-*? Is morphosyntactic reanalysis directional?

- ▶ Syntactic change (& “grammaticalization”) = usually treated as *unidirectional*.
 - ▶ Especially in generative approaches, e.g., van Gelderen 2004, 2009, 2013; Breitbarth 2017, Biberauer 2019, Biberauer & Roberts 2017.
- ▶ Occam’s razor: assuming unidirectionality for morphological/morphosyntactic reanalysis makes stronger & falsifiable predictions and should therefore be preferred.

Assumptions:

- ▶ Changes in categorizing/derivational morphology are unidirectional, parallel to syntactic changes
 - ▶ This directionality moreover follows from the same underlying principles as in syntactic change
 - ▶ In “syntactico-centric” approaches to morphology (Distributed Morphology, Nanosyntax, Exoskeletal...): because morphology maps to syntactic structure
- FWF V 850-G “Verbal categories and categorizers in diachrony”
(<https://lauragrestenberger.com/categorizers-in-diachrony>)

Reanalysis & directionality

There's some confusion in the literature as to whether directionality in morphological reanalysis 1) exists and 2) is predicted/expected.

- ▶ Haspelmath (1995) observes an inherent *directionality* in the changes he discusses (affix telescoping, conglutination): While reanalysis of the type $[XY][Z] \rightarrow [X][YZ]$ is amply attested, the opposite, $[X][YZ] \rightarrow [XY][Z]$, only occurs in the reanalysis of *roots* & doesn't give rise to new *affixes*.
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 - ▶ But this doesn't follow from anything in his approach so there's no explanation
- ▶ From a DM-perspective, Diertani (2011) argues explicitly *against* unidirectionality in morphological reanalysis & Dali and Mathieu (2021) implicitly accept this.
 - ▶ Because the reanalysis of M-word and Sub-word boundaries could in principle go either way, especially in the context of “string-vacuous reanalysis”, (3).
 - ▶ But then why is the vast majority of examples so pervasively “rightwards” (in structural terms: upwards)?

- (3)
- a. $\sqrt{-X-\emptyset-Y} \rightarrow \sqrt{-\emptyset-X-Y}$ (“upwards”)
 - b. $\sqrt{-X-\emptyset-Y} \rightarrow \sqrt{-X-Y-\emptyset}$ (“downwards”)

Note that the linear order of the morphemes hasn't changed.

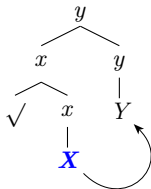
Reanalysis & directionality

Arguments *for* assuming unidirectionality in morphosyntactic reanalysis:
Grestenberger 2022, 2023.

- ▶ Reanalysis is upwards (UR, Roberts and Roussou 2003) → follows from Economy Principles that kick in during L1 acquisition and determine mapping of form to structure (e.g., the HPP & LMP of van Gelderen 2011, etc.)
- ▶ Because morphological linearization mirrors syntactic structure (Baker 1985 a.m.o.), this is also expected to hold for reanalysis of morphemes in complex word forms.
- ▶ Apparent exceptions:
 - ▶ Spec-head reanalysis (HPP, van Gelderen 2011, Meelen & Roberts at last DiGS) → but this is essentially reduction of structure within a phrase
 - ▶ *Loss* of intermediate functional projections/meaning
 - ▶ Reanalysis of functional material as part of the root (cf. Haspelmath's observation) → lexical entry of the root changes, but no new affix arises/is lost.
 - ▶ Postsyntactic operations like LD that can arise/disappear diachronically (Diertani 2011)

Types of UR

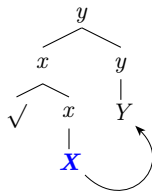
- 1) Category change, no loss of meaning (= functional projections)



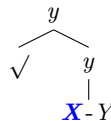
Types of UR

2) Category change + loss of meaning (= loss of functional projections)

a.



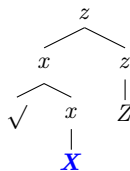
→ b.



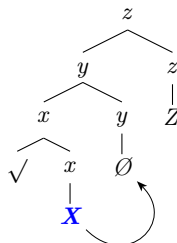
Types of UR

3) Category change + addition of meaning (= FP)

a.



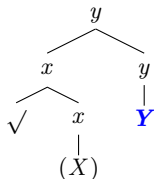
→ b.



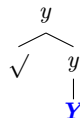
Types of UR

4) No category change, loss of meaning (= of functional projections)

a.



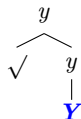
→ b.



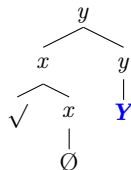
Types of UR

5) No category change, addition of meaning (= of functional projections)

a.



→ b.



Summary

	no change in selected FP	FP lost	FP added
category change of reanalyzed affix	1) AG <i>-euō</i> → MG <i>-evo</i> ; “con- glutination”; “secretion”	2) AG <i>-is-mos</i> → MG <i>-ismos</i> ; “tele- scoping”	3) AG <i>-(th)ē-</i> → MG <i>- thi-</i> ; Proto-Algonquian independent order
no category change of reanalyzed affix	(= no change)	4) AG middle <i>- menos</i> → MG pas- sive <i>-menos</i> (target state)	5) Ved. <i>-ín</i> (denom. → deverbal)

(See Grestenberger 2022 for discussion of these examples)

Spec-head-reanalysis & diminutives as heads vs. modifiers

Formally, diminutive morphemes can pattern as modifiers/specifiers or as categorial heads cross-linguistically (e.g., Wiltschko & Steriopolo 2007, Fábregas 2013, Gouskova & Bobaljik 2022, etc.), with differing properties.

(4) Head-DIM vs. mod-DIM

	DIM = head	DIM = modifier
changes the category/gender of the base	✓	✗
turns mass nouns into count nouns	✓	✗
can trigger root/stem suppletion	✓	✗
can undergo allomorphy/suppletion	✓	✗
can combine with different categorial bases	✗	✓
can iterate	✗	✓
forms its own prosodic domain	✗	✓

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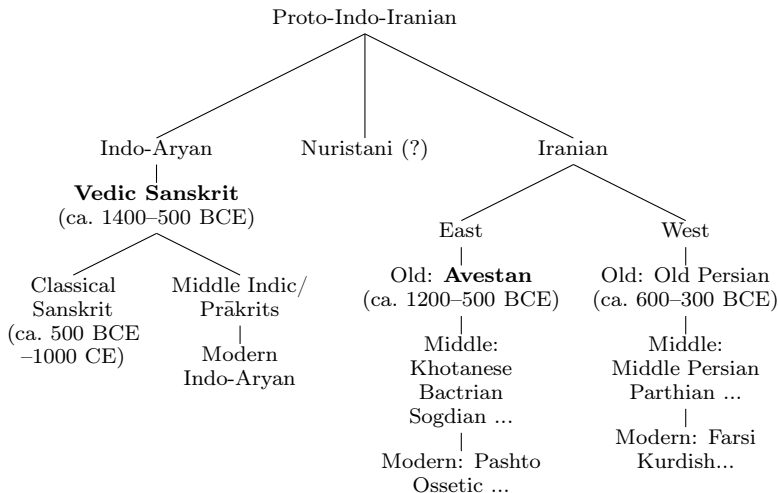
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can iterate	✗	✓
forms its own prosodic domain	✗	✓

► Directionality in head-modifier change?

(*)-ka- in Indo-Iranian: Vedic

(5) The Indo-Iranian language family



(*)-ka- in Indo-Iranian: Vedic

- ▶ *Pace* Jurafsky, -ka-forms with unambiguous diminutive readings are actually rare in Rigvedic Sanskrit and in Avestan
- ▶ Note: -ka-derivatives from stems in -u-, -i-, and a- were resegmented to -uka-, -ika-, and -aka- (some with lengthening of the presuffixal vowel); in the following, these are treated together with simple -ka- (cf. AiG II,2: 143–50; 308–13; 480–3)

(6) RV (Rigveda): 68 ka-forms with identifiable bases

Derivative	Base	# of forms	%
verbal adjective	✓	20	29.4%
(attenuative) adjective	adj.	15	22%
m./f. substantive	m./f. substantive	23	34%
adj.	pron.	7	10.2%
other		3	4.4%
Total		68	

- ▶ + 17 with unclear/onomatopoetic base

Verbal adjectives

- (7) Examples: -ka-adjectives derived from roots or verbal stems (& their substantivizations)

Derivative	Meaning	√/verb	
-lābh-ika-	‘seizing, winning’	<i>rabh/labh</i>	‘seize, take’
ánī-ka-	‘mouth; face’ (n.)	<i>anⁱ</i>	‘breathe’
dṛś-īka-	‘visible; sight’ (n.)	<i>dṛś</i>	‘appear, become visible’
hlāḍ-iká-	‘refreshing’	<i>hlāḍ</i>	‘become cool, fresh’
māṛḍ-īká-	‘grace, favor’ (n.)	<i>mṛḍ</i>	‘be generous, graceful’
mṛḍ-īká-	‘grace, favor’ (n.)	<i>mṛḍ</i>	‘be gracious’
muh-uká-	‘instant’ (n.)	<i>muh</i>	‘become startled’
śló-ka-	‘what is heard; praise’ (m.)	<i>śrav</i>	‘hear’
śúṣ-ka-	‘dry’	<i>śuṣ</i>	‘be dry’
vṛdh-īká-	‘grown; equal to (+ dat.)’	<i>vṛdh</i>	‘grow’
jāgarū-ka-	‘alert, aware’	* <i>jāgaru-</i>	‘awake, aware’

Attenuative adjectives

- (8) Examples: attenuative or pleonastic -ka-adjectives derived from adjectives (& their substantivizations)

Derivative	Meaning	Adjective	
<i>anya-ká-</i>	‘other (thing, n.)’	<i>anyá-</i>	‘other’ (adj.)
<i>arbha-ká-</i>	‘small, young’	<i>árbha-</i>	‘small’
<i>dva-ká-</i>	‘twice; together’	<i>dvá-</i>	‘two’
<i>eka-ká-</i>	‘alone’	<i>éka-</i>	‘one, single’
<i>kanīna-ká-</i> , -ā-	‘young man/woman’	<i>kanīna-</i>	‘young’
<i>sana-ká-</i>	‘old-ish’ (pej.)	<i>sána-</i>	‘old’
<i>śana-ká-</i>	‘slow’	<i>śána-</i>	‘slow’
<i>śīta-ka-</i> , f. <i>śīti-kā-</i>	‘cool’	<i>śītá-</i>	‘cold’
<i>dūra-ká-</i>	‘distant; distance (n.)’	<i>dūrā-</i>	‘far; distance’ (n.)
<i>vīśva-ka-</i>	PN (m.)	<i>vīśva-</i>	‘all, every’ (adj.)
<i>śyāva-ka-</i>	PN (m.)	<i>śyāva-</i>	‘dark’; also PN (m.)

Substantives from substantives

- (9) Examples: concrete substantives in *-ka-* derived from animate concrete substantives (m./f.); forms with plausible contextual diminutive meaning = **bold**

Derivative	Meaning	Base	
<i>jyā-kā-</i> f.	‘little bowstring’	<i>jyā-</i> f.	‘bowstring’
<i>urvāru-kā-</i> n.	squash	<i>urvāru-</i> , <i>-ū-</i> (AV)	‘cucumber; squash’
<i>ānta-ka-</i> m.	PN	<i>ānta-</i> m.	‘end’
<i>avi-kā-</i> m., <i>-kā-</i> f.	‘sheep’ m.; ‘ewe’ f.	<i>avi-</i> m./f.	‘sheep’
<i>marya-kā-</i> m.	‘little man’	<i>mārya-</i> m.	‘man, mortal’
<i>pāda-kā-</i> m.	‘little foot’	<i>pāda-</i> m.	‘foot’
<i>putra-kā-</i> m.	‘little son, sonny’	<i>putrá-</i> m.	‘son’
<i>rāja-kā-</i> m.	‘little king, kinglet’	<i>rājan-</i> m.	‘king’
<i>sóma-ka-</i> m.	PN	<i>sóma-</i> m.	Soma
<i>dēva-ka-</i> m.	‘(little) god’	<i>devá-</i> m.	‘divine; god’
<i>nāsi-kā-</i> f.	‘nostril; nose’ (Du.)	<i>nās-</i> f.	‘nose’ (Du.)
<i>vīra-kā-</i> m.	‘little hero’	<i>vīrá-</i> m.	‘hero’

Substantives from substantives

- ▶ One instance of a *ka*-derivative from a n. mass noun: *uda-ká*- n. ‘(amount of) water’ ← *udá(n)*- n. ‘water’
- ▶ synchronically suppletive to *udá(n)*- in the nom-acc.
- ▶ possible instance of mass → count? But synchronically both mass
 - ▶ Creation of countable atoms as core function of diminutives in, e.g., Wiltschko 2006; De Belder 2011, etc.

Discussion

- ▶ Taken together, -ka- mostly forms *adjectival* derivatives — like all adjectives, these can be substantivized without an overt derivational morpheme.
- ▶ The derivation of animate *substantives* (from nominal bases) could therefore be a secondary extension of the function of -ka- based on such substantivizations.
- ▶ -ka- in general preserves the gender and category of the base, except in the first (verbal adjective-forming) group
- ▶ Among the Rigvedic substantives, there are only a few that show contextual diminutive meaning (attenuative, pejorative, ‘small’, etc.) — about 12.
- ▶ Additionally, there are a few adjectives that could be interpreted as having diminutive meaning (attenuative, ‘-ish’)

Rigvedic diminutive -ka-

- The diminutive use is moreover contextually restricted and only occurs in a few passages, where it is often pejorative-contrastive, as in (10).

(10) *citra* *íd* *rājā* *rāja-**kā*** *íd* *anya-**ké***
 Citra.NOM EMPH König.NOM König-DIM.NOM.PL EMPH andere-DIM.NOM.PL
*ya-**ké*** *sárasvatīm* *ánu*
 REL-DIM.NOM.PL Sarasvatī.AKK entlang
 “Citra is the only king; the other petty little ones who (live) along the
 Sarasvatī are only kinglets” (RV 8.21.18; transl. Jamison & Brereton 2014)

- Jamison (2009) argues that this use is highly register-specific and typical of vernacular registers; that is, it is used in these passages to mark vernacular, non-standard speech.

Summary

- ▶ The majority of synchronically transparent *ka*-derivatives with identifiable bases are adjectives (and adjectival substantivizations)
- ▶ Diminutive meaning is contextually restricted and associated with passages that characterize vernacular speech
- ▶ -*ka*- usually does not change the category (adj. vs. substantive) or gender of the derivational base.

-ka- in Avestan

The lack of diminutive meaning of -ka- is even more conspicuous in Avestan:

- (11) AV: 34 *ka*-forms with identifiable bases (+ 38 with unclear/onomatopoetic bases)

Derivative	Base	# of forms	%
verbal adjective	✓	11	32%
(attenuative) adj.	adj.	6	18%
m./f. substantive	m./f. subst.	10	29%
adj.	pron.	2	6%
relational adj.	m./f./n. subst.	5	15%
Total		34	

Verbal adjectives

(12) Root-/verbal stem-derived -ka-adjective (& their substantivizations)

Derivative	Meaning	√/Verb	
YAv. <i>aini-ka-</i> m.	‘face’	<i>an</i>	‘breathe’
YAv. <i>ə-uuərəz-ika-</i>	‘not working, lazy’	<i>varz</i>	‘work’
YAv. <i>pac-ika-</i>	‘cooking’	<i>pak/pac</i>	‘cook’
OAv. <i>maržd-ika-</i>	‘gracious; grace (n.)’	<i>mərəžd</i>	‘be gracious’
OAv. <i>mərəžd-ika-</i>	‘gracious; grace (n.)’	<i>mərəžd</i>	‘be gracious’
YAv. ⁺ <i>vid-aka-</i>	‘finding’	<i>vaēd</i>	‘find’
YAv. <i>rap-aka-</i>	‘supporting’	<i>rap</i>	‘support’
YAv. <i>sao-ka-</i> n., <i>-kā-</i> f.	‘use, benefit’	<i>sū, sao</i>	‘increase, prosper’ (?)
YAv. <i>huš-ka-</i>	‘dry; dry land’ (n.)	<i>haoš</i>	‘dry (out)’
YAv. <i>zina-ka-</i>	‘damaging’ (?)	<i>zīnā-</i> (?)	‘damage’
YAv. <i>apa.xraosa-ka-</i>	‘quarrelsome’	<i>xraos</i> ‘yell’ / * <i>apa.xraosa-</i> m. ‘yelling’	

Attenuative adjectives

- (13) Attenuative or pleonastic -ka-adjectives (& their substantivizations) from adjectival bases

Derivative (all YAv.)	Meaning	Base	
<i>a-pərənāiiĩ-ka-</i>	‘minor; child’ (m.)	<i>a-pərənāiii-</i>	‘young, minor’
<i>a-nāma-ka-</i>	‘nameless’	* <i>a-nāman-</i>	‘nameless’
<i>kasuu-ika-</i>	‘(very) small’	<i>kasu-</i>	‘small’
<i>mūra-ka-</i> m.	name of a daeva	? <i>mūra-</i>	‘dumb’
<i>siiāma-ka-</i> m.	name of a mountain	* <i>siiāma-</i>	‘dark’
<i>hum-aiia-ka-</i> m.	PN	<i>hu-māiiā-, -maiia-</i>	‘blessed’

Substantives from substantives

(14) (m./f.) substantives in -ka- from animate concrete substantives (m./f.)

Derivative	Meaning	Base	
YAv. <i>carāiti-kā-</i> f.	‘young woman’	<i>carāiti-</i> f.	‘young woman; wife’
YAv. <i>kaini-kā-</i> f.	‘girl’	<i>kainiiā-</i> , <i>kaini-</i> f.	‘young girl’
YAv. <i>nāiri-kā-</i> f.	‘(house)wife’	<i>nāirī-</i> f.	‘wife’
YAv. <i>jahi-kā-</i> f.	‘bad woman’	<i>jahī-</i> f.	‘bad woman’
YAv. <i>arša-ka-</i> m.	PN	<i>aršan-</i> m.	‘male, man’*
OAv. <i>daiti-ka-</i>	‘wild animal’	* <i>da(n)t-</i> m. (?)	‘tooth’
YAv. <i>daha-ka-</i> m.	a daeva	* <i>daha-</i> m.	‘enemy, demon’
YAv. <i>mašiiā-ka-</i> m.	‘human’	<i>mašiiā-</i> m.	‘mortal; human’
YAv. <i>zəma-ka-</i> m.	‘winter storm’	<i>ziām-</i> m.	‘winter’
YAv. <i>vauuža-ka-</i> m.	a daevic animal	?* <i>vauuža-</i> m.	‘wasp’

Relational adjectives

Interestingly, in Avestan & Old Persian there are some clear examples of $N \rightarrow A$ with relational (appurtenance?) meaning:

(15) Relational adjectives (& their substantivizations)

Derivative	Meaning	Base	
YAv. <i>pūiti-ka-</i>	‘purifying’ (a.)	* <i>pūiti-</i> f.	‘purification’
YAv. <i>spa-ka-</i>	‘dog-like’	<i>spa(n)-</i> m.	‘dog’
YAv. <i>ni-uuaia-ka-</i> (m.)	‘fearsome (one)’	* <i>ni-uuaia-</i> m.	‘fear, terror’ (?)
YAv. <i>ni-pašna-ka-</i>	‘envious’	* <i>ni-pašna-</i>	‘envy’ (?)
OAv. <i>pasu-ka-</i> m.	‘domesticated animal’	<i>pasu-</i> m.	‘livestock’ (coll.); ‘domesticated animal’

- ▶ OP *vazar-ka-* ‘great, big’ ← **vazar-* ‘greatness’ (instr. sg. *vašnā* ‘by the grace (of)’)
 - ▶ OP *ārštika-* ‘spearman’, *huv-ārštika-* ‘good spearman’ ← *aršti-* ‘spear’
 - ▶ Maybe also OP *ba(ṇ)da-ka-* ‘subject’ < *‘bound’; ‘with bands’ ← *baṇda-* m. ‘band, fetter’ (or *baṇd-* ‘bind’?)

Relational adjectives

Context shows that these are indeed relational, not diminutive, e.g.:

- (16) *baēuuarə* *ažinəm* *udarō-θrąsanəm*
 ten.thousand.N snake.GEN.PL belly-crawling.GEN.PL
ava-janiiāt *baēuuarə* *ažinəm* *spa-ka-nəm*
 down-strike.OPT.3SG.ACT ten.thousand.N snake.GEN.PL dog-like-GEN.PL
kahrpunanəm *ava-janiiāt*
 K.GEN.PL down-strike.OPT.3SG.ACT
 “Let him strike down ten thousand belly-crawling snakes, let him strike down
 ten thousand dog-like *Kahrpuna*-snakes” (V.14.5)

Relational adjectives

- (17) *azəm yō ahurō mazdā tā haθra*
 I.NOM who.NOM.SG Ahura.NOM Mazda.NOM DEM.PRON.ACC.PL.N together
fra-frāuuaiiāmi auui zraiiō pūitikəm
 PRVB-flow.CAUS.PRS.1SG.ACT to sea.ACC purifying.ACC
 “I, Ahura Mazda, make these flow together to the Pūitika-/purifying sea.”
 (V. 5.18)

Discussion

- ▶ The Avestan nominal system is more archaic than the Vedic one in several respects, so it is not implausible that Avestan would have preserved remnants of the older uses of *-ka-*.
- ▶ As always in Avestan, the contexts are often difficult to interpret, so diminutive meaning cannot be completely excluded based on this survey of forms.
- ▶ Evidence from personal names? *-(v)ka-* not too common in Avestan, but this could again be due to register — *-uka-* is more common in Old Persian personal names, and generally in women's names (Mayrhofer 1973; Remmer 2006: 199–200); Bactrian hypocoristics (Sims-Williams 2010: 11), etc.
 - ▶ But both appurtenance ('of X') and diminutive morphology is associated with hypocoristic use cross-linguistically, so either way this wouldn't be too surprising.

-ka- in Middle Indic and Middle Iranian

- ▶ The Middle Indic (Pāli, Prakrits ...) and Middle Iranian (Middle Persian, Khotanese, Sogdian, Bactrian...) languages have treated -ka- and the suffix variants -(a/i/u)ka- in a remarkably parallel fashion
- ▶ These suffixes were generalized especially to masculine and neuter nominal stems and turned into an all-purpose nominal stem-forming suffix or *nominalizer* (abbreviated *n*), usually without any discernible semantic difference to the base (in those case where it still exists synchronically).

-ka- in Middle Indic/Prakrit

- ▶ -ka-, -ga-, -(y)a- becomes a semantically bleached all-purpose suffix (Pischel 1900: 95, 405)
- ▶ No (discernible) difference to the base: *bahu* ‘much, many’ & *bahu-ka* ‘much, many’, *nāti-* & *nāti-ka-* ‘relatives’, etc. — regional/dialectal variation, cf. (18).
- ▶ -ika-/i-ya- vs. -aka- vs. -uka-, e.g., *viṃc(h)ua-* < *-uka- vs. *viṃchia-* < *-ika- (Skt. *vṛśc-ika-* ‘scorpion’); *macciya-* < **martyika-* vs. *martyaka-* ‘mortal, man’ (AiG II,2: 310)
- ▶ “Hyperpleonastic” forms, e.g., *bahuaya-* ‘much, many’ as if < **bahu-ka-ka-*

- (18) Variation in the use of -ka- in the Aśoka-edicts (3rd–1st century BCE),
Jamison (2009: 316)

Erṇaguḍi	jane ba[hu] ...	ambakaja[nikā] ba[hu]
Kalsi	jane bahu	abakajani[yo] bahu
Mansehra	jane] bahu	abakajanika bahu
Shazbazgarhi	jano ba	striyaka bahu
Sopārā	jane bahū	ambakajanik[ā] bahū
Girnar	jano ucāvacam ...	mahiḍāyo bahukam
Dhauḷi	j[a]ne bahukam	ithī b[ahuka]m
Jaugaḍa	jane [ba]hu[ka]m ...	
“Menfolk (perform) many (ceremonies), womenfolk ... many ...”		

-ka- in Middle Iranian

The same is basically the case in Middle Iranian:

(19) Manichean Middle Persian pleonastic $^{*}-(V)ka-$ (Boyce 1977)

<i>mwrđ</i> /murđ/	‘dead’	<i>mwrđ-g</i> /murđ- ag / (< $^{*}-a-ka-$)	‘dead’
<i>byš’z</i> /bēšāz/	‘doctor, healer’	<i>byš’z-g</i> /bēšāz- āg / (< $^{*}-āka-$)	‘healer’
<i>’pyd</i> /apēd/	‘gone, vanished’	<i>’pyd-g</i> /apēd- ag / (< $^{*}-aka-$)	‘lost’

- ▶ In the Middle Iranian languages, the sequence $-a-k(a/i/ō)-$ was moreover contracted to $^{*}-ai$ in the nominative (e.g., Khot. $-ai$) and further to $-ē$; acc. $^{*}-aku > ^{*}-a'u > -ō$, cf. Sogdian, (20).
 - ▶ Though the suffix also survives as (restored) $(^{*})-(a)k-$ with different functions, e.g., agent nouns, verbal abstracts...
 - ▶ This gave rise to different declension classes → reanalysis of nominal stem-forming morphology as nominal inflectional morphology

(20) Sogdian pleonastic $^{*}-(V)ka-$ (Gershevitch 1954: 144–52; Sims-Williams 1989; Skjærvø 2008)

<i>pāδ</i>	‘foot’	<i>pāδ-ē</i> (< $^{*}-a-ka-$, <-yy>)	‘foot’
<i>əspēt</i>	‘white’	<i>əspēt-ē</i>	‘white’
<i>xusand</i>	‘happy’	<i>xusand-ē</i>	‘happy’

Analysis: *-ka-* and unidirectionality

- ▶ The grammaticalization path CHILD > SMALL > DIM (Jurafsky 1996, Kuteva et al. 2019) does not adequately describe the development of IIr. *-ka-*:
 - ▶ *-ka-* never meant ‘child’ (as far back as we can reconstruct) and is not particularly often found on nouns that mean ‘child’ (or young animals, etc.) at the oldest stages of the IIr. languages
 - ▶ The diminutive use is restricted to a specific stratum of Old Indo-Aryan, but missing in the Prakits and the Middle Iranian languages
 - ▶ Though Jamison (2009) & p.c. argues that it is what underlies the semantically bleached pleonastic use that we see in Middle Indic & Middle Iranian
 - ▶ There are too many nominal derivatives that cannot easily be explained as (former) diminutives

This path also does not explain the inherited adjective-forming function present in both Vedic and Avestan in which *-ka-* changes/determines the category (*a*).

- ▶ In Vedic/Avestan: mostly root-derived/deverbal (some denominal ex. in Avestan & Old Persian)
- ▶ In other older IE languages: **denominal relational/appurtenance adjectives**, most clearly seen in the variant **-i-ko-*; (21) & Fortson (2010: 135)

Relational -ka- in IE

- (21) Latin adjectives of appurtenance in *-i(-)ko- (Weiss 2020: 313–5)
- a. *bellum* ‘war’ — *bell-icus* ‘bellicose, war-mongering’
 - b. *populus* ‘people, public’ — *pobl-icus*/*pūbl-icus* ‘(belonging to the) public’
 - c. *Gallia* ‘Gaul’ — *Gall-icus* ‘Gallic’
 - d. *modus* ‘measure’ — *mod-icus* ‘moderate, measured’

Relational -ka- in IE

Classical Sanskrit adjectives/substantives of appurtenance in -ika- (AiG II,2: 308ff.; Lühr 2008: 218)

- (22)
- a. *pántha-* ‘path’ — *páth-ika-* ‘wanderer’
 - b. *akṣá-* ‘dice’ — *ākṣ-iká-* ‘dice-player’
 - c. *mṛgá-* ‘wild animals, deer’ - *mārg-iká-* ‘hunter’
 - d. *rátha-* ‘chariot’ — *ráthika-* ‘riding on a chariot’

Ancient Greek adjectives of appurtenance in -ikós (Schwyzer 1939: 497):

- (23)
- a. *Akhaía* ‘Achea’ — *Akhai-ikós* ‘Achaean’
 - b. *Troía* ‘Troy’ — *Trō-ikós* ‘Trojan’
 - c. *híppos* ‘horse’ — *hipp-ikós* ‘of a horse, horse-related’

Relational *-ka-* in IE

The *-i-* in **-iko-* is diachronically analyzable as a substantivizing/nominal stem-forming suffix that made adjectival & verbal abstracts (Schindler 1980, Nussbaum 1999, 2009; Grestenberger 2014, 2017):

- (24) **-o*-adjective → **-i*-abstract
- a. Lat. *ravus* ‘hoarse’ → *ravis* f. ‘hoarseness’
 - b. Gk. *argós* ‘bright, shining; fast’ → *argi-* ‘brightness’ (in compounds, cp. Ved. *ṛji-* in *ṛjī-śvan-* ‘having swift dogs’)
 - c. OIr. *glan* ‘clear’ → *glain* f. ‘glass; clearness’
 - d. PIE **d^hub-ro-* ‘deep’ (> Toch. ^A*tpär*, ^B*tapre*) → **d^hub-ri-* ‘depth’ > OCS *dŭbrŭ* f. ‘abyss’

- Relational adjectives in **-ko-* to these nouns would have meant ‘of/related to X-ness’

Relational -ka- & reanalysis

- Reanalysis/resegmentation of *-i-stem bases, e.g., **hosti-ko-* ‘of/related to the enemy’ → Lat. *host-icus* (Weiss 2020: 315, fn. 150)

Some evidence in Vedic for this process:

<i>usr</i> i <i>ká-</i> m.	‘little bull’	<i>usr</i> á-	‘red(ish)’; ‘bull’ m.
<i>śīt</i> i <i>kā-</i> (adj. f.)	‘cold’	<i>śīt</i> á- (adj.)	‘cold’

- Synchronically, this is “modifying” -ka- (no category change) — but originally via *i-abstracts **usrí-* ‘redness’, **śítí-* ‘cold’?

With subsequent reanalysis as deverbal/root-derived in contexts with ambiguous segmentation could then explain the verbal adjectives in -(V)ka-:

- **hlādi-ká-* ‘related to/with freshness’ → **hlād-iká-* ‘refreshing’
- **muhu-ká-* ‘related to/of something sudden’ (RV 4.20.9 *múhu* adv. ‘suddenly’) → *muh-uká-* ‘startling, in an instant’
- *[*suš-*]_N-ka- ‘of/with dryness’ (root noun, cf. Skt. *parṇa-śuṣ-* ‘leaves-drying’ → **suš-ka-* ‘dry’ (» Ved. *śúṣ-ka-*))

Crucially, diminutive meaning is impossible as a starting point for these reanalyses/resegmentations - both morphologically and semantically.

Diachrony of *-ka-*

An alternative grammaticalization path:

(25) (relational/“genitival”) > partitive > diminutive > nominalizer > INFL

- ▶ on “genitival” cf. Nussbaum 2009; adjectives of appurtenance
- ▶ Original function of **-ko-* in PIE: relational adjectives/adjectives of appurtenance from (concrete/abstract) substantives
- ▶ Category-changing & prosodically dominant (always carries the accent, cf. Greek; oldest Vedic)
- ▶ Substantival function = secondary via substantivizations of *ko*-adjectives (probably already in PIE) → hence N → N and A → A pattern

→ *-ka-* was reanalyzed as a *modifier* in Indo-Iranian

-ka- in Indo-Iranian

- ▶ Proposal: (reanalyzed) IIr. (*)-ka- was a *modifier* of the categorial head (*a*, *n*).
 - ▶ It does not change the category/gender of the base, i.e., does not project its own formal (categorial) features
 - ▶ The examples of $N \rightarrow A$ (primarily in Avestan) are archaisms and reflect the older, denominal adjective-forming function
 - ▶ Prosodic evidence: In Vedic, -ká- originally attracts the accent, i.e., it seems to form its own prosodic domain (cf. also Greek).
- ▶ Function of IIr. ‘modifying’ (*)-ka-: forming contextually salient partitions from the denotation of the base; creating countable atoms.

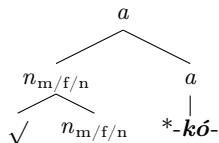
Semantics of -ka-

Semantics of *ka*-derivatives (in IIr.):

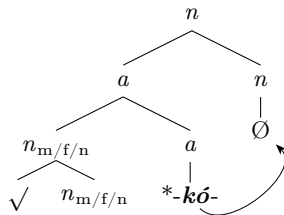
- ▶ Base = mass noun or collective: singulative (Nurmio Forthcoming; Dali and Mathieu 2021) with a KIND or UNIT reading
 - ▶ Ved. *uda-ká-* ‘water’; Av. *pasu-ka-* ‘domesticated animal’
- ▶ Base = animate count noun: only the KIND-reading is available; “type of x”/“kind of x”.
 - ▶ Ved. *jyā-kā-* ‘a type of bowstring’; *rāja-kā-* ‘a type of king’
- ▶ Base = adjective: -ka- expresses the *degree* to which the property expressed by the adjectival base characterizes the modified entity.
 - ▶ e.g., *arbha-kā-* express the degree to which something is *árbha-* ‘small’, etc. → attenuative meaning
- ▶ With animate substantives and with adjectives, the “type of”- and gradation-reading could develop attenuative or pejorative readings via pragmatic implicature (a kind of x is not an x) → **diminutives** → diminutive -ka- (e.g., Classical Sanskrit, Pāṇini)
 - ▶ Cf. the examples in Nussbaum (2009), e.g., Old Latin *serv-os* ‘Slave’ : *servo-lu-s* ‘a slave not worth very much; a young slave’

Reanalysis of -ka-

(26) PIE denominal relational adjective



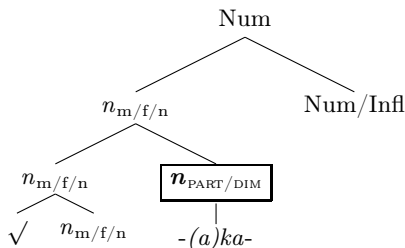
(27) Zero substantivization & reanalysis of PIE denominal relational adjective



► Loss of intermediate functional projection/adjectival meaning

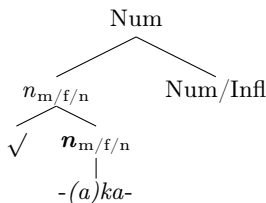
Reanalysis of *-ka-*

(28) Modifying/DIM (IIr.)



- Further developments: $n_{PART/DIM}$ -modifier became a categorial head on the way to Middle Indic and Middle Iranian, (29), and eventually inflectional morphology, (30).

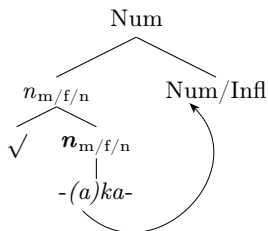
(29) Middle Iranian/Indic (categorizer)



Reanalysis of *-ka-*

- Mod/Spec-Head reanalysis in (29) appears to be “downwards” because the modifier/specifier position is lost

(30) Infl suffix (Middle Iranian)



Summary

- ▶ Reanalysis is strictly local, but regular:
 - ▶ Function-changing reanalysis (adjectival suffix → nominal suffix) is upwards
 - ▶ Reduction of structure, Spec-head (Mod > Head) looks like it's downwards because intermediate structure/terminal nodes are lost
- ▶ There is directionality, but it's highly context-sensitive
- ▶ The analogue of “semantic bleaching” in syntactic change (e.g., lexical verb > auxiliary) is also relevant in morphological reanalysis of complex word forms.

Parallels: Latin > Romance

Latin combines two inherited adjectival suffixes to form diminutives, *-lus* < **-lo-*, *-u/olus* < **-e-los* & **-ko-* (*-culus* < **-ke-los*); Weiss 2020:

(31) Verbal adjectives

Derivative		Base	
<i>bibulus</i>	‘absorbent’	<i>bibō</i>	‘drink’
<i>crēdulus</i>	‘believing’	<i>crēdō</i>	‘I believe’
<i>figulus</i>	‘potter’	<i>figō</i>	‘fashion’

(32) Latin diminutives in *-(c)ulus*

	Base		Dim	
inanimate	<i>lapid-</i> m.	‘stone’	<i>lapillus</i> m. < <i>*lapid-lo-</i>	‘pebble’
animate	<i>filius</i> m.	‘son’	<i>fili-olus</i> m.	‘little son’
mass/[<i>-count</i>]	<i>spēs</i> f.	‘hope’	<i>spē-cula</i> f.	‘ray of hope’

- No clear examples of appurtenance use in Latin for **-lo-*, but for **-(i)ko-* cf. above.

Parallels: Germanic

- ▶ **German(ic)**: Gm. nominal diminutive affix $-(e)l-$ < OHG affix $-il(a)$ (< PIE $*-elo-$, $*-ilo-$)
- ▶ traces of appurtenance/partitive nouns meaning “of X”, some of which are preserved in Modern Standard German, (33).

(33) Appurtenance nouns in $-el-$, Gm.

<i>Arm</i> m.	‘arm’	<i>Ärm-el</i> m. (OHG <i>armilo</i>)	‘sleeve’ < ‘pertaining to the arm’
<i>Eiche</i> f.	‘oak tree’	<i>Eich-el</i> f. (OHG <i>eihhila</i>)	‘acorn’ < ‘of/pertaining to the oak tree’

Parallels: Germanic

This suffix mostly forms diminutive nouns from nouns and instrument nouns from verbs in the older Germanic languages; the diminutive variant triggers umlaut of the preceding vowel, (34).

(34) OHG *-il(a)* and *-al(a)* nouns

Base		Diminutive	
<i>busc, bosc</i>	‘bush, shrub’	<i>busk-ila</i>	NHG <i>Büschel</i> ‘tuft, bunch’
<i>sack</i>	‘sack’	<i>seck-il</i>	‘small sack, bag’
<i>(h)ring</i>	‘ring’	<i>(h)ring-ila/o</i>	‘little ring; marigold’

- Standard MHG: *-el* = ‘low’/lexicalized diminutive (De Belder et al. 2014) or plain nominalizer (Grestenberger and Kallulli 2019)

Conclusion

- ▶ The grammaticalization path proposed here (partitive/genitival > diminutive > *n* > INFL) preserves the unidirectionality hypothesis of grammatical change, which is also a core tenet of Jurafsky (1996).
- ▶ It does not invalidate the cross-linguistically common path CHILD > DIMINUTIVE — different paths for diminutives (as for other grammatical markers, e.g., passives, middle markers)
 - ▶ And recall there may also be evidence for CHILD > PARTITIVE, so maybe here too we're actually dealing with CHILD > PARTITIVE > DIMINUTIVE
- ▶ It can account for the (inherited) (de)verbal adjective-forming function of *-ka-* (reanalysis *n*-derived → $\sqrt{\text{ }}$ -derived), which is difficult to derive from an original attentuative/diminutive function

Final disclaimer: the analysis proposed here is in no way intended as an argument against the observation that the use of diminutive morphology is often pragmatically marked and register-specific, or perceived as vernacular or non-standard (for *-ka-* cf. Jamison 2009). In this approach, this actually follows from the pragmatic implicature “type of *x*”/“not *x*” → “less than *X*” (Nussbaum 2009).

Thank you!



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