The Diversification of Indo-Iranian and the Position of the Nuristani Languages

Jakob Halfmann

The Position of the Nuristani Languages

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Katë pre-Islamic ancestor effigies of a man and a woman,
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Image 84 (excerpt) from Album 1 (Kabul Museum I - B. A.,
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Jakob Halfmann
ORCID: 0000-0003-3184-4022
Affiliation: Julius-Maximilians-Universität Würzburg (JMU), Institut für Altertumswissenschaften

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Jakob Halfmann
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Abbreviations, Sources and Transcription

The names used to refer to the individual Nuristani languages used in this book follow the proposals of Halfmann (2021). The following symbols, abbreviations and data sources are used:

<	etymologically derived from
>	developed into
⇐	borrowed from
⇐ IA	borrowed from an Indo-Aryan form (in most cases Middle Indo-Aryan or later) equivalent to the quoted Old Indo-Aryan form
⇒	borrowed into
←	morphologically derived from
→	morphologically derived into

Av.		Avestan
Bactr.		Bactrian
A.		Ashkun (dialect of Wama if not otherwise stated)
–	W	dialect of Wama (from Buddruss n.d.; Strand 2008)
–	M	dialect of Majegal (from Morgenstierne 1929; 1934)
Dam.		Dameli (from FLI 2016)
F		feminine
IA		Indo-Aryan
Kt.		Katë
–	W	Western dialect (from Grjunberg 1980; Strand 1999a)
	- *KL*	subdialect of Kulem (from Grjunberg 1980)
	- *KT*	subdialect of Ktivi (Kantiwā) (from Strand 1999a)
	- *ŘM*	subdialect of Řamgël (from my own text corpus)
–	NE	Northeastern dialect (from Sun-Aro 2022)
–	SE	Southeastern dialect (from Strand 1999b)
M		masculine
MIA		Middle Indo-Aryan
NKal.		Nuristani Kalasha
–	Ẓ	dialect of Ẓönčigal (Arans) (from Tāza 2017)
–	N	dialect of Nisheygram (from Degener 1998)

Nur.	Nuristani
OAv.	Old Avestan
OIA	Old Indo-Aryan
OP	Old Persian
PIE	Proto-Indo-European
PIIr.	Proto-Indo-Iranian
Pr.	Prasun (dialects not distinguished) (from Buddruss & Degener 2015; 2017)
Skt.	Sanskrit
Sogd.	Sogdian
– B	in Buddhist texts
– S	in Sogdian script
– M	in Manichaean script
– C	in Christian texts in Syriac script
Treg.	Tregami
YAv.	Young Avestan

Transcription systems of the sources have been unified to the system used in Turner's (1962–1966) *Comparative Dictionary of the Indo-Aryan Languages*, i.e., ⟨ċ⟩ = [t͡s], ⟨j̇⟩ = [d͡z]. The close central vowel [ɘ ~ ɨ] of some Nuristani languages is transcribed as ⟨ë⟩ (though it is not clear whether it is phonetically identical in all of them), the retroflex approximant [ɻ] is transcribed as ⟨ř⟩, its nasalized variant [ɻ̃] as ⟨ň⟩ and the nasalized retroflex flap [ɽ̃] as ⟨ṇ⟩. In the data cited from Sun-Aro (2022), unwritten vowels and semantic detail are retrieved from my own fieldwork data and text corpus. The macron used by Tāza (2017) is interpreted as a marker of stress, except in the case of ⟨a⟩ vs. ⟨ā⟩. His symbol ⟨i̤⟩ is transcribed as ⟨ɨ⟩, though its phonological status and phonetic value is unclear. When his retroflex approximant symbols ⟨ř⟩ and ⟨r̄̆⟩ appear as syllable nuclei, they are given here as ⟨r̩̆⟩ and ⟨ṇ̆⟩ with the IPA mark for syllabicity. In the Ashkun and Prasun data, where the phonological status of vowel length is unclear, possibly spurious length distinctions from the sources have been removed. For Prasun the notation ⟨ö⟩ encountered in Buddruss & Degener (2015) is normalized to ⟨e⟩, as there is frequent co-variation and no sufficient evidence for a phonological contrast. Possible inconsistency remains with regard to ⟨v⟩ vs. ⟨w⟩, which is maintained as used in the sources, though both symbols may express the same sound.

0. Introduction

This book offers a new approach to the long-standing problem of the genealogical affiliation of the Nuristani languages, a small group of closely related languages spoken in the Eastern Hindu Kush around the border of Afghanistan and Pakistan, within the Indo-Iranian subgroup of Indo-European. Since the early 20th century, these languages have been acknowledged as representing a unique Indo-Iranian lineage that does not obviously belong into either of the established subgroups Iranian and Indo-Aryan.

In order to come closer to a reliable classification of the Nuristani group, the topic is approached both via theoretical considerations on language diversification (Section 1) and via a step-by-step examination of the features defining the established groupings Indo-Iranian, Iranian and Indo-Aryan, with a focus on those that are relevant to the question at hand (Sections 2–5). The major part of the work then deals with the features of the Nuristani group itself, examining most of the crucial isoglosses that have been discussed in previous research.

Among Indo-Europeanists, the debate about the classification of Nuristani has remained centered around the same few lexical items presented by Morgenstierne (1926: 50–69; 1945; 1973a) and Buddruss (1977a). Lexical resources published more recently, both by European and North American researchers (e.g., Degener 1998; Strand 1999b; Buddruss & Degener 2015) and by native speakers in Afghanistan and Pakistan (e.g., Tāza 2017; Sun-Aro 2022),[1] have not yet been sufficiently brought to bear on the question. Data from these sources have been fully integrated into the present treatment. Its novelty therefore lies in the fact that it draws on more ample and reliable lexical resources than those which were available to previous researchers.

The conclusions reached in this way differ from some of the more recently published contributions on the topic in suggesting that the Nuristani languages are historically more closely affiliated with the Iranian than the Indo-Aryan subgroup

[1] The dictionaries produced by native speakers in Afghanistan are quite difficult to access in other countries. They are of varying reliability with regard to translation of lemmas and transcription. In some cases, no more than a vowelless ad-hoc orthography in Arabic script is offered. Though they must therefore be approached with some critical thinking, they are nevertheless usually more reliable than the field transcriptions of earlier foreign researchers, who usually had an imperfect command of the languages. I am grateful to Sviatoslav Kaverin for making the dictionaries of Tāza (2017) and Sun-Aro (2022) and Georg Buddruss's unpublished materials on the Ashkun dialect of Wāmā, available to me.

of Indo-Iranian, though they must have been isolated from the Iranian continuum early on and subsequently have come under intense contact influence from Indo-Aryan languages, which led to extensive lexical borrowing, some shared areal sound changes and structural/typological convergence.

1. Preliminaries on Language Diversification

The observation that languages diversify over time, eventually breaking up into families of daughter languages, is one of the fundamental insights that provided the foundation for modern (historical) linguistics. How exactly this diversification proceeds has been a subject of controversy since the beginnings of the field (see, e.g., Schuchardt 1870; Schmidt 1872: 27–28; against Schleicher 1861: 6–7) and the debate especially over how to best represent this process in abstract models (e.g. in the form of trees, waves, chains, networks etc.) has not abated up to the present (see, e.g., Jacques & List 2019; against François 2014; Kalyan & François 2018; and the response in Kalyan & François 2019). Part of the issue is certainly that the process of diversification is most apparent in its results, but difficult to observe while it happens, especially since the time scale involved is larger than the lifespan of individual human beings.

Despite the continued debate over modeling, which is essentially concerned with the appropriateness of this or that metaphor and its respective methodological (dis)advantages,[2] a general understanding of the ground reality has been available at least since Paul (1886), who understood diversification as emerging from individual idiolectal variation, which is compounded or restricted by the intensity of interpersonal contact:

> The life of a language is not conceivable without constant differentiation. If it were imaginable that the languages of individuals in the area of one language were completely alike at some point, the first step to the development of differences among them would surely be made in the next instance. The spontaneous evolution of each one of them must take a particular course based on the particularities of the predisposition and experiences of its bearer. The influence that the individual exerts or suffers never extends further than to a fraction of the collective, and within this fraction there are significant differences in grade. Consequently, a constant leveling of the emerged differences does take place, which consists in divergences from the previous custom being repressed, or, on the other hand, transferred to individuals who had not developed them spontaneously. However, this leveling never becomes complete. It comes close to this only within

[2] Cf. already Schmidt (1872: 28): “Bilder haben in der wissenschaft nur ser geringen wert” (“metaphors/images have only very little value in science”).

> a circle in which constant active contact takes place. The less intense the contact, the more differences can form and be maintained. The possibility of diversification goes even further when there is no longer any contact at all, but only indirect transmission via intermediaries. (Paul 1886: 38; author's translation)[3]

It is generally assumed that languages usually diversify first into dialects and eventually into separate languages (though the cut-off between the two is obviously arbitrary) and that subgroups eventually emerge from the breakup of separated daughter languages. If this is the case, it implies that the breakup of a single ancestor language is usually followed by a dialect continuum phase, in which at least adjacent varieties still form a community of shared communication. Sections of the continuum may undergo shared innovations and these can either form the basis for divergence into a new language or subgroup, or they might be overlaid by differently distributed innovations that turn out to be more numerous or significant in (preventing) communication in the long run.

Where sharply distinct varieties have not yet come into being, it is unrealistic to consider each innovation that spreads only to one part of the continuum as producing a phylogenetic split. There can be no meaningful distinction between contact spread and internal innovation when divergences have not yet reached the point where mutual understanding between varieties is impeded. In such situations – which are not rare – even "true" shared innovations (as opposed to independent parallel innovations) can arise with incongruent geographic distributions throughout the continuum (*contra* Jacques & List 2019: 140–142; cf. also Kalyan & François 2019: 169–170). If the continuum eventually breaks up into separate languages (and these become subgroups after further diversification), the older isoglosses from the continuum period may be distributed over subgroups in ways that seem unexpected when considered from a later perspective.

[3] "Ohne fortwährende differenzierung kann das leben einer sprache gar nicht gedacht werden. Wäre es denkbar, dass auf einem sprachgebiete einmal alle individualsprachen einander vollständig gleich wären, so würde doch im nächsten augenblicke der ansatz zur herausbildung von verschiedenheiten unter ihnen gemacht werden. Die spontane entwickelung einer jeden einzelnen muss nach den esonderheiten in der anlage und den erlebnissen ihres trägers eine besondere richtung einschlagen. Der einfluss, den der einzelne übt oder erleidet, erstreckt sich immer nur auf einen bruchteil der gesammtheit, und innerhalb dieses bruchteils finden bedeutende gradverschiedenheiten statt. Demgemäss findet zwar auch eine immerwährende ausgleichung der eingetretenen differenzierungen statt, die darin besteht, dass abweichungen von dem bisherigen usus entweder zurückgedrängt werden oder aber auf individuen übertragen, die sie spontan nicht entwickelt haben. Diese ausgleichung wird aber nie eine vollständige. Eine annähernde wird sie immer nur innerhalb eines kreises, in dem ein anhaltender regen [sic] verkehr stattfindet. Je weniger intensiv der verkehr ist, um so mehr differenzen können sich bilden und erhalten. Noch weiter geht die möglichkeit zur differenzierung, wenn gar kein directer verkehr mehr besteht, sondern nur eine indirecte verbindung durch mittelglieder."

This leads us to the possibility pointed out by Garrett (2000) that seemingly characteristic innovations found universally in a certain language family or group may turn out to be results of continued convergence of (a section of) a continuum, rather than reflecting reconstructable features of a common ancestor of the group.[4] Early attestations and outlier evidence are therefore crucial in accessing the real history and chronology of changes. Garrett (2000: 148–149) discusses the example of the Ancient Greek dialects, some features of which (e.g. the loss of labiovelars) used to be projected back to the Proto-Greek common ancestor before the discovery of Mycenaean revealed that they must have been produced by later convergence of all non-Mycenaean dialects, while Mycenaean itself is a part of the original continuum rather than its ancestor, since it shares innovations with only some of the other dialects.

One might equally adduce cases like the metathesis of liquids in Common Slavic vs. the absence of metathesis in Polabian. Had Polabian gone extinct without leaving any traces, linguists would have had to wrestle with the problem of liquid metathesis occuring in all Slavic languages, but taking different forms in different varieties (e.g. Bulgarian *grad* vs. Russian *górod* 'town'). One might have reached the conclusion that some form of metathesis was already a feature of the common ancestor, or one might have reconstructed unmetathesized forms to explain the variation. The latter possibility, which is the historically correct one, would have seemed much less plausible without the outlier testimony of Polabian (*gord* 'town').

What seems to be necessary for the genesis of a separate language from a continuum of dialects is that innovations accumulate in a group of varieties in such a way that most communication with other related varieties is prevented.[5] This occurs most easily where natural or social barriers or emigration impede continued contact. This is how a "split" is typically imagined in historical linguistics. Babel et al. (2013: 447), based on Ross (1988) and Pawley & Ross (1995), refer to this process as "network breaking". It is, however, not the only way how a dialect continuum can break up into separate languages. One might also imagine the case where a different language spreads into the area of the dialect continuum via immigration and/or language shift, thereby severing the

[4] Phrased in biological jargon, this means that "apomorphic taxa need not be clades" (Babel et al. 2013: 448), i.e., groups with shared features (*taxa*) that are divergent (*apomorphic*) do not have to form a group of descent from an exclusive common ancestor (a *clade*). In other words, shared innovations do not automatically imply the historical existence of an exclusive common ancestor.

[5] The term "varieties" here can be understood as reaching up to the level of idiolects.

contact relations between related varieties, allowing them to separately accumulate innovations. A variant of this situation occurs when the spreading language is a variety originally situated on one end of the continuum. In this case Babel et al. (2013) use the term "network pruning", stating that

> sharply distinct languages and the eventual family-tree effect can arise out of an earlier dialect network when expanding dialects replace their neighbors. If enough intermediate dialects are pruned, the remaining dialects will be sharply distinct [6] (Babel et al. 2013: 447).

That is, when innovations have accumulated in a variety on one end of a continuum and speakers of adjacent dialects shift to this variety, two formerly distant sections of a continuum may become adjacent, with the result that communication is prevented and that each of the two goes on accumulating further innovations on its own. If the expanded variety diversifies again after this, it produces a new subgroup.

With these general observations in mind, it is possible to turn to the main topic of this work, the Indo-Iranian family.

[6] Babel et al. (2013) draw this observation from Schmidt (1872: 28), who presented it in the context of a debate over the internal structure of the Indo-European family. Though Schmidt's argument aimed at replacing the tree model, particularly in its application to Indo-European, it should be noted that the recognition that "network pruning" is a possible historical process – which seems difficult to deny – does not automatically imply that this is the only way how languages diversify or invalidate the possibility of diversification into subgroups via continuous divergence.

2. The Indo-Iranian Family

Indo-Iranian is the most widely accepted higher-level subgroup of Indo-European and its status as an intermediate node in the diversification of Indo-European is uncontroversial. This is because the Indo-Iranian languages share a number of clear innovations, especially in phonology,[7] that set them off as a whole against the rest of the Indo-European family. The most important exclusive innovations are (cf. Kümmel 2022: 246–251):

- Brugmann's law: lengthening of PIE **o* in open syllables > *$\bar{o}$ (> *$\bar{a}$ via the Indo-Iranian vowel merger)
  - e.g., OIA *jā́nu-*; YAv. *zānu-*; NKal. *zã* < PIE **ǵonu-* 'knee' (> Greek γόνυ)
- Vowel merger: PIE *$\breve{a}$, *$\breve{e}$, *$\breve{o}$ > PIIr. *$\breve{a}$
  - e.g., OIA *catvā́raḥ*, *bhrā́tar-*; YAv. *čaϑvārō*, *brātar-*; NKal. *čatā́*, *brā* < PIE **kʷetu̯ores* 'four', **bʰreh₂ter-* 'brother' (> Greek τέσσαρες, φράτηρ)
- Epenthetic vowel **i* next to laryngeals (preserved in somewhat distinct distributions in the daughter languages)

There are also some innovations that are clearly present in Indo-Iranian, but not exclusive to it, making it debatable whether their occurrence in other Indo-European subgroups is shared or merely parallel with Indo-Iranian, like the following:

- Satemization (Ćatamization): PIE palatovelars *$\acute{k}$, *$\acute{g}^{(h)}$ > affricates *$\acute{c}$, *$\acute{ǰ}^{(h)}$
  - e.g., OIA *dáśa-*; YAv. *dasa-*; Kt. *duċ* < PIE **dekḿ̥* 'ten'
- Palatalization of velars: PIE labiovelars & plain velars *$k^{(w)}$, *$g^{(w)}$ > affricates *$\check{c}$, *$\check{ǰ}$ before PIE *$\breve{e}$ and *$\breve{i}$ (this chronologically precedes the IIr. vowel merger)
  - e.g., OIA *páñca-*; YAv. *pančа-*; NKal. *pũč* < PIE **penkʷe-* 'five'
- Syllabic nasals PIE **m̥*, **n̥* > PIIr. **a*
  - e.g., OIA *śatám*; YAv. *satəm* < PIE **ḱm̥tom-* '100'

For some other isoglosses, the classification as Indo-Iranian innovations is possible, but not beyond doubt:

- Bartholomae's law: Progressive assimilation in obstruent clusters beginning with a voiced aspirate, e.g., PIE **bʰudʱ-to-* > OIA *buddha-* 'awoken'

[7] Kümmel (2022: 250) mentions only one potential exclusive morphological innovation: the use of the "weak" stem of nouns in the accusative plural.

  - The rule is still applied in Old Avestan, despite the deaspiration of voiced aspirates, but is lost in later Iranian; it is unclear whether it is an Indo-Iranian innovation or an archaic feature that has been lost in other subgroups of Indo-European (Kümmel 2022: 246–247)
- Grassmann's law: Dissimilation of voiced aspirates when preceding another voiced aspirate
  - Visible only in Indo-Aryan, since voiced aspirates are deaspirated in Iranian and Nuristani (Kümmel 2022: 247–248)
- Liquid merger: PIE $*l + *r > *r$
  - Debated due to the existence of a phoneme /l/ in (especially later) OIA and later Iranian, but the original PIE distribution of $*l$ and $*r$ is in any case lost everywhere, making an original merger likely, though several open question remain (see Mayrhofer 2002)
- RUKI rule: PIE $*s >$ PIIr. $*š$ after PIE $*r/*l$, $*u$, $*k$ and $*i$
  - Application in Nuristani is debated, see Section 6.3.
- Aspiration from the influence of laryngeals
  - The results are phonetically aspirated only in Indo-Aryan, but fricatives in Iranian, and Nuristani has no traces of aspiration. Karim (2021: 9–10) and Kümmel (2022: 250–251) therefore suggest that the Iranian instances could also be explained separately as results of the general Iranian pre-consonantal fricativization. However, fricativization before obstruents and before laryngeals is perhaps not very likely to result from the same phonetic process and there is at least one development that suggests presence of voiceless aspirates in the prehistory of Iranian ($*\text{TVND}^{\text{h}} > *\text{T}^{\text{h}}\text{VND}$; see the discussion in Section 5).

In addition to these classical examples of phonological innovations, there are also some more idiosyncratic divergences that make a single intermediate ancestor language plausible as a historical reality.[8] A number of common Indo-European words appear in slightly unexpected forms:

- 'tongue': OIA *jihvā́-*, YAv. *hizuuā-*, Kt. *dić* vs. Gothic *tuggō* which is more expected from PIE $*d\underset{\circ}{n}ǵ^{h}\underset{\sim}{u}eh_2s$. Though most descendants of this word have undergone

[8] François (2014: 178) stresses the potential value of what he calls "lexically-specific sound changes" for linguistic classification, since – as he claims – such sporadic divergences are more likely to be transmitted as such only within a single community. Jacques & List (2019: 144–146, 148) do not dispute this observation in principle, but they are right to caution that the probative value of such divergences depends on how each particular case actually came about. Thus, e.g., idiosyncratic divergences resulting from variously levelled proto-variation are not strong evidence for shared descent.

irregular deformations, the Indo-Iranian languages agree in reflecting an unexpected *i* in the first syllable. The onsets appear to be variously dissimilated;

- 'tear': OIA *áśru-*, YAv. *asrū-*°, Kt. *aṣí* with vowel onset vs. Greek δάκρυ, English *tear*, but the initial plosive is missing also in Agnean (Tocharian A) *ākär* and Lithuanian *ãšara*;
- 'heart': OIA *hŕ̥d-*, *hŕ̥daya-*, OAv. *zərəd-*, YAv. *zərəδaiia-*, Kt. *zërḗ* pointing to an onset with virtual PIE **ǵʰ-* vs. all other Indo-European languages pointing to PIE **ḱ-* (e.g. Latin *cor*, Armenian *sirt*). Since the expected onset *ś* does appear in OIA *śraddhā́-* 'faith, trust' and *śrád dhā-* 'to trust' < PIE **ḱred dʰeh₁-* lit. 'to set the heart' (but OAv. *zrazdā-* 'trusting' etc.), it is likely that the explanation should be sought in a synchronic alternation of the Indo-Iranian ancestor language, which underlines the plausibility of its existence as a real language system.[9]

There are also a number of words which seem to have been inherited from the common ancestor of Indo-Iranian, but find no correlates in other Indo-European languages, which makes it likely that they entered into the Indo-Iranian proto-language as loanwords. Following Lubotsky (2001a), some have sought to associate these words with an unattested language supposedly spoken by the bearers of the Bactria-Margiana Archeological Complex in Central Asia. Another notable lexical agreement is the reconstructable self-designation **ā́r̥ia-* shared among the earliest Indo-Iranian languages (OIA *árya-*, YAv. *airiia-*, OP *ariya-*).

These features all speak in favor of the historical reality of a single Proto-Indo-Iranian language, from which all later Indo-Iranian languages descend. More difficulties in subclassification are encountered below the umbrella of Indo-Iranian. While the scientific consensus for a long time had been that there are two clearly distinguishable subgroups named Iranian and Indo-Aryan, and that Iranian itself must be divided into two (East and West Iranian) and further into four subgroups (Northeast, Southeast, Northwest and Southwest Iranian), more recent research has raised doubts about almost all aspects of this model. At least the mentioned scheme of subclassification for Iranian is by now widely accepted as untenable (cf. Korn 2016; 2019) and no alternative scheme has since gained universal acceptance. Instead, even the idea that Iranian as a whole forms a coherent subgroup descending from an intermediate common ancestor has been called into

[9] The alternation in question might have been a PIIr. sandhi pattern paralleling the OIA rules *-d, -t + ś- > -c# ch-* and *-d, -t + j- > -j# j-* in the voiced sphere, i.e. **-d + *ć- > *-ǰ# ǰʰ-* next to **-t + *ć- > *-ć# ćʰ-* the conditioning for which would have been lost with the loss of the final voicing contrast in plosives. As a neuter, the PIIr. word for 'heart' would often have appeared after, e.g., the neuter demonstrative **tad*.

question (Tremblay 2005). While the status of Indo-Aryan as a subgroup is usually not doubted, puzzling questions about its history of divergence from Iranian have emerged out of the fragmentary testimony of the Indo-Iranian adstrate vocabulary of Mitanni (∼ 15th c. BCE) and the Nuristani outlier group (reliably attested only since the 20th century CE), which is often tentatively considered a kind of "third branch" of Indo-Iranian.

In the following sections, I will discuss the status of each of the four potential subgroups of Indo-Iranian, starting with Indo-Aryan as the most unproblematic and moving on to Mitanni-Aryan, Iranian and finally Nuristani.

3. Indo-Aryan

From the time of its earliest attestation, Indo-Aryan is set off as a group by a number of neatly nested innovations not found in other Indo-Iranian languages. These are primarily phonological innovations, whereas innovations in morphology are "mostly minor" (Kümmel 2022: 252). The most important ones are:

- Merger of primary and secondary voiced palatal affricates (i.e. PIIr. **ǰ* + **ǰ̌* and **ǰʱ* + **ǰ̌ʱ*)
- Subsequent debuccalization of the merged aspirated voiced palatal affricate (< **ǰ̌ʱ* + **ǰʱ*) to *h*[10]
- Fricativization of **ć* > *ś*, which introduces a new sibilant contrast and conditions the development of retroflex *ṣ*, **ẓ* < **š*, **ž*
- *zd*$^{(h)}$ > *V̄d*$^{(h)}$ and **žd*$^{(h)}$ > **ẓḍ*$^{(h)}$ > *V̄ḍ*$^{(h)}$
- Merger of various PIE consonant clusters (**tk*, **tḱ*, **ks*, **ḱs* etc.) as *kṣ*
- Simplification of some consonant clusters (**sć* > *(c)ch*)
- **r̥HC* > *īr* ~ *ūr*; **r̥HV* > *ir* ~ *ur*

These innovations found in Old Indo-Aryan can be used to define Indo-Aryan as a group, as they are also found in all of its later stages. While attested literary OIA cannot be considered the direct ancestor of all later IA languages, it cannot have differed much from Proto-Indo-Aryan. The differences are accessible to us in the form of divergences inherited by Middle and New Indo-Aryan that must go back to a more archaic stage of development than that seen in literary Old Indo-Aryan (cf. Oberlies 1999; Lipp 2009: II, 311–313). Notable among these are the separate development of certain PIE consonant clusters that have merged into *kṣ* in OIA (**dʰgʷʰ* /*_i/e*, **dʰǵʰ*, **gǰʱ*, **gʰs*, **ǵʰs* > *(g)gh* or *(j)jh*), the form of the thematic middle present participle (MIA *-mīna-* expected from PIE **-mh₁no-* vs. innovative

[10] Cardona (2003: 28–29) takes the OIA imperative form *jahi* 'kill!', which implies earlier **ǰadʰi* (< **gʷʰn̥-dʰi*) with secondary introduction of palatalized **ǰʱ-* from the full grade of **ǰʱan-* (< **gʷʰen-*) 'to kill', followed by dissimilation of aspiration (**ǰʱadʰi* > **ǰadʰi*; Grassmann's law) as evidence for the idea that Proto-Indo-Aryan still had an obstruent reflex of **ǰʱ*/**ǰʱ*, since he additionally assumes that Grassman's law did not yet apply in Proto-Indo-Iranian. However, his evidence for the latter assumption (Av. *xumba-* 'bowl') has a different explanation (discussed in Section 5 below). The fact that a matching form *ǰaiδi* (not ***gaiδi*) exists in Avestan points to the introduction of **ǰʱ-* from the full grade already in Proto-Indo-Iranian. If Grassmann's law applied already in Proto-Indo-Iranian, the resulting **ǰadʰi* could have simply been inherited as an irregular form into all descendants. Otherwise, the existence of OIA *jahi* at most indicates a relative chronology with Grassmann's law applying before **ǰʱ*/**ǰʱ* > *h* in the pre-history of Indo-Aryan, but there is no need to assume the existence of obstruent reflexes of **ǰʱ*/**ǰʱ* in Proto-Indo-Aryan.

OIA *-māna-*[11]) and some lexical archaisms, e.g. Gulbahar Pashai *žū-* 'to eat' reflecting – like Nuristani Kt. *yu-* and Wakhi *yaw-* 'id.' – the PIE root *$*Hi̯eu̯h_2$- 'to graze', which has no verbal descendants in OIA (Nikolaev 2014).

Depending on one's evaluation of the position of Mitanni-Aryan and Nuristani, one could set up a larger subgroup, the common ancestor of which would then look more different from Old Indo-Aryan, but "core Indo-Aryan" as defined by the innovations above would still form a well-defined subgroup within such a hypothetical grouping.

It thus appears that there are no difficulties with the assumption that Indo-Aryan is a subgroup of Indo-Iranian that neatly separated from the rest of the family at a given point in its history. Indeed, it is generally assumed that the Indo-Aryan languages were brought south from Central Asia by a separate migration, which would explain the clear-cut division.

[11] The OIA form has been in some way adapted to the corresponding athematic ending *-āna-*, but the exact proportional relation underlying this analogy is unclear.

4. Mitanni-Aryan

Beginning around the 15th century BCE, some cuneiform texts from the cultural orbit of the mostly Hurrian-speaking state of Mitanni written in Hurrian, Hittite and Akkadian attest personal names, names of deities and equestrian terminology of apparent Indo-Iranian origin. After a rather polemical controversy, which also concerned the question of the reality of this linguistic material and its potential for political instrumentalization (see Mayrhofer 1966; 1974; 1982; against Kammenhuber 1968; 1977; Diakonoff 1972), a consensus appears to have emerged that this adstrate vocabulary is real (though its extent may have been overestimated in the past) and that it should furthermore be considered as specifically Indo-Aryan, though representing an earlier stage of development than that seen in the earliest attested Old Indo-Aryan texts. According to Mayrhofer (1982: 73) the Indo-Aryan affinity "can be regarded as certain" ("kann als gesichert gelten"). Lipp (2009: I, 313) comes to the same conclusion, considering the situation "unambiguous" ("eindeutig").[12]

Geographically, the Indo-Aryan connection is surprising, given the distance from India and the fact that Iranian languages were (later) spoken much closer to the area in question, but long-distance migration is of course not an impossibility per se, and some authors assume that Indo-Aryan languages had previously also been spoken in western Iran and were only later replaced there by Iranian languages (Mayrhofer 1966: 40, fn. 3; Burrow 1973: 125–126, 140).

When considered in terms of shared innovations, there actually is not much evidence that conclusively points towards an Indo-Aryan affiliation in the fragmentarily and indirectly attested Mitanni-Aryan data. In some regards, what is attested of Mitanni-Aryan looks archaic, as may be expected in light of its early attestation. In particular, three relevant archaisms may be noted:[13]

- PIIr. **s* is preserved, e.g. in ⟨ša-at-ta-°⟩ 'seven' matching OIA *saptá-* against innovative Av. *hapta-*
- The PIIr. clusters **zd$^{(h)}$* and **žd$^{(h)}$* are preserved in the personal name *Biriamašda* (∼ PIIr. **PriHa-mazd^{h}a-* 'lover of wisdom') and perhaps the noun *mišta-nnu*

[12] Kümmel (2022: 246) concurs, though with more careful wording: "Linguistically and culturally, this variety seems to belong rather to Indo-Aryan."

[13] Mitanni-Aryan forms here and in the following are cited from Mayrhofer (1966; 1982) and Lipp (2009: I, 265–328).

'reward (for seizing a fugitive)', matching Av. *mazdā-* 'wisdom' and *mižda-* 'reward' against innovative OIA *medhā́-* (PN *Priyá-medha-*) and *mīḍhá-*

- The PIIr. diphthong **aḭ* is preserved in *aika-*° 'one', agreeing more closely with the Old Iranian developments (Av. *aē*, OP *ai*), against innovative OIA (as attested) which has *e* in *éka-* 'one', though this monophthongization may be a late development.

Mitanni-Aryan innovations in comparison to reconstructed Proto-Indo-Iranian appear particularly in the development of the palatals:

- PIIr. **Haćuą-* 'horse' (< PIE **h_1eḱuo-*) is reflected as *aššu(a)* in the personal names *Aššu-zzana* (PIIr. **Haćuą-čanas-* 'drawing enjoyment from horses'), *Biriįaššuųa* (~ PIIr. **PriHa-Haćuą-* 'having dear horses; loving horses') and *Biridašuą* (~ PIIr. **PriHta-Haćuą-* 'having cherished horses; cherishing horses') and probably the job title *āššu-šša-nni* 'horse trainer', suggesting a sibilant outcome of the PIIr. affricate **ć* at least in the context of the cluster **ćų*.[14] Modifying a proposal of Bailey (1957), Mayrhofer (1959), Raulwing & Schmitt (1998) and Lipp (2009: I, 270–271, fn. 17) see a sibilant reflex of PIIr. **ć* also in the second element of *āššu-šša-nni* (the third element *-nni* appears to be a Hurrian suffix). Raulwing & Schmitt (1998: 695–698) equate the formation of the title with a reconstructed OIA root compound **aśva-śā-* 'exhausting/exerting horses' containing the zero-grade of the root *śam*^{i}- 'to become exhausted, to exert oneself' (< PIE **ḱemh_2-*).[15] This is evaluated as "a possible, but […] not verifiable solution […], which should rather be absent from an etymological dictionary of Old Indo-Aryan"[16] by Mayrhofer (1982: 76), but defended by Raulwing & Schmitt (1998: 695–698) and Lipp (2009: I, 270–271, fn. 17).
- PIIr. **ųaǰʰana-* 'driving' (< PIE **ųeǵʰ-eno-*) and its genitive **ųaǰʰanasya* are reflected respectively as *ųašanna* and *ųašannašaya* 'race track', suggesting a (probably voiced) sibilant outcome of the PIIr. affricate **ǰʰ*.

[14] Lipp's (2009: I, 273–309) examples of Mitanni-Aryan loanwords in Luwian have found a better explanation as inherited Luwian words, probably with affricate reflexes of PIE **ḱ* (Melchert 2012), eliminating most other potential examples of a sibilant outcome of PIIr. **ć* in Mitanni-Aryan. At the same time, Melchert's (2012) interpretation also eliminates the alternative explanation of *āššuššanni* as a loanword from Luwian (cf. Oettinger 1994: 75) since the Luwian word for 'horse' would accordingly have the form *azu* (= *atsu*) rather than *asu/āššu*.

[15] With Scarlata's (1999: 755–766) explanation of Vedic root compounds as exocentric compounds with an action (root) noun, the transitive meaning of the compound ('exhausting horses') in comparison to the intransitive meaning of the root ('to become exhausted') would be understandable: the horse trainer would be the one 'who has the exhaustion of horses' or 'by whom horses become exhausted'.

[16] "Eine mögliche, aber […] nicht zu sichernde Lösung […], die in einem etymologischen Wörterbuch des Altindoarischen eher fehlen sollte."

- For the explanation of a personal name that is attested in Hittite spelling as ⟨KUR⟩*tiu̯azza* and ⟨KUR⟩*tiu̯azzaš* and in Akkadian as ⟨KUR⟩*tiu̯a(z)za* and *Šattau̯azza* Mayrhofer (1966: 21; 1974: 25) reconstructs the unattested OIA compounds **Sāti-vāja-* 'obtains battle prizes' (~ PIIr. **saHti-u̯āja-*) and **Sāta-vāja-* 'having obtained battle prizes' (~ PIIr. **saHta-u̯āja-*) based on the collocation of *san*^{i}- 'to obtain' and *vāja-* 'contest, race, battle, prize' in the Ṛgveda. Such a derivation, if correct, would point to PIIr. **ǰ* having a separate reflex from **ǰʰ* in Mitanni Aryan, **ǰ* remaining an affricate. This etymology is, generally speaking, plausible and the segmentation into two elements *šatta/i* and *u̯a(z)za* may perhaps be supported with the (somewhat differently spelled) inverted form *Uasašatta* attested elsewhere, but it cannot be considered unassailable. Thus, e.g., the element *u̯a(z)za* might conceivably also reflect a derivative of the PIIr. root **u̯ač-* 'to speak', as originally suggested by Mayrhofer (1966: 38, fn. 1), and thus contain an affricate that has no bearing on classification.[17] The ambiguity of the spelling and the attestation as a personal name (of course without literal translation) do not allow us to definitively confirm or disprove Mayrhofer's hypothesis.

For each of the decisive palatal developments we are thus relying on the testimony of a single example, which in two cases rests on a debatable etymology. The information about possible shared innovations that can be drawn from these developments is limited and subject to further debate.

A comparison with OIA and several Iranian varieties is shown in Table 1. A sibilant outcome of PIIr. **ć* is found both in OIA (*ś*) and in Avestan and most other Iranian languages (*s*). The earliest Iranian languages probably had affricate outcomes of **ć*, as suggested, e.g., by Old Steppe Iranian loanwords in Tocharian (Peyrot 2018; Bernard 2025b).

Lipp (2009: I, 315–316) argues that the Common Iranian development **s* > *h* must predate **ć* > *s* in Avestan etc., since otherwise **s* and **ć* would have merged as *h*. Since PIIr. **s* is preserved in Mitanni-Aryan along with the development of a sibilant from PIIr. **ć*, Lipp (2009) concludes that the relative chronology excludes the possibility of a shared innovation with Avestan etc. and that the Mitanni-Aryan sibilant < **ć* must accordingly have developed as part of a shared innovation **ć* > *ś* with OIA. The latter conclusion is certainly not inevitable, but even the former may be questioned.

[17] An anonymous reviewer points out that the geminate spelling ⟨zz⟩ more likely indicates a non-lenis consonant in Hurrian orthography.

PIIr.	Mitanni	Old Indo-Aryan	Old Steppe Iranian	Avestan	Old Persian	Khotanese
*ǰ	[affricate]?	*j*	**dz*	*z*	*d*	*z* ⟨ys⟩
*ǰʰ	[sibilant]	*h*	**dz*?			
*ǰ̌	?	*j*	?	*ǰ̌*	*ǰ̌*	*dz* ⟨js⟩
*ǰ̌ʰ	?	*h*	?			
**ć*	[sibilant]?	*ś*	**ts*?	*s*	*ϑ*	*s*
**ću̯*	[sibilant] + *u*	*śv*	**tsw*	*sp*	*s*	*śś*
**s*	[sibilant]	*s*	**h* *s* in some clusters	*h* *s* in some clusters	*h* *s* in some clusters	*h* *s* in some clusters

Table 1. Mitanni-Aryan palatal developments in comparison with Indo-Aryan and Iranian

Lipp's conclusion presupposes that the deaffrication of the reflex of **ć* proceeded in a single step to a sibilant that was identical to the older **s*, but this need not have been the case. More than one "*s*-like" sibilant could certainly have existed at a given time, only one of which then debuccalized to **h* in most contexts. Such a scenario is made rather plausible by Old Persian, where the reflex of **ć* outside of the context **ću̯* never merged with the sibilant outcome of older **s* (found particularly in the context before voiceless plosives).

For Mitanni-Aryan, it must additionally be noted that certain evidence exists only for the development of the cluster **ću̯*, whereas the evidence for the development of **ć* outside of this cluster depends on one's evaluation of the debated 'horse trainer' term. Old Persian, Khotanese and Wakhi notably developed a separate reflex of **ć* in the cluster **ću̯*, distinct from that found in other positions (cf. Table 1). Lipp (2009: I, 315–316, fn. 161) proposes that the relative chronology in these cases may have been as follows:[18]

1. **ć*, **ću̯* > **ts*, **tsw*
2. **s* > *h*
3. **ts*, **tsw* > **s*$_2$, (**s*$_2$*w* >) **sw*
4. **sw* > *(s)s / sp / (ś)ś*

[18] Due to the mentioned developments in Old Persian, Lipp's chronology can only be considered valid if the new sibilant (< **ć*) still differed phonetically from the older one (< **s*), at least when not followed by **u̯*. This is expressed here by the symbol **s*$_2$. For the languages other than Old Persian, the assumption of an **s*$_2$ is not strictly necessary.

He thereby fixes the separation of the reflexes of **ć* and **ć /*_u̯* into the assumed relative chronology of **s* > *h* and **ts* > *s*, which would mean that Mitanni-Aryan could not be an earlier stage of, e.g., Old Persian even if it should turn out that there are separate outcomes of **ć* and **ć /*_u̯* after all. However, as mentioned, this chronology is not inevitable and, e.g., the following sequence is equally possible:

1. **ć, *ću̯* > **ts, *tsw*
2. **ts, *tsw* > **s_2, *s_2w*
3. **s* > *h*
4. **s_2w* > **sw*
5. **sw* > *(s)s / sp / (ś)ś*

Even if one accepts the first chronology for Old Persian, Avestan and Khotanese/Wakhi, this still does not in principle exclude the possibility of, e.g., the following hypothetical relative chronology in another (Indo-)Iranian language:

1. **ć, *ću̯* > *ts, tsw*
2. *tsw* > *ćw* > *św*

With a preservation of **s* this could still be a possible pre-history of the system seemingly attested for Mitanni-Aryan as long as the 'horse trainer' etymology is not confirmed beyond doubt.

If Mitanni-Aryan had separate reflexes of **ǰʰ* and **ǰ*, as implied by the proposed etymology of ⟨KUR⟩*tiwazza*, this would be incompatible with the development of the earliest Iranian languages, which show a general merger of the voiced and voiced aspirate series (cf. Lipp 2009: I, 317). However, the development of a sibilant from PIIr. **ǰʰ* does not immediately point to Indo-Aryan either, since there the attested outcome is *h*. It can only be counted as a shared innovation with Indo-Aryan if we accept Mayrhofer's (1966: 18, fn. 5) and Lipp's (2009: I, 269–270) assumption that the sibilant spelling ⟨š⟩ represents a voiced aspirated (breathy-voiced) sibilant **ž̈ʰ* and that such a sound would be a plausible intermediary stage between PIIr. **ǰʰ* and OIA *h*.[19] If the etymology of ⟨KUR⟩*tiu̯azza* is not correct, the

[19] Halfmann (2022: 116, fn. 2) objects that a breathy-voiced sibilant would be "typologically unlikely". Among the world's languages, voiced aspirated sibilants have indeed apparently only been reported from a single variety, the Dikundu dialect of !Xũ, a Kx'a language, spoken in Namibia (Jacques 2011: 1520; transcribed there as [z^{ɦ}] and [ʒ^{ɦ}]). Ladefoged & Maddieson (1996: 178) even state that "there are no languages listed with breathy voiced fricatives". Jacques (2011: 1520) sets up a typological "implicational hierarchy" stating that any language that has voiced aspirated (i.e., breathy-voiced) fricatives should be expected to also have voiceless aspirated fricatives – something which can hardly be assumed for Mitanni-Aryan. However, sibilants classified as "slack-voiced" (i.e., slightly breathy) do exist in dialects of Wu Chinese (Ladefoged & Maddieson 1996: 63–66, 178) and some Bantu languages have "depressor" sibilants, which have breathiness as an optional phonetic characteristic (Maddieson &

more straightforward conclusion from the spelling of *u̯ašanna* would be that **ǰʰ* lost its aspiration/breathiness, possibly merged with **ǰ* and developed into a sibilant *z* or *ž*, rather more in line with the Iranian development.

Other potential innovations that have been discussed by previous research are less conclusive lexical/morphological features or even concern cultural traits treated as possible extralinguistic clues to the provenance of the speakers of Mitanni-Aryan:

- The numeral *aika-*° 'one' matches OIA *éka-* rather than Av. *aēuua-* in formation
- The Kassite deity name *Šuriu̯aš* (borrowed from Mitanni-Aryan?) matches OIA *sū́rya-* 'sun, sun god' which has no morphological equivalent in Old Iranian, where a more basic stem is used instead (Old Avestan *huuar-*)
- A reflex of PIIr. **u̯aǰʰana-* with a meaning similar to 'track, course' is only attested in Iranian (Sogdian M *ʾnxr-wzn* 'zodiac', lit. 'course of the stars') (Benveniste 1962: 9)
- The names of some deities appealed to in the Mitanni treaties seem to correspond more closely to members of the Vedic pantheon than to deities of pre-Zoroastrian Iranian religion or the presumable religion of the speakers of Proto-Indo-Iranian (to the extent that these are reconstructable from later Zoroastrian sources), e.g. OIA *Váruṇa-* (= Mitanni-Aryan ⟨ú-ru-u̯a-na⟩, ⟨a-ru-na⟩) lacks a correspondence in the attested Iranian tradition (see Thieme 1960; Burrow 1973)

The numeral variant *aika-*° 'one' is notable, but not conclusive: both **aiu̯a-* and **aiu̯a-* must have existed as variants in Proto-Indo-Iranian, so that neither of the two variants can be counted as evidence for shared descent (cf. Lipp 2009: I, 323–324).[20] This is in fact a typical case of the phenomenon of "Incomplete Lineage Sorting" discussed by Jacques & List (2019).

The name *Šuriu̯aš* is a more interesting case, because it involves a morphological formation that is only attested in Indo-Aryan, but, as Lipp (2009: I, 324–325) points out, it is possible that the formation is inherited from Proto-Indo-European (cf. similarly formed Greek ἥλιος) and therefore not an innovation in

Sands 2019: 95–97). Additionally, the modern Indo-Aryan language Palula has clusters of the forms /ǰh/ [ʑɦ], /zh/ [zɦ] and /ẓh/ [ʐɦ] which could alternatively be analyzed as breathy-voiced sibilants (Liljegren 2016: 69–72) and in Kotgarhi-Kochi (also Indo-Aryan) [zʱ] appears as a variant of /dzʱ/ (Hendriksen 1986: 16). The proposed explanation for the Mitanni-Aryan sibilant therefore cannot be categorically excluded on typological grounds.

[20] Incidentally, despite the deceiving appearance of Kt. *ev* '1', it is likely that the Nuristani languages reflect only **aika-* (see Section 6.5.4), which equally has no necessary consequences for classification.

Indo-Aryan and it may even be reflected in Middle Iranian Sogdian *xwyr* (but cf. the discussion of the Nuristani word for 'sun' in Section 6.5.4).

As for *u̯ašanna*, it does not seem impossible that the meaning 'course, track' could also have existed in an early stage of Indo-Aryan. Since this word also causes phonological difficulties (see above), it may, however, be preferable for adherents of the Indo-Aryan hypothesis to return to one of the earlier interpretations, deriving it, e.g., from PIIr. **u̯asana-* 'dwelling', despite the semantic difficulty.

Finally, similarities between what we know of the religions of the speakers of Vedic and Mitanni-Aryan cannot be considered a conclusive argument for linguistic classification. Considering that the religious traditions of the Iranian-speaking peoples were probably radically transformed by Zoroastrian teachings and not much is known of their state before the coming of Zoroastrianism, similarities between Vedic and Mitanni-Aryan religion contrasting with the Avestan tradition could easily be taken as inconclusive "archaisms", if one were to look at religion in the same way as language. Neither Thieme (1960), nor Burrow (1973) following him, have supplied any truly decisive arguments to which this objection could not still apply.

As it stands, the classification of Mitanni-Aryan as an early representative of already separate Indo-Aryan is a plausible possibility. The presence of archaisms in comparison with "core Indo-Aryan" would then only necessitate the assumption that the attestation of Mitanni-Aryan predates the completion of some shared innovations of core Indo-Aryan. However, it also remains conceivable that Mitanni-Aryan represents its own subgroup of Indo-Iranian, in which PIIr. **ǰʰ* and **ǰ* are kept apart as *ź* and *ǰ*, whereas **ć* at least in the cluster **ću̯* develops into *(s)s* or *(ś)ś*.[21] Even the assumption that Mitanni-Aryan is an early Iranian language that had not yet undergone the sound change **s* > *h*, though **ć* in the Indo-Iranian sequence **ću̯* had already developed into a kind of sibilant and the reflex of **ǰ(h)* had deaffricated to *z*, is not completely impossible. Much depends on the correctness of a few debatable etymologies. Unless further data should appear, none of these three possibilities can be excluded with certainty.

[21] This possibility is rejected by Mayrhofer (1966: 23) as an "idle game of thought" ("müßiges Gedankenspiel"), but I see no reason why it should be less likely in principle than an affiliation with one of the established subgroups.

5. Iranian

The long-established Iranian subgroup has only in recent decades come under increased scrutiny, after the true scope of its internal diversity had become better understood. Building on the observation that several innovations that had traditionally been used to define Iranian against Indo-Aryan must have come about only after the Iranian languages had already diversified, Tremblay (2005) attempted to make the case that the Iranian languages could rather be considered a *sprachbund* which does not have a common ancestor other than Proto-Indo-Iranian, or – in biological terms – that Iranian is a taxon but not a clade. Tremblay's proposal has so far not been accepted into the mainstream of Indo-Iranian studies, but it is mentioned in handbooks as an idea worthy of discussion (e.g. Cantera 2017: 481–483). It is undeniable that characteristic Iranian innovations are in many cases not attributable to the common ancestor of all Iranian languages. The most important examples are discussed in the following.

The first such innovation is the sound change **s* > *h*, which is today generally considered to have spread through the diversified Iranian continuum rather than being inherited from the ancestor of all Iranian languages (see Szemerényi 1966; Mayrhofer 1989: 7; Hintze 1998; Lipp 2009: I, 318–322). The strongest evidence for this conclusion is the deity name ⟨^{D}as-sa-ra ^{D}ma-za-áš⟩ attested among the names of Elamite gods in an Assyrian text (III R 66) that reached its final redaction around the 8th century BCE (von Soden *apud* Mayrhofer 1971: 52). This is a likely equivalent of the name of the Zoroastrian main deity OP *A^{h}uramazdā*, but with preserved PIIr. **s* (**Asura-mazdās*, cf. OIA *ásura-* 'type of spirit/deity').[22] The sound change **s* > *h*, though fully established in attested Old Iranian and all later Iranian languages, therefore cannot have been completed yet at the (somewhat uncertain) time of the text's original composition, even though the Iranian languages must already have diversified at least before its final redaction, as is demonstrated by the attestation of Avestan.[23] Lipp (2009: I, 319–320)

[22] With regard to previous rejections of this identification, see Mayrhofer (1971: 51–52).

[23] The theoretically possible assumption that the name originates in Mitanni-Aryan (or a variety closely related to it), which preserved PIIr. **s*, would be in conflict with the general assessment that Mitanni-Aryan was already extinct as a spoken language at the time of its (indirect) attestation, making the early 1st millennium BCE too late for another borrowing. As mentioned above, the religion of the speakers of Mitanni-Aryan also appears to have been similar to Vedic beliefs, which makes it less likely that they had a concept of **Asura-mazdās*.

concludes based on the completion of the sound change in Avestan that it must have spread areally from east to west, affecting Avestan around 1200 BCE before being transmitted to the western Iranian language from which **Asura-mazdās* was adopted into the Assyrian text. As Boyce (1984) points out, the attestation in the Assyrian text more likely refers to a presumable pre-Zoroastrian Iranian deity **Asura-mazdās*, which would later have been adopted into Zarathustra's teachings, since otherwise it would imply the somewhat odd situation that Zarathustra used the form with *h* in his teachings (thus attested in the Gathas), whereas Iranian peoples further west adopted it at first with *s* before also undergoing the regular sound change **s* > *h*.[24]

The Old Persian place name ⟨u-v-j-⟩ */Hūža/ 'Elam', continued in New Persian *Xūz-istān* and presumably derived from the name of the Elamite city of ***Sūša*, which was also re-borrowed into OP as ⟨ç-u-š-a⟩, may point in a similar direction, since one might assume that this name could only have entered the language once its speakers had some knowledge of the place. However, the name could also have entered the language quite early via intermediaries (cf. Lipp 2009: I, 319, fn. 166 and references cited there). The case of YAv. *hindu-* vs. OIA *síndhu-* as names of the Indus river, which is also sometimes mentioned in this context, could similarly be based on loanword adaptation from Indo-Aryan according to regular correspondence patterns (Thieme 1970; see also Jacques & List 2019: 149–153 on the process of loanword nativization). In total, however, we can observe in the case of **s* > *h* how fragmentary early attestation, uncertain though it may be, can correct an inaccurate reconstruction derived from the universal spread of a feature in the later languages of a group.

The second case of this kind is the development of the Indo-European primary palatals **ḱ* and **ǵʰ* into sibilants, which merged with older **s* (where preserved as a sibilant) and **z* in all languages other than Old Persian (where the new sibilants turned into *ϑ* and **δ* > *d* instead).[25] This development is found in all directly attested Iranian languages. Despite this, we must conclude that the oldest stages of

[24] Hintze (1998: 148) and Lipp (2009: I, 320) admit this as a possibility, but it does seem rather unconvincing. That it is precisely **Asura-mazdās* among the Iranian gods who is mentioned in the Assyrian text need not be "just by a quirk of chance", which Hintze (1998: 148) presents as the only alternative view. It is fully possible that he was the most high-ranking deity already before Zarathustra and that his status was only particularly stressed or reinterpreted in the context of Zoroastrianism.

[25] The idea that interdental fricatives more easily develop out of affricates than sibilants, which is sometimes encountered in the literature (e.g., Tremblay 2005: 677), has no firm basis in sound change typology. Direct developments from sibilants to interdentals are well-attested, e.g., in Burmese, Turkmen and Huastec.

Iranian still had affricate reflexes, as is most impressively shown by the "Steppe Iranian" loanwords into Kuchean (Tocharian B) previously mentioned in Section 4 (*etswe* 'mule' ~ Av. *aspa-* 'horse'; *tsain* 'baldric' ~ YAv. *zaēnuš-* 'weapon'; cf. Peyrot 2018; Bernard 2025b). Here, again, a fragmentary loanword transmission reflecting ancient contacts corrects the reconstruction that could be derived from the almost universal agreement of the later languages. Minor details like the non-merger with **s/*z* in Old Persian and developments like Pashto *ṣt* < PIIr. **rć* (more easily routed via **rts* than via **rs*) might have already raised some doubts, but could perhaps not have convinced in the absence of clearer evidence.[26]

Some authors (Sims-Williams 1998: 136; Tremblay 2005: 678; Cantera 2017: 492; Peyrot 2018: 271) further take the Khotanese and Wakhi (or "Sakan") development **ću̯* > *š*; **ju̯* > *ž* (Khot. *aśśä*, Wakhi *yaš* 'horse' < PIIr. **Haću̯a-*; Khot. *biśā* 'tongue' < PIIr. **[d/j/u̯]iʰu̯aH-*) as evidence for the assumption that these affricates must still have been palatal (as opposed to dental) at the time of the common ancestor of the Iranian languages, eliminating another one of its potential differences to Proto-Indo-Iranian. On this point opinions differ, however – Lipp (2009: I, 315–316, fn. 161) instead derives Khotanese *š* ⟨śś⟩ from **sw* < **tsw* < **ću̯*, attributing the palatality to lip rounding, with the parallel of **ps* > Avestan *fš*. Hock (2023: 432), in the context of a typological investigation of palatalization processes next to labial glides, does not accept lip-rounding as an environment that may cause palatalization and instead proposes to explain the "Sakan" development via a palatal excrescence arising out of still palatal affricates: "ćśʸw" > "ćśʸu̯" > "ćśy" > "t̪s̪y" > "s̪y" > "ś" (Hock 2023: 436). He attributes the palatal affricate to Proto-Indo-Iranian, but the proposed development implies that it would have persisted into a presumable Proto-Iranian.

In fact, at least one case of palatalization on affricates arising directly from lip-rounding environments, without the involvement of any palatal sounds, has been directly observed[27] and the development does have a clear phonetic pathway: Yeung & Havenhill (2021) describe a sound change in progress in Hong Kong Cantonese in which dental affricates /ts/ and /tsʰ/ are palatalized to [tʃ], [tʃʰ] before rounded vowels and argue that this is explainable as a perception-based hypo-correction, since lip-rounding and tongue backing both lengthen the front

[26] The evidence of affricates as reflexes of the same sounds in Nuristani has also played a role in supporting this reconstruction, but is better taken out of consideration here, as long as the relationship between Nuristani and Iranian has not been clarified.

[27] An anonymous reviewer points out that a development from labialized to palatal sibilants/affricates must probably also be assumed for the prehistory of the Abkhaz-Adyghean family.

cavity of the vocal tract, producing similar acoustic effects on sibilants (in particular lowering the acoustic Center of Gravity (COG) and spectral peak). Interestingly, the sibilant /s/ is not affected by this sound change, which Yeung & Havenhill (2021) attribute to the fact that the frication phase of /s/ is longer than in the affricates, where it overlaps completely with the anticipatory lip-rounding.[28] We can conclude from this that the "Sakan" development alone does not force us to reconstruct palatal affricates for the most immediate ancestor, but that an affricate antecedent (**tsw*) appears a bit more likely than a sibilant (**sw*).[29]

Another point that could be taken to point to palatal affricates = PIIr. **ć/*ǰ(ʰ)* in the common ancestor of the Iranian languages is the development of the sequence *xšt* out of the PIIr. combinations **ć-t* and **ǰ-t* in some Young Avestan, Sogdian and Bactrian forms (with regular further development to χτ in Bactrian). Due to the potential significance of this development it is worth discussing in detail whether it can be upheld as a sound law.

Excursus: "Kellens's Law"

Kellens (1976) has interpreted the outcome *xšt* resulting from the PIIr. combinations **ć-t* and **ǰ-t* in some Young Avestan, Sogdian and Bactrian forms as a special development of **ć-t* and **ǰ-t* after the vowel **a* that differed phonetically from the outcome *št* of PIE **st* in RUKI contexts. Tremblay (2009) expanded on this proposal under the title of "Kellens's law", claiming that it held also after *u/u̯* and *r̥*. Kellens's (1976) original formulation is accepted in the handbook article of Lubotsky (2018: 1884).

If the conditioning of this development has been correctly stated by Kellens (1976) and/or Tremblay (2009) this would mean that a merger of PIE **ḱt* and **st* after **r*, **u*, **k*, **i* as something like ***št*, had not yet taken place in Proto-Indo-Iranian and that consequently the merger as *št* in most Iranian languages and as *ṣṭ*

[28] The fact that *s* is affected in the case of **ps > fš* quoted by Lipp, as well as the RUKI development **s > š* after *u*, which must result from a similar phonetic effect (probably to be dated to earlier times than Proto-Indo-Iranian), could be attributed to a difference between (shorter?) anticipatory lip-rounding and (longer?) persistence of lip rounding.

[29] The assumption that Kuchean (Toch. B) *etswe* 'mule' cannot have been borrowed from pre-Khotanese or pre-Tumshuqese is therefore on less solid ground, since the central argument for this given by Peyrot (2018: 272) was the impossibility of a development PIIr. **ću̯ > *tsw > š*. However, Bernard (2025b: 151–184) identifies a number of other non-Khotanese/Tumshuqese features in the same Old Iranian loanword layer that can still be taken as evidence against its pre-Khotanese/Tumshuqese provenance. In light of the coherence of this lexical layer, e.g. in terms of vowel substitutions/developments like *e* for Iranian **a* as also in *etswe* (Bernard 2025b: 154), the "Old Steppe Iranian" hypothesis still seems plausible in general.

in Indo-Aryan result from independent innovations.[30] The specific outcome *xš* of the Indo-Iranian palatal affricates in this case would perhaps rather point to a palatal than a dental antecedent (cf. Tremblay 2005: 678).

Lipp (2009: I, 209) rejects "Kellens's law" and instead considers *xšt* an irregular "specific phonological realization" of **št* after **a* and perhaps **u*, which "has nothing to do with" origin in PIE **ḱt*.[31] The distribution of *xšt* is indeed rather inconsistent and not as we would expect it to be if Kellens's (1976) statement of the conditioning of the sound change is correct, even less so if Tremblay's (2009) modifications apply: exceptions such as Young Avestan *našta-* 'ruined' (< **nać-ta-*), *ašta-* 'eight' (< PIE **HoḱtoH*); Bactrian παρογατο 'taken notice of' (< **pari-kać-ta-*), ατατο 'eight'; Sogdian MS *nšt-*, past stem of *nyš* 'to spoil' (< **nać-ta-*), S ʾštʾ 'eight' are numerous and not satisfactorily explained. This applies especially to the numeral 'eight', which is isolated from the verbal system and other morphological paradigms that could potentially have introduced analogical changes, but nevertheless is never reflected as ***axštă̆-*. Tremblay (2009: 352) admits that it represents the "most irreducible counterexample to Kellens's law" ("contre-exemple le plus irréductible à la loi de Kellens").

If the development only happened after **a*, where the RUKI rule never applied, it is also difficult to claim a clear etymological distribution, since there can of course be no contrast with RUKI outcomes in this context (cf. Lipp 2009: I, 209). On the other hand, the assumption of a secondary development in the context after **a*, seemingly implied by Lipp (2009: I, 209), is rendered implausible by YAv. *nipixšta-* and Bactr. νοβιχτο, where the *xšt*-reflex appears after **i*, as well as the exceptions after **a* mentioned above. Lipp's (2009: I, 206–207) proposal that the Bactrian variation χτ ~ τ ~ þτ results from a sound change in progress, in which **št* turned into *ht*, which would sometimes have been represented as χτ, is not convincing either, since the lexical distribution of the two outcomes appears to be fixed and since Bactrian otherwise consistently distinguishes *h* ⟨υ⟩ from *x* ⟨χ⟩. Examples with þτ < **št* (as well as þ-/-χþ- < **xš-*/**-xš-*) are more likely to be loanwords, e.g. from Parthian, whereas ριþτο 'day name' < **Hr̥štāt-*, quoted by

[30] As a corollary, this would imply that **š* was not yet phonemic, but still a conditioned allophone of **s* in Proto-Indo-Iranian, which would have additional consequences for the interpretation of the RUKI development in Nuristani (on which see Section 6.3).

[31] "[…] ist auf jeden Fall festzuhalten, daß es sich bei unregelmäßigem *-xšt-* um eine spezifische lautliche Realisierung von aw. *-št-* in der Position hinter /a/ (und möglicherweise /u/) handelt, die nichts mit der Herkunft von aw. *-št-* aus idg. *ḱt* oder aus einem im RUKI-Kontext stehenden idg. *st* > indoiran. *št* zu tun hat".

Lipp (2009: I, 207), shows regular Bactrian þτ < **ršt* (expected next to þ < **rš*; cf. Gholami 2014: 56, where **ršt* is printed as "**rst*").

In total, the distribution of unexpected *xšt* appears to be too erratic to be explained by a regular sound change, whether ancient or secondary. Analogical origin *a priori* looks like the most likely option, especially since all cases are associated with verbal roots and thus embedded in morphological paradigms. While unexpected spellings in (Young) Avestan can always potentially be attributed to its problematic history of transmission, this cannot hold for corresponding forms in Sogdian and Bactrian, which most likely represent linguistic reality. It is therefore advisable to focus on those examples where the three languages agree in showing the divergent reflex. In this way, only the clear cases shown in Table 2 remain, derived from only two roots, PIIr. **paiḱ-* and **spać-*.

Young Avestan	Bactrian	Sogdian
paēs- 'to decorate' ptcp. °*-paxšta-*, (*fra-*)*pixšta-*	νιβισ-, ναβισ- 'to write' pst. νιβιχτο, ναβιχτο etc.	*npʾyns, npʾys* 'to write' pst. *npxšt-, npʾxšt-*
spas- 'to observe' ptcp. *spaxšta-* *spaxšti-* 'observation'	(α)σπισ- 'to serve' pst. σπαχτο (α)σπαχτο 'service'	*(ʾ)sp(ʾ)yš-* 'to serve' pst. *(ʾ)spxšt-*

Table 2. Young Avestan, Bactrian and Sogdian forms agreeing in showing unexpected *xš*. Matching forms are aligned.[32]

The common factor in these examples is not the root vowel, but the root-final PIIr. **ć* and a generally similar consonant structure of the root. It is also notable that YAv. °*-paxšta-*, Sogd. *npxšt-, npʾxšt-* with an unexpected root vowel *a* appears next to YAv. (*fra-*)*pixšta-*, Bactr. νιβιχτο.[33]

The most obvious context where the sequence *xšt* would be expected regularly is in *-ta-* participles and similar derivatives from roots ending in the PIE clusters **ks* or **kʷs*, e.g. in OAv. *daxš-* 'to point out, to reveal' < PIE **dekʷs-*, with its *-ta-*

[32] Sources: Young Avestan from Bartholomae (1904), Insler (1962); Bactrian from Sims-Williams (2007), Halfmann et al. (2023: 40); Sogdian from Sims-Williams (2023), Sims-Williams & Durkin-Meisterernst (2012).

[33] The variation between °*pixšta-* and °*paxšta-* has been interpreted by Kellens (1976: 63) and Tremblay (2005: 678, fn. 15) as a result of interference with the Indo-European root of Greek πήγνυμι, Latin *pangere* 'to fasten, to fix' (reconstructed as **peh₂ǵ-* 'to become solid' by Rix et al. (2001: 461)), but the only verbal descendant of this root in Indo-Iranian seems to be the Vedic hapax *pāpaja* 'stops repeatedly' ("bleibt immer wieder stehen"), which is semantically difficult to reconcile.

participle *daxšta-* < **dekʷs-to-*.[34] If a relationship between *daēs-* 'to show, to reveal' and *daxš-* 'to point out, to reveal' had been inferred by speakers based on formal and semantic similarity, this could have formed a nexus for the extension of a participle in *-xšta-* to other *s*-final roots.[35] Formally similar *paēs-* 'to decorate' could in this way have received the variant participle *°paxšta-* with the unexpected root vowel *a* (*daēs-* → *daxšta-* :: *paēs-* → *paxšta-*). This, in turn, could be behind the "compromise form" *°-pixšta-* also reflected by Bactrian νιβιχτο. The further extension of the pattern *paēs-* → *paxšta-* to *spas-* → *spaxšta--* would only have been a short step away, and could have been supported by the formal similarity of the two roots. In the case of PIIr. **u̯raiḱ-* 'to turn, twist, spin' (YAv. *uruuaēs-*), Sogdian attests (derivatives of) two participles C *rwyšt* 'spun' and B *ʾrwʾštk* 'bound, fixed' (with prefix **ā-*), next to the nominal derivative C *ʾrwxš* 'bandage, gag, strap' which may be a cognate (with prefix **ā-*) of Young Avestan *°-uruuīxšna-* 'lacing' < **u̯rić-na-* (Gershevitch 1961: 52; but cf. Schwartz 1970: 391 for an alternative derivation). The root vowel variation is again understandable based on the analogical extension of the *°axšta-* pattern, but *ʾrwʾštk* must be a "compromise form" in the opposite direction of *frapixšta-*. The appearance of *xš* in *ʾrwxš/°-uruuīxšna-* supports the assumption that the analogical *(a)xš* had been introduced into the paradigm of this root as well and additionally indicates that the pattern had also been extended to the context before *n*-initial suffixes. This was possible because Iranian languages showed the same variation of the root final consonant of **ć*-final roots there as before *t*-initial suffixes (Av. *s* ~ *š*, e.g. in *fras-* 'to ask', *frašna-* 'question').

A somewhat different case, in which Sogdian and Bactrian agree, but a corresponding form is not attested in Young Avestan, is that of Bactrian αλφανζ-, past stem λφαχτο and Sogdian S *δβʾyz*, past stem M *δβʾxšt-* 'to acquire', where the past stems match in suggesting an unexpected form with (earlier) *xšt*, while the

[34] The derivation of *daxš-* from PIE **dekʷs-* is doubted by Rix et al. (2001: 112) based on Rieken's (1999: 210–211) rejection of the connection with Hittite *tekkuss-* 'to show', but this connection is reasserted by Kloekhorst (2008: 864–865). The Indo-European etymology of *daxš-* is not essential to the further argument.

[35] Insler (1962) has previously argued for an association of *daxš-* with *daēs-* and furnished ample philological evidence for their relationship, but he instead concluded that the root *daxš-* must be an analogical creation from the participle *daxšta-*, which he considers to have been formed from *daēs-* in parallel to *paxšta-* from *paēs-*. This, however, provides no way to account for the existence of the *a* in the first place, which would be perfectly understandable starting from an original *daxš-*. In addition, as Insler (1962: 65) points out himself, the formation of a new present stem from a past participle, though common in Middle Iranian, "would be singular in Avestan". As Schlerath (1962: 574) further notes, *daxš-* is already Old Avestan whereas the *xš* ~ *š* alternation appears only in Young Avestan.

present stems derive from two distinct formations. According to Kümmel (2011–2023: 84) the root of these present stems may belong with PIE **tu̯eng^{h}-* ‘to press’ (whence German *zwingen*), and he suggests a semantic development ‘to press, stuff, load’ > ‘to obtain’ comparable to that seen in the Greek derivative σάττω ‘to stuff, to load’ from the same root. However, the Bactrian verb could also be < **ϑwanzǰa-* ‘to be pressed’ (~ YAv. *ϑβązǰa-* ‘to become upset’ < PIE **tu̯n̥g^{h}-ske-* with introduction of full grade) and the Sogdian present stem could derive from older **ϑwāzaya-*, perhaps a secondary causative formation based on the same present stem with simplification of the cluster *zǰ* to *z*. Semantically one could then imagine a development akin to that seen in German *sich sorgen* ‘to worry’, applicative *besorgen* ‘to deal with; to acquire, get’. This semantic background could also make it possible to integrate Sogdian C *ftpyž* ‘to force’ < **fra-ϑwāzaya-* under the same etymon, which Kümmel (2011–2023: 84) considered likely, but semantically difficult.

The root of these verbs would then be unlike the other roots with the unexpected *xšt* development, ending in a PIE plain velar. For Bactrian αλφανζ-, the existence of the expected past stem *αλφαγδο < Old Iranian **ϑwaxta-* seems to be suggested by its reflex in the New Persian loanword *alfanǰ-*, pst. *alfaγd-* ‘to acquire’, though an alternative Persian past stem *alfaxt-* corresponding to λφαχτο also exists. The parallel existence of both forms could again point to the secondary association of a form originally belonging to a root ending in *xš* (as with YAv. *daxšta-* and *daēs-*). A suitable candidate exists in YAv. *ϑβaxš-* ‘to take care of sth., to occupy oneself with sth.’, which neatly fits into the semantic pipeline ‘to worry (about)’ > ‘to be occupied with; to take care of’ > ‘to acquire’.

However complicated and uncertain, I believe that this account of the “Kellens’s law” alternation as a result of analogical change in regional later Old Iranian provides a better match for the data than the assumption of a regular sound change, whether ancient or secondary. It also provides a reason for the apparent absence of the alternation in RUKI contexts, since it would have originated in a morphological proportion that never came up in verbs with final RUKI-*š*. The reconstruction of palatal affricates = PIIr. **ć* and **ǰ* for the common ancestor of all Iranian languages would then not be required. The question whether the development PIE **ḱ-t/*ǵ-t* > **št* was already completed in Proto-Indo-Iranian will, however, be returned to below in the context of the Nuristani evidence.

Conclusions on Iranian

There are two further arguments that Tremblay (2005) levels against a Proto-Iranian intermediary stage, but neither of these is inescapable. First, with regard to the deaspiration of voiced aspirates, Tremblay (2005: 675) argues that the alternation reflecting Bartholomae's law ($D^h + T > D^zD^h$) in Old Avestan could not have been preserved without its conditioning factor, the voiced aspirates, and that therefore these must still have been present in Old Avestan. It is, however, not impossible that a phonological alternation that has become opaque and purely lexical as a result of sound change is transmitted for a while before being leveled away (it may even be retained altogether). The faithful preservation of the alternation does seem to imply a relatively recent deaspiration, but since there is otherwise no evidence that any Iranian language preserved the voiced aspirates, there are not enough grounds to date the deaspiration after the time of the presumable common ancestor.

Secondly, Tremblay (2005: 676–677) argues that spirantization of PIIr. **p*, **t*, **k* > *f*, *ϑ*, *x* before consonants and laryngeals (in the latter context probably via **p^h*, **t^h*, **k^h*) cannot have been completed yet at the time of the common ancestor of Iranian, based both on plosive reflexes in some later Iranian languages (Khotanese, Wakhi, Parachi, Balochi) and on the evidence of Old Persian *amāxam* 'our' vs. Avestan *ahmākəm* < **asmākam*, which he explains as a result of transference of aspiration from *h* (< **s*) to *k*, producing an aspirated **k^h* which would place the development **k^h* > *x* after the sound change **s* > *h* and thus after the common ancestor of Iranian. These arguments are accepted by Lipp (2009: I, 158–160), but he admits that the plosives in later Iranian languages may also have resulted from secondary fortition. Though it is difficult to prove conclusively which realization is historically primary, the fact that plosive outcomes appear especially in areas of Indo-Aryan contact influence, which could plausibly have led to a reduction of fricatives, and the general spirantization in the earlier-attested languages perhaps give more weight to the assumption that spirantization was at one point universal throughout Iranian.[36] In the case of Old Persian *amāxam* it is not inconceivable that *k* > *x* happened as a simple fricative assimilation to the preceding *h* without an intermediary **k^h*.

[36] For Balochi in particular, Korn (2005: 80, 324–325) assumes a reversal from fricatives to stops, with the arguments that fricatives "in loanwords of all periods and times" are replaced by stops (though here substitution is difficult to distinguish from sound change after borrowing) and that a parallel development with attested Middle Iranian would be more likely than the opposite, given continuous contact.

The fronting of aspiration in Avestan *xumba-* ‘pot’ ~ OIA *kumbhá-*, which is also mentioned by Tremblay (2005: 677), requires only a particular relative chronology within the common ancestor of the Iranian languages (first aspiration fronting, then *k^h > *x*), since there are no Iranian languages without this development. Kümmel (2022: 257) has proposed that this fronting of aspiration happened as part of a regular sound change TVND^h > T^{h}VND, adducing also YAv. *ϑanǰ-* ‘to pull’ etc. < PIE **teng^h-*. A possible further candidate may be the verbal root **xand-* ‘to laugh’ (attested from Middle Iranian onwards), if it derives from a secondary root **kend^h-* related to the light-verb phraseme reflected by OIA *cánas-dhā-* ‘to be delighted/satisfied, to enjoy’ (< PIE roots **kenH-* and **d^{h}eh$_1$-*).[37] If spirantization is an innovation of the Iranian common ancestor, then so is this process of aspiration fronting.

Based on the following four innovations it would then be defensible to assume that an exclusive common ancestor of all Iranian languages distinct from Proto-Indo-Iranian was a historical reality:

- Merger of PIIr. voiced aspirated and voiced sounds
- PIIr. **ć*, **ǰ$^{(h)}$* > dental affricates **ts*, **dz*
- Fronting of aspiration in the context TVND^h (> T^{h}VND)
- Possibly: Fricativization of PIIr. **p*, **t*, **k* > *f*, *ϑ*, *x* before consonants and next to laryngeals (the latter probably via **p^h*, **t^h*, **k^h*)

This remains possible as long as further evidence does not cast doubt on the shared development of these four innovations. Aside from these few early shared innovations, most of the similarities among the later Iranian languages are due to continued contact in what was still a continuum of mutually intelligible varieties.

[37] Previous explanations of **xand-* as an onomatopoetic form comparable to OIA *kakkhati* ‘laughs’ (Cheung 2007: 443) are not satisfactory, as this cannot motivate the sequence *-nd-*. Regarding secondary roots from combinations with **d^{h}eh$_1$-*, see Hackstein (2002: 13–19) and Kölligan (2018). The absence of palatalization in the onset requires *o* ablaut grade in the root, which could be due to an *-e̯ie-* present formation **kond^h-e̯ie-*. This would be compatible with Middle Persian/Parthian *xand-*, but Khotanese *khīttä* ‘laughs’, pst. ptcp. **khaṃtta-*, points to simple thematic **xand-a-ti* (Emmerick 1968: 25–26). Alternatively, unpalatalized **k* could have been transferred from a presumable agent noun formation **kon(H)-d^{h}h$_1$-ó-*. If Old Persian *xaudā* ‘cap, hat’ and its cognates derive from **ko̯u̯d^{h}ó-* ‘concealing’ ← **ke̯u̯d^h-* ‘to conceal’ (cf. Abaev 1958–1989: IV, 244; Rix et al. 2001: 358–359), the conditioning of the sound change would have to be extended from “after nasals” to “after sonorants”.

6. Nuristani

The Nuristani group is comprised of the five modern languages Katë, Nuristani Kalasha, Tregami, Ashkun and Prasun spoken in and around the Afghan province of Nuristan, with the possible addition of Dameli in southern Chitral, Pakistan, which contains at least a large proportion of Nuristani-derived lexicon (cf. Halfmann 2022: 123–130). These languages were singled out from among the "Indo-Iranian Frontier Languages" by Morgenstierne (1926: 50–69) as likely constituting a separate subgroup of Indo-Iranian that is neither clearly Iranian nor Indo-Aryan. Morgenstierne's proposal was followed by a long debate, in which highly varied opinions on the position of Nuristani have been voiced by different authors (for summaries, see Degener 2002; Lipp 2009: I, 157, fn. 22).

Within the Nuristani group, there is a notable difference between the central cluster of Katë, Nuristani Kalasha, Tregami and Ashkun on the one hand, which are strongly affected by contact with Indo-Aryan and in many respects have the appearance of New Indo-Aryan languages (especially typologically and lexically), and the smallest Nuristani language, Prasun, on the other. Prasun, described by Morgenstierne (1949: 188) as "the most aberrant of the Kafir [i.e. Nuristani] languages, and in some respects one of the most peculiar of modern Indo-European tongues", is typologically and historically more oriented towards the Iranian-speaking north, with which it shares some sound changes like unconditional **b*, **d*, **g* > **β*, **δ*, **γ*, followed by **β* > *w*, **δ* > *l* and **γ* > *y* (cf. Kreidl 2021: 179).[38] In some cases it preserves Nuristani lexical items replaced by Indo-Aryan borrowings in the other languages, but it is also extremely innovative, especially in phonology, and an extensive layer of Katë loanwords (including

[38] Later, additional unconditional developments **t* > *y* and **k* > ∅ seem to have occurred, cf. *zëmí* 'son-in-law' < **zəmay* < PIIr. **ǰāmātar-*, *ëyú* 2SG pronoun (DIR) < **tuw* < PIIr. **tuHam* (vs. preservation in clusters: *ütye-iš* '2SG pronoun (OBL)' < **tye* < **tyām* < PIIr. **tṷām*, with secondary addition of the OBL ending *-iš* < **-asya*), *-yoċ-* 'to carve' < PIE **tetḱ-*; *oz-* 'to look, to wait' < PIIr. **kać-*, *w(y)ed-* 'to laugh' < **wi-kand-* < PIIr. **u̯i* + **kandʰ-*, *(w)ulúg* 'hat' < PIIr. **kaṷdʰa-* or ⇐ Bactr. χωλο **'helmet, cap' (attested as personal name) + DIM *-Vg* (vs. preservation in clusters *-skoz-* 'to look' < PIIr. **sam* + **kać-*). The lack of a positional conditioning of the plosive developments in Prasun is especially striking when compared to the "Indo-Aryan-like" intervocalic lenition/dropping but initial preservation seen in the other Nuristani languages. Most recently, another lenition (this time postvocalic) of the newest layer of simple plosives took place, in which **k* and **p* became *g* [ɣ ~ j̰ ~ g ~ k] and *b*, e.g. in *ügűr* 'hoof' ~ Kt. W/NE *kyur* 'foot' ⇐ IA *khura-* 'hoof', *tëbḗg* 'gun' ~ Kt. W *tpëk* 'id.' ⇐ Pashto *tupak* 'id.'.

many Indo-Aryan words passed on in this way), as well as uncertainties about the vowel system, additionally make the Prasun evidence difficult to evaluate.

The stark contrast between Prasun and the other languages would not be expected if they had been spoken in their present, directly adjacent locations throughout their history. It seems likely that Prasun was separated from the other languages for some time, but it is unclear whether it was originally spoken on the other side of the main Hindu Kush chain or separated by other, interfering languages. A variant of the latter possibility would be that an original Nuristani continuum was "pruned" in its center by migration or language shift from the south, leaving its original southern and northern edges adjacent to each other. The Nuristani language area likely contracted over a long period of time until it became mostly restricted to the area around the Pech valley. On the other hand, it also expanded in relatively recent times with the Katë expansion of the 17th/18th century, which led to the displacement of Indo-Aryan and Iranian languages to the west, north and east of the Katë homeland of Ktivi (Kantiwā) in central Nuristan (cf. Herrlich 1937; Snoy 1965; Strand 1997; Cacopardo 2023).

In this regard, the geographical position of Dameli and the presence of apparent Nuristani loanwords in Khowar also deserves an explanation. The original language of the Jashi, the previous inhabitants of most of eastern Nuristan (cf. Cacopardo & Cacopardo 2001: 173–226; Cacopardo 2023), which was later displaced by Katë, is unknown, but could just as well have been Indo-Aryan as Nuristani. The oral history of the Dameli speakers does not point to a displacement of the language community from eastern Nuristan (Cacopardo & Cacopardo 2001: 168), which would be expected in case the language had been brought from there by Jashi refugees after the Katë expansion (as proposed by Morgenstierne 1942: 147–148). If Dameli is Nuristani in origin, it would therefore seem most likely that Nuristani languages were once also spoken around the Kunar-Chitral valley (today's Nuristani enclaves in this area are of recent origin), apparently reaching far enough to the north to come into contact with Khowar, but surviving only in the furthest south of Chitral in the form of Dameli. Regardless of whether the Jashi spoke a separate Nuristani language before the Katë expansion, the more isolated geographical position of Dameli, at some distance from Nuristan and surrounded by Indo-Aryan languages, could account for the stronger Indo-Aryan influences on its lexicon and phonology.

In the following sections, I will discuss all of the central isoglosses that may shed light on the position of Nuristani within Indo-Iranian, based on the more ample data available today (cf. Section 0.). Sections 6.1–6.4 will primarily be

concerned with an evaluation of the developments of the Indo-Iranian palatals in Nuristani, but, in the course of this, will also deal with intersecting issues like the development of the Indo-Iranian aspiration contrast and the status of the RUKI rule in the development of the sibilants. Section 6.5 is focused on a re-evaluation of the isoglosses shared with Indo-Aryan that have been particularly stressed in previous research.

6.1 Palatal developments and aspiration

The crucial isoglosses that caused Morgenstierne to single out the Nuristani group concern the development of the Indo-Iranian primary and secondary palatals. Here, the Nuristani languages show structurally the same mergers as Iranian: preservation of the contrast between **ǰ(ʰ)* and **ǰ́(ʰ)*, but loss of the aspiration contrast. Additionally, the outcomes of the primary palatals **ć* and **ǰ(ʰ)* are phonetically dental affricates at least in some of the languages, a stage of development that can also be reconstructed for the earliest stages of Iranian (see Section 5), but is not directly attested in any Iranian language.[39]

Proto-Indo-Iranian	**č*	**ǰ*	**ǰʰ*	**ǰ́*	**ǰ́ʰ*	**ć*
Proto-Nuristani	**č*	**ǰ*		**j̈*		**ċ*
– Katë	*č*	*ǰ* (> *č* /_#)		NE/W *z*, SE *j̈* (> W *ċ* ~ *j̈* ~ *z*, NE/SE *ċ* /_#)		*ċ*
– N. Kalasha	*č*	*ǰ*		*z*		*ċ*
– Tregami	*č*	*ǰ*		*j̈*		*ċ*
– Ashkun	*ċ*	*j̈* ~ *z* (> *ǰ* ~ *ž* /_*i*)				*s* (> *š* /_*i*) (merged with PIIr. **s* and borrowed IA *š/ś*)
– Prasun	*ž*			*z*		
– Dameli	*č*	*ž*		*z*		*ċ*

Table 3. Nuristani palatal developments - basic correspondences

[39] Note that the transcription of these dental affricates as **ts*, **dz* for early Iranian, but as **ċ*, **j̈* for Nuristani, is only a notational convention owed to different research traditions. Both transcriptions refer to the same sounds (IPA [t͡s], [d͡z]).

As can be seen in the basic correspondences listed in Table 3, the further development of the palatals has remained more conservative in Katë and Nuristani Kalasha, whereas Ashkun and Prasun have taken more innovative paths. Examples illustrating the correspondences are shown in Table 4.

PIIr.	Old Indo-Aryan	Avestan/Iranian	Nuristani
*ǰ	*jyā́-* ‘bowstring’	*ǰiiā-* ‘bowstring’	Kt. *ǰi*, NKal. *ǰi*, A. *ǰi*, Pr. *ži* ‘bowstring’
	nij- ‘to wash’	*niž-* ‘to wash’	Kt. W *nëǰ-*, NE *niǰ-*, SE *ninǰ-*, NKal. *niǰ-*, Pr. *niž-* ‘to wash’
	jīv- ‘to be alive’	*ǰuu-* ‘to be alive’	Kt. W/NE *ǰiv-*, SE *ǰü-* ‘to be alive’ NKal. Ẓ *ǰüw-* ‘to make a living’
*ǰʰ	*han-* ‘to strike, kill’	*ǰan-* ‘to strike, kill’	Kt. W *ǰiř-*, NE *ǰiň-*, SE *ǰaň-*, NKal. Ẓ *ẓɨ̄-*, N *ǰā̃-*, Pr. *žon-*, Dam. *žan-* ‘to kill’
	han-tar- ‘killer’	*ǰan-tar-* ‘killer’	Kt. NE/W *ǰut*, SE *ǰüt*, NKal. *ǰūt*, Pr. *žüt* ‘(snow) leopard’
	áhi- ‘snake’	*aži-* ‘snake’	Prasun *ižéŋ* ‘snake’ (doubtful, suffix unexplained)
*ǰ	*jā́mātar-* ‘son-in-law’	*zāmātar-* ‘son-in-law’	Kt. W/NE *zëmó*, SE *ǰamó*, NKal. *zamā́*, A. *zamā́*, Pr. *zëmí*, Dam. *zāmā* ‘son-in-law’
	jñā- (*jānā-*) ‘to know’	*zān-* ‘to know’	Kt. W *zař-*, NE *zaň-*, SE *ǰaň-*, NKal. Ẓ *zṇ̌-*, Pr. *(ë)zn-*, Dam. *zān-* ‘to know, to understand’
	jā́nu- ‘knee’	*zānu-* ‘knee’	Kt. W *zo*, KT *zu*, NE *zõ*, SE *ǰõ*, NKal. *zã̄*, A. *zã̄* ‘knee’
*ǰʱ	*hŕ̥d-aya-* ‘heart’	*zərəδ-aiia-* ‘heart’	Kt. W/NE *zërḗ*, SE *ǰarḗ*, NKal. Ẓ *zo,* N *zö*, A. *ǰidí* ~ *židí*, Pr. *zër*, Dam. *zādí* ‘heart’
	himá- ‘snow’	Wakhi *zəm* ‘snow’	Kt. NE/W *zim*, SE *ǰïm*, NKal. Ẓ *zëm/zɨm*, N *zim*, A. *žim*, Pr. *zëmá* ‘snow’

	hári- 'yellow, pale'	*zairi-* 'yellow'	Kt. W *zëřḗ,* NE *zëňḗ,* SE *jëňḗ* 'red, brown, yellow', Pr. *zün, zünyóg* 'yellow'[40]
**ć*[41]	*dáśa-* 'ten'	*dasa-* 'ten'	Kt. *duċ*, Pr. *lëz(ḗ)* 'ten'; [NKal. *doš* 'ten' ⇐ IA]; [A. *dos* 'ten' ⇐ IA?]
	kaś- 'to become visible, to see, to look'	*kas-* 'to become visible, to see, to look'	Kt. W/NE *kċ-*, SE *kaċ-*, NKal. *kaċ-*, A. *kas-* 'to look', Pr. *oz-* 'to wait; to look for', Dam. *kaċ-* 'to look for'
	paśu-pā́- 'shepherd'	*pasu-* 'livestock' °*-pā-* 'protecting'	[+ **-ka-*] Kt. W/NE *pċo*, SE *paċó*, Pr. *wuzá* 'shepherd' [NKal. *pašpā́*, A. *paš(i)pá* ⇐ IA]

Table 4. Nuristani palatal developments – examples

The Nuristani languages are in fact primarily recognizable by their archaisms, and not many shared innovations have been identified as evidence for their coherence as a group of common descent. They share the merger of voiced aspirated and voiced sounds (see Table 5, top), but this is also found in Iranian. A good candidate for an exclusive shared innovation is the development of pre-laryngeal plosives, which probably became voiceless aspirates in Proto-Indo-Iranian, but merge with regular voiceless unaspirated plosives in Nuristani, leaving no trace of an aspiration contrast, nor any indications of an Iranian-like fricative stage (see Table 5, center). Similarly, the Nuristani languages have plosives as reflexes of pre-consonantal plosives, unlike the fricatives seen in Iranian languages (see Table 5, bottom). There are some Iranian languages which also do not have fricative outcomes in these contexts, but these then generally

[40] See Section 6.5.3 on the morphological derivation of the Nuristani forms.

[41] The puzzlement in previous publications over the Nuristani words showing *š* in place of PIIr. **ć* and the attempts to explain them as anything other than Indo-Aryan loanwords (originating with Morgenstierne 1926: 58) seem unnecessary to me. Morgenstierne had apparently come to the same conclusion by the end of his life (see Morgenstierne 1973a: 337), but the doubts were revived by Buddruss (1977a: 30–31), whose assessment is quoted in full by Lipp (2009: I, 154, fn. 15). Morgenstierne's (1929: 198) earlier contention (re-affirmed by Buddruss 1977a: 30) that it would be strange that Nuristani should have borrowed so many words with Indo-Aryan *ś* < **ć* but almost none with Indo-Aryan *h* < **ʃʱ*, **ʃʱ* can be disregarded, as there are in fact quite a few cases of borrowed Indo-Aryan words with *h* (e.g., Kt. SE *přor* 'wound' ⇐ *prahāra-*, *ắdrë* 'yellow' ⇐ *haridra-ka-*, *Móne* 'pre-Islamic deity' ⇐ *Mahādevá-*), though the *h* itself is of course dropped, as the Nuristani languages have no phoneme /h/.

have voiceless aspirates instead (with the notable exception of Balochi). It is not possible to exclude with certainty that this deaspiration is a recent, convergent development in Nuristani, but it could not be explained as a result of the contact influence of the surrounding Indo-Aryan languages, which all have (or had until most recently) voiceless aspirates.

Old Indo-Aryan	Avestan/Iranian	Nuristani
dhūmá- ‘smoke’	Khotanese *dumä* ‘smoke’	Kt. W/NE *dyum*, SE *düm*, NKal. *düm*, A. *dum*, Pr. *ülű́m* ‘smoke’
bhrā́tar- ‘brother’	*brātar-* ‘brother’	Kt. *břo*, NKal. *brā*, A. W *břắ*, M *blā*, Pr. *wayə́* ‘brother’
khára- ‘donkey’	*xara-* ‘donkey’	Kt. W/NE *kur*; [+ **-ka-*] NKal. N *kará* ‘donkey’
–	*ząϑa-* ‘birth’	Kt. W/NE *zut* ‘birth pangs’; NKal. *zũt*, Pr. *zut* ‘birth, birthing time’
phéna- ‘foam’	Ossetic *fynk/finkæ* ‘foam’	[+ **-ka-*] Kt. NE *paňḗ*, SE *přẽ*, NKal. Ẓ *pṇ̃*, N *přẽ*, A. *pyəṇə́* ‘foam’
kram^{i}*-* ‘to step, to stride’	Sogdian B *xrʾm-* ‘to come’	Kt. W/SE *křam-*, A. *křām-* ‘to thresh’
tráyas ‘three’	*ϑrāiiō* ‘three’	Kt. W/SE *tre*, NE *tëré*, NKal. *tre*, A. *trë*, Pr. *tči* ‘three’
–	Munji *fʾráγoməy* ‘male goat kid (1–2 years old)’	Kt. W/NE *přómë*, W-*KT* *přúmë*, SE *přámë*, NKal. Ẓ *prāmḗ*, A. *přāmḗ*, Pr. *pām(ḗ)* [⇐ Kt.?] ‘(age stage of) male goat kid’ Pr. *pum* ‘lamb’

Table 5. Loss of aspiration and absence of pre-consonantal spirantization in Nuristani[42]

Werba (2016: 349) argues for a recent deaspiration of both voiced and voiceless aspirates in Nuristani and Kümmel (2022: 254, fn. 7) is also open to this conclusion, claiming that “the merger of the palatal aspirates with the simple voiced palatals presupposes a chronology different from Indo-Aryan”, but that this “only requires that aspiration was lost before the debuccalization of palatal aspirates”. This is not quite correct, however, since the Nuristani outcomes (cf.

[42] Some of the words in this table (particularly Kt. *kur*) are possible loanwords, but they still serve to illustrate the loss of the aspiration contrast and absence of fricative reflexes – loanwords which entered the Nuristani languages after the loss of aspiration would naturally have been borrowed with replacement of aspirates by non-aspirates.

Table 3) also presuppose that the primary and secondary palatals never merged, whereas they most likely merged in Indo-Aryan before the debuccalization of the aspirates to *h*: First PIIr. **ǰ*, **ǰ̌* > *j* and PIIr. **ǰ́ʰ*, **ǰ̌ʰ* > **jʰ*, and only then **jʰ* > *h*. If aspiration had merely been lost before the debuccalization of the palatal aspirates in this chronology, this would have produced a single merged phoneme ***j* < PIIr. **ǰ*, **ǰ́ʰ*, **ǰ̌*, **ǰ̌ʰ*. A different development than in Indo-Aryan is therefore required both with regard to the merger of primary and secondary palatals and to the debuccalization of palatal aspirates.

In any case, neither of these two developments can be claimed to be recent, post-Proto-Indo-Aryan innovations, as both the merger and the debuccalization must be reconstructed for the last common ancestor of all Indo-Aryan languages. If we include the Mitanni-Aryan evidence as potentially Indo-Aryan, which amounts to reaching back to a stage before the last common ancestor of the Indo-Aryan languages (see Section 4), this would show us that the debuccalization of the aspirates had not (yet) occurred, but primary and secondary palatals had apparently already merged in the 15th century BCE. If we wanted to place Nuristani on the historical trajectory of Indo-Aryan, the de-aspiration in Nuristani would accordingly have to be even earlier, also considering that the occlusion in **jʰ* (< PIIr. **ǰ́ʰ*, **ǰ̌ʰ*) seems to have already been lost in Mitanni Aryan, whereas some Nuristani languages retain this occlusion until today.

If we are not fixed on placing the separation of Nuristani somewhere on the trajectory towards Indo-Aryan, the deaspiration of voiced aspirates in Nuristani does not necessarily have to be this early, but in that case it would be rather attractive to assume that it happened at the same time as in Iranian, where the same development has occurred. That it should have happened very late, even after the introduction of New Persian loanwords, as suggested by Werba (2016: 349), is practically excluded. Werba's contention that Nuristani shows reflexes of the Middle Indo-Aryan development *bh* > *h* in the root *bhū-* 'to become' with later loss of *h-* and therefore must have retained voiced aspirates until recently, is untenable. His quotation of "w. Pr.[43] *o-* ‚sein'" ['to be'] (Werba 2016: 349), allegedly < **ho-* < *bhava-*, results from a misapprehension: NKal. N "*o-* ‚sein'" does appear in Degener (1998: 493), but this stem is an abstraction from the paradigm of the copula *om*, *oš* etc. < **asmi*, **asi* etc. In NKal., *o* in monosyllables reflects **a*, not **au̯* or **au̯a*, which become *u*. The descendants of PIIr. **bʰuH-* 'to become, to be' are Kt. *bu-*, NKal. *bu-*, Ashkun *bo-*, Prasun *w-*, of which all except

[43] "w." = Waigali = N. Kalasha, "Pr." = present.

the last preserve the plosive character of PIIr. *b^h-. In Prasun the further development *b > w is regular. The loss of h in borrowed Persian vocabulary, which is also adduced as evidence by Werba (2016: 349), does not point to a late loss of h but rather to the absence of h from the Nuristani phonological systems. In any case, h is also generally dropped in the colloquial Persian of Afghanistan.

With regard to the time of deaspiration of the voiceless aspirates there is greater uncertainty, because this cannot have happened in parallel with Iranian. Werba (2016: 349) again claims a very late development, but I fail to understand why he believes that Kt. *gyu* 'shit' etc. < *$gūt^ha$- < *$guHtHa$- should be evidence for this. Here *t < *t^h is simply lost intervocalically like any other instance of *t. Kümmel (2022: 254, fn. 7) uses a different argument, pointing out that, since Dameli is more likely a Nuristani than an Indo-Aryan language but has voiceless aspirates, a recent date for voiceless deaspiration in Nuristani would be plausible.

However, if Dameli is indeed originally a Nuristani language, which does appear likely, it is still more probable that its aspiration contrast was introduced along with Indo-Aryan loanwords, since there are no clear cases of Nuristani words with etymological aspiration in Dameli, whereas the Nuristani-derived word *uštūn* 'pillar' (~ OIA *sthū́ṇā-*) shows no aspiration (cf. Halfmann 2022: 125–126).[44] The fact that Dameli also has no aspiration in the onset of *tanɣ-* 'to become fat' (FLI 2016: 54; Urdu transl. *moṭ(ā) honā*), the cognate of Katë W/NE *tëŋ-*, SE *taŋ-* 'to grow (up)', N. Kalasha *taŋ-* 'to stretch (itr.), to grow' < PIIr. *$tanɣ^h$- 'to pull, to stretch'[45] is therefore probably without probative value with regard to the application of the Iranian development *TVND^h > *T^{h}VND in the prehistory of Nuristani. The Dameli verb *$k^hāž$-* 'to want, desire' appears to be borrowed from Middle Iranian with substitution of k^h for *xw* (cf. Sogdian *xw(ʾ)yz*, Bactrian χωζ- 'id.' < Old Iranian *$xwāz$-; ultimately a derivative of PIE *$su̯eh_2d$- 'to become tasty'?). This may indicate that aspiration was already present in Dameli in the Middle Iranian period.[46] As this is also the time when Indo-Aryan influence can be

[44] The (etymologically unexpected) aspiration in the Nuristani-derived Dameli word *t^hus* 'straw' (with *s* corresponding to OIA *ṣ* in *túṣa-* 'chaff') mentioned by Halfmann (2022: 125) is due to a secondary development of aspirated t^h and k^h before sibilants, cf. *$t^huš$-* 'to celebrate' ~ OIA *tuṣ-ya-* 'to be delighted', *$k^hušala$* 'intelligent' ~ OIA *kúśala-ka-*, *$k^hiṣ$* 'plowing' ~ OIA *kr̥ṣí-* (FLI 2016: 55, 127).

[45] Redistribution of intransitive meaning to the simple stem could easily have happened somewhere on the way to the currently productive means of marking valency, where, e.g., N. Kalasha *taŋ-* contrasts with *taŋ-ā-* 'to stretch (tr.)' (*-ā-* < *˚$āp/w$-aya-*). The absence of root-final palatalization in Nuristani points to a denominal origin or perhaps a different analogical generalization of the root shape than that seen in Iranian.

[46] It is not clear whether the process of secondary aspiration before sibilants also applied before *ž* (< *$ǰ$*). As there are no attested cases in this context, but at least one case with unaspirated *k* before *ž*

assumed to have been strongest for sociohistorical reasons, introduction of the aspiration contrast via loanwords already at this time is not improbable. It follows then, that the deaspiration seen in the Nuristani vocabulary of Dameli likely happened before this period.

We can therefore conclude that deaspiration of voiced aspirates could indeed be an innovation shared by Nuristani and Iranian and that the deaspiration of voiceless aspirates is also probably relatively early and serves as the best available candidate for a shared Nuristani innovation identified so far, though other candidates will be mentioned in the further discussion.

6.2 The development of PIIr. **ts*, **ds*

Lipp (2009: I, 150–151) has interpreted the merger of PIIr. **ts*, **ds* with **ć*, **ʃ$^{(h)}$* as dental affricates as another shared innovation of Nuristani and Iranian. This merger is, in a way, a natural consequence of the dentalization of **ć* and **ʃ$^{(h)}$*, though the exact phonetic realization of **ts* and **ds*, i.e., whether they were "real" affricates, is not known. It is possible that this merger did take place in Nuristani, but the evidence deserves a more nuanced discussion. Lipp points only to Kt. W *maċḗ*, NE *ṓ-maċẽ*, SE *ṓ-maċẽ̃* 'fish' (Lipp: "Kati *mat͡si*") ~ OIA *mátsya-* 'fish', and Kt. W *vëċúř*, NE *uċéř*, SE *vaċéř*; NKal. Ẓ *waċélë*, N *oċalá* 'calf' (Lipp: "Kati *wut͡suř*, Waigali *wat͡sala*") ~ OIA *vatsá-* 'calf' and sees his point proven, but the actual situation is a bit more complicated. The word for 'calf' is a likely Indo-Aryan loanword ~ OIA *vatsá-* + *-la-ka-*. The correspondence Kt. *ř* ~ NKal. *l* appears in earlier borrowings for IA *l* (cf. Section 6.5.2) and the word is missing from Prasun. Another loanword from the same root is NKal. *saċá* 'year' (in *tre saċá* 'the year before last'[47] etc.), A. *sōċḗ* 'year' (in *tre sōċḗ* 'the year before last etc.), Kt. *ssë*, Pr. *wusċú* ~ *wuċú*[48] 'year', likely borrowed from an MIA form akin to Gandhari *saṁvatsara* 'year'. For the word for 'fish', borrowing is also difficult to exclude.

(*kūžīkan* 'a kind of mulberry'), it is possible that it did not apply in this context and that the aspiration in *kʰāž-* is therefore old.

[47] Time distances like 'two days ago' etc. are reckoned in Nuristani languages with the inclusion of the current day/year etc., thus, e.g., Kt. *ačúṭ* 'in three days, the day after the day after tomorrow' contains a derivative of OIA *caturthá-* 'fourth' (borrowed from IA). Therefore *tre saċá* means 'two years ago', but contains the numeral *tre* 'three'.

[48] Buddruss & Degener (2015: 859) also record a (possibly spurious) variant "*woso*" in the same dialect and compare the word to OIA **vatsa-* 'year' (as in OIA *vatsa-rá-* 'year'), but it is more likely that the word is originally a syncopated form like Kt. *ssë* with the prothetic syllable *(w)u-* ~ *(w)ü-* ~ *(w)ə-* which is frequently added to monosyllabic words in Prasun, e.g. in *wunúg* 'wooden aqueduct, mill water conduit' ~ NKal. *nu* 'id.' < PIIr. **naHu-* (see Section 6.5.4).

If we assume for now that the words are inherited, the consonant correspondences in fact do not match those expected for simple PIIr. **ć*:

- Kt. W *maċé*, NE *ő-maċẽ*, SE *ő-maċẽ̃*[49] 'fish' [compounds with *ō* 'water']
- NKal. Ẓ *maćé*, N *maċ* 'fish'
- A. *mōċ* 'fish'
- Pr. *t-ëwa misü* (Buddruss & Degener 2015), *t-ëwa misíg* (Liljegren et al. 2021) 'fish' [*t-ëwa* = 'from inside the water (ABL)'; added DIM *-g*]

A. *ċ* and Pr. *s* appear in place of expected A. *s* and Pr. *z*.[50] This would at first glance speak against a merger of **ć* and **ts*. However, the example is not perfect, since OIA *mátsya-* contains a cluster *-tsy-*, which could have developed differently from simple intervocalic *-ts-*.

Additional – though still not indubitable – evidence for the merger of **ts*, **ds* with **ć*, **ʃ(h)* in Nuristani comes from the voiced counterpart. The PIIr. cluster **ds* is quite rare, but one potential example may be found in the correspondence OIA *ádga-* 'knot, sprout (of bamboo)', New Persian *azg* 'twig, branch', *(a)zax* 'wart, knob of wood' (cf. Filippone 2011: 213), which may reflect a PIIr. **Hadsga-* < PIE **Hodsg^{w}o-/*h$_{3}$edsg^{w}o-* > Old Irish *odb* 'knot in a tree, branch', Middle Welsh *oddf* 'knot, hump' (Lubotsky 2010: s.v. *ádga-*). This etymon probably has a Nuristani correspondence in the following cognate set:

- Kt. W/NE *azé́*, SE *ajé́* 'wart' < **Hadsga-* + **-ka-*
- NKal. Ẓ *anzlík*, N *anzilík* 'wart' < **Hadsga-* + *-ī* + IA-derived *-likā-* + DIM *-k*
- Pr. *izóg* 'wart' < **Hadsga-* + *-ī* + DIM *-og*

Again, this set reflects a cluster *-dsg-* rather than simple *-ds-*, but all languages show essentially the same reflex as with PIIr. **ʃ(h)* here. Only NKal. *anz(i)lik* shows an unexpected nasal, which may be a reflection of the cluster **zg*, but otherwise the *g* is lost without a trace in all languages.

[49] The final nasalization in Kt. NE/SE cannot be straighforwardly explained from **matsya-ka-*, but the dialectal correspondence is reminiscent of that seen in W *maŕé*, NE *maŕé*, SE *maŕé̃* 'hawk, bird of prey' ~ OIA *māra-ka-* 'killer' (with lexicographers also: 'falcon, hawk') and NE *maṣĺ* 'honey' ⇐ IA *mākṣika-*. In light of these words, assuming a general sound change in which nasalization spread from the allophonically nasalized initial syllable to the following one may be preferable to a morphological explanation with an unmotivated suffix **-na-*.

[50] The regular Prasun outcome of simple PIIr. **ć* is *z*, as can be seen in Table 4. Morgenstierne (1949: 208) considered this a "postvocalic" development next to "true Kafiri *ċ*", but *zā* 'an herb', equated by Buddruss & Degener (2015: 887) with "Ningalami *ċā*", seems to contradict the intervocalic hypothesis: Ningalami *ċā* is a likely loanword from NKal. *ċā* 'greens', a cognate of the Prasun word and Kt. SE *ċo* 'greens' ~ OIA *śāka-* 'potherb, vegetable, greens'. The further discussion will show that Prasun *ċ* appears only as a reflex of particular clusters, never of simple PIIr. **ć*.

6.3 The RUKI Rule and the development of palatal clusters

A shared archaism of the Nuristani languages is the preservation of PIIr. **s*, like in Indo-Aryan and the reconstructed earliest stages of Iranian (see Table 6).

Additionally, as pointed out by Morgenstierne (1973a: 340–341), clear reflexes of the application of the RUKI rule (PIE **s* > **š* /**r*,**u/u̯*,**k*,**i/i̯* _) are lacking in Nuristani. In RUKI environments, Nuristani languages instead show simple *s* or further developments that could be secondary. Examples are given in the following subsections, ordered by result and phonological context. The Ashkun evidence is mostly excluded, as it is usually too ambiguous to be helpful due to the (relatively late) merger of *s*, *š* and *ċ* as *s*. Since the regular development of PIE **ks* in Nuristani is still debated, it will not be listed here, but discussed in detail further below in Section 6.3.9.

Old Indo-Aryan	Avestan	Nuristani
-	*hapərəsī-* 'juniper'	Katë W *së(v)řéċ,* NE *sëřéċ*, SE *sařéċ* 'juniper' Prasun *ṣoẓ* 'juniper' (assimilated < **soẓ*)
sagh- 'to be able to bear'	-	Katë SE *saǰ-* 'to endure, to last'[51]

Table 6. Preservation of PIIr. **s* in Nuristani
(in words that also contain Nur. palatal developments).

6.3.1 Alveolar *s* < **s* /**u*,**au̯*,**ai̯* _

The outcome *s* appears after **u*, but also after **au̯* and **ai̯*:

- Kt. W *mësé́,* NE *musé́,* SE *muzé́*;[52] Pr. *müs* 'mouse'[53]
  < **mūš-a-* [+ **-ka-* in Kt.] (OIA *mū́ṣ-*, Middle Persian *mūš* 'mouse')
- Kt. W *tyus,* SE *tüs*; NKal. *tüs* 'hull of grain/millet', Dam. *t^{h}us* 'straw'
  < **tuša-* (OIA *túṣa-* 'hull of grain')[54]

[51] This form could also be an Indo-Aryan loanword, if derived from MIA **sajjha-* < *sah-ya-*, but such a present formation to this root does not seem to be attested in MIA or NIA. Turner (1962–1966: T. 13383) reports only the Prakrit form *sajjha-* 'capable of bearing' < nominal *sáh-ya-*.

[52] In Kt. SE forms, results of a late lenition of intervocalic sibilants can be observed, which has also affected some New Persian loanwords: *muzé́rmon* 'Muslim' ⇐ *musulmān*, *niẓón* 'sign' ⇐ *nišān*.

[53] Hegedűs (2012: 154–155) observes an "alternation *š* ~ *ṣ*" in Ashkun *muṣé́* 'mouse' corresponding to *s* in the other languages and considers this the regular reflex to be expected also in *yuṣ* 'broth' (~ OIA *yūṣa-* 'broth'). However, since *s* appears in A. *must* 'fist', *dos* 'yesterday', *wis* 'poison' etc., A. *muṣë* and *yuṣ* are better considered Indo-Aryan loanwords which do not show the inherited development. As for the alternation, though *muṣé́* and *yuṣ* have both been recorded with *š* (at least as a variant) by Morgenstierne (1929; 1934), both appear with *ṣ* in the more reliable unpublished data of Buddruss.

[54] Hegedűs (2022: 154) considers this example problematic based on Turner's (1962–1966: T. 5892) contention that it could be a "non-Aryan" loanword in Indo-Aryan, but the derivation from the PIE root **teu̯s-* suggested by Werba *apud* Mayrhofer (1992–2001: I, 660) is rather straightforward. Unexplained

- Kt. W *pëřés,* NE *pëřésë,* SE *pařézë* ‘dust-colored, grey; dust’; Pr. *përċé* ‘dust, sand’ [⇐ Kt.]
  < **paruša-* + **-ka-*[55] (OIA *paruṣá-* ‘grey, dirt-colored’, YAv. *pouruša-* ‘grey’)
- Kt., NKal. *dus*, Pr. *wulús* ‘yesterday’
  < **daų̯šaH-* ‘night’ (OIA *doṣā́-* ‘evening’, Middle/New Persian *dōš* ‘last night’)
- Pr. *nus-* ~ *nüs-* ‘to hear’
  < **ni-g^{h}aų̯š-* (Av. *gaoš-*, Sogdian S *nγwš*, Middle Persian *niyōš-* ‘to hear’)
- NKal. *ẓ̣ tẽs* - obl.pl. of demonstrative *se* (dir.sg.), *te* (dir.pl.)
  < **taį̯šām* - gen.pl. of demonstrative **sa-* (nom.sg.), *taį̯* (nom.pl.)

6.3.2 Palatal *š* < **s /*i_ , *_i*

The outcome *š* appears after **i*, but since this includes secondary instances of *i* and the same outcome appears *before i*, whereas *s* remains after **aį̯*, **s* > *š* in these contexts is likely a secondary development.[56] Examples:

- Kt. *viš*; NKal. *wiš*; Pr. *wiš* ~ *üš* ‘poison’
  < **ų̯iša-*, cf. OIA *viṣá-*, Av. *uuīša-* ‘poison’
- Kt. W *nëš-*, NE *niš-*; NKal. *niši-* ‘to sit down’
  < **ni-šīda-*, cf. OIA *ni-ṣīda-* ‘to sit down’, OAv. *ni-šąsiiā* ‘I shall sit down’
- Kt. *-uš* ~ *-iš, -miš*; NKal. *-š, -miš*; Pr. *-š, -mš* - verbal endings 2SG, 1PL
  < **-a-si, *-masi*
- Kt. W/NE *šiv-*, SE *šǖ-*; NKal. *šüw-*, Pr. *-šu-* ~ *-šü-* ‘to sew’
  < **siHų̯-*, cf. OIA *sīv-ya-*, Ossetic *x^{w}yj-/xuj-* ‘to sew’
- Pr. *-šil-* ‘to sit down’
  < **sīda-*, cf. OIA *sīda-*, YAv. °*-hiδa-* ‘to sit’
- Kt. *ši* ‘embrace’
  < **sHi-ti-*, cf. OIA *siti-* ‘binding, fastening’, YAv. *hita-* ‘bound’

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variation in some New Indo-Aryan languages cannot be taken as proof of non-Indo-Iranian origin, since the phonological histories of these languages are often poorly understood.

[55] Turner (1962–1966: T. 8019) connects these words to OIA *pāṁsú-* ‘crumbling soil, dust, sand’, but this is less convincing both phonologically and semantically. The *ř* in Kt. is due to a special Kt. development of **r* in labial contexts: **r-* > *ẓ- /_*u*: W *ẓyu*, NE *ẓu*, SE *ẓü* ‘hair’ < **Hrud^{h}-a-* ‘growth, sprout’, W *ẓyu-*, NE/SE *ẓu-* ‘to cry’ < **ruda-* (**raų̯d-*) ‘id.’; **-r-* > *ř /_u/u_*: W/NE *bë-dyúř*, SE *ba-düř* ‘far’ (prefixed locative) < **duHra-* ‘id.’; W *s(ë)ċyúř*, NE *ssyuř*, SE *ċüř* ‘father-in-law’ < **sų̯aćura-* ‘id.’. Elsewhere **r-* > Kt. *ř-* (e.g., *řuč* ‘light’ < **raų̯čas-*) and intervocalic **-r-* > Kt. ∅ (e.g. *ma-* ‘to kill, slaughter’ < **mār-aį̯a-* or ⇐ IA *mār-aya-*, *peć* ‘axe’ < **paraću-*) .

[56] In terms of relative chronology, it implies that **aį̯* > **e* happened before *s* > **š /*i_, *_i*. Consequently, if the latter development is reconstructable for Proto-Nuristani, then so is **aį̯* > **e*.

6.3.3 Cluster **št* < **st*

The PIE cluster **st* unconditionally develops into *št* in Kt., NKal. Ẓ and the Nuristani lexicon of Dameli (with final reduction to *š* in Kt. SE and Dam.). In NKal. N the result is *št-* word-initially, but *-st-* in word-internal position, while Prasun has *št* word-initially and after front vowels and *st* elsewhere. Ashkun has *st* everywhere in accordance with the merger mentioned in Section 6.3. Word-initially, a prothetic vowel additionally develops in all languages except Kt.

No systematic difference in outcome can be observed between the RUKI environments with PIIr. **u/u̯* or **i* and other environments, indicating the absence of a RUKI reflex also in this context. The development **st* > **št* may be reconstructable for Proto-Nuristani, if we can assume a secondary reversal **št* > *st* after non-front vowels in Pr. and generally in intervocalic position in NKal. N.[57]

1. Word-initially:
   a. Kt. *štum*; NKal. Ẓ *üštű́m*; Pr. *ištyéb* ‘tree’; NKal. N *üstű́m* ‘pillar’
      < **stamb^{h}a-* ‘post, pillar’
   b. Kt. W *štyu*, SE *štű̃*; NKal. Ẓ *üštű̃́*; Dam. *uštūn* ‘pillar’
      <**stuHnaH-* ‘pillar’
   c. Kt. W *što*, [+ *-ig:*] Pr. *ištíg* ‘star’
      < **Hstar-* ~ **Hstār-* ‘star’
2. With PIIr. **i:*
   a. NKal. Ẓ *pištḗ*, N *pistá* ‘powder snow’
      < **piš-ta-ka-* ‘crushed, ground’ (+ DIM *-ok* > NKal. Ẓ *pištók* ‘finely ground matter, particles’)
   b. Kt. W *křëštḗ*, NE *kaṇṣtḗ*, SE *kaṅéštë*; NKal. Ẓ *kõ̃štṓ*, N *kõ̃stṓ*; [+ *-g:*] Pr. *ëštḗg* ‘younger, youngest’
      < **kaništ(H)a-ka-* ‘younger, youngest’
3. With PIIr. **u/u̯:*
   a. Kt. W *mišt* ‘fist’
      < **mušti-* [+ **-ka-:*] Pr. *müštű́* ‘fist’; [+ *-k:*] NKal. N *müstik* ‘fist’, but NKal Ẓ *müṣṭí* ‘fist’ ⇐ IA

[57] Notable in this regard is NKal. N *pistá* ‘powder snow’ < **piš-ta-ka-* next to the verbal root *piš-* with *š*. A consequence of this analysis would be that Kt. W *ašt*, SE *áštë* ‘3PL present copula’ would have to be derived from the older athematic 3SG **HaHs-tai* ‘sits’ or possibly the original 3SG copula **Hasti*, rather than a secondary contraction of a thematicized 3PL form **HaHs-anti vel sim.*, even though the rest of the paradigm has obviously been thematicized (W 1SG *asúm*, 2G *asúš*). Shift from 3SG to 3PL could be explained via generalization of 3SG forms to PL contexts based on existing patterns in the grammar, followed by displacement in the SG by the innovative 3SG form *asḗ*. The existence of *-t* (< **-nti*) as a 3PL ending could have aided such a change.

b. Kt. W/NE *přušt*, SE *přüš*; NKal. Ẓ *prũ̃št*, N *prüst*; Pr. *pust* (beside *pušt* ⇐ Kt.) ‘bed’
< **praṷštHa-*

4. With PIIr. **a:*
a. Kt. W/NE *dušt*, NE *duy*,[58] SE *düš*; NKal. Ẓ *došt*, N *dost*; Pr. *lust*; Dam. *daš* ‘hand’
< **ǰʰasta-*
b. Kt. W/NE *mřëštḗ*, SE *mřaštḗ*; NKal. Ẓ *muštḗ*, N *mustá* ‘brain’
< **mrasta-ka-* < **mastra-ka-* (?)

6.3.4 Retroflex *ṣ* < **rs*

The outcome *ṣ* results from **r* + **s*, but this can equally likely derive from **rs* as from **rš*. Since the same development appears in regional Indo-Aryan, it is difficult to distinguish loanwords from inherited words in this category. Examples:

- Kt. W/NE *aṣḗ*, SE *aẓḗ*[59]; NKal. Ẓ *aṣḗ* ‘bull’
  <**Hr̥ša-ka-*, cf. OIA *ṛṣa-bhá-* ‘bull’, YAv. *aršan-* ‘male, male animal’
- Kt. W/NE *kṣ-*, SE *kaẓ-* ‘to scrape’; NKal. *kaṣ-* ‘to pull, to drag’
  < **karš-*, cf. OIA *karṣ-*, YAv. *karš-* ‘to drag, to pull, to plow’
- Kt. W *pëmëṣṭ-*, NE *pumëṣṭ-*, SE *pamë ṣṭ-*; NKal. Ẓ *pramëṣ-*, pfv. *pramëṣṭ-*, N *pramaṣṭ-* ‘to forget’
  < **pra-marš-* (analogical present stems from participle **pra-mr̥š-ta-* except in NKal. Ẓ), cf. OIA *pra-marṣ-*, Munji *fərmiy-/fərməśḱ-* ‘to forget’
- Kt. W *paṣyú* ‘sole of foot’[60]; Pr. *wëṣḗ* ‘heel’
  < **pāršny-a-ka-*, cf. OIA *pā́rṣṇi-*, New Persian *pāšna* ‘heel’

[58] Kt. NE in some cases has forms ending in *-y* corresponding to *-št* in the other dialects, e.g. NE *ay* 3PL copula ~ W *ašt*, SE *áštë*; *punúy* ‘earlier’ ~ W *pënúšt*, SE *panű́š*. These forms do not seem to result from a general sound change, since words with *-št* exist as well, while the Southeastern dialect also has the copular form *ay* ~ *ā* as a variant. Perhaps an earlier conditioned sound change had led to variation between the two outcomes that was then differently leveled in the various dialects.

[59] The SE direct case form is analogically formed on the pattern of *e*-final nouns, which have dir.sg. *-e*, obl.sg. *-ē*, whereas the other dialects preserve the older paradigm with dir.sg. *-ë*, obl.sg. *-ē*.

[60] Attested with the expected retroflex sibilant in an unpublished Western dialect glossary from the archives of A.L. Grjunberg (Russian gloss: ‘podošva’). Turner (1962–1966: T. 8124) cites a less accurate transcription “*pašyū̃*” from Morgenstierne’s field data. In the Eastern dialects the word for ‘heel’ is instead NE *kyúr-kṭë*, SE *kű́r-(k)ṭë*, a compound with W/NE *kyur*, SE *kür* ‘foot’ ⇐ IA *khura-* ‘hoof’.

6.3.5 Retroflex *ṣ(ṭ)* and palatal *š(t)* in loanwords

The Nuristani languages also contain Indo-Aryan loanwords with the Indo-Aryan RUKI development to retroflex *ṣ(ṭ)*:[61]

- Kt. *veṣ,* NKal. *weṣ* 'health'
  ⇐ IA *véṣa-* 'activity'
- Kt. W/SE *ǰeṣṭ*, NE *ǰïṣṭ* 'elder, leader'
  ⇐ IA *jyéṣṭha-* 'best, eldest'
- Kt. W *vëṣṭ-*, SE *viṣṭ-* 'to tighten, tie tightly'
  ⇐ IA *veṣṭ-aya-* 'to wrap' or secondary **viṣṭ-aya-*
- Kt. *duṣ* 'sin, crime, guilt'; NKal. ẓ *duṣ* 'fault, shortcoming, sin'
  ⇐ IA *doṣa-* 'fault, vice, sin, crime'
- NKal. ẓ *urúṣ* 'anger'
  ⇐ IA *roṣa-* 'id.'

Palatal *š* can also appear for original *ṣ* in IA loanwords, either as a reflex of *ṣy* > *š* or as result of a sound change *ṣṭ* > *št /i_* in NKal. The latter produces word-internal *št* also in NKal. N and therefore postdates **št* > *st* /V_V in that dialect. It seems to be shared by Ashkun, which shows *st* instead of *ṣṭ* in one corresponding word.

- Kt. *piš*, NKal. *püš* 'flower'
  ⇐ IA *púṣya-* 'id.'
- NKal. *šiš-* 'to become dry'
  ⇐ IA *śuṣ-ya-* 'id.'
- NKal. ẓ *wilíšt* 'lost sheep/goat'
  ⇐ IA *víliṣṭa-* 'broken off, out of due order'
- NKal. ẓ/N *iríšt* 'line (of a carving, text)'
  ⇐ IA **r̥ṣṭa-* or **r̥ṣṭi-* participle/verbal noun from *raj-* 'to straighten, to align'[62]
- NKal. ẓ/N *pištík*; A. *pstikāk*; Kt. W *pṣkok*, NE *ṣkak,* SE *ṣkyak* 'sheep or goat dung'
  < **piṣṭik*, fem. dim. form in *-ik* ⇐ IA **pr̥ṣṭa-* 'sprinkled' (+ additional suffix *-(v)ok/-āk* in Kt./A.)

[61] That these are Indo-Aryan loanwords can be deduced from two directions: 1. By exclusion: there are two different developments, of which one appears only in Nuristani, whereas the other appears both in Nuristani and in neighboring Indo-Aryan languages; 2. From co-occurence of the Indo-Aryan-like development with other non-Nuristani sound developments within the same word, e.g. Kt. *ǰeṣṭ* < PIIr. root **ǰiaH-* with **ǰ* > *ǰ*, NKal. *urúṣ* with prothetic vowel before *r-* instead of **r-* > ẓ *ẓ-*, N *wř-*.

[62] The source of the borrowing would have had the form **riṣṭ(a)*, to which the usual prothetic vowel was added. The reflection of word-initial *r̥* as *ri* may point to a sanskritic learned borrowing.

6.3.6 Voiced context

For the voiced RUKI context, Morgenstierne (1973a: 341) mentioned Kt. W *pižḍó*, SE *píždo* as a potential example. He translated the word as ‘dangerous avalanche’ and connected it to OIA *pīḍā-* ‘damage’ < PIIr. **pižḍaH-*. The Kt. form would in this case have to contain an additional **-ka-* suffix to explain the preservation of the final vowel. However, the initial stress of the SE dialect form rather points to a recent compound (cf. Strand 1999b: s.v. “p′iš do”). Strand (1999b) translates the word as “blowing snow (especially, off a mountaintop)”. Word-final stress is attested for the Western dialect and in Pr. *pižḍá bës* ‘snowstorm’ (*bës* = ‘wind’) and IA Kalasha *pižḍó* ‘avalanche’ (Trail & Cooper 1999), both borrowed from Kt. The Kt. SE stress therefore most likely results from re-segmentation into still analyzable components, though the word is today no longer transparent (unless interpreted as ‘flower-mountain’). The meaning is probably closer to ‘snowstorm’ or ‘blowing snow’ than ‘avalanche’, since the normal word for ‘avalanche’ in Kt. is *trus*. The word can be interpreted as a compound with an otherwise unattested **pišt(é)* ‘powder snow’, cognate to NKal. *pištḗ* ‘powder snow’ and an element *-do*. Strand apparently identifies this *-do* with *do* ‘mountain’ (⇐ IA *dhā́rā-* ‘edge’), though the structure of the compound would then be unusual, since normally the first member modifies the second in Kt. compounds. Another possibility could be to compare *-do* to the first element of NE *dó-dëmi,* SE *dó-damu* (NE *dëmí*, SE *damú* = ‘wind’), translated by Strand (1999b) as ‘wind from the mountain’, again probably due to an identification of *do-* with *do* ‘mountain’. Sun-Aro (2022), on the other hand, translates the compound as Persian *tund-bād* ‘violent storm, typhoon’ without reference to mountains. There is therefore a chance that this *do* could be equivalent (whether as a cognate or as a borrowing) to OIA *dhāva-*, a deverbal noun from the root *dhav*^{i}- ‘to shake violently, to agitate, to fan’, so that the etymological meaning of *pižḍó* would be ‘snow-shaking’, whereas *dó-dëmi* would originally be a ‘shaking-wind’. In any case, *pižḍó* is unlikely to be a cognate of OIA *pīḍā-* ‘damage’. Accordingly, the voiced RUKI development in Nuristani remains unknown, since no further potential examples have so far come to light.

6.3.7 Previous interpretations

With the relevant data from the previous sections in mind, it is now possible to turn to possible interpretations of the facts, starting with previously proposed explanations. In this context, it may, first of all, be pointed out that the conditioning of the RUKI development does not point to a unitary change:

Retraction after **r* and **k*, rounding after **u* and palatalization after **i* are different phonetic phenomena that could only converge on the same result after some time. However, the question is then at what time these various processes had produced their convergent result. There are good reasons to doubt a late date for the completion of the RUKI changes: Not only do the oldest Indo-Iranian languages agree in following the RUKI rule, there is also evidence for RUKI results in Proto-Indo-Iranian loanwords into Uralic (cf. Holopainen 2023, e.g. Finnish *viha* 'venom' ⇐ PIIr. **u̯iša-*) and the completion of RUKI at an even higher phylogenetic level is implied by its presence in Balto-Slavic. In light of the non-trivial conditioning, the Balto-Slavic result is unlikely to have emerged completely independently. We therefore cannot date the completion of the RUKI changes to post-Proto-Indo-Iranian times, but have to place it – as a phonetic phenomenon – at least in dialectal Proto-Indo-European. In light of this, it would be very surprising indeed, if the RUKI rule had never applied in Nuristani. The tendency among researchers has therefore been to try to explain the absence of RUKI reflexes as a result of secondary reversal, rather than non-application of the rule.

Morgenstierne (1973a: 341) considered the possibility that RUKI was not yet phonologized in Proto-Indo-Iranian and that this rather happened in the individual descendant languages, producing different phonological results in Nuristani than in Iranian or Indo-Aryan. He did not want to assume a general reversal of RUKI, since PIE **rs* becomes and remains *ṣ*, so that a sound change **ṣ* > *s* could not be postulated (Morgenstierne 1973a: 340). This argument is accepted by Hegedűs (2012: 155), but it is not compelling: There is, first of all, no need to assume an Indo-Aryan-like retroflex sibilant as the outcome of RUKI in Nuristani, but even if we did so, interaction with the sound change **rs* > *ṣ* is only a matter of relative chronology – reversal of RUKI could have taken place before **rs* became retroflex *ṣ*. The question of whether the RUKI result had already been phonologized in Proto-Indo-Iranian, producing a phonemic contrast between /*s/ and RUKI-/*š/, depends on the dating of the change PIE **ḱt* > **št*. If this was a Proto-Indo-Iranian change, the distribution of **š* would have become somewhat unpredictable, and therefore already phonemic, at this time. It is therefore crucial to examine the outcome of this cluster in Nuristani, a point to which I will return in Section 6.3.8.

Cathcart (2011) argues for a reversal of RUKI in Nuristani via several stages of depalatalization and repalatalization. Though the assumed processes are in themselves not implausible, some misinterpretations and some incorrect data from earlier sources lead Cathcart to conclusions that turn out to be untenable when applied to the data available today, e.g., the assumption of a merger of PIE **ks* and

**ḱs* as **ċ* in Proto-Nuristani or *š* as a result of PIIr. **rš* in Prasun (cf. Hegedűs 2022: 154–156).

Hegedűs (2012: 153–158) presented the hypothesis that the RUKI rule failed to apply in Nuristani only in the environment after a laryngeal, i.e. **uHs*, **iHs* > **us*, **is*, but, as the examples quoted above show, there is no real correlation of the lack of a distinguishable RUKI reflex with this environment. Hegedűs's (2012) study also shows a number of further problems in etymological derivation and reconstruction.[63] Hegedűs (2022: 156) concedes that the study was based "on a limited set of examples" and that the topic needs to be revisited.

The explanation presented by Strand (2022), accepted in Heggarty et al. (2023: S71) as the most plausible, does not assume a reversal of RUKI in Nuristani, but rather a non-application after **u*, taking this as evidence for a subgroup of Iranian and Indo-Aryan against Nuristani as the single outlier. The theory can be quoted in full here, as it takes up only a single paragraph:

> The conundrum of the Nûristânî "non-*ruki* *u" […] can be explained as first an Aryan laminalization of sibilants (*s > *š) after phonemes that have the tongue's blade close to the alveolar ridge (*i, *r, and *k). Aryan *u did not affect a following *s because the tongue's blade was down, away from the alveolar ridge. But later in South Aryan a general lingual backing brought the blade closer to the alveolar ridge, with a resulting laminalization of *s to *š to apical *ṣ* after *u* (as well as after *i*, *r*, and *k*). This post-*u* laminalization apparently was adopted by the North Âryâs in India as *š*, which spread into Irânian with their subsequent migration to Irân, while bypassing the Kamboǰas and Early Sakas (*Ćakâs)[64] who lived close to the Hindu Kush range. (Strand 2022: 345)

[63] E.g., PIE **h₂ŕtḱo-* 'bear' does not contain a RUKI environment, NKal. *küċ* 'belly' and Kt. W/NE *křċë*, SE *křaċé* 'hip' are unlikely to be cognates, the PIE reconstruction **u̯iHso-* is an unlikely antecedent for the Indo-Iranian word for 'poison' (rather PIIr. **u̯iša-* < **u̯iso-* with regular secondary lengthening of **i* in Avestan, see de Vaan 2003: 226) and the words attributed to PIIr. **i̯uHs-* 'broth' are unlikely to be inherited Nuristani forms – if they were, they would in fact provide counterevidence to the assumed sound change **uHs* > *us*.

[64] These terms are supposed to be a reference to the speakers of Proto-Nuristani, based on highly adventurous etymologies for some modern Nuristani ethnonyms presented earlier on in Strand's article (2022: 344; e.g. "vâi" < "*vâ-saka-î"). As Strand (2022: 343) points out himself, the historical Saka spoke Iranian languages. The same can be assumed for the Kamboja, based on Yāska's comment that *śavati* means 'he goes' in their language. This is likely a descendant of PIIr. **čḭau̯-* 'to move' with the simplification of PIIr. **čḭ* to *š* and semantic development to 'to go' found in many Iranian languages, e.g., Avestan *šauu-*, Bactrian þαο- 'to go' (cf. Mayrhofer 1992–2001: II, 307, 553). It is not compatible with Nuristani (cf. Kt. W/NE *čiv-*, SE *čü-* 'to move, to shake (itr.)'). The languages of the Saka and Kamboja are therefore unlikely to be ancestral to Nuristani.

There is an odd confusion between articulatory phonetic description and historical explanation in Strand's account, beside some rather unusual claims about pre-historic migrations (Iranian out of India?). What is needed is not a phonetic explanation as to why a sibilant might be palatalized after [ɾ], [k] and [i], but not after [u], but a historical account for the mismatch between Nuristani and its closest relatives up to Balto-Slavic. Its unhelpfulness aside, Strand's phonetic explanation itself hardly makes sense: There is no meaningful way in which the tongue blade is closer to the alveolar ridge in the articulation of [k] than in the articulation of [u] and the phonetic factors adduced to explain the absence of **s* > **š* after **u* in Nuristani are suddenly assumed to be no longer in effect in the other groups, where **s* > **š* did happen after **u*, apparently because their entire speaker communities shifted their tongues into a different position and held them there – an entirely unmotivated assumption. Strand's theory also disregards the outcome *s* after **aḷ* and the secondary nature of *š* after **i* in Nuristani.

The most promising approach is that of Lipp (2009), who attempted to explain the RUKI outcomes in the context of the development of the Indo-Iranian palatals and palatal clusters in Nuristani. However, his explanation is also ultimately unsatisfactory, again as a result of limited data and overreliance on Morgenstierne's interpretations. Lipp (2009: I, 155–156) argues for a secondary reversal **š* > *s* based on the Prasun words *āst(ḗ)* 'eight' and *wustú* 'breast, rib', which he took to be respectively the inherited outcome of PIE **HoḱtoH* 'eight' and a cognate of Latin *pectus*, Old Irish *ucht* 'chest' < PIE "**peḱt°*". Lipp assumed that these words would have to have gone through the development PIE **ḱt* > PIIr. **št* and that the outcome of this as *st* is therefore proof for a reversal **š* > *s*. However, since he also assumes a depalatalization of *št* after non-front vowels specific to Prasun (Lipp 2009: II, 381–382; an assumption which is most likely correct, see Section 6.3.8), this does not suffice as proof for a general reversal **š* > *s*. If the etymological identifications are correct, it would only indicate that the change **ḱt* > *št* is also reflected in Nuristani and can therefore be reconstructed for Proto-Indo-Iranian. As a consequence, the RUKI result would also already have been phonemicized at that time. This then points only by implication to a secondary loss of the contrast /*s/ vs. /*š/ in Nuristani. There are, however, sufficient grounds to doubt the etymological derivations assumed by Lipp, as I will attempt to show in the following section.

6.3.8 The development of **ḱt*

The derivation of *wustú* from PIE "**peḱt°*" assumed by Lipp (2009: I, 155–156) is based on a tentative suggestion of Morgenstierne (1949: 250 with "??"), which was later qualified in Morgenstierne (1973a: 340) as "too doubtful to build anything upon it" ("zu zweifelhaft, um daß irgend etwas [sic] darauf gebaut werden kann"). In the more reliable data published more recently by Buddruss & Degener (2015) only the meaning 'rib' is confirmed for *wustú*. The connection with Latin *pectus*, already daring to begin with, therefore becomes even less plausible. It would be equally justified to derive the word, e.g., from PIIr. **paṷasta-* 'cover, canopy' + **-ka-*, which would have the benefit of providing a connection within Indo-Iranian (semantically cf. Engl. *rib* < PIE **h₁rebʰ-* > Greek ἐρέφω 'to cover, provide with a roof').[65]

This leaves the Prasun numeral 'eight' as the single example for PIE **ḱt* > Nuristani *st*. While it is not far-fetched to interpret Pr. *āst(é)*, with Morgenstierne (1973a: 340), as the inherited counterpart of Kt. W/SE *vuṣt*, NE *uṣt*, NKal. *oṣṭ* 'eight' ⇐ IA *aṣṭá-*, doubt remains here as well: As the comparison in Table 7 shows, the numerals between 'six' and 'nine' were probably borrowed (relatively early) from IA into all Nuristani languages. With 'seven' and 'nine' this is not as obvious, but for 'six' it is almost certain[66] and for 'eight' probable.

Since Prasun has a reflex of the Indo-Aryan 'six', it is, in principle, not unlikely that the 'eight' was also borrowed. The vocalism of the Prasun numerals seven through ten seems to originate in their disyllabic variants, which are probably so-called "citation forms" with a suffix syllable of unclear origin (cf. Buddruss & Degener 2017: 81–82), otherwise one would expect ***ust* and ***luz* < earlier monosyllabic **ast* and **laz* (cf. Kreidl 2024: 451–453). Morgenstierne (1973a: 340) did not find the assumption of a secondary development *ṣṭ* > *st* in the numeral 'eight', which would be implied by the Indo-Aryan borrowing hypothesis,

[65] A connection to OIA *pr̥ṣṭí-* 'rib', which has no direct correspondences in Iranian, would perhaps be semantically more straightforward, but is phonologically more difficult. It would require not just **ḱt* > **št* and **r̥št* > **ṣṭ* > *st*, but also a complete assimilation of the vocalism to the rounding of the initial labial. From **paṷasta-ka-* the same development as in *wusċú* 'year' ⇐ IA *saṁvatsara-* can be assumed, i.e. syncope and prothesis of *(w)u-*.

[66] Regardless of the reconstruction of this numeral (PIIr. **kšṷaćs*, **šṷaćs* or **sṷaćs*?), the initial *ṣ* and the vowel correspondence pointing to earlier **o* (usually reflecting PIIr. **aṷ*, **aṷa*, but never **ṷa*, cf. Kt. *sus*, NKal. *sos*, Pr. *syus* < **sṷasā* 'sister' with *o* in NKal.) are unexpected for inherited Nuristani forms, whereas they are perfectly compatible with the form *ṣo* attested in Gandhari and reflected in surrounding IA languages.

very attractive ("sagt mir aber auch nicht recht zu"), but there are some cases which may provide parallels for such a change.

Prasun	Katë (NE)	Ashkun	N. Kalasha	Dameli	IA Kalasha	Gandhari
ipű́n	*ev*	*aç*	*ew*	*ek*	*ek*	*eko*
lü	*dyu*	*du*	*dü*	*dū*	*du*	*duve*
tči	*tëré*	*trë*	*tre*	*trā*	*tre*	*traye*
čpu	*štëvó*	*ċatá́*	*čatá́*	*čōr*	*čaw*	M *catvari* F *cadure*
wuč(ú)	*puč*	*põċ*	*pũč* ~ *põč*	*pã̃č*	*ponǰ*	*paṁca*
wuṣ(ú)	*ṣu*	*ṣo*	*ṣu*	*ṣō*	*ṣo*	*ṣo*
sët(é́)	*sut*	*sot*	*sot*	*sat*	*sat*	*sata*
āst(é́)	*uṣṭ*	*oṣṭ*	*oṣṭ*	*aṣ*	*aṣṭ*	*aṭha*
nuy(ú)	*nu*	*no*	*nu*	*nō*	*no*	*no*
lëz(é́)	*duċ*	*dos*	*doš*	*daš*	*daš*	*daśa*

Table 7. The Numerals 1–10 in Nuristani and neighboring Indo-Aryan. Likely Indo-Aryan borrowings in Nuristani are indicated in shades of grey based on the confidence with which borrowing can be assumed (darker = more certain).[67]

The first is a word family of Indo-Aryan origin related to OIA *jyeṣṭha-* 'eldest, foremost'. An MIA descendant of this word was probably borrowed into all Nuristani languages in the sense of 'elder, chief', cf. Kt. W/SE *ǰeṣṭ*, NE *ǰīṣṭ* 'elder, chief, leader' mentioned above. The same word is widespread in surrounding Indo-Aryan languages and the reflex of the initial palatal from PIIr. **ǰ* as *ǰ*, as well as the retroflex *ṣṭ* also indicate Indo-Aryan origin. In Prasun the outcome of the same word is *žešt* 'bull' (< *'chief'). A feminine equivalent, probably ⇐ *jyeṣṭh-ī-*, is represented in *žišt* 'grandmother' (< *'elder'). The semantic changes in both cases indicate that these words underwent further development within Prasun, meaning that they were probably not borrowed very recently. The outcome *št* < **ṣṭ* must also be an internal development of Prasun and could be compared to *st* < **ṣṭ* in *ast(é́)* if we assume the general split of **st* into *št* after front vowels and *st* after non-front vowels in Prasun proposed by Lipp (2009). Phonetically it would be most plausible to assume a change **ṣṭ* > **št* with later depalatalization after non-front vowels. Another word from the same Indo-Aryan word for 'elder, chief' is *ëṣṭé́g* 'elder (adj.), village elder' (**ëṣṭé́* + *-g*, roughly < **žṣṭë* < **žeṣṭá* ⇐ *jyeṣṭha-*

[67] Sources: Dameli from Perder (2013), IA Kalasha from Heegård (2015: 62), Gandhari from Baums & Glass (2002).

ka-), which is semantically and phonologically closer to the Indo-Aryan form and its equivalents in other Nuristani languages, pointing to a more recent borrowing (after **ṣṭ* > *st*?). Buddruss noted a variant *ëstég* in 1956 and though this form was rejected by speakers in 1970, Buddruss & Degener (2015: 592) insist that is was "certainly heard" ("sicher gehört") in 1956. If this is correct, it may have been an older form (with **ṣṭ* > *st*), later replaced by a re-borrowed variant with retroflex *ṣṭ*.

The second example that could be explained by a Prasun sound change **ṣṭ* > *st* is *pust*, which means 'bed' like Kt. W/NE *přušt*, SE *přüš*, but also 'bridge cantilever', like Kt. W/SE *pruṣṭ*, NE *purúṣṭ*. Though the etymology of the latter word is not clear, the colexification of 'bed' and 'bridge cantilever' is not the most obvious and may well have been produced by a secondary phonological merger of two originally unrelated etyma.

The third possibly parallel example is the word *wëstí* 'woman, wife' < PIIr. **striH-* 'woman'. In this case some background on the development of *C*r* clusters in Prasun is necessary to understand why. Prasun shows a general development **tr*, **dr* > *ṭ, ḍ*, which, in the case of **dr*, affects only later loanwords, since earlier **dr* becomes *r-*, probably via **lr* (e.g. in *wurú* 'bow' < **draṷna-*, *rasíg* 'grape' < **draps-ǐ-kā-*[68] + DIM *-g*). Examples include *ẓëṭ* 'night' (< **raHtriH-* or ⇐ earlier Kt. **ẓātr* > Kt. *řotr* 'id.') and *ḍu* 'ambush' (⇐ Kt. *dru* 'id.'). This development was followed by a general palatalization of retroflexes before and after the front vowels *e* (< **ā* /_(C)*i/y*), *i* and *ü*, producing *č, ǰ, šč*, respectively from *ṭ, ḍ, ṣṭ*. Examples include *či* 'three'[69] < **traḭas*; *žičí* 'book, letter' < **čitr-ita-*; *čü* 'sour milk' < **tr̥p-ita-*; *müčü* 'tree stump, log' ~ Kt. *muṭ-úk* 'tree stump, log'; *ǰeiní* 'witch' ⇐ earlier Kt. **ḍāiní*[70] > Kt. *ḍáni-k* 'id.'; *Süǰúm-sur* 'name of a lake' ~ Kt. NE *Sudrém-/Sudrúm-sur*;[71] *ščeli* 'straight, true' ⇐ Kt. *ṣṭal-ë/-i* 'id.'; *iščűr* 'camel' ⇐ Kt. *ṣṭyur* 'id.';[72] *če* 'bribe' ~ Kt. *ẹay* 'id.'. Clusters of dental affricates with *r* are probably also implicated in this sound change, with **ćr* (Proto-Nuristani **ċr*) changing like **tr-* to *ṭ* > *č*, e.g. *ṭo* 'inner thigh' < **ćraṷni-* 'hips, loins' (> Kt. *ẹũ* 'thigh, hip'), *če* 'bribe' ~ Kt. *ẹay* 'id.' and secondary **jr* resulting from syncope of Proto-Nuristani **ċVr°* or **jVr°*

[68] This etymon is further discussed in Section 6.3.11.
[69] This word is also spelled as "tči" in Buddruss & Degener (2015). The significance of this notation is not clear to me. If there is a phonetic difference to simple *č*, this would require an explanation.
[70] Ultimately a learned borrowing ⇐ Skt. *ḍākinī-*.
[71] Ultimately probably ⇐ Skt. *Sudharmā-* 'hall of the gods'. In pre-Islamic times, this lake was imagined as a dwelling place of the gods (Buddruss 1960: 204). A connection to the *Sudharmā-* of post-Vedic Hinduism seems more plausible to me than Buddruss's (1960: 208) (mythological) comparison to the Vedic *ṛ̥tásya sádas-* 'seat of justice', not least because of the direct formal match.
[72] Ultimately ⇐ New Persian *šutur* 'camel'.

developing like **dr* to *ḍ* > *ǰ*, e.g. *ḍug* 'milk' < **jru* + DIM Vg < PNur. **jara-* + *-ka-* (cf. NKal. *zor* 'milk' etc. < PNur. **jara-*)[73] and *ǰi* 'head' < **ḍi* < **jri* < **ćarʲa-ka-* < PIr. **ćr̥Has-*.[74]

In the case of **str* in *wëstí*, on the other hand, the outcome is *st*, though one might expect **str* > *ṣṭ* > *šč* in parallel with **tr*, **dr* > *ṭ*, *ḍ* > *č, ǰ*. One could imagine that the first stage **str* > *ṣṭ* did indeed take place,[75] but that the sound change *ṣṭ* > *št* then occured before the palatalization of retroflexes, so that the palatalization of *ṣṭ* only happened in later loanwords. The relative chronology would look as follows:

1. **tr*, **dr*, **str* > *ṭ*, *ḍ*, **ṣṭ*
2. **ṣṭ* > *št*
3. *št* > *st* /*a, o, u, ë_*
4. *ṭ, ḍ, ṣṭ, ç* > *č, ǰ, šč, č* /*i, e, ü_* or *_i, e, ü*

With this chronology *āst(é)* could be considered an Indo-Aryan loanword. If neither *wustú* nor *āst(é)* turn out to be reliable witnesses to the fate of PIE **ḱt*, and consequently the RUKI development in Nuristani, further evidence is required.

Since the word for 'eight' must be excluded, being a potential loanword, the best chances of finding evidence for the outcome of **ḱt* in Nuristani would be provided by formations with *t*-initial suffixes to roots ending in **ḱ* or **ǵ*. The prominence of the **-ta-* participle in later Indo-Iranian verbal systems makes this form the most promising place to start. The perfective verb stems of all Nuristani languages except Prasun are based on this participle and we might hope to find here a few irregular forms that can help us understand the inherited development of **ḱ* + **t*. Unfortunately, however, the suffix has mostly been regularized to the reflex of **-i-ta-* (the form of the participle originally appearing with **-a̯i̯a-*

[73] Morgenstierne (1949: 258) separated Pr. *ḍug* from the other Nuristani words for 'milk' and tentatively derived it from **drogga-* < **doghra-*. Considering the early Prasun sound change **d* > *l*, this development would only be possible in an Indo-Aryan loanword, but a formation **doghra-* is otherwise unattested in Indo-Aryan and the presumable Indo-Aryan loanword would then have entered only Prasun and left no traces in the Nuristani varieties that were otherwise more deeply affected by Indo-Aryan contact. Deriving *ḍug* from the general Nuristani 'milk' root therefore seems preferable to me.

[74] This word is further discussed in Section 6.5.3.

[75] It is not clear whether this stage is attested in the phrase *Mareš ëṣṭi* '[the pre-Islamic god] Mara's wife', which Buddruss & Degener (2015: 591) classifiy as "Kafir [i.e. pre-Islamic], obsolete" ("kafirisch, obsolet"). If this is not a mere artifact of documentation, but really a survival of an earlier form in a poetic register, it could give further weight to the assumed change, but the context of attestation is not very reassuring: The phrase appears without further comment in a mythological narrative and the wife is addressed with the modern form *wëstí* a few lines further on. It is not clear to me whether the classification as "Kafir, obsolete" was explicitly confirmed by the speaker or whether it is an attempt by Buddruss & Degener to make sense of a variant form recorded in the field notes.

formations). The irregular forms that still exist reflect developments from *°*r̥-ta-ka-* (e.g. Kt. *këřḗ*, A. *këṛḗ* ‘done’ < **kr̥-ta-ka-*) and similar contexts, but no reflections of the development of **ḱt* can be found. This leaves only lexicalized representatives of the same form as potential evidence. Here, first of all, there is one case with the same outcome *ṣṭ* as in Indo-Aryan, but this is of course again suspicious of being a loanword:

- Kt. W *nëṣṭḗ*, SE *naṣṭḗ* ‘stingy, miserly’
  NKal. Ẓ *naṣṭḗ* ‘childless’
  ~ OIA *naṣṭá-* ‘ruined’ + *-ka-* (*naś-* ‘to ruin’ ⇒ Kt., NKal. *naš-* ‘to ruin, destroy’)

It would be especially likely that the forms with *ṣṭ* are loanwords, if it could be shown that they appear next to another development in Nuristani that does not occur in Indo-Aryan. There are two cognate sets that may point in this direction:

1. NKal. Ẓ *krĩċ*, N *krẽċ* ‘empty millet straw’, A. *kři̊s* ‘empty millet ear’
   < **krić-ta-* ‘pressed’ (PIE **k$^{(w)}$leu̯ḱ-* ‘to press’, cf. OIA *kleś-* ‘to oppress’, Parth. *n-xrys*, Sogd. M *n-xrys* ‘to reproach’,[76] Lithuanian *klìšės* ‘crab claw’; cf. Rix et al. 2001: 363)
   NKal. Ẓ *kreš-*, Dam. *kreš-* ‘to knead’ are borrowed from an IA cognate **kreś-aya-* ‘to press’ ~ OIA *kleś-aya-* ‘to oppress’
2. NKal. Ẓ *piċḗ* ‘pieces or cuttings of wood, stone etc.’, Pr. *wiċḗ* ‘pieces (e.g., of cheese)’
   < **pić-ta-* ‘carved, prepared’ + **-ka-* (PIE **peu̯ḱ-* ‘to cut off, carve out’, cf. NKal. *piċ-* ‘to chop up, reduce to pieces’)

In both cases a clear addition of resultative meaning can be observed when compared to the meaning of the root, which fits nicely with a derivation from a *-ta*-participle. For set 1, Turner (1962–1966: T. 3605) suggested a derivation from pseudo-OIA **kreśa-*, i.e. PIIr. **krau̯ća-*, a noun meaning ‘(the act of) pressing’, but the agreement in vocalism between NKal. Ẓ and A. shows that the original form had **i* in the root, so that only **krića-* would be possible. However, from such a zero-grade thematic formation we would rather expect a subject/agent-oriented meaning (cf. Debrunner 1954: 69). This would work with an intransitive root, as in the example **tau̯š-* ‘to be empty’ → **tuš-a-* ‘thing that is empty’ > ‘grain hull’ discussed above, but is not really plausible with a transitive root meaning ‘to press’, which should then rather produce the meaning ‘pressing, thing that

[76] Cheung (2007: 449) derives Sogdian *n-xrys* ‘to reproach’ from **ni* + **krau̯ć-* ‘to call’ (like Middle Persian *nxrwh-* ‘to reproach’), against Sims-Williams and Sundermann *apud* Mayrhofer (1992–2001: I, 419). For Sogdian this is phonologically possible, but it requires a treatment of Parthian *n-xrys* as a loanword from Sogdian (cf. Durkin-Meisterernst 2004: 249).

presses'.[77] Turner's abstract noun '(the act of) pressing' is similarly unlikely as a semantic antecedent. For set 2 an explanation from a zero-grade thematic noun is excluded already on the phonological level, since the sound correspondence is not equivalent to that expected from simple PIIr. **ć* (Pr. *ċ* instead of *ʒ*, see Section 6.1). With regard to set 2 it is especially noteworthy that NKal. apparently preserves a contrast between the participles of **pić-* 'to cut off, carve out' (*piċé̋* 'cuttings') and **piš-* 'to grind' (*pištḗ* 'powder snow' < *'powder') – two forms which merge phonologically both in Old Indo-Aryan and in Avestan.

If the suggested derivations are correct,[78] the following sound correspondence rules can be set up:

**ḱt* > NKal. *ċ*, A. *s*, Pr. *ċ*

**ḱ* > NKal. *ċ*, A. *s*, Pr. *ʒ*

Evidence for the development of **ǵʰ* + dental in Nuristani, which became OIA *V̄ḍʰ* and Av. *žd*, is more difficult to find. This is a context in which Bartholomae's law ($D^h + T > DD^h$) would have applied, the results of which can be expected to have been leveled out in the late-attested Nuristani languages due to the early merger of voiced aspirates with voiced consonants, as in later Iranian (after Old Avestan). There is one potential example of this context, which is, however, likely a secondary combination: In Kt. dialects the verbs *áċ-* (< **ā* 'towards' + **ǵa-sća-* 'to go') and W *avz-*, NE *āʒ-*, SE *ṓj̈-* (< **ā* 'towards' + **u̯aǰʰ-* 'to ride, drive, move; to float') mean respectively 'to come' and 'to jump' in non-perfective forms, but their perfective forms form a dialectally varying single paradigm. The Western and Northeastern dialects have the regularly formed, gender-invariant participles *avzí*

[77] According to Debrunner (1954: 75), the zero-grade thematic noun is a type that gained in prominence in the course of Indo-Aryan history, there overwhelmingly appearing with subject/agent-oriented meaning. Earlier formations of this kind with matches in Iranian or other Indo-European subgroups are not very common and do not have a unified semantic type (Debrunner 1954: 75), but patient orientation appears to be rare among these as well. As possible patient-oriented examples, an anonymous reviewer suggests OIA *piśá-* 'leopard/cheetah (?)' ~ Sarikoli *pis*, Wakhi *pəs* '(snow) leopard' ~ Old Church Slavonic *рысь* 'dog' < PIE **piḱo-*, which may be related to PIE **peiḱ-* 'to carve out, to decorate, to adorn' via an original sense *'adorned (with spots)' (Kulikov 2009), and YAv. *āsna-* 'inborn, innate, natural' < **ā-ǵna-* from PIE **ǵenh₁-* 'to give birth'. Though such meanings may thus occur as well, an equivalent form derived from PIIr. **kraiċ-* is not attested in any Indo-Iranian language, whether with subject/agent-oriented or patient-oriented meaning. PIIr. **krić-ta-*, on the other hand, has a certain reflex at least in OIA *kliṣṭa-* 'oppressed, tormented' and seems therefore the more likely option.

[78] An anonymous reviewer cautions that it would be quite risky to take these two examples as a foundation for far-reaching conclusions about Indo-Iranian phonological history and proposes alternative derivations from **pić-ya-* 'to be carved out' or **pić-na-/krić-na-*. It would certainly be preferable if additional examples could be found that would strengthen the derivation, but, as it stands, the assumption of a *-ta-* suffix seems the more semantically natural and straightforward solution to me. Though two examples are probably not enough to settle the question, the evidence for a development PIE **ḱt* > PNur. **št* is even more lacking.

for ‘approached, almost arrived/come’ and *áy(i)* for ‘come (inceptively)’. The Southeastern dialect has no such meaning difference, but *ā ~ ay-* for feminine forms and irregularly formed *ő́zë* for masculine forms.[79] Sources agree on *-ʒ-* in *ő́zë*, which differs from the affricate in the non-perfective stem *ő́j-* to jump. In most cases this *-ʒ-* reflects an earlier **-s-* before sibilant lenition, but in this case it seems that *ő́zë* reflects a combination of PNur. **ā-waj-* with **-ta-ka-*, so that *ʒ* in this case would derive from earlier **jt*. However, direct derivation from PIIr. **ā + *uɟdʰa- + *-ka-* with Bartholomae’s law is not likely.

In total, we can conclude that the Nuristani languages probably did not undergo the development **ḱt > št*, which is usually reconstructed for Proto-Indo-Iranian based on the outcomes Avestan *št* and Old Indo-Aryan *ṣṭ*. If we assume that this development was not Proto-Indo-Iranian, the development of PIIr. **ćt* and **ćn > št, šn* in Iranian can be understood as a unitary development independent of **ćt > *št > ṣṭ* in Indo-Aryan, where **ćn > šn* never happened (cf. OIA *praśná-* ‘question’ < PIE **preḱ-no-*).[80] It would also imply that RUKI-*š* was not yet phonologized in Proto-Indo-Iranian, so that we can indeed consider a different phonologization in Nuristani than in Indo-Aryan or Iranian, as Morgenstierne (1973a: 341) did. However, to complete the picture we must now turn to the remaining open question – the inherited development of PIE **ks* in Nuristani.

6.3.9 The development of **ks*

In order to determine what is the most likely inherited outcome of **ks*, a number of confounding factors first need to be sorted out. As always, we must expect many loanwords showing reflexes of the Indo-Aryan development *kṣ*, which, in the region around Nuristan, resulted in a retroflex affricate *ç(h)*, lenited in some varieties to *ṣ* and palatalized before front vowels or *y* to *č(h)* in most varieties.[81] In

[79] The form W/NE *áy(i)*, SE *ā ~ ay-* derives from **ā-gata-*, either with secondary addition of the generalized participle ending **-i-ta-* or as an originally feminine form in **-ǐ-kā-*. If the latter explanation is correct, its functional range would have been preserved in the SE dialect, whereas the phonological merger with (gender-invariant) **-i-ta-* forms, would have led to a reanalysis as a gender-neutral form in the other dialects.

[80] A word that may show the Nuristani development of **ćn* is Kt. *ařúć* ‘simple knot’, which could be compared to YAv. *˚uruuīxšna-* ‘lacing’ and more directly to Sogd. C *ʾrwxš* ‘bandage, gag, strap’ < **ā-u̯rić-na-* (cf. the excursus in Section 5 on the *xš* in these words). This would imply that the development of **u̯r* differs between the intervocalic and word-initial position, since the initial development is Kt. *bř-*, NKal. *br-*, A. W *wř-* ~ M *wl-*, Pr. *w-*, observable, e.g. in Kt. W *bëč-*, NE *břëč-*, SE *břić-*; NKal. Ẓ *breć-*; Pr. *-wiz-* ‘to spin (yarn)’ < **u̯raḭć-* and Kt. *bře*; NKal. *bre*; A. W *wřei*, M *wlei* ‘flour’ < **u̯raḭH-(p)-i-ta-* ‘crushed’.

[81] It has sometimes been argued that the Indo-Aryan languages of the region show distinct reflexes of PIE **ḱs* and **ks*, the former being reflected by *č(h)* and the latter by *ç(h)* (Kogan 2005; Hegedűs 2012: 152). However, all cases of *č(h)* can in fact be explained by secondary palatalization before *i, e* and *y*,

some varieties the phonological contrast between *ç(h)/ṣ* and *č(h)/š* has been lost in recent generations, as a result of Northeastern Pashto influence (see Lehr 2014: 83–84 on Darra-i Nur Pashai). For the forms with *ṣ*, the possible source language/dialect can be more precisely pinpointed as being either from Swat (*-kṣ- > -ṣ-* in Torwali) (Morgenstierne 1930: 295) or from a variety close to far Northwestern or Southeastern Pashai (*kṣ > ṣ* in Northwestern Gulbahar, Shutul, Sanjan and Bolaghain and generally in the Southeastern dialect, see Morgenstierne 1967a: 17, 22).[82] The Indo-Aryan reflexes of course appear with the same mergers as in Old Indo-Aryan, i.e., we can expect them not only < PIE **ks*, but also < **ḱs*, **tḱ*, **tk* etc. Examples include:

1. With *ç*:
   - Kt. W *maçí*, NE *maçḯ* ~ *maçyḗ*, SE *maçḭ̄*; NKal. Ẓ *meçḗ*, N *māçí*; A. *mač/çí* 'honey'
     ⇐ IA *mākṣika-* 'honey' < PIIr. **makš-* 'fly, bee'
   - Kt. *loç* 'red (*obsolete*)'; NKal. N *lāçḗ* 'red' [+ **-aina-*]
     ⇐ IA *lākṣā́-* 'red dye, lac' ← PIIr. **ragša-* 'dark-colored, red' (√**rag-*)
   - Kt. W *ṣç-*, NE *ṣy-*, SE *çaç-*; NKal. *çaç-* 'to bite, gnaw, eat meat/nuts'
     ⇐ IA *cakṣ-* 'to seem, appear' < PIE **kʷeḱs-*, with semantic development as seen in Hindi *cā̆kh-* 'to taste, try (food), eat' and other M/NIA forms (in Turner 1962–1966: T. 4557), perhaps via caus. **cakṣ-aya-* 'to make apparent'
   - NKal. N *ço* 'wound'
     ⇐ IA *kṣatá-* 'wounded' < PIE **tkn̥-to-*

2. With *ṣ*:
   - Kt. W/NE *yuṣ*, SE *yüṣ*; NKal. *yoṣ*; A. *yoṣ*; Pr. *yuṣ* ~ *yüṣ* 'demon'
     ⇐ IA *yakṣá-* ← PIIr. **i̯akš-* 'to appear'; the semantic development 'apparition, phenomenon' > 'demon' is a later Indo-Aryan innovation (Mayrhofer 1992–2001: II, 391)
   - Kt. *ṣuṇ-*; NKal. N *ṣun-*; A. *ṣun-*; Pr. *ṣüd-* 'to knead'; NKal. N *ṣuṇ-* 'to stomp grapes'
     ⇐ IA *kṣund-* 'to strike, trample, stomp'
   - Kt. *ṣoṣ*; NKal. *ṣāṣ* 'witness'
     ⇐ IA *sa-akṣin-* 'id.' ← PIIr. **Hakši-* 'eye'; with assimilation *s*V*ṣ* > *ṣ*V*ṣ*

so that these Indo-Aryan languages in fact only show further developments of the OIA system, as may be expected (similarly Kümmel 2020: 241).

[82] Geographically, Southeastern Pashai seems the most plausible, while from a socio-historical perspective the MIA period seems to be the most likely era for strong Indo-Aryan contact influence. I would therefore assume that a MIA variety dialectally adjacent or ancestral to Southeastern Pashai was the source of these words.

- Kt. W/SE *vuṣól*, NE *uṣól* ‘water conduit; W: waterfall’;
  ⇐ IA **vi-kṣāla-* ‘washing down’ ← PIIr. **gʃʰar-* ‘to flow, float in water’
- Kt. NE *mačíṣ* ‘evil eye’
  compound of *mačí* ‘blame’ and *-iṣ* ⇐ IA *íkṣā-* ‘look’ < PIIr. **HiHkšaH-*

3. With *č*:
- Kt. NE *avíč*, SE *avéč*; NKal. Ẓ *awéǰ* ‘need, necessity’
  ⇐ IA *avekṣya-* ‘to be attended to’ ← PIIr. **au̯a* + **HiHkš-*
- Kt. *vič-* ‘to be worth (e.g. seeing etc.)’
  ⇐ IA *vīkṣ-ya-* (pass.) ‘to be regarded, to be thought fit/proper’ ← PIIr. **u̯i* + **HiHkš-*
- NKal. *čem* ‘village ward’
  ⇐ IA *kṣéma-* ‘restful, secure dwelling’ < PIE **tḱoi̯-mo-*
- Kt. W *ačí* ~ *ačé*, NE/SE *ačé́*; NKal. *ačé́*, Treg. *açé́*, A. *aćī́*, Pr. *ižíí* ‘eye’
  ⇐ IA *ákṣi-* < PIIr. **Hakši-*[83] + pl. ending **-āni* (cf. Vedic *akṣā́ṇi* ‘eyes’, but the ending is not necessarily borrowed)[84]
- NKal. Ẓ *kačā́nt*, N *kačánt* ‘armpit, side, next to’
  ⇐ IA *kakṣyà-* ‘belonging to the armpit, girdle’ ← PIE **koḱso-* (+ *ánta-* ‘end, boundary’? cf. Ẓ *tarḗnt*, N *taránt* ‘near’)

4. Special case with *č* < *-kṣm-*:
- Kt. *puč*; NKal. *poč*; A. *poć*; Pr. *pučúg* [⇐ Kt.] ‘cotton (cloth)’; Kt. SE *pačí varuk* ‘cotton (wool)’
  ⇐ IA *pákṣman-* ‘fine hair, filament’ < PIIr. **paććman-*, most likely borrowed from an MIA source with a development like that seen in Prakrit *lacchī-* <

[83] While YAv. *aši* ‘eyes (du.)’ points to a form with PIE **ḱs*, the wider Indo-European cognates point to a root **h₃ekʷ-*. The current consensus is that YAv. *aši* has probably been influenced by *uši* ‘ears (du.)’ (Mayrhofer 1992–2001: I, 43; Wodtko, Irslinger & Schneider 2008: 377, n. 34)

[84] Hegedűs (2012: 151–152) presents this set as the main example of the inherited Nuristani development of PIE **k(ʷ)s*. The borrowing of a basic body part lexeme would indeed be somewhat unusual and the ending **-āni* found in the Nuristani forms is a clear difference to the words for ‘eye’ in the surrounding IA languages, which have either no ending or reflect the later OIA dual *ákṣiṇī* or plural *ákṣīṇi*. In an IA form, the *č* could only have arisen before a following *i/e*, e.g. in the nom. sg. *ákṣi*. The pl. ending would then have to be a secondary addition, quite possibly after borrowing and from the Nuristani morphological inventory. The main reason for the classification as a loanword here is the existence of a possible doublet in Kt. with a different development that is more likely inherited, because it cannot be explained from IA. It is not clear whether Tregami has a retroflex vs. palatal contrast on affricates – if so, it could strengthen the borrowing hypothesis. An alternative could be to assume an inherited formation without the cluster **kʷs* in Nuristani, e.g. **h₃ekʷ-en-*, which has also been proposed as underlying the OIA stem *akṣan-* (see Wodtko, Irslinger & Schneider 2008: 371, 375, 378 for details), but this is more doubtful in view of the lack of a direct attestation in the earliest known Indo-Iranian languages.

lakṣmī́- ‘good fortune’, Romani *lač(h)o* ‘good’ < **lakṣma-ka-* (see Turner 1962–1966: T. 10890, 10888) [85]

5. Special case with Kt. *č* < **ç* due to shift of retroflexion to *-nd-*:

- Kt. W/NE *ačuṇ-*, SE *ačúṇ-* ‘to run’; perhaps ~ NKal. N *ãĉ-* ‘to jump’
  ⇐ IA **ā-kṣund-* ‘to trample towards’

As was already noted by Morgenstierne (1973a: 339), there are distinct outcomes of PIE **ks* and **ḱs* in Nuristani. Morgenstierne considered *ç* to be the most likely inherited outcome of PIE **ks*, but kept open the possibility that the words with *ç* are Indo-Aryan loanwords, which seems most likely to me. What Morgenstierne had not noticed, is that the outcome of **ḱs* is not the same as that of simple **ḱ*. The reflexes of **ḱ* and **ḱs* (as well as **tḱ* and PIIr. **sć*[86]) only coincide as *ċ* in Kt., NKal. and Dam., whereas A. and Pr. distinguish separate reflexes for **ḱs* + **tḱ* (likely already merged in PIIr.) and for PIIr. **sć* (merged with PIE **ḱ* / PIIr. **ć* in Pr.). Examples include:

1. with PIE **ḱs* or **tḱ* (> Kt. *ċ*, NKal. *ċ*, A. *ċ*, Pr. *ċ*)

- NKal. *küċ*; A. *kuċ* ‘belly’
  < PIE **kuḱsi-* (OIA *kukṣi-* ‘cheek, belly, abdomen’, Sogd. S *kwšy-* ‘side of body’)
- Kt. W *daċyú* ~ *davċyú*, NE *daċĭ́* ~ *daċyḗ*;[87] Pr. *lug* (?)[88] ‘right (hand)’
  < PIE **deḱsino-*
- Kt. W/NE *pī̆̈ći*, SE *pü̆̈ći*; NKal. Ẓ *püċ*, N *puċ*; A. *piċ*; Pr. *wyeċ* ‘pine tree (*Pinus wallichiana vel sim.*)’
  probably a loan-calque of IA **pītu-vr̥kṣa-*(*ka-*/*-ikā-*) (whence Khowar *poç*, Pashai *pinčṓ* [Darra-i Nur], *pūčī́* [Laurowan], *pǖnčǖ́* [Wegal]), cf. OIA *pītu-dāru-* ‘pine tree’) with replacement of IA *vr̥kṣá-* ‘tree’ by its Nuristani cognate < PIIr. **u̯r̥ćća-* (cf. YAv. *varəša-* ‘tree’) and additional suffixation (**-ĭ̆-kā-*) in Kt. (cf. Kreidl forthc.)[89]

[85] This word had previously been connected with a hypothetical OIA form **potya-* derived from the lexicographically attested *pota-* ‘cloth’, but the vowel correspondences clearly point to earlier **a* rather than **o*. That terms for ‘cotton’ were transmitted to other regions in the form of MIA descendants of *pákṣman-* can also be gleaned from the Middle/New Persian word *pambag* > *pamba* ‘cotton’, which has no established further etymology (Ḥasan-Dūst 2014: 725), but likely originates in an MIA variety with a different sound development *pákṣman-* > *pammha-* ⟨*pamha*⟩ > *pambha-*. See Turner (1962–1966: T. 7638) for matching IA forms and see von Hinüber (2001: 186–188, 202–203), as well as the parallel OIA *brāhmaṇá-* > Prakrit *bammhaṇa* ⟨*bamhaṇa*⟩ ~ *baṁbhaṇa* ‘brahmin’ for the sound developments.

[86] I.e., the reflex of PIE **sk* word-initially or after a vowel and before **e*/**i* (Lubotsky 2001b).

[87] The reflex *a* in a pre-stress syllable in W and NE usually points to long **ā*, which possibly indicates a derived (*vr̥ddhi*?) form.

[88] Probably the reflex of **ḱs* was lost in a cluster simplification after syncope in this word.

[89] Morgenstierne connected this set with wider Indo-European cognates like Greek πεύκη ‘pine’, a proposal that was accepted by Turner (1962–1966: T. 8407) under the pseudo-OIA lemma **pośī-* and

- Kt. *iċ*; NKal. *oċ*; A. *iċ*; Pr. *itrú*[90] ‘bear’[91]
  < PIE *$h_2rtḱo$- ‘bear’
- Kt. W *s(ë)ċ-*, NE *ss-*, SE *taċ-*; NKal. Ẓ *taċ-*; A. *toċ-*; Pr. *-yoċ-* Dam. *taċ-* ‘to hew, carve’
  < PIE *$tetḱ$- ‘to produce’ (OIA *takṣ-* ‘to form, chisel’)
- Kt. W *ċař-*, NE/SE *ċaň-* (tr.) ‘to shake walnuts, leaves or fruit from a tree’ < *$ććān$-*(aya-)* and nominal derivatives Kt. SE *ċaňḗ*; NKal. Ẓ *ċã̄*, N *ċē*; A. *ċāṇḗ* ‘pole used to shake down walnuts from a tree’; Pr. *-pċun-* (tr.), Kt. NE *pċéň-* (tr.) ‘to shake’ < **pra* + *$ććān$-*(aya-)*; Pr. *-pċon-* (itr.) ‘to shake oneself, to fall’, Kt. SE *přaċéň-* (itr.) ‘to drop off, to fall off [in pieces or as fruit from a tree]’ < **pra* + *$ććan$-* and nominal derivatives Kt. W *pċeř*, SE *přaċéň* ‘crumb, small piece’ (with m./f. diminutive endings: Kt. W *pċéřuk/pċéyik* ‘very small’), Pr. *psna*, *psnu*, *psnog* ‘piece’, *psne li-* ‘to reduce to pieces’[92]
  Cognate to Khotanese *ṣāñ-* ‘to shake down’, Parthian *wy-šʾn-* ‘to shake off, down’, Munji *fər-ṣon-* (tr.) ‘to shake (out)’, Sogd. C *šn-* (itr.) ‘to shake, tremble, quake’ (cf. Cheung 2007: 371–372). An OIA cognate is not attested, but modern forms like Khowar *ṣhonik* ‘to beat down, shake down’ (Strand (2001): ‘knock [walnuts] off tree with a pole’); IA Kalasha *ṣhṓik* ‘to harvest walnuts by knocking them down with a pole’; Sindhi *chāṇaṇu* (tr.) ‘to strain, filter, sift; to investigate, scan; to pluck out or off, to shake down [fruit from a tree]’, *chaṇaṇu* (itr.) ‘to be strained; to drop [of fruit]’[93] (Turner 1962–1966: T. 3643; Trail & Cooper 1999; Mewaram 1910) presuppose OIA *$kṣan$- (itr.) ~

by Wodtko, Irslinger & Schneider (2008: 553) with the PIE reconstruction *$pe/ou̯ḱih_2$-. However, the initial stress and vowel length in Kt. as well as the *ċ* in all languages and the vowel correspondences are not compatible with this derivation.

[90] Either the product of a peculiar metathesis *$rċ\dot{c}$ > *tr* or a compound.

[91] Hegedűs (2012: 148) explains the correspondence Kt., A. *i* ~ NKal. *o* via labialization of **i* in NKal. by an assumed **u* in the following syllable (supposed to be attested in Pr. *itrú*), but this correspondence is more likely the regular outcome of PIIr. *$r̥$ in (synchronic) monosyllables, cf. Kt. *ċiṭ* ~ NKal. *ċoṭ* ‘manure, fertilizer’ < PIIr. *$ćakr̥t$- (+*-ka*-?).

[92] The change *$ċ$ > *s* in Pr. *psnu* etc. is comparable to (*$ṭ$ >) *$č$ > *š* in Pr. *pšlu* ‘hairy’ ~ Kt. W *pṭ̈lë* ‘id.’.

[93] Meanings like ‘to strain’ etc. may result from a phonological merger with another etymon. One option is the root represented by Khwarezmian *s-fsʾny-* ‘to whet, polish’, Pashto *šan-* ‘to ransack, to search’; Middle Persian *šānag*, Munji *šəfūn* ‘comb’ (and possibly YAv. *fšan-* of unclear translation), which is usually connected to Greek κτείς ‘comb’ and Latin *pecten* ‘comb’ (cf. Beekes 2009: 790) and therefore reconstructed as PIE *$pḱten$- > OIr. *$fšan$- ‘to comb, scrape’. Another would be PIE *$ksen$- (Greek ξαίνω, OIA *kṣan-* ‘to card wool’; cf. Rix et al. 2001: 371). *Pace* Cheung (2007: 92), these two roots are better kept apart, though they are similar semantically and merge phonologically in many later Iranian languages (e.g., Pashto *šan-* < *$fšan$-, but *ušn-* ‘to unravel old woolen threads’ < *$u̯i$ + *$xšan$-). Both roots could be expected to merge phonologically with *$kṣan$- ‘to shake’ in Indo-Aryan.

**kṣān-aya-* (tr.). The whole IIr. set points to PIIr. **ććan-* and theoretical PIE **tḱen-* or **ḱsen-* ‘to shake’, but there are no obvious outside cognates.

2. with an unknown cluster (> Kt. *ċ*, NKal. *ċ*, A. *s*, Pr. *ċ*):
   - Kt. W *ċov*, NE/SE *ċō*; NKal. *ċāw*, A. *sāw*; Pr. *ċā* ‘branch’
     ~ OIA *śā́khā-*, New Persian *šāx,* Armenian *cʿax*, Lithuanian *šakà* ‘branch’, Russian *soxá* ‘wooden plow’[94]
3. with PIIr. **sć* (> Kt. *ċ*, NKal. *ċ*, A. *ċ*, Pr. *z*)
   - Kt. *ċi-* ‘to be cut’; Pr. *zil-* ~ *zül-* ‘to break’
     < PIIr. **sćid-* ‘to cut, break’
   - Kt. W *péċ-*, NE/SE *přéċ-* ‘to depart’; Pr. *pëz-* ~ *-bz-* ‘to go’
     < PIIr. **prati* ‘forth’ + **ga-sća-* ‘to go’
   - Kt. *áċ-*; NKal. ẓ *aċ-* ‘to come’; but Pr. *a-ċ-* ‘to come’ ⇐ Kt.
     < PIIr. **ā* ‘towards’ + **ga-sća-* ‘to go’
   - Kt. W/NE *vëċó*, SE *vaċó*; NKal. ẓ *waċái* ~ *waċā́*, N *oċā́*; A. *waċá*; Pr. *wëzél* ‘(traditional leather) shoe’
     < PIIr. **upa* ‘onto’ + **sćād-iH-* ‘covering’ (Kt. forms are M, but Kt. W/NE *kṭo*, SE *kaṛó* ‘knife’ is also M, though ⇐ IA **kart-tār-ī-*)
   - NKal. ẓ *peċā́w* ‘shade’
     < PIIr. **p(r)ati* ‘forth’ + **sćaH-* ‘shade’ + suffix;[95] Pr. *wuċá* ‘shade’ either has the same origin or derives directly from **sćaH-i̯aH-* ‘shade’ (~ OIA *chāyā́-*) with prothetic *wu-*
   - Kt. NE *nëċó*, SE *niċé́*;[96] A. *ničé*; Pr. *niċá* (⇐ Kt.?) ‘shaded area (e.g. of the valley)’
     < PIIr. **ni* ‘down’ +**sćaH-i̯a-* ‘shade’; the A. form probably underwent regular secondary palatalization, but NKal. ẓ *üčā́*, N *učā́* ‘id.’ is more likely ⇐ IA **vi-cchāya-* or **uc-chāya-*, since *ċ* appears in *peċā́w*
   - Kt. W *ċavé́*, NE/SE *ċavé́*
     secondary verbal noun **sċā-p/w-ani-* ← **sċā-p/w-aya-* ‘to shade’?

[94] Sadovski (2017: 572) reconstructs the PIIr. form of this word as “**(t)ćākhā-*”. The bracket indicates that the OIA reflex is unexpected from **tḱ* and the same applies to the A. reflex. The Nuristani sound correspondence is the same as that postulated above for PIE **ḱt*, but from **ḱt* one would expect OIA *ṣṭ*, Av. *št*. Either the etymon had a unique consonant cluster, or a special (word-initial?) development from one of the known clusters has to be assumed for OIA or A. Kümmel (2022: 251) seems to imply paradigmatic variation as an explanation with his PIE reconstruction “**tḱáχkχ-/(t)ḱχkáχ-*”.

[95] The suffix is unclear, since the *w* could be a hiatus filler, as it probably is in NKal. *ċāw* ‘branch’ ~ OIA *śā́khā-*.

[96] The *é́* in the SE form is unexpected in an independent word, but would be expected if it were used as the first member of a compound (cf. Halfmann 2024: 118–120). It may therefore have been extracted from compounds, cf. e.g. NE *Nëċe-čpér* ~ *Nëċo-čpér* ‘former abode of the Yuṣ’ (Grjunberg 1995: 610) (lit. ‘shady indentation’), which would correspond to hypothetical SE **Niċë-čpé́r*.

PIIr. **sč*,[97] which becomes *sč* in Avestan and *śc* in OIA, turns into Kt. *č*, A. *ç*, Pr. *š* in the following examples:

- Kt. W *sċu-*, NE *ssi-* ~ *ssyu-*, SE *vušš-*;[98] NKal. N *ištič-*;[99] Pr. *šiž-* 'to drip'
  < PIIr. **sčut-i̯a-* (OIA *ścot-* 'to ooze, to trickle, to drop')
- Kt. *čū*; A. *çaṇá* 'goat kid'; perhaps Pr. *šuwá(g)* 'lamb (5–6 months old)'
  < PIIr. **sčani-* (Av. *sčaini-* 'goat kid', cf. Hoffmann 1967) + **-ka-* in A.

Since the reflexes of **tḱ* + **ḱs* and **ḱ* do not coincide and the former shows less lenition, a plausible Proto-Nuristani reconstruction for the outcome of **tḱ* + **ḱs* would be a geminated affricate **ċċ*. The proto-Nuristani outcome of **sḱ* must have differed both from this and from simple **ċ*. If the cognate set Kt. *pṣë*; A. *pëṣarḗ*; Pr. *pëṣkí* 'pre-Islamic oracle priest (who communicated the will of the gods while in trance)' contains a derivative of PIIr. **pr̥sć-* 'to ask', the development **rsć* > **ṣ* in parallel with **rs* > *ṣ* could support a reconstruction as Proto-Nuristani **sċ*. A parallel preservation of the cluster **sč* in Proto-Nuristani is also suggested by the correspondence Kt. *č* ~ Pt. *š* and the dissimilated *št* in NKal. After **r*, **sč* is also retroflexed, but in this case the affricate survives and the sibilant disappears, at least in Kt. and NKal., as the example Kt. NE/W *vëç-*, SE *viç-*, NKal. Ẓ *waç-*, N *oç-* 'to crush, castrate' < **h₂u̯r̥g-ske-* (cf. Lubotsky 2001b: 13) > OIA *vr̥śca-* 'to cut off' shows.

Up to this point I have excluded all reflexes that had previously been discussed as the inherited Nuristani outcome of PIE **ks*, identifying them either as Indo-Aryan in origin (*ç, ṣ, č*) or as reflecting PIE **ḱs* (PNur. **ċċ*). In a number of words, however, there is another correspondence, with the outcome *š* in Kt. and NKal. and possibly *ṣ* in Pr., that cannot be easily accounted for as either of these things. At first glance, these cases may seem to be secondarily palatalized Indo-Aryan forms with *š* < earlier *ṣ* < *kṣ*, in parallel with *č(h)* < *kṣ*, but such an explanation would be faced with numerous problems. First, not all cases have a following *i* – some have a preceding *i*, but this does not seem to lead to palatalization of *kṣ* in the region (cf. Kt. *mačíṣ* 'evil eye' mentioned above and IA Kalasha *riç* 'excrement' < **rikṣa-* vs. *kuč* 'belly' < *kukṣí-*). It is also notable that in Southeastern Pashai the development *ç(h)* > *ṣ* apparently postdates the palatalization of *ç(h)* < *kṣ* – see, e.g., *laṣ-* 'to see' < *lakṣ-* 'to recognize', but *meček* 'fly' < *mákṣikā-* – so that the

[97] < PIIr. **č* + *s* mobile or < PIE **sk* after obstruent before **e/*i* (Lubotsky 2001b).
[98] Various reductions of the cluster **sčʷč* produced by syncope. The SE form is probably prefixed.
[99] Probably dissimilated **sč/*šč* > **st/št* because of the following *č* (< **ti̯*), meaning that this is not necessarily the regular outcome of PIIr. **sč* in NKal.

existence of forms with *š* < *kṣ* /_*i* would not be expected.[100] I would therefore argue that the following words may in fact show the regular inherited Nuristani reflex of PIIr. **kš* < PIE **k$^{(w)}$s*:

- Kt. SE *šatrḗmë* 'industrious'; NKal. Ẓ *šadrḗmë* 'clever, nimble'
  < PIIr. **kšatr̥ia-tama-* 'most powerful' + **-ka-*
- Kt. W *vëšeř-*, NE *višň-*, SE *vižíň-*; NKal. Ẓ *wišň-*; Pr. *-ṣn-* 'to card (wool)'
  < PIIr. **u̯i* + **kšan-* 'id.' < PIE **ksen-* 'id.' (Rix et al. 2001: 371–372); Pr. form with special development of **wš* < **wiš* or < unprefixed / resegmented **kšan-* with **kš-* > *ṣ*?
- Kt. W *vëš-*, NE *viš-*, SE *viž-* 'to think, to want'
  probably a conflation of IA *vaś-* 'to want' (⇒ NKal. N *oš-* 'to buy', Pr. *woš-* 'to want') with inherited **wiš-* < PIIr. **u̯i* + **HiHkš-* 'to consider'
- Kt. W *iš*, NE *ĩš* ~ *ũš*, SE *õš* in light-verb construction *ũš ku-* etc. 'to look' (*ku-* 'to do')[101]
  < PIIr. **Hakši-* 'eye'; The correspondence NE *ũš* ~ SE *õš* is the same as in NE *ũċ* ~ SE *õċ* 'I' < **HaǰHam*, the variant W *iš*, NE *ĩš* could be parallel to the variation seen in *-uš/-iš* - 2sg personal ending < **Hasi* - 2sg copula, or a separate reflex of PIIr. **HiHkšaH-* 'look'
- Kt. W/NE *ašpurú*, SE *ašpúrë* 'dream', SE *ašpúri* ~ *ačpúri* 'evil eye'
  possibly compounds of the reflex of PIIr. **Hakši-* 'eye' with IA *pari-bhūta-* + *-ka-/-ikā-* 'conquered; pervaded; insulted' ('eye-pervaded (M)' > 'dream', 'eye-insulted (F)' > 'evil eye'), separately borrowed as *pur-ḗ/-í* 'completed (M/F)'; the variant *ačpúri* may come from folk-etymological reanalysis as a compound with *ačḗ* 'eye' (like *ačpúṛi* 'eyelashes'), but *ašpúri* must be primary since *čp* is otherwise not reduced to *šp* (cf., e.g., *čpáṇë* 'flat-nosed')
- Kt. NE *šiš-*, SE *šiž-* 'to feel pity, empathy'
  < PIIr. **ćikš-* (< ***ći-ćk-š-*) with *š-* instead of *ċ-*, but assimilation **ćVš* > *šVš* is possible (cf. °*-čič* 'needle' < **ćuHčiH-*) and the archaic semantics would be difficult to explain in an MIA loanword, cf. Ṛgvedic *śikṣ-* 'to wish to help' (active meaning) vs. only 'to learn' (middle meaning) in later language ~ YAv. *sixš-* 'to learn' (cf. also IA Kalasha *ṣiṣh-* 'to learn')

[100] The merger of *ṣ* and *š* among younger generations of Darra-i Nur Pashai speakers mentioned above, which produces, e.g., *laš-* 'to see' < *laṣ-*, is far too recent to be of relevance for the Indo-Aryan loanword layer in Nuristani. It happens regardless of whether there is an *i* in the environment.

[101] The NKal. equivalent of this light verb construction, Ẓ *eçḗ č-*, N *ā̆ça k-* 'to look', may contain an unpalatalized descendant of OIA *ákṣi-* > **aççhi-*. Turner's (1962–1966: T. 1064, 14267) connection of this phrase to IA **ā-cakṣati* is unconvincing both for phonological reasons and because the first member of a light-verb construction is most likely of nominal or adverbial origin.

Yet another development, to Kt., NKal. *ċ*, Pr. *s*, appears in a few other cases. Among the examples below, the first certainly contains **gs* and for most of the others this could also be argued. The cluster **gs* could conceivably have developed in a different way from **ks*, though the two merge both in Indo-Aryan and in Iranian. Otherwise one would have to consider this the inherited development and discard the examples with *š*, but it is not obvious how this could be done. Note that this is not the same development as that from Proto-Nuristani **ċċ*, since the reflex in Prasun differs.

- Kt. NE *dryuċ*, SE *drüċ* '(malicious) gossip'
  < PIIr. **dʰrug-š* / **dʰrukš* 'deceit', cf. OIA *drúh-* (nom. *dhruk*) 'harm, offence', Av. *drug-* (nom. *druxš*) 'lie, deceit'
- NKal. *pāċ* 'direction'[102]
  < **pāgša-* / **pākša-, vr̥ddhi* form of PIIr. **pagša-* / **pakša-*, cf. OIA *pakṣá-* 'flank, side, wing', Ossetic *faxs* 'side, mountain slope', perhaps related to PIE **peg-* ~ **pōg-* (?) in Russian *pax* 'loins', Czech *paže* 'arm' (Pokorny 1959: 792, though OIA *pājasyà-* 'belly, loins' < **pājas-* would have to be separated; cf. Mayrhofer 1992–2001: II, 116)
- Kt. W *KT peéċ*, *KL pëvéċ*, *ŘM peċ* 'boy, young man'
  perhaps < PIIr. **p(r)ati* 'forth' + **Hu̯agš-a-* 'growing'
- NKal. *toċ*, Pr. *is* ~ *üs* 'air pocket that forms between body and bulging garment above the belt (German "Gewand-/Jackenbausch")'
  perhaps < **tagša-* ← PIE **teg-o/es-*, from **(s)teg-* 'to cover'
- Kt. SE *maċḗ̃* 'honeycomb', *nil-méċḗ̃* 'mass of fly eggs' (compound with *nilḗ* 'black'); Pr. *masóg* 'fly'
  < **makš-a-ka-* < PIIr. **makš-* 'fly, bee' (Pr. form + DIM *-og*), cf. OIA *mákṣ-*, YAv. *maxš-ī-* 'fly, bee', further etymology unknown and no indication of **-g-* in the root (unless Middle/New Persian *manǰ* 'fly, bee' can be connected in some way); a derivation from **maćaka-* (whence OIA *maśáka-* 'mosquito, fly') is less likely, since the Pr. form should then have *-z-* and the meaning of the Kt. forms is derived from 'fly, bee' rather than 'fly, bee' itself; Pr. *a* in the first sillable indicates earlier vowel length, cf. *masíg* 'moon' < **maHas-ĭ̆kā-* + *-g*

[102] The appurtenance of Pr. *obúċ* 'side, direction', connected by Turner (1962–1966: T. 7627), is unclear. It could perhaps be derived from something like **upa-pagša-* which would contain the same sequence **-pVp-* which also produces *b* in *abḗg* 'bread', if this is < **apuHpa-ka-* + *-g*, but the *ċ* does not agree with *s* in *masóg* and *is* ~ *üs* and the vowel development is unclear.

An incongruent distribution of reflexes is observed in the following set, derived by Turner (1962–1966: T. 3652) and Hegedűs (2012: 150–151) from (an inherited equivalent of) OIA *kṣáp-* 'night' (excluding the Pr. form and under the assumption that the Kt. form means 'night' rather than 'evening meal'[103]):

- Kt. W *ṣov*, NE/SE *ṣõ̃* 'dinner, evening meal'[104]
- Pr. *ṣëmí* 'dinner, evening meal'
- A. *ç*u 'night'

Kt. *ṣõ̃* and Pr. *ṣëmí* fit rather well with Iranian forms like Av. *xšafniia-*, Munji *xṣéma*, New Persian *šām* 'evening meal', a formation that has no direct equivalent in Indo-Aryan. However, *ṣ* in Kt. points to a loanword. The development *fny* > *m* in this word is essentially universal in later Iranian and also appears in the Pr. form, whereas Kt. *ṣõ̃* cannot derive from a form with *m* and would have to originate in a more archaic form of the word. It is possible that the two words were separately borrowed from Iranian. The A. form, on the other hand, with its initial *ç-* and meaning 'night' is most likely actually an Indo-Aryan loanword from a descendant of OIA *kṣáp-*.

6.3.10 Conclusions on RUKI

All Indo-European languages with a phonologized RUKI outcome have developed new sibilants and/or lost sibilants in various ways, which interfered with the initially predictable distribution of **s* and RUKI-**š*. Old Indo-Aryan has *ś* < **ć* and in Iranian **s* was debuccalized to *h* in most positions, followed by the arisal of new sibilants from **ć* and **ǰ*$^{(h)}$ in most languages of the group. In Balto-Slavic, too, all attested languages developed sibilants from the primary palatals. Following such an introduction of new sibilants, it is typologically quite common that the new sibilants either merge into an existing sibilant phoneme or – if a contrast is maintained – that the places of articulation of all sibilants become spaced out over time in a way that allows for clearer auditory contrasts (see Zygis 2003; Bičovský 2008). This explains, e.g., the emergence of the retroflex place of articulation in Indo-Aryan.

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[103] The meaning 'evening meal' could originate in a word for 'evening', but at least synchronically the basic reference of the terms is specifically to the meal, whereas words for 'evening' are derived by compounding it with words for 'time' (e.g. Kt. *ṣõ̃-vel*), i.e., 'dinnertime' for 'evening'. The Pr. form "*ōšʹuk*" 'night' quoted by both authors from the records of Wolfgang Lentz is not confirmed by Buddruss & Degener (2015: 580), who describe it as "very uncertain" ("ganz unsicher").

[104] Quoted by Turner (1962–1966: T. 3652) and Hegedűs (2012: 150–151) as ""*shâ*" 'night'" from Davidson (1902).

In Nuristani **ć* and **ʃ$^{(h)}$* became sibilants only quite recently and then only in some members of the family. In earlier history they would have been preserved as affricates. As mentioned above, **ć* and **ʃ$^{(h)}$* did not produce sibilants in clusters with dentals either in early Nuristani. However, there are three new sibilant generation events that have matching outcomes in all Nuristani languages and are therefore likely to stem from the early history of the family: **st* > *št*, palatalization of **s* > *š* before and after **i* and the reduction of **kš* to a sibilant of unclear articulation that comes out as *š* in Kt. and NKal. and possibly as *ṣ* in Prasun. None of the sibilants produced by these three changes merged with the RUKI allophone of **s*. Therefore they either arose after an independent unconditional merger of **s* and its RUKI allophone as [s], or at least one of them introduced a sibilant into the phonological system that was sufficiently distinct from both **s* and its RUKI allophone to cause a re-arrangement of the sibilant contrasts, thereby producing conditions conducive to a merger of **s* and its RUKI allophone. The assumption of an independent merger before the arisal of the new sibilants requires a more complicated account for the development **kš* > Kt., NKal. *š*, since this would have to have arisen by a chain **kš* > **ks* > **kš* > *š*. The second explanation is therefore preferable: the cluster **kš* lost its plosive and turned into a retracted sibilant which produced conditions conducive to a merger of the two less retracted allophones of **s*. The changes **st* > *št* and **s* > *š* next to **i* later produced new sibilants which merged with the retracted sibilant < **kš* at least in Kt. and NKal. The development of **rs* > *ṣ* likely happened after this, quite possibly already under Indo-Aryan areal influence.

6.3.11 Further cluster developments: **d^{h}ǵ^{h}* and **ps*

The developments of the PIE consonant clusters **ts*, **ds*, **ḱt*, **ǵt*, **ǵ^{h}t*, **tḱ*, **sk* (PIIR. **sć* and **sč*), **ḱs* and **ks* in Nuristani have been discussed above. For a full understanding of the early history of Nuristani, it would, however, be necessary to know the outcomes of all PIE consonant clusters, in particular of those involving velars and palatals. In the cases of **d^{h}g^{wh}*, **tk$^{(w)}$*, **pḱ*, **zg*, **zǵ* and **zǵ^{h}* this remains a task for future research, as no clear examples containing them have yet come to light. For **d^{h}ǵ^{h}* and **ps*, on the other hand, some further evidence can be adduced.

For **d^{h}ǵ^{h}*, and specifically the PIE word **d^{h}eǵ^{h}-ōm* ~ **d^{h}ǵ^{h}-m-* ~ **d^{h}ǵ^{h}-em* ‘earth’, reconstructed by Lipp (2009: II, 74) for Pre-Proto-Indo-Iranian as **dʃ^{h}ām*, gen. **ʃ^{h}m-as*, the following reflexes were presented by Halfmann (2023a: 327):

- Kt. *Mijóm*; Pr. *Mënjḗm* ‘a former name of the Pārūn valley’, translated as “world in the middle” (“*Verden i midten*”) in Morgenstierne’s field notes

< **mad^{h}i̯a-* ‘middle’ + **dʃ^{h}ām* ‘earth’

- NKal ʐ *ǰam-ḍuŋǵ* ‘wild tuber, potato’[105]
  < **dʃ^{h}ām* ‘earth’ + *ḍuŋǵ* ‘bulb, round object’
- Pr. *wërǰ(ë)mí* ~ *wëǰ(ë)mí* ‘person, human being’
  < **u̯iHra-* ‘man’ + **dʃ^{h}ām-i̯a-ka-* ‘earthly’ (?; segmentation doubful)

If the etymologies of these forms are correct, they show a development **d^{h}ǵ^{h}* > *ǰ*. This is somewhat unexpected, since **tḱ* produces Proto-Nuristani **ċċ* and one might therefore expect a parallel **jj̈*. From simple PIIr. **ǰ*, Pr. develops *ž*, whereas the the reflex of PIE **d^{h}ǵ^{h}* in Pr. appears to be *ǰ*. However, since it is only attested in potentially distorting consonant clusters at the boundary of two compound elements, it is not clear whether its isolated outcome would also be *ǰ* and whether it would therefore require a separate reconstruction, e.g. as PNur. **ǰǰ*.

Lipp (2009: II, 9–11, 74–75) postulates a “post-occlusive simplification of affricates” in Proto-Indo-Iranian that would account for Old Indo-Aryan *kṣās*, acc. *kṣām* via **dʃ^{h}* > **dž^{h}* > **ḍʐ^{h}* > **gʐ^{h}* > *kṣ* and for hypothetical Proto-Iranian **ǰās*, acc. **ǰām* via **dʃ^{h}* > **dž^{h}* > **ǰ^{h}* > **ǰ*. However, since the onset of Avestan *zå̊*, acc. *ząm* is leveled to the outcome of **ʃ^{h}* in **ʃ^{h}m-as* etc. and the same applies to all its Iranian cognates, the Iranian reflex of **d^{h}ǵ^{h}* is actually unattested. Unlike Lipp (2009), Cantera (2017: 496) expects that the original outcome would have been **ž*, based on the parallel of **tḱ* > *š*, which certainly makes sense, though we have no way to prove it.

The cluster **ps* most likely developed into *s* with lengthening of the preceding vowel in Nuristani. This can be seen in the words for ‘grape’, though some further discussion of the etymology is necessary:

- Kt. *dros* ‘grape’
- NKal. *drās* ‘grape’
- Pr. *rasíg* ‘grape’

These words have previously been associated with late-attested OIA *drākṣā-* ‘grape’. However, the sound development of the Nuristani forms does not fall under any of the correspondences to OIA *kṣ* noted above (with the exception of A. *draṣ* ‘grape’, which is likely influenced by or borrowed from IA). The development is isolated within the region (cf. Fussman 1972: 301) and therefore likely an

[105] Buddruss also records A. *ǰamḍuŋǵ* as “a type of edible cress” (“eine essbare Kresseart”). If this is a genuine A. cognate, the preservation of *ǰ* as against development to *j̈* ~ *z* is remarkable. The Pr. name of the same plant is said to be *zirá-puḍuk*, glossed in Buddruss & Degener (2015: 890) as “plant. type of cress?” (“Pflanze. Kresse-Art?”), which probably contains (borrowed) Kt. *puṛúk* ‘egg, round object’, indicating that this is also a tuber. The first element *zirá-* is unclear.

inherited Nuristani feature. According to Thieme *apud* Oberlies (1990: 163, en. 30), OIA *drākṣā-* 'grape' could be interpreted as a false re-sanskritization of a MIA **daccha-* < OIA *drapsá-* 'drop'.[106] As Mayrhofer (1992–2001: III, 272) remarks, this suggestion still needs to be reconciled with the sound developments in modern Indo-Aryan languages, especially of the Northwest, where forms like Ningalami *laç*, IA Kalasha *draç*, Aret Pashai *deṣik* 'grape' seem to require an antecedent with *kṣ*. The only NIA form that could straightforwardly reflect **daccha-* < *drapsá-* is Kashmiri *dach* 'grape'. Additionally there are central NIA forms with *(k)kh*, such as Saraiki *drākh*, Panjabi *dākh* which also point to OIA *kṣ*. The change *ps* > *cch* is attested quite early, with *kr̥cchrá-*, possibly < **kr̥psra-*, appearing in the Ṛgveda (von Hinüber 2001: 185), so that it is perhaps not impossible to assume that the modern forms are reflections of the re-sanskritized form borrowed rather early from a literary register, with subsequent application of the MIA changes *kṣ* > *(k)kh / (ç)ch*. There is, however, also an alternative possibility, which I will briefly outline here.

In Gandhari, only two words with etymological *ps* are attested; the cluster is represented in writing as ⟨śp⟩ in ⟨juhośpi(*da)⟩ 'disgusting' < *jugupsita-* and as ⟨s̱⟩ (lenited *s*) in ⟨juhoṣidave⟩ 'to be disgusted by' < **jugupsitavya-* (Baums & Glass 2002), whereas the outcome of *kṣ* was written as ⟨kṣ⟩ and perhaps pronounced as *(ç)ch*, so that a general merger of *ps* with *kṣ* in northwestern MIA cannot be posited. The word for 'grape' is once doubtfully attested in the spelling ⟨trakṣ̄i⟩ (if not ⟨vrakṣ̄i⟩) (Baums & Glass 2002). In modern IA languages of the northwest, *ps* also has a different outcome than *kṣ*, e.g. Khowar *ċhiír* 'milk' < *kṣīrá-* vs. *weċh-* 'to ask for sth.' < *upepsa-* 'to wish to obtain', and *droç* 'grape'. However, a common sound development found in Gandhari is the retroflexion of a word-internal dental plosive by an *r* in a preceding onset cluster, e.g., in the prefix OIA *prati-* > ⟨paṭi⟩ or OIA *nirgrantha-* 'Jain' > ⟨nigaṭha⟩. It is therefore possible that the same could also happen with a palatal affricate **(c)ch* arising from *ps*. Notably, all Pashai forms for 'grape' have dropped the *-r-* from the onset cluster in their word for 'grape', though other languages of the region do retain a reflex of *dr-* in this word. The central Indo-Aryan words like Panjabi *drākh* ~ *dākh* could perhaps be explained by borrowing within the Indo-Aryan dialect continuum of a northwestern form **draçça-* or **draccha-* with the application of the regular

[106] Oberlies (1990: 153–159) himself posits the meaning 'streak (e.g. in a liquid)' (German *Schliere*) instead of 'drop' as the meaning of OIA *drapsa-*, which would make it possible to unite *drapsa-* in its liquid-related meaning under one etymon with OIA *drapsa-*, YAv. *drafša-* 'banner', but at the same time makes it more difficult to reconcile with the meaning 'grape'.

correspondence *(ç)ch/(c)ch* ~ *(k)kh* otherwise appearing in words with original *kṣ*. The more temperate and/or mountainous areas of the northwest are certainly more suitable for grape cultivation than central India and grapes are thought to have been introduced to India from this direction. Later, a form of the 'grape' word was apparently borrowed back in the other direction from the wider Panjab, possibly along with a certain variety of grape, and produced words such as Dameli *drāk*, Shumashti, Gawar-Bati *lāk* 'grape', which go against the inherited sound developments of these languages.

Regardless of the preferred explanation for the IA words, the Nuristani forms are perfectly compatible with PIIr. **drapsa-*, and not really with anything else. They cannot derive from a borrowed descendant of OIA *drākṣā-* or from an inherited form with PIE **ḱs*, **ks* or **gs*.

Vowel lengthening in the context **VpC* has a parallel in the following set:[107]

- Kt. *ton*; A. *tān* '(homespun) wool cloth'
  < PIIr. **tapna-*, whence Khotanese *thauna-* 'cloth', Ossetic *tyn/tunæ* '(homespun) broadcloth', Kurmanji *tevn* 'loom; tissue, fabric; cobweb, spiderweb' (Bailey 1979: 149; Abaev 1958–1989: III, 336–337; Chyet 2003: 611)

Evidence for the Nuristani development of PIE **pḱ* is unfortunately still lacking. For the time being, it therefore also remains uncertain whether or not this cluster merges with **ps*, as in Iranian (> Avestan *fš*), and whether or not a development of PIE **pḱ* > **pš* can be reconstructed for Proto-Indo-Iranian, as is assumed by Lipp (2009: II, 9–11).[108]

6.4 Chronology of palatal developments

With the new evidence regarding cluster developments in Nuristani described above, a re-evaluation of the chronology of Indo-Iranian palatal developments becomes necessary. The contrast between the palatal sibilant *š* as the outcome of merged PIE **tḱ* + **ḱs* in Iranian and dental **ċċ* in Nuristani raises the question of whether the dentalization of PIIr. **ć*, **ǰ$^{(h)}$* to **ċ*, **j̇* can still be viewed as a shared

[107] It is, however, unclear whether the change **VpC* > **V:C* applied before all consonants. There are some words like Kt. *sut*, NKal *sot* 'seven' ~ OIA *saptá-* and Kt. *nut*, NKal. *nut* 'granddaughter' ~ OIA *naptī́-*, which did not undergo the change. It is not possible to decide at this stage whether these can be identified as loanwords ⇐ MIA *satta*, **nattī* by this feature or whether the sound change simply did not apply before *t*.

[108] The Iranian evidence is indeterminate in this regard, since Av. *fš* results from both PIE **pḱ* and **ps*, so that it remains possible to assume a chronology in which the affricate resulting from PIE **pḱ* > PIIr. **pć* is retained until the Iranian-internal development **ć* > **ts* > *s*, and only subsequently becomes *š* as part of a general change **fs* > *fš* (cf. Cantera 2017: 495–496).

innovation of Nuristani and Iranian. At first glance, it may seem more economical to assume a single, sweeping dentalization in Nuristani that was independent of that in Iranian. However, this would not provide a good account for the facts, since in that case we would expect that next to the outcomes of **ḱ*, **tḱ* + **ḱs* and **ǵ(ʰ*, also **dʰǵʰ* should be affected, which, however, has a palatal outcome in Nuristani.

There is one further circumstantial argument for a shared dentalization with Iranian, though this in some ways upsets the very concept of "Proto-Iranian". The Indo-Iranian word for 'hand', **ʃʰasta-* has regular outcomes in OIA *hasta-*, Av. *zasta-* and OP *dasta-*. However, many Iranian languages in fact have forms deriving from **dasta-*, a form which would only be expected in Old Persian and its closest relatives which have regular **ʃʰ* > *d*. For languages spoken further to the west borrowing from Persian cannot be excluded, but the **dasta-* forms appear far outside the geographical scope of plausible Persian influence, as the following examples demonstrate:

- Khotanese *dasta-* 'hand'
- Sogdian MS *δst-* 'hand'
- Bactrian λιστο 'hand'
- Pashto *lās* 'hand'
- Ossetic *dæstæg* 'bundle of ears of grain fitting into one hand' (< **dasta-ka-*).

Near-universal borrowing of a basic body part lexeme from Persian in areas far outside of Persia, along with complete absence of any inherited doublets, is quite implausible. It has therefore been generally assumed that these words result from an early post-Proto-Iranian areal dissimilation **dzasta-* > **dasta-* proceeding from the dental affricate stage (e.g., Klingenschmitt 1975: 77; Morgenstierne 2003: 45). This cannot have been a Proto-Iranian change, as it did not affect Avestan. The same dissimilation can, however, also be observed in Nuristani, as the following examples show:

- Kt. *dušt* 'hand'
- NKal. Ẓ *došt*, N *dost* 'hand'
- A. *dost* 'hand'
- Pr. *lust* 'hand'
- Dam. *daš* 'hand'.

The universality of the dissimilation in all languages of the group, along with the sound change **d* > *l* in Prasun *lust* indicates that it must also have happened quite early in the history of Nuristani. Prasun **d* > *l* predates the loss of single intervocalic plosives (Pr. *ülűm* ~ OIA *godhūma-* 'wheat') and was likely part of an

areal lambdacism diffused from Bactrian which also affected Sarghulami, Munji-Yidgha and Pashto (Kreidl 2021). The original Bactrian change of *d* > *l* is datable to around the 4th century BCE (de Blois 2013: 269–270), whereas the diffusion could have happened later, according to Kreidl (2021) some time in the early centuries CE.[109] In any case it places the Nuristani dissimilation in roughly the right timeframe for a shared innovation with parts of the Iranian continuum.

If we want to separate the history of Nuristani completely from that of Iranian, we therefore have to assume at least three parallel but independent innovations:

1. deaspiration of voiced aspirates
2. dentalization of PIIr. **ć*, **ǰ$^{(h)}$*
3. perhaps: merger of PIIr. **ć*, **ǰ$^{(h)}$* with **ts*, **ds* (but see Section 6.2)
4. dissimilation **dzasta-* > **dasta-* (shared with most of Iranian)

On the other hand, if we accept that these changes were shared innovations, we have to place Nuristani squarely within Iranian, since it has participated in a Common Iranian, i.e. areal post-Proto-Iranian or perhaps dialectal Proto-Iranian, innovation.

Since the Nuristani data also independently points to two successive dentalizations, this indeed seems like the best explanation to me. The course of events would then have been:

1. a dentalization which affected simple PIIr. **ć* and **ǰ$^{(h)}$*, whereas the clusters resulting from PIE **tḱ* + **ḱs* and **d^{h}ǵ^{h}*, perhaps best reconstructed as PIIr. **ćć* and **ǰǰ*, as well as other coronal clusters like **ḱt* > PIIr. **ćt* remained unaffected
2. a second dentalization in Nuristani, which affected only PIIr. **ć*, which at this point only occured in clusters like **ćć*, **ćt*, **pć*, whereas **ǰǰ* remained unaffected

A full chronology of changes affecting the relevant palatals and palatal clusters from Proto-Indo-European respectively to Old Indo-Aryan, Avestan and Proto-Nuristani according to this model, is given in Table 8 to Table 12.

[109] It seems likely to me that the diffusion happened at a time when *l* was still only a prestigious variant pronunciation of *δ* in Bactrian but had not fully displaced it yet, as this makes its transfer into other languages with *δ* in their phonological systems easier to understand. This would favor the conclusion that the diffusion did not happen much later than the sound change itself.

Proto-Indo-European						
*ḱ	*tḱ	*ḱs	*ḱt	*ǵ	*ǵʰ	*dʰǵʰ
Shared Proto-Indo-Iranian innovations						
*ć	*ćć	*ćć	*ćt	*ǰ	*ǰʰ	*ǰǰʰ

Table 8. Changes from Proto-Indo-European to Proto-Indo-Iranian

Proto-Indo-Iranian						
*ć	*ćć	*ćć	*ćt	*ǰ	*ǰʰ	*ǰǰʰ
*ćt > *št, merger with and phonemicization of RUKI-š						
*ć	*ćć	*ćć	*št	*ǰ	*ǰʰ	*ǰǰʰ
merger of *ǰ(ʰ) and *ǰ̌(ʰ) [*ǰ̌(ʰ) *not in table*]						
*ć	*ćć	*ćć	*št	*j	*jʰ	*ǰǰʰ
debuccalization of *jʰ > h						
*ć	*ćć	*ćć	*št	*j	*h	*ǰǰʰ
post-occlusive deaffrication						
*ć	*ćš	*ćš	*št	*j	*h	*ǰžʰ
deaffrication of simple *ć > ś, displacement of *š to retroflex place of articulation						
*ś	*ćṣ	*ćṣ	*ṣt	*j	*h	*ǰẓʰ
assimilation in coronal + retroflex clusters – Proto-Indo-Aryan						
*ś	*ṭṣ	*ṭṣ	*ṣṭ	*j	*h	*ḍẓʰ
retraction of plosives > k, g before ṣ, ẓ – dialectal Proto-Indo-Aryan						
ś	kṣ	kṣ	ṣṭ	j	h	*gẓʰ ~ kṣ

Table 9. Changes from Proto-Indo-Iranian to Old Indo-Aryan

Proto-Indo-Iranian						
*ć	*ćć	*ćć	*ćt	*ǰ	*ǰʰ	*ǰǰʰ
deaspiration of voiced aspirates						
*ċ	*ćć	*ćć	*ćt	*ǰ	*ǰ	*ǰǰ
dentalization of *ć, *ǰ > *ċ, *j̈, but preservation in coronal clusters/geminates – Proto-Irano-Nuristani/Proto-Iranian						
*ċ	*ćć	*ćć	*ćt	*j̈	*j̈	*ǰǰ

Table 10. Changes from Proto-Indo-Iranian to Proto-Irano-Nuristani/Proto-Iranian

Proto-Irano-Nuristani/Proto-Iranian						
*ċ	*ćć	*ćć	*ćt	*j̈	*j̈	*ǰǰ
*ćt, *ćn > *št, *šn, merger with and phonemicization of RUKI-š [*šn not in table]						
*ċ	*ćć	*ćć	*št	*j̈	*j̈	*ǰǰ
spirantization of *ćć > *śś and perhaps of *ǰǰ > *źź						
*ċ	*śś	*śś	*št	*j̈	*j̈	*źź
merger of *śś with *š and perhaps of *źź with *ž						
*ċ	*š	*š	*št	*j̈	*j̈	*ž
deaffrication of dental affricates – Avestan						
*s	*š	*š	*št	*z	*z	*ž

Table 11. Changes from Proto-Irano-Nuristani/Proto-Iranian to Avestan

Proto-Irano-Nuristani/Proto-Iranian						
*ċ	*ćć	*ćć	*ćt	*j̈	*j̈	*ǰǰ
second dentalization: *ć > *ċ in all positions, but *ǰǰ remains						
*ċ	*ċċ	*ċċ	*ċt	*j̈	*j̈	*ǰǰ
merger of *ǰ and *ǰ̌ – Proto-Nuristani						
*ċ	*ċċ	*ċċ	*ċt	*j̈	*j̈	*ǰ̌(ǰ)

Table 12. Changes from Proto-Irano-Nuristani/Proto-Iranian to Proto-Nuristani

6.5 Potential Indo-Aryan features

If Nuristani is to be placed within Iranian, this immediately raises the question about its Indo-Aryan features, which have previously been much discussed and stressed in the literature. Isoglosses with Indo-Aryan have been noted in the following four areas:

1. The development of **d* + **t* > **-tt-* instead of Iranian *-st-*
2. The distribution of the liquids *r* and *l*
3. The outcome of PIIr. **r̥H*
4. Parallels in lexicon and (especially derivational) morphology

With the possible exception of the first, all of these points can in fact be refuted, as I will attempt to demonstrate in the following.

6.5.1 Dental clusters

Two important phonological rules applying in dental clusters are generally reconstructed for Proto-Indo-Iranian:

1. Voiced plosives were assimilated to a following voiceless plosive, but voiced aspirates caused the assimilation of a following voiceless plosive

(Bartholomae's law). Bartholomae's law was leveled out in later Iranian, since it had become opaque with the merger of voiced and voiced aspirated sounds

2. The first dental in a dental cluster was produced with some kind of affrication, a tendency that is usually projected back to Proto-Indo-European times. The affrication disappeared on the way to OIA, whereas the affricated plosive turned into a sibilant in Iranian[110]

The results of both rules taken together can be schematically summarized as follows:

*t + *t > PIIr. *t^st	e.g. in	OIA *cittá-* 'recognized' (← *cet-*), YAv. *čista-* 'id.' (← *čōiϑ-*)
*d + *t > PIIr. *t^st	e.g. in	OIA *mattá-* 'drunk' (← *mad-*), New Persian *mast* 'id.'
*d^h + *t > PIIr. *d^zd^h	e.g. in	OIA *ruddhá-* 'obstructed' (← *rodh-*), YAv. °*uruzda-* 'id.' (← *raōd-*)

It is not to be expected that the Bartholomae assimilation would be preserved in Nuristani, since voiced and voiced aspirated sounds also merged there and there was ample time for leveling before the first documentation of Nuristani. The outcomes of the affrication, on the other hand, are a noticeable isogloss that separates Indo-Aryan from Iranian. Studying the development of this environment in Nuristani could therefore produce interesting results. Morgenstierne (1926: 60; 1973a: 332) noted that the Nuristani development in this context appears to agree with the Indo-Aryan one, though not all of his examples are equally convincing:

- Kt. W *vëtí-*, NE *utí-*, SE *vutḯ-* 'to stand, wait, remain'; NKal. *ütí-* 'to stand' corresponding to IA **ut-thīya-* (pass. of *ut-thā-* 'to stand up'), and Kt. NE *utélë*, SE *vutḗlë*; NKal. Ẓ *ütélë*, N *ütalá* 'high' corresponding to IA **uttha-la-ka-* (← *uttha-* 'standing up, rising') are most likely loanwords, since there is also a separate set composed of Kt. SE *vúšt-* 'to stand up (*archaic*)'; NKal. Ẓ *ošt-*, N *ost-* Pr. *üšt-* 'to stand up'; NKal. Ẓ *üšt-* 'to mount, copulate [of male animals]'[111] (thus also Turner

[110] It is worth mentioning here that Steblin-Kamenskij (1999: 118) considers Wakhi *cɨtr*, *cətr* 'spindle' to be an inherited cognate of, rather than a loanword from, IA *cāttra-* 'id.'. He speculates that the development of *t^st to *t* instead of *st* may be one of the "Indian features" of Wakhi, which would mean that the development is not Proto-Iranian. This hypothesis deserves further investigation, but does not at first glance seem very likely, in view of examples like *vand-* 'to bind', pfv. ptcp. *vast-*, which would have to be "explained away" as Persian loanwords.

[111] Initial stress in Kt. SE *vúšt-* and *o* in NKal. Ẓ *ošt-*, N *ost-* point to recomposition with Kt. SE *vú-*, NKal. Ẓ *oi-*, N *o-* 'straight up' < *ad^hi. The original formation < **ud* + **staH-* survives intact in Pr. *üšt-*; NKal. Ẓ *üšt-*.

1962–1966: T. 1900). Nuristani therefore does not share in the Indo-Aryan development **d* + **st^{h}-* > *tth*

- Kt. *čit* ‘choice, wish’; NKal. *čit* ‘appetite’ seems to agree with OIA *cittá-* ‘thought’, though borrowing from Indo-Aryan cannot be excluded
- Kt. *pt-ë/-i*; NKal. *prat-ó/-í* ‘given (M/F)’ corresponding to OIA *prá-tta-* + *-ka-/-ikā-* < **pra* + **dH-ta-* appears to be the best example, though an Iranian ***°sta-* < **dH-ta-* is actually unattested (Mayrhofer 1992–2001: I, 715)

It must be pointed out that the observable outcome in the modern Nuristani languages is word-internal single *-t-*, which does presuppose an earlier cluster **Ct*, but does not necessarily need to be reconstructed as **-tt-*. In the case of an Iranian-style outcome **-st-* we would probably expect a merger with PIIr. **st*, resulting in *št* ~ *st* in the individual languages, which is not what we find,[112] but simple *-t-* may just as well reflect the earlier PIIr. stage **t^{s}t*. Since **°d-st^{h}°* does not become *t*, but **št*, Nuristani cannot have dropped the frication between two plosives in the same sound change as Indo-Aryan did, i.e., a shared innovation with Indo-Aryan is not likely.

A possible candidate for the cluster **d* + **d* is Kt. W *vudrá-*,[113] NE *undrá*, SE *vundrá-*; Dam. *undrař-* ‘to fly’ where the result is *nd*. Morgenstierne (1926: 60) connected this to OIA *uḍ-ḍī-* ‘to fly’, noting that “the phonetic conditions are not clear”. A more likely etymology is from PIIr. **ud* ‘up’ + **drāu̯-aia-* / **draH-* ‘to run, haste’, but in view of parallels in New Indo-Aryan like Saraiki *uḍra-* ‘to fly’, borrowing from an IA descendant of this combination cannot be excluded. Since the development of PIIr. **zd* in Nuristani is not known, making a comparison to the Iranian development is at any rate difficult in this case. It is also not clear to what extent the development to *nd* is the result of the cluster position with following *-r-*.

Just as analogical *st* appears in place of the Bartholomae’s law development *zd* < **d^{z}d^{h}* in later Iranian, analogical *-t-* < **-Ct-* appears in this context in Nuristani, which confirms that it is most likely the inherited development of **t/*d* + **t*:

- Kt. W *ẓutr*, NE *ẓútër*; NKal. Ẓ *ẓütr*, N *ütríg* ‘rope’
  < PIIr. **rud^{h}-* (**rau̯d^{h}-*) ‘to obstruct’ + **-tra-* ‘instrument suffix’

In Bartholomae’s law contexts with preceding labial or velar voiced aspirates, the outcome is similarly *-t-* < **-Ct-*, pointing to voicing assimilation to the *t* (cf.

[112] When considered together with the other evidence, it does not appear likely that A. *ċostḗ* ‘ceiling’ reflects PIIr. **śćad-ta-ka-* ‘covered’.
[113] Absence of *n* probably due to loss of nasalization in this dialect.

Morgenstierne 1973a: 334). This affects inherited stems as well as borrowed Indo-Aryan stems in combination with Nuristani suffixes:

- Kt. NE/W *vakt-ḗ/-í*, SE *vřağút-ë/-i*, pfv. participles of NE/W *vagá-*, SE *vřağá-* 'to get'
  < prefix *va-* 'towards speaker/deictic center' + PIIr. **grāb^{h}-aḍa-*, ptcp.s reflect ***gṛpta-ka-/-ī̆-ka-*
- A. *lotḗ*, pfv. particple (M) of *law-* 'to find'; NKal. N *lató*, pfv. particple (M) of *lā-* 'to find'
  ⇐ IA *labh-* 'to obtain', ptcp. reflects ***lap-ta-ka-*
- Kt. W/NE *lëtrí*, SE *latrí*; NKal. Ẓ *latrí*; Dam. *latrí* 'thing, possession'
  ← IA *labh-* 'to obtain', noun reflects ***lap-trī-kā-*[114] (though M in Kt.)

Based on this, Morgenstierne was most likely right to identify Kt. W/NE *bëdí*, SE *bidí*; NKal. Ẓ *büdí*; A. *bëdí* 'mind, intellect' ~ OIA *buddhi-ka-* as a loanword from Indo-Aryan, though he later changed his mind on this point, taking *-d-* to be the inherited Nuristani development (Morgenstierne 1973a: 332). Regarding this, he further notes, with reference to Turner (1962–1966: T. 9277, 9276):

> A *bŭ̄r*, W [= NKal.] *buṛā* may represent another possibility of development, though not necessarily a purely Kaf. [= Nuristani] one (**būḍhi* < *buẓḍhi* < **bhud^{ʒ}-dhi*). A *betȭ* 'he understood' has probably been formed secondarily from **bud* + *ta*. (Morgenstierne 1973a: 332, fn. 8)[115]

In my view, these latter cases have a different background altogether. Turner's (1962–1966: T. 9277) claim that "*buddhi-* replaced **būḍhi-* < **bud^{ʒ}dhi-*" confuses several mutually exclusive developments: **d^{ʒ}d^{h}* did not become ***ʒd^{h}* in Indo-Aryan. It became *ʒd* in Iranian, but the *ʒ* in this context was never affected by the RUKI rule. The Indo-Aryan development **žd$^{(h)}$* > V̄ḍ applied in RUKI contexts and was predicated on the Indo-Aryan retroflex RUKI outcome. For Nuristani, in turn, we have no reason to assume a retroflex RUKI outcome.[116] The Nuristani words Kt. NE/SE *buṛḗ* 'cavity, body cavity'; NKal. Ẓ *büṛḗ* 'hollow tree trunk, body cavity; heart'; N *buṛá* 'intention, thought' A. *buṛḗ* 'belly, torso, insides, heart, body (of an instrument)', as the glosses indicate, do not primarily refer to the mind, but

[114] It is not likely that Shina *laç* 'goats' is connected to these forms, as suggested by Turner (1962–1966: T. 10938), since there would be no basis for a replacement of **labdhra-* with an innovative **laptra-* in an Indo-Aryan language. Shina *laç* is more likely in some way connected to OIA *lakṣá-* or *lákṣman-*.

[115] "A *bŭ̄r*, W *buṛā* mag eine andere, aber nicht notwendigerweise rein kaf. Entwicklungmöglichkeit repräsentieren (**būḍhi* < *buẓḍhi* < **bhud^{ʒ}-dhi*). A *betȭ* ‚er verstand' ist wahrscheinlich sekundär aus **bud* + *ta* gebildet worden."

[116] There is at least one Indo-Aryan loanword in Nuristani that does reflect the development PIIr. **žd$^{(h)}$* > OIA V̄ḍ*(h)*, but this has the expected *ř* < *-ḍ-* rather than *ṛ* < *-ḍḍ-* in Kt.: Kt. *při* ~ *přiyí* ~ *pří*; A. *pëṛí* ~ *piṛí* 'vagina (*vulgar*)' ⇐ IA *pīḍ-ita-* 'pressed, squeezed' < **pižd-*.

originally mean ‘cavity’, which through a semantic narrowing to ‘body cavity’ > ‘insides’ > ‘heart’, could also acquire psychological senses, especially in NKal. The logical conclusion is that they are not related to the PIIr. root **baud^{h}-* ‘to become awake’ at all. An antecedent **bu/oḍḍa-ka-* could be mechanically reconstructed, but provides no obvious etymological connections.

The root of A. “*betȭ* ‘he understood’” is recorded by Buddruss as *bat-* ‘to think’. This is most likely cognate to NKal. *bat-* ‘id.’. Notably, the *-t-* is not limited to perfective forms based on the *-ta-* participle, but is – at least synchronically – part of the root. The root vowel does not favor the assumption of a relation to PIIr. **baud^{h}-*.

It may be concluded that the outcome of **t/*d + *t* in Nuristani does not agree with the Iranian outcome *st*, but was a cluster **Ct* coming out as *-t-* in the modern languages, just as borrowed Indo-Aryan *-tt-* does. In this, Nuristani is more compatible with the Indo-Aryan development, but an early shared innovation **t^{s}t > *tt* does not need to be assumed.

6.5.2 The distribution of *r* and *l*

Another isogloss that separates Indo-Aryan from Iranian is the distribution of the liquids *r* and *l*. The original distribution of Indo-European **r* and **l* is not preserved anywhere in Indo-Iranian, but while a complete merger into **r* can be observed in the earliest attested Iranian languages, Old Indo-Aryan, especially in its later phases, also has many cases of *l*, which appears in positions of both Indo-European **l* and **r*. The origin of this Indo-Aryan *l* is still an unsolved question, but it eventually seems to have settled into a relatively fixed lexical distribution that is also reflected in modern Indo-Aryan languages.

According to Morgenstierne (1926: 61–62), the Nuristani languages “have *l* in about the same cases as S[ans]kr[it]” and this could in theory be taken as a possible argument for closer affiliation with Indo-Aryan. However, as Hamp (1968: 136–137) has shown, there is at least one instructive case of an *r/l* doublet in Nuristani, in which the representative with *l* is independently more likely to be an Indo-Aryan loanword, whereas the one with *r* is likely an inherited word:

1. with PNur. **r-*:

- Kt. W/NE *řëvéki*, SE *vřĭğĭ*; A. *ẓokí*; Pr. *ẓuwí* 'fox'[117]
  usually connected with an otherwise unattested, differently suffixed variant **rau̯pākḭa-* of the PIIr. word reflected by OIA *lopāśá-* 'fox', New Persian *rōbāh*, but possibly it may instead be derived from < PIIr. **Hrau̯pāć-ka-* + **-iH-* + **-kaH-* (Kt. forms are F), in parallel with Kt. W *KL* *nëvéki* 'granddaughter', F derived from *nëvók* 'grandson' < **napāt-ka-*; on the proposal of an athematic stem for the 'fox' word, see Palmér et al. (2021); the formation underlying the Pr. word may or may not be different.

2. with *l-* and IA *ś/š* < **ć*:

- NKal. ẓ *lawšḗ*, N *liwašá* 'fox'
  ⇐ IA *lopāśá-* 'fox' + *-ka-*

It is therefore important to sort out likely loanwords before making any observations about the distribution of *r* and *l*. Cases in which Nuristani has only a variant with *r*, which corresponds to *l* in OIA, are also not unheard of, as the following examples show:

- Kt. *bře*; NKal. *bre*; A. W *wřei*, M *wlei* 'flour'
  < **u̯raḭH-(p)-i-ta-* 'crushed', but OIA *vlay*^{i}- 'to press down'
- Kt. W/NE *këvó*, SE *kavó*; NKal. *kawā́* 'conical carrying basket (worn on the back)'
  < PIIr. **kapāra-* 'vessel', whence OIA *kapā́la-* 'vessel; skull', Middle Persian *kabārag* 'vessel'; New Persian *kabāra* 'basket tied to a donkey's back'; with intervocalic dropping of **-r-*, where *-l-* would have been preserved (cf. Kt. *ṣyol*; NKal. *ṣyāl* 'wolf' ⇐ IA *śr̥gāla-* 'jackal')

The converse – Nuristani *l* vs. OIA *r* – has been proposed by Morgenstierne (1926: 61) for Kt. *nilḗ,* A. *nil* 'lake formed from a river', supposed to be cognate to OIA *nīrá-* 'water', but this etymology is not very likely, both because *nīrá-* is probably a Dravidian loanword (Mayrhofer 1992–2001: II, 50) and because of the *l* in Kt. (see below). A better explanation may be ⇐ IA *ni-laya-* 'resting place' (← *ni* 'down, downriver' + *lay*^{i}- 'to cling, to remain sticking, to settle on sth.'), though it is not clear whether the monosyllabic form in A. can derive from this.

Other cases where a Nuristani language has *l* for OIA *r* result from the sound change **kr*, **gr*, **pr*, **br* > *kl, gl, pl, bl* in dialects of A. (e.g. *blā* 'brother' < PIIr. **b*^{h}*raHtar-*, *klom* 'work' ⇐ IA *kárman-*), but these must be excluded from the

[117] *Pace* Halfmann (2023a: 128), Dam. *rōpak* with its short vowel in the second syllable and an inexplicable preservation of *-p-* is probably better considered an Iranian loanword (from something like ***ropask*) than an inherited cognate.

discussion because this change is late and secondary. This resolves the case of the pre-Islamic deity A. *Blamadé* ⇐ IA *Brahma-deva-* problematized by Mayrhofer (2002: 154) in the context of the *l*/*r* development.

As pointed out by Halfmann (2023b: 506–507), at least for Kt. a clear argument can be made that all present-day cases of *l* must have entered the language secondarily, since another correspondence exists between *l* in the other Nuristani languages and *ř* in Kt., probably reflecting *l* in earlier borrowings from Indo-Aryan:

- NKal. *letr* 'harvest'; A. M *latrā-* 'to harvest' ~ Kt. SE *řetr* 'harvesting time'
  ⇐ IA *lavitra-* 'reaping tool'
- NKal. Ẓ *waċél̈ë*, N *oċalá*; A. *oċalé* ~ Kt. W *vëċúř*, NE *uċéř*, SE *vaċéř*
  ⇐ IA *vatsá-* 'calf' + *-la-ka-*
- NKal. *palā́*; A. *palé* ~ Kt. *pařé* "apple"
  ⇐ IA *phála-* 'fruit' + *-kā-* (at least for Kt. a *vr̥ddhi* derivative may have to be assumed to explain *-a-* in W/NE)
- NKal. *mül*; A. *mulí*; Pr. *mülű* ~ Kt. W *mřëyí*, NE *mřéy*, SE *muňí* 'price'
  ⇐ IA *mūlya-* 'price' + *-ka-*
- NKal. *tul-*, A. *tol-*, Pr. *a-tul-* ~ Kt. *tuř-* 'to weigh sth.'; Kt. SE *tüř* 'a weight measure'
  ⇐ IA *tol-aya-* 'to weigh'; *tulā́-* 'scales, weight' (with specifically IA development of **r̥HC*)
- Kt. NE *kyúřẽ*, SE *kűřẽ;* NE *kyúř-kyuř* 'separate(ly)'
  ⇐ IA *kévala-* 'alone' + instr. *-ẽ* / distributive reduplication
- NKal. *kül* 'natal home; numeral classifier for families'; A. *kul* 'clan' ~ Kt. SE *küř* 'numeral classifier for families'; NE *tat-kyúř*, SE *tat-kűř* 'male paternal relatives (of a woman)' (compound with *tot-* 'father')
  ⇐ IA *kúla-* 'herd, troop, family'
- Kt. *šoř* 'birth', e.g. in W/NE *p-šoř e-*, SE *pšoř ye-* 'to go into labor'
  probably ⇐ IA *śā́lā-* 'house, hall, shed, stable', referring to the menstruation / birth shed common in pre-Islamic Nuristan, therefore *p-šoř e-* originally *'to go to the shed'; later re-borrowed as *šol* 'stable'

The only known case where a word with a defining Nuristani palatal development also has *l* is Kt. W/NE *lëz-*, SE *lïj-*; A. *lej-* 'to lick' (~ OIA *leh-* ~ *reh-* 'id.'). However, since this root has *l* also in Kt., the presence of the *l* is likely secondary, probably as a result of influence from corresponding IA forms (cf. Pashai [Laurowan, Gulbahar] *läy-* 'to lick'), perhaps furthered by a kind of universal sound symbolism (laterals associated with the sound of licking). Notably, an *l* also appears in this particular root in later Iranian languages, in contrast to

the *r*- of Old Iranian (New Persian *lištan*, *lēs*-, but YAv. *raēz*-), which Cheung (2007: 311) describes as "a notorious problem".

In conclusion, it thus seems more likely that Nuristani originally had only **r* < PIE **l* + **r* and did not develop (or preserve) an *l* in conjunction with Indo-Aryan.

6.5.3 The outcome of PIIr. **r̥H* and laryngeal developments

Following Morgenstierne (1926: 61), a consensus has emerged that the PIIr. sequence **r̥H*C developed into **īr*C, **ūr*C in Nuristani as in Indo-Aryan, but unlike Iranian, where it becomes **ar*C or **r̥*C (Mayrhofer 1984: 384–385, fn. 14; Degener 2002: 108; Lipp 2009: I, 169–170). This observation induced Cowgill (*apud* Mayrhofer 1984: 384–385, fn. 14) to doubt his own hypothesis of an affiliation of Nuristani with early Iranian and Degener (2002: 108) similarly characterizes it as "an important point which cannot be easily pushed aside". This consensus is, however, based on just a single example, NKal. Ẓ *drëgëlḗ*, N *drigalá*; A. *drigalḗ* 'long (M)', compared to OIA *dīrghá*- 'id.' < **dr̥Hgʰa*-.

After the discussion of *l* and *r* in the preceding section, the *-l*- suffix of this word already makes it suspicious of being an Indo-Aryan loanword, as does its similarity in formation to corresponding words in neighboring Indo-Aryan languages (Pashai [Kurangal] *ligolo*, Gawar-Bati *ligāla*, 'long'). Morgenstierne (1926: 61) also quotes a supposedly equivalent Kt. cognate with the transcription "*drigẽr'"*, but this word does not in fact have an *i* in its root syllable and also shows a different suffix containing a nasal, which does not appear in the NKal. and A. forms. The nasal suffix is matched by an equivalent in Pr.:

- Kt. W *drëgéř*, NE *dërëgéň*, SE *drëŋéň* 'long (M)'
- Pr. *ǰigní* 'long'

The Pr. form is likely a loanword from Kt., since it has *ǰ* < **ḍ /_i* < **dr* instead of *l* < **d* or *r* < **lr* < **dr*, so that only the Kt. form requires an explanation. There are two types of adjectives in Kt. which end in W *-éř*, NE *-éň*, SE *-éň* in their masculine forms: one type associated with verbal roots, which contains the suffix **-āna-ka*- (originally the athematic middle present participle ending, see Halfmann 2024: 461–462[118]), and a second type made up of color adjectives, which contain the suffix **-aṇa-ka*- (Halfmann 2024: 261, fn. 133). Since **dr̥Hgʰa*- 'long' is not associated with a productive verbal root in the oldest attested Indo-Iranian languages, a formation with **-āna-ka*- is not likely. The adverbial expression Kt. W *bë-drëgá*, NE *bë-dërëgā́*, SE *ba-drínǫ* 'at a distance' implies an earlier noun **drVgã̄*

[118] With a mix-up of "thematic" and "athematic" on p. 461, fn. 254.

‘length, distance’, which appears to be related but excludes a derivation from *-*aṇa-ka-*, since its final vowel points to *-*ān-* as an immediate antecedent. It may be possible to connect these forms to spatial nouns in -*ň* ~ -Ṽ, derived from spatial morphemes (originally adverbs) (see Halfmann 2024: 398). These may be equated with OIA formations with the suffix -*tana-*, which derives adjectives from (originally temporal, but later also spatial) adverbs (Debrunner 1954: 592–595). From the use in deriving spatial nouns from adverbs, it could have been analogically extended to other spatial contexts.

The noun **drVgã* could then be derived from nominalized **dr̥Hg*^{h}*a-* + *-tana-* and the adjective from **dr̥Hg*^{h}*a-* + **-tana* + **-ka-*. The vowel correspondence of the first syllable of W *drëgéř*, NE *dërëgéň*, SE *drëŋéň*, where all dialects have *ë*, points to an earlier **e*, as in W *sëyí*, NE/SE *sëňí* ‘soldier’ ~ IA *sénya-* + *ka-*; SE *dëňí* ‘milch (cow)’ ~ IA **dhen-ikā-* and (with umlaut) W *sëlkyéř*, NE *sëlkyéň*, SE *sëlkéň* ‘flowing, smooth, slippery’ ← W/NE/SE *sëlk-* ‘to slip’ ⇐ IA **saṁ-likh-ya-* ‘to be scratched, grazed, smoothed’[119] + **-āna-ka-*. The last example appears to be the most pertinent, because it has a comparable suffix formation and number of syllables. An **i*, on the other hand, would come out as W/NE *ë* ~ SE *i* (cf. W *bëċ-*, NE *břëċ-*, SE *břiċ-* ‘to spin’ < **u̯rić-*; W/NE *lëz-*, SE *liǰ-* ‘to lick’ < **rij*^{h}-), long **ī* perhaps as NE/SE *i* (cf. NE *divéř*, SE *divéř* ‘island’ ~ IA *dvīpá-* ‘id.’ + an unclear suffix). In SE *ba-dríŋo*, the *i* in the secondarily stressed middle syllable can also reflect earlier **e*, as with the *í* in Kt. SE *vříǧi* ~ *é* in W/NE *řëvéki* ‘fox’ or in the feminine verbal gender marker SE *-i* ~ W/NE *-e* (see Halfmann 2024: 489).[120]

The vowel assimilation rules in Pr. are not yet fully clear, but the vocalism in Pr. could be explained from the original **e* in the first syllable of the borrowed Kt. term, which would have turned into *i* (cf. Pr. *kiċ* ‘(long animal) hair’ ⇐ Kt. *keċ*).

Further examples from the same word family are Kt. W *drey*, NE *dëréy*, SE *drě* ‘late(r), delayed’, which is probably equivalent to the OIA comparative *drā́ghīyas* ‘longer’, with analogical generalization of *-gh-* from the basic adjective (semantically cf. New Persian *dēr* ‘late’ < **dr̥Hg*^{h}*a-*), and NKal. Ẓ *dṛ̌* ‘late, delayed’ in light-verb constructions like *dṛ̌ č-* ‘to delay’ (with *č-* ‘to do’). We cannot exclude the possibility that this *dṛ̌* is an inherited reflex of **dr̥Hg*^{h}*a-*, though it could perhaps also be compared to Proto-Slavic **dьliti* ‘to last, prolong’ and **dьlь* ‘length’

[119] The corresponding forms NKal. Ẓ *sɨrëk-*, N *seṛik-*; A. *sirik-* ‘to slip’ show divergent correspondences to IA *-ṁl-* (MIA *–ll-*?).
[120] In these cases the **e* reflects an **ā* affected by umlaut via / contraction with **i*.

< unextended PIE *$d\underline{l}h_1$- (Derksen 2008: 133–134). It should then be counted as a case of *$\underset{\circ}{r}H$V rather than *$\underset{\circ}{r}H$C.

We can thus conclude that the single example upholding the rule that Nuristani shares *$\underset{\circ}{r}H$C > *$\bar{\imath}r$C with Indo-Aryan, is rather unconvincing. On top of this, Kümmel (2022: 254, fn. 8) has already noted one "probable exception" to the supposed development, which means that at present there is really no basis for assuming it. This "exception" is found in the following set of cognates:

- Kt. W/NE *vërúk*, SE *varúk*; NKal. Ẓ *warék*, N *warák*; A. *wërók*; Pr. *wurúg* 'wool'
  < PIIr. **(H)u̯$\underset{\circ}{r}$Hna(H)-* (OIA *úrṇā-*, YAv. *uuarənā-*) + **-ka-*; probably without **-ka-* in Kt. W *vëréši* 'carding bow', there compounded with a derivative of *aš-* 'to throw'

Morgenstierne (1954: 311) reconstructed the proto-form for this set as "**v$\underset{\circ}{r}$nakka-*", which Hamp (1968: 181–182) considered "convincing", but neither of the two elaborated on the historical implications of this reconstruction. The reconstruction of a geminate **-kk-* is not necessary since intervocalic plosives are generally preserved in the position after a nasal (via NVCV > NṼCV > NVNCV), though this implies that the sound change **rn* > **rr* took place later, or that at least vowel nasalization remained behind after it.

With regard to the root vowel, it is first of all necessary to establish the regular developments of **$\underset{\circ}{r}$*, **a* and **ar* in various positions in Nuristani:

1. The vocalic component of PNur. **ər* < PIIr. **$\underset{\circ}{r}$* develops into Kt., A., Pr. *i*; NKal. **a* > *o* in stressed (synchronic) monosyllables, but merges with **a* in all languages in unstressed position.
   a. in stressed monosyllables:
      - Kt., A. *iċ*; Pr. *itrú* ~ NKal. *oċ* 'bear'
        < PIIr. **H$\underset{\circ}{r}$ćća-*
      - Kt. *ċiṭ*; A. *šiṭ* (with regular secondary palatalization of **s* < **ć* /_*i*); Pr. *žič* (assimilated < **zič*) ~ NKal. *ċoṭ* 'manure, fertilizer'
        < PIIr. **ćak$\underset{\circ}{r}$t-* + *-ka-*[121]
   b. in unstressed position:-
      - Kt. W *bëřé*, SE *bařé*; A. *bëṛé* 'taken away (M)'
        < PIIr. **b$^h\underset{\circ}{r}$ta-* 'borne' + **-ka-*

[121] The assumption of a suffix is probably necessary to explain stress on the second syllable. Assuming a **-ka-* suffix instead of simple thematization with **-a-* may be necessary to explain the outcome *ṭ* < **$\underset{\circ}{r}$t*, since otherwise **$\underset{\circ}{r}$t* appears to produce Kt. *ř*, A. *ṛ* (cf. Kt. W *bëřé*, SE *bařé*; A. *bëṛé* under b.). A cluster **rtk* could have been more resistant to lenition and therefore have produced the outcome *ṭ*.

- Kt. W *mřëŋéċ*, NE *mřëŋéċë*, SE *mřaŋjə́* ‘(small) bird, songbird’
  < PIIr. **mr̥ga-* + **-āća-* (cf. Wakhi *mingas* ‘small bird, sparrow’, Khotanese *murāsa-* ‘peacock’) + **-ka-*

2. Short **a* develops into Kt., Pr. *u* ~ NKal., A. *o* in stressed monosyllables, but into Kt. W/NE *ë* (~ ∅), SE *a* in pre-stress position of (synchronically) disyllabic words; long **ā* develops into Kt. *o* ~ NKal. *ā* ~ A. *ă̄* ~ Pr. *ə*C/*a*# in stressed monosyllables, but into Kt. W/NE/SE *a* in pre-stress position of (synchronically) disyllabic words
3. In the context **ar*C, **a* is lengthened to **ā* in stressed monosyllables of all languages,[122] but this apparently does not apply in unstressed positions[123] or before **u̯/*i̯*
   a. in stressed monosyllables:
      - Kt. *kor*; NKal. *kār* ‘ear’
        < PIIr. **karna-* ‘ear’
      - Kt. *por*, A. *pār* ‘leaf, sheet’
        < PIIr. **parna-* ‘wing, feather, leaf’
      - Kt. *čom*; NKal. *čām*; A. *ċam* ‘skin’
        < PIIr. **čarman-* ‘skin’ (or ⇐ IA)
      - Kt. *moč*; NKal. *māč*; A. *mać* ‘husband, man’
        < PIIr. **marṭ̯a-* ‘mortal, man’ (or ⇐ IA)
      - Kt. W *trok* ‘dislocation of joint’; NE/SE *trok* ‘sadness’
        < PIIr. **tarka-* ‘turning’; via ‘reflection, thought’ (as in OIA *tarka-*) > ‘pondering, brooding’ > ‘sadness’
   b. with following **u̯*, **i̯*:
      - Kt. W *suv*, NKal. *söw* ‘all’
        < PIIr. **saru̯a-* ‘whole, all’

[122] The relative chronology is not certain and the lengthening could instead perhaps be thought of as a compensatory development going along with the reduction of geminates, akin to that seen in late IA, but cf. Kt. *drum* ‘socio-religious order (pre-Islamic)’ ⇐ IA *dharma-*, presumably borrowed as MIA *dhramma* with no lengthening after reduction of the geminate.

[123] The word Kt. W *makə́ř*, NE *makə́ř*, SE *maǧə́ř*; NKal. Ẓ *makóř*, N *mřāká*; A. *mřëkaṛə́* ‘monkey’ ~ IA *markáṭa-* could at first glance be taken as an example with unstressed lengthening (because of Kt. W/NE/SE a; NKal. N *ā*), but, as a likely IA loanword, this could have gone through the development *markáṭa-* > **m(r)akkaṭa* > **m(r)ākaṛa* before being adopted into Nuristani. Morgenstierne (1973b: 236) finds no evidence for the expected stage **mrakkaṭa* with *r*-metathesis in the IA languages of the region and concludes that the introduction of this word to the northwest could be the result of a “later borrowing” in the form **makkaṭa-*, presumably from the Indo-Aryan plains, which would mean that the word may not even have contained an *r* when it entered Nuristani. At least the A. form could, however, reflect a form with metathesis.

- NKal. *ċöw*; A. *ëw* ‘markhor buck’
  < PIIr. **ćaru̯a-* ‘buck’ ~ Lat. *cervus* ‘stag’ etc.
- NKal. Ẓ *koi*, N *kö* ‘work’; Kt. *ku-*° in W/NE *kú-dyum*, SE *kú-düm* ‘work’, SE *kú-ğu-tõ* ‘blacksmith’s oven’ (< “work-do-place”)
  < PIIr. **karu̯a-* ‘to be done’

c. in unstressed position:

- Kt. W/NE *vër-*, SE *var-* ‘to grow’
  < PIIr. **Hu̯ard^{h}-a-* ‘to grow’
- Kt. W *řëz-*, NE *řënz-*, SE *řanj-*; Pr. *ẓoẓ-* ‘to shake, tremble’
  < PIIr. **rarǰ-* ‘to shake, tremble’ (Sogdian B *wy-r$^{\flat}$rz* ‘to shake, tremble’)

With this in mind, the word for ‘wool’ can be reconstructed as either PNur. **warnaka-/*warrãka-* or **wərnaka-/*wərrãka-*, but certainly not as **ūrnaka-* as would be required for a parallel with the Indo-Aryan development.

The following cases may likewise reflect **r̥HC* > **ar*:

- Kt. W *puv*, NKal. *pöw* ‘last year’
  < PIIr. **pr̥Hu̯a-* ‘former, prior, preceding’ (OIA *pū́rva-*, YAv. *pouruua-*); less likely ~ OIA *parut-* ‘last year’, since *-r-* should then be preserved in NKal. (cf. *dor* ‘door’ < **du̯ar-a-*)
- Kt. *oṣ*; NKal. *āṣ* ‘covetousness, desire’
  < PIIr. **r̥Hš-* (OIA *īrṣ-yā́-* ‘envy’, YAv. *arəš-iiant-* ‘envious’)

A more doubtful case is Kt. W *břeċ*, NE/SE *břẽċ* ‘type of tree’,[124] which could perhaps be derived from PIIr. **b^{h}r̥Hja-* ‘birch’ (OIA *bhūrja-*, Ossetic *bærz*), but may instead be cognate to A. W *wyẽs*, M *wlẽis* ‘willow’, which would then rather point to PIIr. **u̯r-* (though *wř-* would be expected in A. W) and therefore to a possible connection with OIA *vréśī-* ‘winding’.

The developments observed so far, can thus be summarized as follows:

1. **r̥Hn* > **arn* > **arr*
2. **r̥Hš* > **arš* > **āṣ* (stressed)
3. **r̥Hu̯* > **arw* > **aw(w)*
4. **r̥Hg^{h}* > **ar^{i}g* (?) > **erg* > **reg*

Development 1 through 3 agree with the Iranian pattern (> **ar*), whereas development 4 diverges both from Iranian and from Indo-Aryan.

[124] Sun-Aro (2022): “type of large tree; it bears no fruit; its leaves are like the leaves of an apple tree; vines are placed over its branches; it has no thorns”; Strand (1999b): “tree with small black berries”; Morgenstierne (1978): “Psht. *tāγa*”, i.e. ‘hackberry tree’. At least synchronically the reference of the word is not ‘birch’ – the Kt. word for ‘birch’ is *oç*.

For the development of the sequence **ṛHV*, which in OIA gives *irV/urV*; *ilV/ulV*, but *arV* in Iranian, the following examples can be considered (beside NKal. ẓ *ďř* 'delay' mentioned above):

- Kt. SE *ċeř*, W *ċiř*, NE *ċiř* ~ *ċyuř* 'top'; Pr. *ǰi* 'head'
  < PIIr. **ćṛHas-* 'head' (OIA *śíras-*, YAv. *sarah-*)
- Pr. (*y*)*ir* 'stone, rock'
  < PIIr. **gṛHi-* 'mountain' (OIA *girí-*, YAv. *gairi-*)
- Kt. SE *géřgël* 'paradise'[125]
  perhaps < PIIr. **gṛH-* 'praise song' (OIA *gír-*, OAv. *gar-*), compounded with *gul* 'valley, country', cf. OAv. *garō.dəmāna-*, YAv *garō.nmāna-* 'the House of Song, Zoroastrian paradise'

Two further potential examples must be excluded:

- Kt. W *zëřé*, NE *zëňé*, SE *ǰëňé* 'red, brown, yellow (M)'; Pr. *zün, zünyóg* 'yellow'
  possibly < PIIr. **ǰʰṛHaṇia-* (OIA *híraṇya-*, YAv. *zaraniia-* 'gold'), or < **ǰʰarH-aṇa-ka-* / **ǰʰṛH-aṇa-ka-* (cf. OIA *hári-* and *híri-*° 'yellow, golden'), but the loss of **-r-*, with no development to Kt. *ř*, Pr. *r* speaks in favor of **ǰʰarH-aṇa-ka-*, developing along the lines of > **ǰarenaka-* > **ǰaenaa*, so that the word probably does not contain **ṛH*.
- Kt. W *tëréz*, NE *tërézë*, SE *tarǰé*; NKal. ẓ *tarënǰé*, N *taranǰá*; A. *taranǰé*; Pr. *tërǰé* 'scales' ~ Bactrian ταραζο 'task, duty' < **'weight', Middle Persian *tarāzūg* 'scales' < **tṛHaH-* 'scales, weight' **Haǰ-uka-* 'driving'; due to universal *-r-* in Nuristani this is most likely a Middle Iranian loanword; since the final syllable reflects **a*, not **u*, it may stem from later Bactrian which had lost vowel distinctions in the final syllable; the reason for *ǰ* in NKal. is unclear, but may be due to borrowing

The most solid case, the word for 'head', implies a special development that is not entirely transparent. Perhaps the simplest way to account for all outcomes would be a proto-Nuristani form **ċar^{i}as-*, with a kind of semi-vocalic element emerging from the laryngeal. The **^{i}* could then condition intervocalic preservation of **-r-*, as *ř* in Kt. and *r* in Pr., while also inducing umlaut effects in both languages.

[125] Recorded in this meaning by Strand (1999b), but also attested in a folk song documented by Morgenstierne (1967b: 1385), there translated as "Psht. *ārām-zei, āsūda-zei* 'a quiet, peaceful place'". Morgenstierne speculates that the warrior lamented in the song may have gone to "seek peace with the Afghan king", but since Pashto *ārām/āsūda-dzāy* can also mean '(final) resting place', it is more likely that the final sentence of the song *géřgël go* means 'he went to paradise'. Unfortunately the spiritual conception associated with this pre-Islamic term has not been documented in detail. The same element *geř* may also be contained in Kt. SE *Géř-du* 'first summer month'. Unrelated homonyms are *geř* 'coiled neck ornament' ⇐ IA *graívya-* 'relating to the neck' (with **gřVv*° > *gVř* as in *goř* 'cupped hands' < **grāb^{h}a-* 'grasp'), and *géřtë* 'sulphur' < **gaᵘkṛta-ᵘant-a-ka-* (cf. Middle Persian *gōgird* 'sulphur').

For Pr. an extension to **ċar^{i}a-ka-* can be assumed to explain the *ǰ* < **ḍ /_i* < **jVr* syncopated in pre-stress (antepenultimate) position. The parallel developments in Kt. SE *géřgël* and Pr. *(y)ir* (with preservation of *-r-*) would thus also be accounted for. The vocalism of Pr. *(y)ir* need not indicate an agreement with OIA *ir*, since Pr. *i* also results from earlier **e* (i.a. < PIIr. **aị*).

In total, the same development as in Iranian therefore appears in three cases (**r̥Hn* > **arn*; **r̥Hš* > **arš*; **r̥Hu̯* > **aru̯*). Umlaut effects which point to some kind of anaptyctic vocalic or semi-vocalic segment can be observed in one other case (**r̥Hg^{h}* > PNur. **ar^{i}g* (?) > **erg*). In the sequence followed by a vowel, umlaut effects are more general and the outcome of **-r-* also differs from that of simple intervocalic **-r-* (**r̥HV* > PNur. **ar^{i}V* > Kt. *eř* ~ *iř* ~ *yuř*; NKal. *ẓ ř* (?); Pr. *ir*).[126] However, none of the cases pointing to anaptyxis produce the same kind of *ĭ/ŭ* vocalism seen in Indo-Aryan. Overall, the development therefore in fact has more in common with that of Iranian, though there are also some uniquely Nuristani traits.

Laryngeal developments in Nuristani paralleling those of Iranian have also been noted by Lipp (2009: I, 167), who sees evidence for an Iranian-style disappearance of **H* in middle syllables (as opposed to the development to *i* in Indo-Aryan) in Pr. *lüšt* 'daughter' < PIIr. **dug^{h}Htā*.[127] In this context, he argues, the postulated extra-short anaptyctic vowel **ĭ* arising next to laryngeals in Proto-Indo-Iranian, which merged with **i* in Indo-Aryan, was dropped in Nuristani, but only after palatalizing the velar **g^{h}*. Proto-Indo-Iranian palatalization before laryngeals is debated, since there are no traces of it in Iranian and since, as Kümmel (2016a: 219–220) points out, the *h* in OIA *duhitar-* need not necessarily point to a palatalized velar, but could also be associated with the sporadic development of voiced aspirates to *-h-* in OIA.

[126] It is not entirely clear why an umlaut effect from the anaptyctic vowel should develop in the position before a vowel and before *g*, but not in the other contexts. It is possible to think of phonetic explanations for those cases where the umlaut effect is not observable (e.g., absorption by following palatal consonants and loss during assimilation of **r^{i}n/*rn* > **rr* and **r^{i}w/*rw* > **ww*), but these would by necessity be ad-hoc explanations. The phonetic conditions leading to the Indo-Aryan outcomes of **r̥H* are similarly unclear.

[127] It may be noted here, that – despite Werba's (2016: 345) insistence to the contrary – the words for 'daughter' in the other Nuristani languages (Kt. NE *ǰi* ~ *ǰu-*, SE *ǰü*; NKal. *ǰü*; A. *zu*) are almost certainly Indo-Aryan loanwords. Together with their close parallels in neighboring IA languages, like IA Kalasha *čhu*, Gawar Bati *zu*, they may be derived from an MIA form like Gandhari *dhitu*. This amply attested form, probably arising in some way from the OIA gen./abl.sg. *duhituḥ*, also serves as the basis for new case forms (e.g., ins.sg. *dhituṇa*) (Baums & Glass 2002). From *dhitu* > **dhiu* > **dhyu* the modern forms are easily derivable.

Regardless of whether the correspondence of OIA *duhitar-* and Pr. *lüšt* is taken to reflect a palatalization before laryngeal of Proto-Indo-Iranian age, it seems clear that a palatalization has taken place in Pr. at some point, as otherwise the generation of a sibilant from *g^h would not be possible. Parallels for a secondary palatalization of velars in Pr. have not come to light so far, so that projecting the development back to Proto-Indo-Iranian does not seem absurd. The preservation of the *-t-* at the same time indicates a very early loss of the anaptyctic vowel. Kümmel (2016a: 220) considers a later syncope of an Indo-Aryan-style full vowel *i* equally possible and Lipp (2009: I, 168) similarly speaks of "irregularly occuring syncope" ("unregelmäßig eintretend[e] Synkope") in Pr. However, though much still remains unclear about Pr. vowel developments, there seem to be no strong parallels for a syncope of the Indo-Iranian penultimate syllable in Pr., which synchronically in fact generally bears the stress (e.g., *žičí* 'book, letter; embroidery, carving' < **čitr-i-ta-*). Later syncopes instead overwhelmingly show up in pre-stress (antepenultimate) position, probably with additional qualifications according to vowel quality or surrounding consonants. There is no reason to assume from the outset that Pr. syncopes are irregular and can appear in any syllable at random.

Lipp's account of Pr. *lüšt* therefore seems plausible overall, though I am not convinced by the idea that Pr. *š* results from an earlier **ç*, which supposedly corresponds to *x* in Middle Persian *duxt* 'daughter' and is generated out of **č* in **čt* < **ǰ-t* via "pre-occlusive simplification of affricates" (Lipp 2009: I, 167). After all, "pre-occlusive simplification of affricates" does not seem to apply in Nuristani. Pr. *š* may rather be explained, in the context of the regular development **ǰ, *č* > *ž*, via a simple voicing assimilation to the following *t*.

In addition to the word for 'daughter', there are in fact a few more cases in Nuristani where a dropped anaptyctic vowel in middle syllables can be assumed:

- Kt. W *zotr*, NE *zótër*, SE *jotr*; A. *zātr*; Pr. *zāṭ* [⇐ Kt. ?] 'relative, kinsman'
  < **ǰānH-tra-* '(person) belonging to the birth place/family', *vr̥ddhi* of **ǰanH-tra-* (OIA *janítra-* 'birthplace; *pl.*: relatives'; YAv. *ząϑra-* 'birth'); direct derivation < **ǰanH-tra-* would require an explanation of the vowel length
- Kt. *štor*; NKal. Ẓ *ištā́r*, N *ištā́r*; A. *astár*; Pr. *išterá* 'quiver'
  likely cognate to Khotanese *starra-* 'covering, envelope, container', derived by Bailey (1979: 431) from "**starana* or **starna* to base *star-* 'to spread, strew'"; Since the PIIr. root **starH-* 'to spread, strew' contains a laryngeal and the

Nuristani forms cannot reflect **starH-ana-*, a reconstruction as **starH-na-* 'covering' is preferable;[128] the A. form may have a prefix **ā-*, but Turner's (1962–1966: T. 1509) derivation from (an equivalent of) OIA *ā-stāra-* 'spreading' is not possible because of preserved *-r-* and absence of initial **ā* in the other forms; NKal. *ä*, Pr. *e* more likely reflect secondary vowel changes than an umlaut effect of the anaptyctic vowel[129]

- Kt. W/SE *-n-*; Pr. *-m-* 'present stem formative'
  < **-mHna-* - thematic suffix of present middle participle (Av. *-mna-*; MIA *-mīna-*, OIA analogical *-māna-*);[130] the Kt. NE present stem formative *-t-* is likely from **-nt-* of the active present participle, whereas Kt. W/NE *-n-* cannot derive from **-nt-*, but requires a cluster antecedent

More doubtful is the example of Kt. *ptë*, the perfective participle (M) of *pře-* 'to give', but also of *-pře-* 'to send (tr.); to hit, reach (itr.) [in a direction specified by a spatial prefix]'. Morgenstierne (1926: 61) compared this form in the meaning 'fallen' with OIA *patitá-* (< **patH-ta-*),[131] but explained the discrepancy in the laryngeal reflex between Nuristani and OIA with the statement that "in S[ans]k[ri]t also the distribution of *seṭ-* an *aneṭ*-forms [*sic*] is often capricious". The non-perfective stem *pře-* would have been analogically formed based on the parallel of *ptë* : *pře-* 'to give' (Morgenstierne 1926: 60). This etymology was adopted by Lipp (2009: I, 168, fn. 48) as a further possible example of **ĭ* dropping in middle syllables, though he also admits the possibility of an *aniṭ* form based analogically on the present stem **patH-a-* (unattested in Kt.). However, the meaning 'to fall' really only appears in *vú-pře-* 'to hit/reach downwards', whereas the use with other prefixes shows that the meaning 'to hit, reach' is primary, e.g. *ní-pře-* 'to reach in downvalley direction', *pú-pře-* 'to hit over an obstacle (e.g. to stub one's toe on a rock)' etc. The synchronic semantic scope of (-)*pře-* likely results from the phonological merger of **pra* + **daH-* 'to give' with **pra* + **dʰaH-* 'to put' (OIA *pra-√dhā-* 'to deliver, to send'), the latter eventually becoming a

[128] **str̥H-na-* 'covered' (~ OIA *stīrṇá-*) would also be possible for Nuristani, but this is semantically less convincing and impossible for Khotanese, which does not have **-na-* participles.
[129] Pr. *e* may even be a mistaken notation of *ë* < **ā*.
[130] This derivation has previously been suggested by Buddruss (1977b). If the Dameli present stem formative *-n-* also belongs here, it would be an impressive morphological piece of evidence for a Nuristani affiliation, but Dameli also has **-nt-* > *n*, so that we cannot exclude that it derives from the active present participle instead.
[131] Morgenstierne (1926: 61) in fact quoted the 3rd person masculine perfective past form *pto* ("*ptå* 'he fell'") rather than the actual participle, but this is a suffixed form of historically primary *ptë*.

transitivity-labile verb covering both ‘to send’ and ‘to reach’ (similarly Strand 1999b).[132]

The word W *trëmší*, NE *tërëmší*, SE *tramží* ‘twilight’; NKal. Ẓ *tremíš* ‘darkness’; N *tramašá* ‘dark’ with its *i* < **H* clearly visible in NKal. Ẓ (though later syncopated in the **-ka-*extended Kt. forms) was noted by Morgenstierne (1926: 61) as a counterexample to the loss of **ĭ* in middle syllables (cf. OIA *támisrā-*, YAv. *tąϑra-* ‘darkness’ < PIIr. **tamHsra-*). This is, however, likely a loanword from Indo-Aryan (as already argued by Lipp 2009: I, 167–168, fn. 48), since it has clear parallels in surrounding IA languages: IA Kalasha *trómiš* ‘evening, just at dark, night’ (Trail & Cooper 1999), Indus Kohistani *tamʌ́ʏ̊ṣ*^{i} ‘dim light’ (Zoller 2005).

The laryngeal development in middle syllables therefore once again places Nuristani together with Iranian rather than Indo-Aryan. The palatalization in Pr. *lüšt* has no parallel in Iranian, but provides an interesting piece of evidence for the original existence, but early dropping of an anaptyctic vowel.

6.5.4 Lexicon and derivational morphology

According to Morgenstierne (1973a: 333) and Buddruss (1977a: 25), Nuristani tends towards the typically Indo-Aryan options in suffix formation and lexicon. While Mayrhofer (1984: 384, fn. 14) considers the examples of this collected by Morgenstierne and Buddruss “impressive” (“eindrucksvoll”), he prefers to interpret them as “testaments to a long-lasting interference” (“Zeugnisse einer langdauernden Interferenz”) between Nuristani and Indo-Aryan. Lipp (2009: I, 161, fn. 33) describes them as “heterogenous examples, partially in need of revision with regard to their diagnostic value” (“heterogen[e] und hinsichtlich ihres Aussagewerts z.T. revisionsbedürftig[e] Beispiele”) – an evaluation with which I fully agree.

Essentially, the proposed examples are either archaisms without diagnostic value shared by Indo-Aryan and Nuristani or likely loanwords:

- Ir. **dūta-* (Balochi *dūt*, New Persian *dūd*) vs. OIA *dhūmá-* ‘smoke’
  Kt. NE/W *dyum*, SE *düm*; NKal. *düm*; A. *dum*; Pr. *ülűm* ‘smoke’
  The *-m-* suffix is not absent from Iranian, as Khotanese has *dumä* ‘smoke’. It is in any case an archaism shared with wider Indo-European (cf. Lithuanian *dűmas*,

[132] The ergative-absolutive construction in perfective clauses could have been a bridging context: verbal agreement in a transitive sentence like *ní-pto* ‘(sb.) sent it (M) downvalley’ is with the patient and this could have allowed a reinterpretation as intransitive *ní-pto* ‘it (M) reached downvalley’, where the agreement is with the single argument.

Lat. *fūmus* ‘smoke) – the innovative form in **-ta-* is a unique feature of (parts of) Iranian.

- Av. *huuar-* vs. OIA *sū́rya-* ‘sun’
  Kt. *su*; NKal. Ẓ *soi*, N *sö*; A. *so*; Pr. *isíg* ‘sun’
  The contrast between Av. *huuar-* and OIA *sū́rya-* is a false dichotomy, as *svàr-(súvar-)* exists in Vedic. In any case, the correspondence Kt. *u* ~ NKal., A *o* in fact indicates ancient **a*, not **ŭ* or **au̯*. The Nuristani developments are exactly equivalent to those < **karia-* mentioned in Section 6.5.3. We can therefore assume an original **su̯ar-i̯á-*,[133] or rather **su̯ar-i̯áH-* in order to account for the feminine gender in Kt. A direct equivalent may then be Sogdian *xwyr* ‘sun’ < Old Iranian **xwarya-* (Yoshida 2016).
- Av. *uuaŋhar-* vs. OIA *vasantá-* ‘spring (season)’
  Kt. W *vësút*, NE *vusút*, SE *vazút* ‘spring’; NKal. Ẓ *wasū́t*, N *osū́t*; A. *wosṓt* ‘summer’; [+ **-ka-*:] Kt. W/NE *vëstḗ*, SE *vastḗ* ‘springly’; NKal. Ẓ *wastḗ* ‘spring crops’; A. *wasantḗ* ‘spring’; Pr. *wusté/í/ú* ‘spring’ [⇐ Kt.]
  Iranian has the more archaic form, an agreement between Nuristani and Indo-Aryan in word formation would therefore point to a shared innovation. However, the Nuristani forms could easily be IA loanwords. There are no uniquely Nuristani developments in this word and corresponding forms are present in all surrounding IA languages (cf. Turner 1962–1966: T. 11439). On top of this, the coordinate term Kt. *šarú*; NKal. Ẓ *šaréi*; A. *soró*; Pr. *širé* ‘fall, autumn’ has certainly been borrowed ⇐ IA *śāradī́-* ‘autumnal (F)’, since it has *š* = IA *ś* < PIIr. **ć*.
- Av. *ātar-* vs. OIA *agní-* ‘fire’
  Pr. *anég*, NKal. *aně́* ~ *ãy* ‘fire’
  There are a few possible cognates of OIA *agní-* in Iranian, though none of them secure: YAv. *Dāštāγni-* ‘personal name’ (Mayrhofer 1992–2001: I, 44) and Yazghulami *aγnág* ‘a white stone (flint?)’ < **agnyakā-*, *wúγn* ‘black’ < **‘burnt’ < **awa-agn(y)a-* (Rastorgueva & Ėdel’man 2000: 86–87). Regardless of whether or not these are reliable witnesses to an Iranian cognate, the word *agní-* is a lexical archaism with clear correspondences in wider Indo-European (Lithuanian *ugnìs*, Latin *ignis* ‘fire’ etc.) – its displacement is therefore a unique feature of Iranian. Kümmel (2022: 256) cites “**angāra-*” as the Nuristani word for ‘fire’,

[133] In accordance with Lipp’s (2009: II, 421–422, 438) reconstruction of PIIr. **súu̯-r̥*, gen. **suu̯-án-s* ‘sun’ (PIE **seh₂-u̯l*, gen. **sh̥₂-u̯én-s*) vs. **su̯ar-* in derivatives with accented suffix. With Mayrhofer’s (1992–2001: II, 794) earlier reconstruction PIIr. **suHar-* ~ **suHan-* ‘sun’, the antecedent of the Nuristani forms could be posited as **suHar-i̯aH-*.

which is represented by Kt. *aŋó*, A. *aŋā́*, but this is certainly an Indo-Aryan loanword, derived from a word originally meaning '(glowing) charcoal' (OIA *áṅgāra-*) and with parallels in surrounding Indo-Aryan languages that show the same semantic shift to 'fire' (cf. Turner 1962–1966: T. 125).

- Av. *gantuma-* vs. OIA *godhū́ma-* 'wheat'
  Kt., NKal., A. *gum*; Pr. *ülū́m* 'wheat'
  In view of **d* > *l* in Pr., this set really represents a rather early agreement between Nuristani and Indo-Aryan. However, this word is likely a Post-PIIr. *wanderwort*, introduced into an already diversified Indo-Iranian language family: The correspondences between the OIA and Av. forms, as well as within Iranian, are not regular, the OIA form likely being the more innovative one, reshaped by folk-etymological reanalysis as "cow-smoke" (Kümmel 2017: 281–282). This may tell us that wheat agriculture was diffused to Nuristani speakers via the Indo-Aryan zone, which may offer an interesting opportunity to tie the linguistic history to an external chronology, but it is not a relevant lexical innovation for subclassification, since we are dealing with a loanword.

The following items represent further agreements with Indo-Aryan:

- Kt. *řotr*; NKal. Ẓ *ẓātr*, N *wātr*; A. *ẓātr*; Pr. *ẓëṭ* 'night'
  Agrees with OIA *rā́trī-* 'night', which has no equivalent in Iranian and displaces older *nákt-* and *kṣáp-* in the course of OIA attestation (Mayrhofer 1992–2001: II, 447), but shows retroflexion of initial **r-*. This did not affect most IA loanwords with *r-*, which instead received vowel prothesis, as in NKal. N *araẓ-* 'to protect' ⇐ IA *rakṣ-*. It could be interpreted as a particularly early loanword from IA.
- Kt. *keċ* 'long animal hair'; NKal. *kẽċ* 'hair'; A. *ċës* 'markhor hair'; Pr. *kiċ* 'long animal hair' [⇐ Kt.]; Dam. *kī̃ċ* 'wool'
  Agrees with OIA *kéśa-* 'hair' against YAv. *gaēsa-* 'curly hair', but has a clear Nuristani palatal development. The onset correspondence of OIA and YAv. is irregular, which has been explained as a result of influence from *késara-* 'mane' on the OIA form (Mayrhofer 1992–2001: I, 401). However, since the ultimate etymology is unclear, it is not possible to establish with certainty whether *k-* or *g-* is original. Trautmann's (1909) proposal of a connection with Lithuanian *káišti* 'to scratch, scrape', Old Prussian *coysnis* 'comb' would let the Iranian form appear more innovative (PIIr. **kaḭća-* then < **koḭḱ-o-* 'scraping' > 'bristle' > 'hair')
- Kt. W/NE *zim*, SE *jïm*; NKal. Ẓ *zëm/zim*, N *zim*; A. *žim*; Pr. *zëmá* 'snow'
  Agrees with OIA *himá-* 'snow' against Common Iranian **wafra-* and has a clear Nuristani palatal development, but since the same word is attested in Wakhi *zəm*

'snow', it must have existed in Iranian before being replaced with innovative **wafra-*. The agreement with OIA is therefore an archaism.

On the other hand, there is in fact a larger number of Iranian-looking lexemes in Nuristani, some of which were already discussed by Morgenstierne (1973a: 333) and Buddruss (1977a: 25–27). Of these, the following may be counted as archaisms, irrelevant for subclassification:

- Iranian **xand-* (Khotanese *khan-*, Middle Persian *xand-*) vs. OIA *has-* 'to laugh'
  Kt. W/NE *kën-*, SE *kan-*; NKal. *kan-*; A. *kon-* 'to laugh'; [+ *u̯i- ?:] Pr. *w(y)ed-* 'to laugh'
  If the etymology < PIE **kenH-* + **$d^{h}eh_{1}$-* proposed in Section 5 is correct, the Irano-Nuristani root most likely results from a pre-Indo-Iranian formation. Despite its relatively late attestation and lack of external cognates, it must therefore be counted as an archaism.
- Av. *ϑanǰ-*, Khotanese *thaṁj-* 'to pull, draw' vs. no equivalent in OIA
  Kt. W/NE *tëŋ-*, SE *taŋ-* 'to grow (up)'; NKal. *taŋ-* 'to stretch (itr.), to grow'; Dam. *taŋ-* 'to become fat'; [+ **ud* ? :] Pr. *(w)ütoŋ-* 'to exert oneself'
  The external cognates like Old Church Slavonic *tęgnǫti* 'to pull', Russian *túžit'* 'to stretch' (Rix et al. 2001: 657) show preservation of this root to be an archaism.
- Av. *uruuaēs-*, Pashto *wres-* 'to turn, twist, spin' vs. no verbal descendant in OIA
  Kt. W *bëċ-*, NE *břëċ-*, SE *břiċ-*; NKal. Ẓ *breċ-*; Pr. *-wiz-* 'to spin (yarn); to twist (a rope)'
  The external cognates Lithuanian *rìšti* 'to tie', Old English *wrīon* 'to envelop' (Rix et al. 2001: 699) show preservation of this root to be an archaism.
- YAv. *kaofa-*, OP *kaufa-*, Parth. *kōf* 'mountain' vs. no cognate in IA
  Pr. *ku* 'mountain' ⇐ Kt.[134] W *kuv*, NE/SE *ku* 'bull's hump', the meaning 'heap, mountain' is possibly preserved in W *kúv-vo*, SE *kú-ō* *'mountain/heap-water' = 'wave'[135] and W *kuv*, NE *kŭ*, SE *kú-pon* 'kind of wild onion/leek' < **kau̯p-ya-* 'mountain (adj.)', compounded with *pon* 'leek (wild)' in SE (semantically cf. New Persian *kōhī* 'mountain (adj.); wild')
  External cognates like Lithuanian *kaũpas* 'heap', English *heap* etc. show preservation of this noun to be an archaism. The (trivial) semantic development from 'heap' to 'mountain' probably happened independently in western Iranian

[134] Preservation of **k-* in Pr. requires the assumption that this is a loanword. Borrowing from Persian *kōh* 'mountain' is, however, sociolinguistically implausible, as contact between Pr. and Persian is a very recent phenomenon (cf. Morgenstierne 1949: 260; Buddruss 1977a: 27).
[135] W *kúv-vo* rather 'having a heap (M)' with *-vo* 'having (M)'?

and Nuristani. The current word for ‘mountain’ in Kt. is *do* ⇐ IA *dhárā-* ‘edge’, which may have replaced the inherited word in this meaning.

- Zabuli [al-Biruni] *γuzbe*; Gorani *wiz*; Khunsari *vizvā* ‘elm tree’ < PIIr. **u̯i(n)ʃu̯a(H)-* (Henning 1963) vs. no cognate in IA
  NKal. ẓ *wiz* ‘elm tree (samara)’[136]
  External cognates like Russian *vjaz* ‘elm tree’, English *wych elm* etc. show preservation of this noun to be an archaism.
- YAv. *uuaβžaka-*; Middle Persian *wabz*; Munji *wáfšiya*; Yidgha *wofšĭo* ‘wasp’ vs. no cognate in IA (except Khowar *bispí* ‘wasp’)
  Kt. W *vušpí*, NE *yuṣpík*,[137] SE *vušpík*; NKal. ẓ *wašpík*, N *wišpík*; A. M *šipík* ‘wasp’
  Khowar *bispí* ‘wasp‘ has usually been explained as a Nuristani loanword, since no other IA language has a cognate and the Khowar form agrees with the Nuristani forms in presupposing earlier **waš/sp°*, as opposed to Iranian **wabž°*. It is generally thought that a metathesis of the original PIE **u̯obʰs°* in pre-Nuristani is responsible for this, which would be parallel to the metathesis leading to Latin *vespa*, English *wasp*. If Pr. *ipusú* ~ *ipúz(ú)* ‘wasp’ is cognate, the metathesis might not even be reconstructable for Proto-Nuristani. The contact scenario between Khowar and Nuristani is unclear. In several cases of special agreements between the two there is also agreement with Wakhi, so that Wakhi influence on Khowar could be responsible in those cases (e.g. NKal. *yoz* ‘cold (n.)’ ~ Khowar *yoz* ‘clear, old ice’ ⇐ Wakhi *yaz* ‘glacier’ < PIE **i̯eǵ-*; cf. Kümmel 2016b: 81). Borrowing of Khowar *bispí* from Munji-Yidgha with an independent metathesis and substitution of *f* with *p* could also be considered. There is, however, at least one other likely Nuristani loanword into Khowar: *oh(r)ċ* ‘bear’. External cognates like Latin *vespa*, English *wasp* show preservation of the ‘wasp’ word to be an archaism.
- YAv. *zaδah-/zadah-* ‘buttocks’ vs. OIA only verbal *had-* ‘to shit’
  Pr. *zulú* ‘vagina’ < **ʃʱadas-* + **-ka-*
  The Pr. meaning results from the common semantic interchange ‘arse’ ⇔ ‘female genitalia’. The external cognates Armenian *jet* ‘tail, penis’ (Martirosyan 2010: 432), Russian *zad* ‘backside’ (Vasmer 1953: 438) show preservation of the noun to be an archaism.

[136] Tāza (2017) does not name the tree directly, but his description of its fruit and features fits the elm: “It is a type of fruit on a tree, which has small, dark green, blackish seeds and which is eaten with skin and kernel. Its tree is tall with broad, small leaves.” (own translation).
[137] Reshaped by folk-etymological association with *yuṣ* ‘demon’.

- YAv. °*-iiå̊ŋh-* ‘to girdle’ vs. no cognate in OIA
  Pr. *-yas-* ‘to girdle’
  External cognates like Lithuanian *júosti*, Greek ζώννῡμι ‘to girdle’ show preservation of this root to be an archaism (Rix et al. 2001: 311).
- YAv. *uruϑwar-* ~ *uruϑwan-* ‘entrails, belly’ < **rut-u̯ar-* ~ °*-u̯an-*; Ossetic *rūd/rod* ‘large intestine, sausage’, Khotanese *rrūva-*, Balochi *rōt* ‘intestines’ < **rau̯ta-*; New Persian *rōda* ‘intestine’ < **rau̯ta-ka-* vs. no equivalent in IA
  Kt. W/SE *řu* ‘intestine’, NE *řu* ‘abdomen’; NKal. Ẓ *ẓu*, N *wřu*; A. *ẓo* ‘intestine’
  External cognates in Germanic like Old English *rēada* ‘a digestive organ’, early Dutch *roode*, early Low German *rode*, *roon* ‘omasum’ show preservation of this word family to be an isolated archaism (see Lidén 1933: 14–17; Morgenstierne 1933).
- Sogdian C *swb-*, M *swmb-*; Middle Persian *sumb-* ‘to pierce, to bore’ vs. no equivalent in OIA
  Kt. W/NE *ċëv-*, SE *ċü-*; NKal. *ċuw-* ‘to bore a hole’; perhaps also Pr. *zipóg* ~ *züpóg* ‘hole’ (< PNur. **sċup-ta-* + *-og* ?[138]) and A. *ċum* ‘(drilled) hole’ (< PNur. **sċo/ub-ma(n)-*)
  Within Indo-Iranian, this Nuristano-Iranian root has been uncertainly connected with OIA *śvábhra-* ‘hole’ (Mayrhofer 1992–2001: II, 675). Cheung (2007: 368) states that an Indo-European etymology “cannot be found”. Lubotsky (1988: 92), on the other hand, connects PIE **skeub^h-* ‘to thrust, to shove’ (Lith. *skùbti* ‘to start hurrying’ < middle voice *‘to shove oneself’, Old High German *scioban* ‘to push’; see Rix et al. 2001: 560), out of which the word-initial development of **sk* before **e* would produce PIIr. **śćau̯b^h-* (cf. Lubotsky 2001b). The onset **ść* may have been generalized to the nasal present stem **śćumb^h-*. If the Pr. and A. forms are cognate, the Nuristani correspondences would support this derivation. The nasal present also seen in Lithuanian would be reflected in Iranian, whereas the Nuristani forms may derive from a causative **śćau̯b^h-aị̯a-*. The agreement between Iranian and Nuristani would then be an archaism.

[138] If this derivation is correct, Pr. *sëtḗ* ‘7’ ~ OIA *sapta-* and *natíg* ‘granddaughter’ ~ OIA *naptī-* would have to be considered loanwords.

- YAv. *ϑβərəs-* ‘to cut, form, carve’ vs. OIA only agent noun *Tváṣṭar-* ‘name of a creator deity’
  Kt. SE M *turċə̆̃*, F *turċĭ̃* ‘small’; W *KL sċə̆̃-ṣoř, KT sëċú-ṣoř*, SE *turċə̆̃-ẓařë* ‘small livestock, goats and sheep’[139]
  If the Kt. forms are based on a derivative **tu̯arć-na-ka-* ‘a cutting’ > ‘small piece’ from PIIr. **tu̯arć-*, later turned into a **-ka-/-ikā-* adjective in SE, this would point to longer productivity of the verbal root in Nuristani, like in Iranian. However, OIA *Tvaṣṭar-* and other nominal derivatives in further Indo-European languages, like Greek σάρξ ‘meat’, show that this is an inherited Indo-European root and its preservation therefore an archaism.
- YAv. *zaiiana-* ‘winterly, winter time’ vs. OIA *hāyaná-* ‘relating to the year’
  Kt. NE *zə̃*, SE *jə̃* ‘winterly, winter season’; NKal. Ẓ *zə̆̓*, N *zə̃*; A. *zyə̃̃*; Pr. *iznera* ‘winter’
  The Nuristani forms agree in formation and semantics with the YAv. forms, but the OIA meaning is innovative (PIE **gʰei̯-om-* ‘winter’), and the agreement therefore an archaism.
- YAv. *nāuu(a)iia-,* OP *nāviya-* ‘an epithet of rivers’ (equivalent to Akkadian ‹*ma-li*› ‘(was) full’),[140] Sogdian *nʾywk* ‘deep’, Kuchean (Toch. B) *newiya* ‘canal, channel’ (⇐ Iranian, cf. Bernard 2025b: 34–36), Middle Persian *nāydāg* ‘translation of YAv. *nāuu(a)iia*’, *nāy* ‘canal, channel’ (Filippone 2017: 119) Bactrian νωιο ‘channel’; Sogdian *nʾw*, Khotanese *no*, Ossetic *naw/nawæ* ‘boat’, New Persian *nāw* ‘canal, channel, aqueduct, drainpipe, mill water conduit, trough, valley, boat’ (cf. Filippone 2017: 124–131), Wakhi *nɨw* ‘mill water conduit’, Munji *nawáɣika* ‘gutter for drainage’ vs. OIA *nāvyà-* ‘river, stream’; *naú-* ‘boat’
  Kt. W/SE *nu*, NE *nū*; NKal. *nu*; A. *no*; Pr. *wunúg* ‘wooden aqueduct, mill water conduit’[141]
  Semantically, the Nuristani forms agree closely with New Persian *nāw* and similar New Iranian forms.[142] These have been connected, on the one hand, with

[139] The correspondence Kt. W *s(ë)ċ°* ~ SE *t*V(C)*ċ°* is regular, as Kt. W *s(ë)ċ-* ~ SE *taċ-* ‘to hew, carve’ (< PIE **tetḱ-*) demonstrates.
[140] Against the traditional translation of these terms as ‘navigable, passable (only) by boat’, see Schmid (1969: 219–220, 222), Widmer (2007), Skjærvø (2005: 315; 2011: 326); holding onto it Sims-Williams (2007: 240), Schmitt (2014: 220–221), Bernard (2025b: 36).
[141] Kt. W *KT ṉivú*, NE *nëvó*, SE *nuvó* ‘trough’ is probably not cognate, but seems rather to belong with NKal. N *niwřə̆̃* ‘trough’ and OIA *nipāna-* ‘trough for watering cattle’
[142] For additional New Iranian comparanda, which are not always easy to distinguish from Persian loanwords, see Schmid (1969: 219), Gershevitch (1962: 79–80). Pashto *nāwá* ‘gutter, drain’, which is listed as “Prob[ably] genuine” by Morgenstierne (2003: 59), appears to be more likely borrowed from

the Old Iranian epithet of rivers and, on the other hand, with PIE *neh_2u- 'boat'. Apparent derivatives of the Indo-European word for 'boat' in Germanic have a similar range of meanings: Norwegian [dial.] *nu* 'trough, wooden water channel/gutter, simple barge' (Det Norske Akademi for Språk og Litteratur 2025), Icelandic *nór* 'tempering trough' (= Old Norse *nór* 'boat') (Kroonen 2013: 391), Norwegian *nøla* 'trough, boat', Old High German *nuosc*, Frisian *nōst* 'trough (Wodtko, Irslinger & Schneider 2008: 516).[143] Both in Nuristani/Iranian and in Germanic, meanings like '(wooden) aqueduct', 'mill water conduit, 'drainpipe', 'gutter' and 'valley' may be derivable from 'trough, hollowed-out trunk'. Out of the same basic meaning, the sense 'boat' could also conceivably have developed, but secondary metaphorical extension from the meaning 'boat' (best attested in the earliest Indo-European languages) to 'trough' or even secondary homonymy of two unrelated roots has also been considered (Wodtko, Irslinger & Schneider 2008: 516–517). If the original reference of PIE *neh_2u- was (also) to trough-shaped objects, the Old Iranian attribute of rivers, along with its formal equivalents in Sogdian, Bactrian, Middle Persian and Old Indo-Aryan, may be considered derivatives of *neh_2u- with a different sense than 'navigable, passable (only) by boat'. As Widmer (2007: 225) points out while arguing against this traditional translation of the Old Iranian terms, such a derivative from *neh_2u- 'boat' should be expected to mean 'relating to a boat', like Greek νήιος, and not 'passable by boat'. The original meaning of the formation could then be posited as 'relating to a trough, trough-like', developing into 'deep (of rivers)' or 'canal, channel'/'stream, river', whereas the underived form may have been transmitted in the meanings 'trough' > 'wooden aqueduct etc.', as well as 'boat'. Phonologically, the Nuristani forms could be derived from PIIr. **naHus* (nom.), whereas borrowing from Persian is not likely (*pace* Steblin-Kamenskij 1999: 252).[144] The origin of the long vowel in Kt. NE is not clear. In case of derivation from **naHu̯i̯a-* a long vowel reflex (Kt. *o*, NKal. *ā*) and a development *$u̯i̯ > y$ (as in Kt. W *nuy*, NE/SE *nuyī́* 'new' < **nau̯-i̯a-* [+ **-ka-*]) would be expected.

identical New Persian *nāwa* 'id.', a **-ka-* derivative of *nāw* that must have already existed in Middle Persian as the loanword in Arabic *nāwaq* 'a stone having a hole for water discharge' (Filippone 2017: 125) ⇐ **nāwag* indicates. Khowar *naá* 'millrace, small wooden channel conducting water to the mill' and Pashai *nawā*, *nuāk* 'millrace' must also be Persian/Pashto loanwords.

[143] Connections have also been proposed with various European river names, such as Lithuanian *Nóva* and German *Nahe*, *Nau* (⇐ Celtic ?) (Schmid 1969). By their nature as toponyms, these must be considered less secure, but they do offer potential matches in other Indo-European branches.

[144] Pr. prothesis of *wu-* likely happened before contact with New Persian and Persian *ā* would usually be substituted by Kt. *o*, NKal. *ā*.

Regardless of whether the reference of the Germanic 'trough' words is a parallel, independent innovation from the original semantics of 'boat', or whether it is inherited from Proto-Indo-European (which seems more likely), the derivation of OIA *nāvyà-* 'river, stream' from **neh₂u-* presupposes the meaning 'trough' at least for Proto-Indo-Iranian, so that its direct survival in Nuristani and Iranian is an archaism, rather than a shared innovation.[145]

A number of other words do, however, point to a shared development of Iranian and Nuristani:

- Av. *uuaēn-* 'to see' vs. OIA *ven-* 'to track, to pursue'
  Kt. W *vëř-*, NE/SE *vaň-*; NKal. Ẓ *wṇ̃-*, N *wřẽ-*; A. *weṇ-*; Dam. *bīn-* 'to see'
  Indo-Aryan preserves the original, narrower meaning (Kümmel 2022: 256, fn. 9), whereas Iranian and Nuristani share the innovation of widening to 'to see'.
- YAv. *mərəγa-* 'bird'; Khotanese *murāsa-* 'peacock'; Wakhi *mingas* ~ *wingas* 'bird, sparrow' vs. OIA *mr̥gá-* 'wild animal'
  Kt. W *mřëŋéċ*, NE *mřëŋéċë*, SE *mřaŋjj́ẽ*; NKal. Ẓ *niŋċé́*, N *niŋaċá*; A. *niŋasé́*; Pr. *ninj* '(small) bird, songbird, sparrow'
  Given the external comparanda, the Kt. form (< **mr̥g-āća-ka-*) must be primary over the forms with initial *ni-* in the other languages. One may suspect a similar contamination as in Wakhi *mingas* ~ *wingas*, where the form with initial *wi-* appears to be influenced by the etymon of Khotanese *biṁji*, New Persian *gunǰišk* 'sparrow', though in the Nuristani case it is not clear which related word is responsible. Indo-Aryan preserves the original, broader meaning 'wild animal' (Mayrhofer 1992–2001: II, 371), whereas Iranian and Nuristani share the innovation of narrowing to 'bird', as well as the suffix formation with **-āća-*. The palatal developments in Nuristani exclude borrowing. The separate set Kt. *mřoŋ*; NKal. *mrāŋ*; A. W *mřëŋ*, M *mlaŋ*; Pr. *maŋ* [⇐ Kt.] 'female game animal (markhor, ibex, deer)' is probably borrowed ⇐ IA, since forms < OIA **mārgī-* or **mārgā-* with this meaning are widespread in regional IA.[146] The same probably applies to Gojal Wakhi *merg* 'female ibex' (TUFS n.d.), which is not found in the more northerly dialects of Wakhan (Steblin-Kamenskij 1999: 457–458).[147]

[145] If the 'trough' words originally belong to a separate homonymous root, this would also mean that we are dealing with an archaism.
[146] See Turner (1962–1966: T. 9885), who derives these forms from OIA **margā-*. *Guṇa* grade would, however, be difficult to justify morphologically, whereas *vr̥ddhi *mārgī-/*mārgā-* is unproblematic.
[147] If one is not inclined to believe in borrowing, it would also be possible to assume that Wakhi and Nuristani preserved an inherited feminine *vr̥ddhi* derivative **mārgaH-/*mārgiH-* ← **mr̥ga-* in the meaning *'female wild animal', which remained associated with deer and comparable game animals, whereas only the basic form **mr̥ga-* specialized to 'bird'. The forms < **mārgaH-/*mārgiH-* would then

- Av. *gaoš-* ‘to hear’, Middle Persian *niyōš-*, Sogdian S *nγwš*, Balochi *nigōš-* ‘to hear’ vs. OIA *ghoṣ-* ‘to sound’ (in some early attestations also ‘to hear’)
  Pr. *nus-* ∼ *nüs-* ‘to hear’
  The meaning ‘to hear’, though lost early on in OIA, is probably the original one of PIIr. **g^{h}au̯š-* and therefore an archaism (Mayrhofer 1992–2001: I, 518–519). However, the combination with **ni* ‘down’ is characteristic of large parts of later Iranian (see Cheung 2007: 115–116). Borrowing from Iranian into Pr. is not likely, as the Pr. form has the Nuristani RUKI development. It is notable that Nuristani, though apparently preserving the meaning ‘to hear’, has not participated in the common Iranian replacement of the word for ‘ear’ with the agent noun **g^{h}au̯ša-* ‘hearer’ derived from this root.
- Sogdian *βrγ$^{\flat}$m$^{\flat}$k* *‘goat kid’, Pashto *warγúmay* ‘goat kid (up to 1 year old)’, Munji *f$^{\flat}$ráγoməy* ‘male goat kid (1–2 years old)’, Sanglechi *fəryəm* ‘two-year-old goat kid’, Wakhi *reγum* ‘two-year-old calf’ vs. no cognate in OIA
  Kt. W/NE *přómë*, W-KT *přúmë*, SE *přámë* ‘male goat kid (6 months to 1 year old)’; NKal. Ẓ *prāmḗ* ‘male goat kid (6 months old)’; A. *přāmḗ* ‘male goat kid (6 months to 1 year old)’; Pr. *pum* ‘lamb’, *pām(ḗ)* ‘male goat kid’ [⇐ Kt.?]
  Though the precise semantic concept behind the formation **pra-gāma-ka-* is not clear (see Morgenstierne 2003: 90; Bernard 2025a: 15–16 for a discussion of various proposals), it must be in some way related to **pra* + **gam-* ‘to go forwards, to come to, to reach’ and its specialized application to (a particular age group of) young livestock must be a narrowing semantic innovation, which is shared by Nuristani and Iranian.
- YAv. *vaēǰ-* ‘to shake, to swing’, New Persian *āwēz-*, Ossetic *awyndz-/awindz-* ‘to hang’ vs. OIA *vej-* ‘to dart, to speed, to recoil’, *ā-vej-* ‘to stir up, confuse’
  Pr. *a-wiž-* ‘to hang’
  OIA preserves the original, wider meaning of PIE **u̯eiǵ-* ‘to start moving, to move away’ (Greek εἴκω, Old English *wīcan* ‘to yield, give way’) (Rix et al. 2001: 667–668) whereas the meanings ‘to swing’ and, with the addition of **ā* ‘towards’, ‘to hang’ are innovations specific to Nuristani and Iranian. Another possible Nuristani cognate is NKal. Ẓ *weǰí* ‘bull with one testicle’ < **u̯aiǰ-i-ta-* ‘hung’.
- Khotanese *thauna* ‘cloth’, Ossetic *tyn/tunæ* ‘(homespun) broadcloth’, Kurmanji *tevn* ‘loom; tissue, fabric; cobweb, spiderweb’ (< **tafna-*) (Bailey 1979: 149;

not be borrowed from, but cognate to the regional IA forms. In either case, however, the shared innovation in the meaning of **mr̥ga-* remains valid.

Abaev 1958–1989: III, 336–337; Chyet 2003: 611); New Persian *tafna* ‘spiderweb’ (< **tafna-ka-*) vs. no cognate in IA

Kt. *ton*; A. *tān* ‘(homespun) wool cloth’

The root of this word is of PIE provenance (**temp-* “to stretch”; Rix et al. 2001: 626) and also has verbal descendants in Iranian (see Cheung 2007: 389),[148] but is unattested in IA. The suffix formation (equivalent to virtual PIE **tm̥p-no-*) with the meaning ‘fabric, cloth, tissue’ is specific to Iranian and Nuristani. Despite the attestation of *thavaṃnaga* ‘cloth’ in Gandhari, the Nuristani words are unlikely to have been borrowed from/via IA, since the Gandhari word, which is only attested from the Tarim basin, is most likely a regional borrowing from Khotanese due to its initial *th-* (Schoubben 2024: 223–224).

- Khotanese *ācana-* ‘thread’, Pashto *inċə́y, nċəy* ~ *ċnəy* ~ *snəy* ‘woolen thread’, Yaghnobi *íčin* ‘string, thread’ vs. no equivalent in IA

  Kt. W *ačé*, NE/SE *ačḗ*; A. *aċḗ* ‘woolen yarn’; Pr. *ižiníg* ‘yarn/thread produced in Nuristan’

  Cheung (2007: 29) connects the Iranian cognates to the root of New Persian *ā-ǰī-dan* ‘to sew’ and OIA *cī́-ra-* ‘cloth, strip, bark’, which he reconstructs as “**čaiH-*”, but he does not give a specific reconstruction for the ‘thread, yarn’ words. They could be reconciled under a (pseudo-)reconstruction **ā-čiHa-na-*.[149] Bailey’s (1979: 1, 16) proposal “**ā-čyana-*” is not possible because **čį* yields *ts* in Khotanese. Pashto *inċə́y* is probably also < **ā-čiHa-na-ki-* and not, with Morgenstierne (2003: 9), < **ham-č(a)yakī-*. Metathesis **čn* > **nč* in Pashto is more likely, since in original **mč/*nč* we would expect post-nasal voicing > *nj* (cf. Skjærvø 1989: 403).

[148] The connection of the Iranian verbal root with PIE **temp-* is problematized by Rix et al. (2001: 626) and Cheung (2007: 389), in view of the long root vowel of Middle and New Iranian forms like New Persian *tāb-* ‘to turn, twist, spin’, but this could easily be secondary (e.g. as an analogical causative formation) and does not invalidate the etymological connection. The expected short root vowel is certainly attested in **tafna-*, which cannot be reconstructed as ***tāfna-*, as assumed by Dragoni (2023: 124) and Schoubben (2024: 223). Dragoni (2023: 124) attributes this form to Konow (1932) and Leumann (1936), but in these works only reconstructions with a short root vowel – **tafna-* and less accurate **tavana-* – can be found (Konow 1932: 10, 29; Leumann 1936: 439).

[149] Debrunner (1954: 197–198) notes that *-(a)na-* derivatives with zero grade in the root appear in OIA especially next to class 6 presents, e.g. *dhúvana-* ‘shaking’ next to *dhuvati* ‘shakes’. This would allow the hypothesis that the PIIr. present stem of **čaiH-* may have been **čiH-a-*. Perhaps the derivation is then best imagined as **čiH-a-ti* > **čiyati* → **čiya-na-*.

- Sogdian B *wy-rʾrz*, Middle Persian *larz-* ‘to shake, to tremble’
  Kt. W *řëz-*, NE *řënz-*, SE *řanj-*; Pr. *ẓoẓ-* ‘to shake, to tremble’
  The root **rarǰ-* ‘to shake, to tremble’ is limited to Iranian and Nuristani. Mayrhofer (1992–2001: II, 459) connects it to OIA *rej-* (< PIE **h₁leiǵ-*) as a reduplicated “*[˚]*ra-riz-*”, whereas Abaev (1958–1989: II, 418) assumes “**rairiz-* → **rarz-*”, but the postulated **-i-* is not attested anywhere and its loss is unexplained.
- Sogdian *kʾxkh*, *kʾkh* ‘palate’ < **kāsa-ka-*; Ossetic *kom* ‘mouth, jaws, throat’, New Persian *kām* ‘palate’ < **kas-man-*; Sanglechi *kamak*, Shughni *čümč*, Sarikoli *čomǰ* ‘back’, Pashto *kúmay* ‘palate’, Parachi *kamá* ‘throat, gullet’ (Kieffer 1980: 102) < **kas-ma-ka-* vs. OIA only verbal *kas-* ‘to gape asunder, to break apart’
  Kt. *kom* ‘uvula’; NKal. ẓ *kām-gagň* ‘uvula’ (with *gagň* ‘bell’), *kamtā̃* ‘palate, beginning of throat’ (with *tā̃* ‘place’ ⇐ MIA *thāna-*) < **kas-man-*; Kt. W *këmú*, NE *kumú* ‘neck’ < **kas-ma-ka-*, compounded in W/NE *këmḍén*, SE *kamḍén* ‘yoke, wooden crosspiece that is fastened over the necks of two animals and atached to a plow or cart’ (with a derivative of *ḍun* ‘stick’ ⇐ IA *daṇḍá-*)
  The derivation of the Iranian forms from the root **kah-* < PIIr. **kas-* was first suggested by Henning (1940: 6) and Abaev (1958–1989: I, 599). The Pamir Iranian words for ‘back’ are derived by Morgenstierne (1974: 26) < “**kắmaka-*”. This form is identified by Sadovski (2017: 577) as a “specific Iranian” formation. Via the intermediary meanings ‘throat’ and ‘neck’ attested in Parachi and Nuristani a connection with **kas-man-* seems possible and would make them more etymologically transparent. The semantic development would then be ‘jaws, throat’ > ‘neck’ > ‘back’. The interaction between original **-h-* and the presence or absence of vowel length in the various Iranian forms is not fully clear. The monosyllabic Nuristani words have long vowels, but this is perhaps conditioned by stress and the position before **sm* > *m*.
- Middle/New Persian *arzan*, Pashto *ğdən*, Wakhi *yirzn* ‘millet’ vs. no equivalent in OIA
  NKal. *ãzű*; A. *aẓű*; Pr. *üǰú*[150] ‘a type of millet’
  The Iranian terms appear to be in origin agent nouns/agentive adjectives formed with the suffix **-ana-* from the PIIr. root **Harǰ-* ‘to shine’. Terms for grain crops with ‘shining’ semantics are not unusual – they refer to the reflective properties

[150] Pr. *ǰ* points to a metathesis **rj* > **jr*, followed by regular **jr* > **ḍ* > **ǰ* / _*ü*. The metathesis may have parallels in *itrú* ‘bear’ (**rċċ* > **ċċr* > *tr* ?) and *üdrá* ‘birch’ (**rjr* > **rjj* > **jjr* > *dr* ?) ~ Kt. *oç*, NKal. *āẓ* ‘birch’ < **Hr̥ǰra-* > OIA *r̥jrá-*, YAv. *ərəzra-*˚ ‘bright’ (?).

of awns and grains in the field. However, the Nuristani terms seem to reflect an **u* in the second syllable, which would make them equivalent in formation to OIA *árjuna-* 'bright, white, silver-colored'. The application of derivatives of **Harǰ-* to a type of millet appears to be a shared innovation of Nuristani and Iranian, but since the formations are apparently not exactly the same, the shared development is not indisputable. It is possible that **Harǰuna-* was replaced by a more transparent form **Harǰ-ana-* with the productive suffix **-ana-* in the prehistory of Iranian. Kümmel (2017: 283–284) also mentions the OIA word *aṇu-* 'broomcorn millet' "that looks like *aṇú-* 'thin'". He suggests that "there may be an indirect connection to the Iranian word, if it goes back to something like **arjnu-*." The Nuristani forms could perhaps also be derived from a form like **arǰnu-ka-*, but this would be an ad-hoc construction of unclear morphological structure aimed at the inclusion of OIA *aṇu-*, which need not be related and could instead just be a specialized use of *aṇu-* 'thin'.

One further case could be explained by borrowing rather than shared innovation, though this is not certain:

- YAv. *ā-zāta-* 'noble', Sogdian *ʾzʾty*, Bactrian αζαδο, Middle/New Persian *āzād* 'free, noble' vs. OIA *ā́-jāta-* 'born'

  Kt. W/NE *azó*, SE *ajó*; Ashk. *azā́* 'freeman, member of the free (non-artisan) caste'; Pr. *ëzā́* 'alive, unhurt, healthy' may be cognate[151]

  The semantic agreement between the innovative meanings in Iranian and Nuristani is rather striking and raises the possibility of borrowing. The same word has also been borrowed from Bactrian into Gandhari as *ajhate* 'free, noble' (Schoubben 2024: 178–179). Previously identified loanwords from Bactrian into Nuristani seem to retain their intervocalic plosives (Halfmann 2023b: 508–509), indicating that the contact occured after the Nuristani-internal loss of these sounds. Since this set of Nuristani forms has lost the plosive, it would have to be an especially early borrowing. It is imaginable that it might have been borrowed from Old Persian during Achaemenid times instead, but no parallel cases of this are known. Substitution of the affricate *ǰ* for Iranian *z* is also seen in Kt. SE *tarǰë́* 'scales' mentioned in Section 6.5.3 and even reflected in the much later borrowings NE *kagáċ* 'paper' ⇐ New Persian *kāġaz*; *geċ* 'cubit' ⇐ New Persian *gaz*.

[151] Cf. the semantic development in Japanese *daijōbu* 'all right, unhurt' < 'a man of class'. It may be relevant that Pr. speakers did not have the same kind of caste society as Kt. and A. speakers did in pre-Islamic times, since members of the artisan caste were not allowed to enter their valley (Klimburg 2002: 55).

However, inheritance and shared innovation cannot be excluded, since an inherited word would look no different.

Périkhanian's (1968: 9–16) postulation (endorsed by Nyberg 1974: 41) of two separate Iranian etyma which would have merged in Middle Persian *āzād*, one originally meaning 'noble' (from **ʃanH-* 'to be born') and one originally meaning 'free' (from **ʃaH-* 'to leave behind'), does not seem necessary to me. The Nuristani terms at any rate encompass both meanings.[152]

Lexical or derivational agreements with Iranian have also been noted with regard to the numeral system. Here, Morgenstierne (1973a: 333) pointed out the similarity of Kt. *ev* 'one' with Av. *aēuua-* as against OIA *éka-*. This match, however, is not as clear as it would at first appear. For the numeral 'one' all Nuristani languages show a contrast between an isolated form, which is also used in counting, and a pre-nominal form (Table 13).

		Isolated	Pre-nominal
Kt.	W/NE	*ev*	*e*
	SE	*ev*	*e* ~ *ē*
NKal.	N	*ew*	*e*
	Ẓ	*ek*	*e*
A.		*aç*	*a*
Pr.		*ipű́n*	*atḗg*

Table 13. Forms of the numeral '1' in Nuristani languages

The isolated form of NKal. Ẓ *ek* could be explained as an Indo-Aryan loan, as much of the NKal. numeral system is of evident Indo-Aryan origin (e.g. *doš* '10' ⇐ IA *dáśa-*) and many New Indo-Aryan languages show forms with unexpected retained *k* for 'one', whether via replacement of *-ka-* with the MIA suffix *-kka-* (Schwarzschild 1958) or as the result of a sanskritism (Turner 1962–1966: T. 2462). The same kind of form is probably behind Ashkun *aç*, which seems to contain a preserved and secondarily palatalized velar (cf. Kt. *mëk-* ~ A. *muç-* 'to flee', probably from an IA form equivalent to Prakrit *mukkaï* 'flees'[153]). Notably, however, the reflex *ç* recurs in the word for 'eleven' *çënús*, which, together with Kt. *yaníċ* 'eleven', matches the (archaic) structure of Av. *aēuuandasa-* 'eleventh' rather than OIA *ekadaśa-* 'eleven', but apparently in the form ***aikkan-daċa-*. Since the form with **-kk-* is likely innovative, it may have been secondarily inserted into the

[152] For details regarding the cultural context, see Edelberg (1984: xi–xii), Klimburg (1999: 61–73), Cacopardo & Cacopardo (2001: 179), Azar (2006: 63–64).

[153] A stem developed analogically from the MIA past participle *mukka-*; cf. Schwarzschild (1958: 313).

inherited ‘eleven’, where also the loss of initial **aḭ-* is difficult to explain.[154] On the other hand, the forms Kt. *ev* and NKal. N *ew* are not directly derivable from **aḭu̯a-*, since we would not expect preservation of the **u̯* (cf. Kt., NKal. *de* ‘pre-Islamic deity’ < **daḭu̯a-*). They could rather be equivalent to cases like Kt. W *ċov*, NKal. *ċāw* ‘branch’ ~ OIA *śā́khā-*; Kt. W *yuv* ‘louse’ ~ OIA *yūkā-*, where the *v/w* could be considered a hiatus filler (*śruti*) after the loss of single intervocalic plosives (cf. also Kt. W *gëvḗ* ‘gone (M)’ < **gata-ka-*). In the cases of Kt. *ċov* and *yuv* there is an original final **ā*, which could have persisted longer than short **a* and therefore required a hiatus filler. Kt. *ev* and NKal. N *ew* may then be reflexes of a feminine form **aḭkaH-*. The prenominal forms Kt. *e*, NKal. *e*, A. *a* are equally compatible with **aḭu̯a-* and **aḭka-*. The Pr. isolated form *ipű́n* probably contains their expected cognate **i*.[155] Hegedűs (2020) has argued convincingly that the element *˚pün* likely represents a univerbated numeral classifier etymologically related to OIA *píṇḍa-* ‘lump, piece’, MIA *puṃḍaïa-* ‘lump-shaped’ and Kt. forms like SE *puṇḍrḗ* ‘round’. The lack of retroflexion of the *n* is explainable by the fact that *ṇ* occurs only as part of the cluster *ṇḍ* in Prasun, and even appears to alternate with dental *n* when *ḍ* is dropped (Buddruss & Degener 2017: 43).[156] However, if we compare Pr. **i* with *lu* ‘pre-Islamic deity’ < **daḭu̯a-*, it becomes clear that **i* cannot derive from **aḭu̯a-*, which should have produced ***u*. The vowel assimilation processes in Pr. are not yet fully understood, so that *ipű́n*, which also has a variant *üpű́n*, may yet derive from earlier ***upin*, but overall the conclusion that the Nuristani languages generally reflect **aḭka-* appears more likely. As noted in Section 4, this has no necessary consequences for classification, as both **aḭka-* and **aḭu̯a-* must have been available in Proto-Indo-Iranian.

Kümmel (2022: 255) also mentions that Nuristani takes the Iranian path in the composition of the numerals for ‘thirteen’ and ‘fourteen’, where Avestan has *ϑri-dasa-* ‘thirteenth’ and *čaϑru-dasa-* ‘fourteenth’, but OIA has *tráyo-daśa-* ‘thirteen’

[154] Perhaps first by development to **eanús* > **a/ënús*, then re-association with the single digit and compounding to **aç-ënús* and finally reanalysis as **a çënús* with prenominal *a*, which is sometimes used before numerals to indicate approximate quantities like English *some* in *some eleven people* etc.

[155] The prenominal form *atḗg*, *pace* Hegedűs (2017), cannot be compared with NKal. *jātá* ‘other, since there are no parallels for dropping of **j* in Pr. A more likely derivation is from PIIr. **antara-* ‘other’ (OIA *ántara-*, YAv. *aṇtara-*) + suffix *-g*, i.e., the Pr. word is a direct cognate of English *other*. The semantic development ‘another’ > ‘a, one’ is possible in the context of use as a prenominal modifier.

[156] Hegedűs (2020: 210) writes that “[i]n the process of Prasun grammaticalization […] the retroflexion of the nasal was lost, which is quite natural”, but this argument is neither convincing – there is no reason why grammaticalization should lead to a nasal randomly changing its place of articulation – nor necessary. The classifier also need not be grammaticalized from synchronically attested *puṇḍíg*, but could rather derive from an unsuffixed direct equivalent of OIA *piṇḍa-* (with *u* vocalism).

and *cátur-daśa-* ‘fourteen’. The Iranian forms are innovative, being formed with the productive compound variants *θri-* and *čaθru-* of the numerals ‘three’ and ‘four’, in analogy to the numerals from fifteen through nineteen (Schmitt 1994: 21–22). Though the original formation of ‘thirteen’ also seems to have survived in Iranian (e.g., Middle Persian *sēzdah* < **çaiaz-daθa-*; Schmitt 1994: 21), an agreement between Iranian and Nuristani in this regard would therefore be a shared innovation. Since the numerals ten–twenty in NKal. and at least twelve–twenty in A. are borrowed from IA, the original system can only be seen in Kt. and Pr., most transparently in Kt. as shown in Table 14.

11	*yaníċ*
12	*diċ*
13	W/SE *triċ*, NE *tëríċ*
14	W/NE *šturéċ*, W *KT štruċ*, SE *štreċ*
15	W/NE *pčiċ*, SE *pačíċ*
16	*ṣeċ*
17	W/NE *stiċ*, SE *satíċ*
18	W/NE *ṣṭiċ*, SE *aṣṭíċ*
19	*neċ*

Table 14. The numerals 11–19 in Katë

Here, all numerals from 11 through 19 end in *-iċ*, which coalesces to *-eċ* with the final vowel of the single digits that end in *u* (*ṣu* ‘6’, *nu* ‘9’). Because of its vowel, this *-iċ* cannot be derived from **-daća-*, but must represent an analogical generalization of an element extracted from forms like **tridaċa-* > **triaċa-* > *triċ*. The Iranian analogical formation pattern may have been extended from **čatru-daċa-* and **tri-daċa-* to **dwi-daċa-* ‘12’, producing two numerals *diċ* and *triċ*, from which an element *-iċ* could have been extracted. The *e* of *štureċ* ~ *štreċ* shows that it reflects **čatru-daċa-* > **štruáċ* altered to **štru-íċ*, rather than **čatur-daċa-*.

6.5.5 Inflectional morphology

As a result of the loss of final syllables in Nuristani, much of the original Indo-Iranian inflectional morphology is not recoverable. We therefore cannot examine whether Nuristani sides with Old Indo-Aryan or Old Iranian in those cases where the two show minor differences in inflection. The only usable cases are disyllabic inflectional endings, of which at least one syllable would survive.

One such case is the innovative OIA instrumental singular case ending of *a*-stems *-ena* < **-aina*. This has a potential match in the Kt. instrumental ending

NE *-ẽ*, SE *-ɛ̃* (consonant-final stems) / NE/SE *-ɛ̃* (*˚*a-ka-* stems). As a possible shared innovation in morphology, this would be rather significant. However, the Kt. endings have no obvious correspondences in the other Nuristani languages, where the instrumental-ablative singular endings NKal. N *-i*, Pr. *-a* are found. In A., a nasalized ending *-uĩ* or *-ĩ* (but also with a variant *-i*) seems to exist (Buddruss 2006: 193), which may or may not be cognate to the Kt. forms.

Since the regular vowel developments in unstressed inflectional endings are uncertain, we cannot draw any clearer conclusion than that the derivation from **-aiṇa* may be phonologically possible. A similar situation pertains with the Khotanese instrumental singular ending *-äna* (*˚*a-ka-* stems: *-aina*), the Wakhi ablative *-ən* and the oblique singular of Yidgha *-ɛn* and Munji *-ān* (plural Yidgha *-ɛf*, Munji *-āf* < **-abiš* ?). Here a derivation from the instrumental singular ˚*an-ā* of *n*-stems has generally been deemed more attractive, but **-aina* could not be excluded as a source (Emmerick 1968: 257–259; Morgenstierne 1938: 123). Whether or not the derivation from *˚*an-ā* is possible for Nuristani and whether this or **-aiṇa* is more likely as a source requires further investigation.

Another inflectional feature in which Nuristani agrees with OIA, but also with Iranian Wakhi, is the existence of **-na-* participles next to **-ta-* participles. Though most Iranian languages generalized the **-ta-* variant, the existence of **-na-* forms in Wakhi proves that they must still have existed in the common ancestor of the Iranian languages. They are of Indo-European origin and therefore an archaism.

7. Conclusions: Nuristani as Iranian?

As the discussion has shown, despite the superficially Indo-Aryan "appearance" of the Nuristani languages, both in terms of typology and synchronic lexicon, there are in fact more points of agreement with Iranian in the inherited phonological development, morphology and lexicon, hidden underneath a layer of Indo-Aryan contact influences. The situation may perhaps be compared to that of Armenian, which, as a result of pervasive loanwords and structural influences, was first considered to be an Iranian language and could only later be shown to form its own subgroup of Indo-European. With Nuristani, the situation is somewhat more difficult to sort out, because the involved languages are more closely related to each other and the time of contact is so remote from the time of documentation, that numerous internal sound changes have applied equally to inherited vocabulary and to Indo-Aryan loanwords.

Nevertheless, as I hope to have shown, enough traces remain that point to an Iranian affiliation, whereas the unique agreements with Indo-Aryan that had previously been discussed in the literature turn out to be on weaker ground than had been assumed. Of the four shared innovations common to all Iranian languages gathered in Section 5, Nuristani certainly shares two: the merger of PIIr. voiced aspirated and voiced sounds, as well as the sound change PIIr. *ć, *ǰ$^{(h)}$ > dental affricates *ċ, *j̈. The other two innovations – fronting of aspiration in the context TVND^{h} (> T^{h}VND) and spirantization of PIIr. *p, *t, *k > f, ϑ, x before consonants and next to laryngeals (the latter probably via *p^{h}, *t^{h}, *k^{h}) – involve the voiceless aspirates, which have no distinct reflexes in Nuristani, and can therefore not be investigated. It is possible that Nuristani at one point went through an Iranian-style spirantization, which was then reversed, perhaps under Indo-Aryan influence. On the other hand, the spirantization could theoretically also be a later Common Iranian innovation that never affected Nuristani.

Due to a possible shared innovation with parts of the Common Iranian continuum (cf. Section 6.4), the Nuristani languages could plausibly be considered an offshoot of early Common Iranian, making them a full part of the Iranian family. However, they must also have been isolated from this continuum rather early on, in a process of "Network Breaking" (cf. Section 1), since they did not participate in large parts of the continued process of convergence that created the characteristic profile of Iranian. They would accordingly not form a separate

subgroup in the actual historical/genealogical sense, but may, as an outlier group to the rest of Common Iranian, offer insights into the relative chronology of early Common Iranian innovations. In this regard, we could of course be faced with a two-way uncertainty in some cases: Developments shared by all Iranian languages to the exclusion of Nuristani might also be considered evidence against the hypothesis of Nuristani as a section of the Common Iranian continuum. On the other hand, if the independent evidence for Nuristani as part of this continuum is strong enough (which is not certain), such cases could indeed allow us to place some innovations that are universal in attested Iranian, but not shared by Nuristani, at a later point in the relative chronology. Ideally we would like to see some indications in the attested Iranian languages that such innovations were not universal from the outset or that they spread areally through the continuum, but even where such evidence is absent, it is not inconceivable that it was simply wiped out by later processes.

This leaves the question of what caused the "Network Breaking" and the early isolation of Nuristani. This question may best be answered with the help of extralinguistic evidence, especially from archaeology and genetics, but simply based on the present-day distribution of the Nuristani languages, one scenario in particular already appears likely: Geographically, Nuristani is separated from the Iranian-speaking world to the north by the natural barrier of the main Hindu Kush range. To the south of Nuristan, the most commonly spoken language today is Iranian Pashto, but this is a rather recent situation – until the Islamic period, much of the Kabul valley would have been Indo-Aryan speaking. Surviving Middle Indo-Aryan inscriptions and documents from the area date back to the early centuries CE, but Indo-Aryan speakers were likely present long before they left written records. The Kabul valley at one point represented the extreme northwesternmost extension of the vast Indo-Aryan zone, but this also means that it need not always have been Indo-Aryan speaking. It seems rather plausible that the isolation of the Nuristani languages in the southern foothills of the Hindu Kush was caused by a language shift of their neighbors to the south to Indo-Aryan, in whichever way this may have come about. Later, the cultural dominance of the Gandharan lowland civilization would have brought with it increasing influences from an Indo-Aryan prestige language that re-shaped the Nuristani languages into the "mixed forms of speech" (Morgenstierne 1942: 147) that they are today.

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An Old Khotanese Reader

The Tale of Bhadra

Nicholas Sims-Williams
With contributions by Jonathan A. Silk

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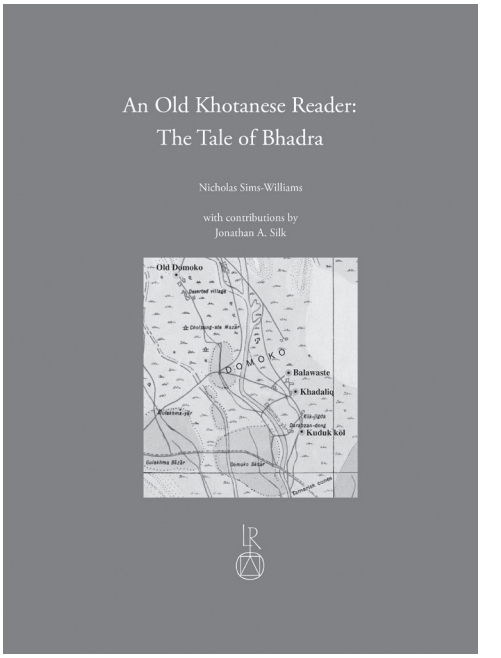

This reader contains the complete text of the Buddhist 'Tale of Bhadra', the second chapter of the Old Khotanese Book of Zambasta, accompanied by a translation, commentary and glossary. All morphological forms occurring in the text are identified in the glossary and in the introduction, which also includes a survey by Jonathan A. Silk of sources and parallels in other languages. The volume thus provides everything required to make this text accessible either to a student who has already worked through the 'Introduction to Khotanese' which forms the first part of R. E. Emmerick's Handbook of Khotanese (BzI 51, 2024) or even to a complete beginner. It also contains substantial original material, particularly in the commentary and the etymological notes in the glossary, which will be of interest to specialists in Khotanese and in Iranian and Indo-European languages in general.

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