Peering into the Past

Using Modern Languages to Understand Ancient Languages and Cultures

Prof. Nathan Sanders, University of Toronto

Laugh & Learn, June 26th, 2026

UNIVERSITY OF TORONTO

Language Change

Language Change

A simple observable fact about language:

All languages change!

As soon as we invented writing 5000 years ago, we wrote down our thoughts about language, and a recurrent theme among those thoughts, from ancient Mesopotamia to today, was complaints from grammar purists about changes to their language.

Language Change

(1) The house is building.

(2) The house is in building.

(3) The house is being built.

In the 1600s, (1) and (2) were basically the only ways to describe the construction of a new house. Phrasing like (3) simply did not exist at all.

Language Change

(1) The house is building.

(2) The house is in building.

(3) The house is being built.

By the 1700s, (3) emerged as a new variant, but as is typical with language change, the educated elite hated it!

In the 1800s, a full century after people had been saying (3), we still find complaints, like George P. Marsh's multi-page rant, calling it "awkward" and "at war with the genius of the English tongue".

Language Change

(1) The house is building.

(2) The house is in building.

(3) The house is being built.

Today, (3) is perfectly normal, while the older forms (1) and (2) would now be mocked as “bad grammar” like (3) used to be.

The grammar pedants lost this battle, **as they always do**! No amount of ranting and raving can stop a language from changing.

Language Change

Language change is a perfectly normal process that affects every language. While many of those changes may be viewed negatively at first, they can eventually become standard, with the older obsolete forms being long forgotten.

Language change can affect any aspect of a language: whether a word exists or not, how it is pronounced, what it means, or even the entire structure of a sentence (as in the example of *the house is being built*).

Language Change

An interesting example of **pronunciation change** comes from Falstaff in Shakespeare's *Henry IV, Part 1*:

(4) If reasons were as plentiful as blackberries, […]

This may seem like an interesting metaphor to modern audiences, but 300 years ago, this was a clever pun, because *reasons* was pronounced more like *raisins*! The modern pronunciation ruins the pun, but no one complains now about this new pronunciation being "lazy" or "illogical". We just accept it.

Language Change

The history of the word *nice* showcases how much **meaning can change**. Middle English originally borrowed *nice* from Old French in the late 1200s, and in both languages, it had the negative meaning ‘silly’, but its meaning eventually shifted in English:

1400s: ‘delicate’
1500s: ‘careful’
1700s: ‘pleasant’

Again, no one now argues that the new meaning of *nice* is wrong and that the older meaning is the only correct meaning. We have accepted the change and moved on with our linguistic lives.

Language Change

Why do languages even bother changing? Where do these new variations in pronunciation, meaning, and structure come from?

One major contributor is that humans have **different body shapes**. This means that our pronunciations are all slightly different. My *see* sounds different from everyone else's *see*.

But our linguistic system must be designed to accommodate this variation, or we wouldn't be able to communicate!

Language Change

Having a system that accommodates variation means that we can also **actively use that variation as a tool for communication**.

For example, linguistic variation can be used to communicate aspects of our identity: where we have lived, how old we are, our gender, which socioeconomic classes we have belonged to, etc.

These uses of variation eventually get entrenched in communities and grow further apart as ways to signal identity.

Language Change

Change can also arise from **human creativity** by taking advantage of common associations and conceptual similarity.

Old English *bedu* originally meant ‘prayer’. The modern descendant *bead* derives from the older meaning as a figure of speech based on the common practice of counting prayers on a string a beads (a rosary).

Old English *gydig* originally meant ‘possessed by an evil spirit’. The modern descendant *giddy* derives from the older meaning as a hyperbolic way of describing someone is excitedly happy.

Comparative Reconstruction

Comparative Reconstruction

Language has likely existed as long as humans have been humans, about 100,000–200,000 years, and possibly longer.

But language has only been recorded for the past 5000 years. The time before that is called **prehistory**.

We can take advantage of our understanding of how languages change to make educated guesses about what prehistoric language might have looked like!

Comparative Reconstruction

Consider the words for ‘father’ from various languages:

father (English)
Vater (German), pronounced with an initial [f] sound
athair (Old Irish), pronounced with no initial consonant
pater (Latin)
pitṛ (Sanskrit)
patēr (Ancient Greek)

These have a **particular pattern** in the initial consonant.

Comparative Reconstruction

We see **the same pattern** in the words for ‘foot’:

foot (English)
fuß (German)
ís (Old Irish)
pedis (Latin)
pád (Sanskrit)
poús (Ancient Greek)

Comparative Reconstruction

This same pattern shows up in many other words:

English	[f]	father, foot, fish, fire, full, feather, floor, float, fold, …
German	[f]	Vater, fuß, Fisch, Feuer, voll, Feder, Flur (hall), Fluss (river), falten, …
Old Irish	–	aithar, ís, íasc, –, lán, ette, lár, luí (rudder), alt (joint), …
Latin	[p]	pater, pedis, piscis, –, plēnus, penna, plānus (flat), pluit (rain), –, …
Sanskrit	[p]	pitr̥, pad, –, –, pūrṇá, –, pr̥thá, plávate (float), puṭa, …
Ancient Greek	[p]	patēr, poús, –, pûr, pleîos, pterón, plátē, pléō (float), péplos (cloth), …

This pattern is **not a coincidence**!

Comparative Reconstruction

[f] and [p] have **similar physical articulation**. Both of them use the lower lip, which touches the upper teeth for [f] and the upper lip for [p]. Across the world's spoken languages, we find lots of examples of [f] and [p] being patterned together, especially with [p] changing into [f], which can explain the English and German words.

In addition, [f] is an **acoustically soft** sound, and across the world's spoken languages, we find lots of examples of [f] being deleted, which explains the absence of the initial consonant in the Old Irish words, if we assume it shifted from [p] to [f] first.

Comparative Reconstruction

All together, this suggests that these words originally started with [p], which changed to [f] in English and German, and possibly in Old Irish before being deleted completely.

This assumes that there were single consistent original sources for these words.

We don’t know that for sure! But if there were the case, our best guess is that those original words started with [p].

Comparative Reconstruction

We can do the same for all the other sounds in these words, ultimately building full hypothetical ancient forms of these words. This method of comparing languages to each other and projecting backwards into the past is called **comparative reconstruction**.

This can allow us to make educated guesses about what ancient languages looked like. They are just guesses, and most of the time, we can't confirm them (not without time travel).

However, there have been a few certain situations which do support our guesses!

Comparative Reconstruction

Using this method on the modern Romance languages (French, Spanish, Italian, Portuguese, Romanian, etc.), we can reconstruct a hypothetical ancestral form called **Proto-Romance**. (The *proto-* prefix indicates a hypothetical single source language using this comparative reconstruction.)

As it turns out, using only this method, our hypothetical **Proto-Romance looks very similar to actual attested Latin**! That is, the existing record of real Latin confirms that our method works, at least for the Romance languages. Similar support comes from comparing reconstructions to other older written languages.

Comparative Reconstruction

In the 19th century, this method was used on the Indo-European languages (the Romance languages, plus English, German, Irish, Sanskrit, Greek, Russian, Lithuanian, Persian, Albanian, Armenian, and many other languages) to reconstruct a hypothetical ancestral form called **Proto-Indo-European (PIE)**, which dates back a few thousand years before writing was invented.

However, in the 20th century, we discovered records of Hittite and Tocharian, ancient extinct Indo-European languages that are old enough to be fairly close in time to PIE. They match our reconstruction of PIE, again showing the reliability and power of this method.

Paleolinguistics

Paleolinguistics

If we can reconstruct a proto-word for a given concept, it seems reasonable to assume the relevant ancient people has regular access to that concept. This is the principle underlying **paleolinguistics**.

For example, from English *wolf*, Tocharian B *walkwe* 'wolf', Albanian *ujk* 'wolf', Sanskrit *vṛka* 'wolf', Avestan *vəhrka* 'wolf', Ancient Greek *lukos* 'wolf', Lithuanian *vil̃kas* 'wolf', Old Church Slavonic *vlĭkŭ* 'wolf', and Latin *lupus* 'wolf', we can reconstruct a PIE word for wolf (something like *wəlkwos*), so it is likely that prehistoric Indo-Europeans lived **where wolves lived**.

Paleolinguistics

Wolves don't narrow things down too much though, since they existed all across Europe and Asia in the rough time period we think ancient Indo-Europeans lived. So we need to look at other reconstructed vocabulary.

From Old English *þēod* 'people, nation', Lycian *tuta* 'community, crowd', Persian *tude* 'mass, crowd', Lithuanian *tautà* 'people, nation', Umbrian *tuta* 'community', and Old Irish *túath* 'people, tribe', we can reconstruct a PIE word (*teuteh*) for some type of **communal tribe structure**.

Paleolinguistics

From English -*wick/wich* (as in *Warwick*, *Greenwich*, etc.), Gothic *weihs* ‘village’, Albanian *vise* ‘place, country’, Avestan *vīs* ‘settlement, village’, Ancient Greek *oîkos* ‘house’, Old Church Slavonic *vĭsi* ‘village’, and Latin *vīcus* ‘village’, we can reconstruct a PIE word (*weyk*) for some type of **longer-term settlement**.

From English *wield*, Hittite *ḫulle* ‘smash, defeat’, Tocharian A *wäl* ‘king’, Lithuanian *valdýti* ‘rule, govern’, Old Church Slavonic *vlasti* ‘rule’, Latin *valēre* ‘be powerful, healthy, worthy’, and Old Irish *flaith* ‘sovereignty, ruler’, we can reconstruct a PIE word (*hwelh*) for the **concept of ruling** one of these settlements.

Paleolinguistics

From English *drake* ‘male duck’, Old English *rīce* ‘realm’, Sanskrit *rā́j* ‘king’, Avestan *rāzan* ‘command’, Latin *rēx* ‘king’, and Old Irish *rí* ‘king’, we can reconstruct a PIE word (*hregs*) for the **actual ruler or king** of these settlements.

From English *deed*, Tocharian B *tās* ‘speak’, Sanskrit *dádhāti* ‘put, punish’, Avestan *dāta* ‘law, command’, Ancient Greek *thésis* ‘custom’, Armenian *dirk‘* ‘position’, Lithuanian *déti* ‘lay, put’, Old Church Slavonic *děti* ‘do, place, speak’, and Old Irish *dál* ‘assembly, meeting’, we can reconstruct a PIE word (*dhehtis*) for the **laws that are put into place by the ruler’s command**.

Paleolinguistics

From English *pain*, Sanskrit *cáyate* ‘avenge, punish’; Avestan *kaēnā* ‘retribution, punishment’, Ancient Greek *poiné́* ‘penalty, vengeance’, Armenian *k‘en* ‘hatred, revenge’, Lithuanian *káina* ‘price, value’, Old Church Slavonic *cěna* ‘price, value’, and Old Irish *cin* ‘crime, guilt’, we can reconstruct a PIE word (*kwoyneh*) for a type of **legal or social penalty** for violating the rules.

These proto-words and others like them suggest that ancient Indo-Europeans lived in **structured communities, with leaders, laws, and punishment**.

Paleolinguistics

From Tocharian A *kuryar* ‘trade’, Sanskrit *krī* ‘buy’, Persian *xar* ‘buy’, Ancient Greek *príasthai* ‘buy’, Lithuanian *krienas* ‘dowry’, Old Russian *kriti* ‘buy’, and Old Irish *crenaid* ‘buy’, we can reconstruct a PIE word (*kwreyh*) for **buying**.

From Sanskrit *máyate* ‘exchange’, Avestan *maēϑa* ‘pair, exchange’, Ancient Greek *misthós* ‘wages, reward’, Lithuanian *maĩnas* ‘exchange’, Old Church Slavonic *měna* ‘exchange’, Latin *mūnus* ‘task, gift’; and Old Irish *moín* ‘gift, treasure’, we can reconstruct a related PIE word (*mey*) for **exchanging**.

Paleolinguistics

From English *fee*, Old English *feoh* ‘money, property, cattle’, Lycian *pasba* ‘livestock, sheep’, Sanskrit *páśu* ‘cattle’, Avestan *pasu* ‘livestock’, Old Armenian *asr* ‘fleece, wool’, Old Lithuanian *pēkus* ‘cattle’, and Latin *pecū* ‘cattle’ and *pecūnia* ‘money, property’, we can reconstruct a PIE word (*peku*) for **wealth, especially mobile wealth in the form of livestock**.

The proto-words and others like them suggest that Indo-Europeans had some system of commerce. The importance of mobile wealth in the form of livestock further suggests they may have been **pastoral nomads** rather than permanently settled agrarians.

Paleolinguistics

Other reconstructed vocabulary gives us even more insight into their pastoral nomadic lifestyle.

From Old English *eoh* 'war horse', Luwian *azzu* 'horse', Tocharian A *yuk* 'horse', Sanskrit *áśva* 'horse', Avestan *aspa* 'horse', Ancient Greek *híppos* 'horse', Armenian *ēš* 'donkey', Lithuanian *ešva* 'mare', Latin *equus* 'horse', and Old Irish *ech* 'horse', we can reconstruct a PIE (*hekwos*) for **horse**, which would have been very important for their frequent and long journeys.

Paleolinguistics

From English *ewe*, Luwian *ḫawi* ‘sheep’, Tocharian B *awi* ‘ewe’, Sanskrit *ávi* ‘sheep’, Ancient Greek *óis* ‘sheep’, Armenian *hoviw* ‘shepherd’, Lithuanian *avìs* ‘sheep’, Old Church Slavonic *ovĭca* ‘sheep’, Latin *ovis* ‘sheep’, and Old Irish *oí* ‘sheep’, we can reconstruct a PIE word (*howis*) for **sheep**.

From English *wool*, Hittite *ḫulana* ‘wool’; Sanskrit *úrṇā* ‘wool’, Avestan *varənā* ‘wool’, Ancient Greek *lênos* ‘wool’, Lithuanian *vìlna* ‘wool’, Old Church Slavonic *vlĭna* ‘wool’, Latin *lāna* ‘wool’, and Old Irish *olann* ‘wool’, we can reconstruct a PIE word (*hwəlhneh*) for **wool**, like from the sheep being herded.

Paleolinguistics

From English *needle*, Albanian *nus* ‘thread’, Ancient Greek *néō* ‘spin’, Czech *nit’* ‘thread’, Latin *nēre* ‘spin’, and Old Irish *snáth* ‘thread’, we can reconstruct a PIE word (*sneh*) for **spinning thread**, perhaps out of sheep wool

From English *weave* and *web*, Hittite *wep* ‘weave’, Tocharian A *wäp* ‘weave’, Albanian *vej* ‘weave’, Sanskrit *váyati* ‘weave’, Avestan *vaf* ‘weave’, and Ancient Greek *huphḗ* ‘fabric’, we can reconstruct a PIE word (*hwebh*) for **weaving** those spun threads into cloth.

Paleolinguistics

From English *wheel*, Tocharian A *kukäl* ‘chariot, wagon’, Sanskrit *cakrá* ‘wheel’, Avestan *caxra* ‘wheel’, Ancient Greek *kúklos* ‘wheel’ Lithuanian *kãklas* ‘neck, collar’, and Old Church Slavonic *kolo* ‘wheel’, we can reconstruct a PIE word (*kwelkwlom*) for **wheel**.

From Tocharian B *amäkṣpänte* ‘wagon-master’, Sanskrit *ákṣa* ‘axle, cart’, Avestan *āžuš* ‘pole’, Ancient Greek *áxōn* ‘axle’, Lithuanian *ašìs* ‘axle’, Old Church Slavonic *osĭ* ‘axle’, Latin *axis* ‘axle’, and Welsh *echel* ‘axle’, we can reconstruct a PIE word (*heksło*) for **axle**, which along with wheels, would have been useful for carts and wagons.

Paleolinguistics

From English *ale*, Sanskrit *aruṣá* ‘reddish’, Ossetic *ælūton* ‘beer’, Ancient Greek *alúdoimon* ‘bitter’, Armenian *awłi* ‘strong fermented drink’, Lithuanian *alùs* ‘beer’, and Old Church Slavonic *olŭ* ‘liquor’, we can reconstruct a PIE word (*heluṭ*) for some sort of **bitter red fermented drink**, perhaps some kind of early form of beer.

From English *mead*, Luwian *máddu* ‘wine’, Tocharian B *mīt* ‘honey’ and *mot* ‘alcohol, wine’, Sanskrit *mádhu* ‘honey, mead’, Avestan *maδa* ‘wine’, Ancient Greek *méthu* ‘wine’, Lithuanian *medùs* ‘honey’, Old Church Slavonic *medŭ* ‘honey’, and Old Irish *mid* ‘mead’, we can reconstruct a PIE word (*medhu*) for **mead**.

Paleolinguistics

From English *wine*, Hittite *wiyan* ‘wine’, Albanian *venë* ‘wine’, Ancient Greek *oînos* ‘wine’, Armenian *gini* ‘wine’, and Latin *vīnum* ‘wine’, we can reconstruct a PIE word (*weyhno*) for **wine**.

The ancient Indo-Europeans clearly seem to have made a variety of fermented beverages to help pass the time while they tended their flocks of sheep!

Paleolinguistics

From English *ore*, Old English *ār* ‘ore, copper, brass’, Sanskrit *áyas* ‘iron, metal’, Avestan *aiiah* ‘metal’, and Latin *aes* ‘copper, bronze, money’, we can reconstruct a PIE word (*heyos*) for **copper or bronze**.

This gives us important insight into the timing of when the ancient Indo-Europeans lived. Given the limited shared metal vocabulary across the Indo-European languages, it seems like the ancient Indo-Europeans existed in the **late Stone Age**, transitioning into the **early Bronze Age** as their language began to break up and their people spread across Eurasia.

Paleolinguistics

From English *birch*, Albanian *bredh* ‘fir’, Sanskrit *bhūrja* ‘birch’, Ossetic *bærz* ‘birch’, Lithuanian *béržas* ‘birch’, Old Church Slavonic *brěza* ‘birch’, and Latin *frāxinus* ‘ash tree’, we can reconstruct a PIE word (*bherhgos*) for a type of tree, likely **birch**.

From English *beech*, Ancient Greek *phēgós* ‘oak’, Old Church Slavonic *bŭzŭ* ‘elder (genus *Sambucus*)’, Latin *fāgus* ‘beech’, and Albanian *bung* ‘oak’, we can reconstruct another PIE word (*bhehgos*) for a different type of tree, likely **beech**.

Paleolinguistics

From Hittite *ḫartakka* ‘bear’, Albanian *ari* ‘bear’, Sanskrit *ṛkṣa* ‘bear’, Avestan *arša* ‘bear’, Ancient Greek *ārktos* ‘bear’, Armenian *arǰ* ‘bear’, Lithuanian *irštvà* ‘bear’s den’, Latin *ursus* ‘bear’, and Old Irish *art* ‘bear’, we can reconstruct a PIE word (*hərtkos*) for **bear**.

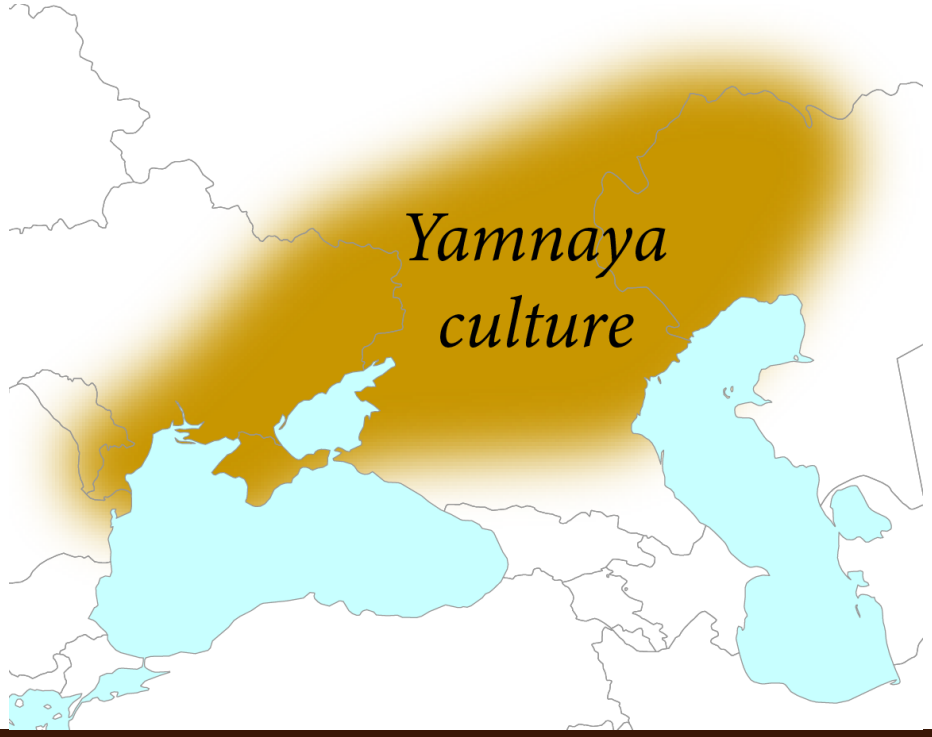
From English *beaver*, Sanskrit *babhrú* ‘reddish brown, mongoose’, Avestan *bawra* ‘beaver’, Lithuanian *bẽbras* ‘beaver’, Czech *bobr* ‘beaver’, and Latin *fiber* ‘beaver’, we can reconstruct a PIE word (*bhebhrus*) for **beaver**.

Paleolinguistics

All of this vocabulary together points to a **particular kind of culture, technological level, and physical environment**: somewhere with both birch and beech trees; with bears, beavers, and wolves; with terrain suitable for horses, carts, and herds of grazing sheep; with a migratory culture transitioning from the Stone Age to the Bronze age (approximately 4500–2500 BC).

Paleolinguistics

In the early 1900s, the **Yamnaya culture** was discovered in the Eurasian steppes north of the Black Sea and Caspian Sea.



Paleolinguistics

Archaeological evidence from the Yamnaya culture fits very well with our reconstructed vocabulary for PIE:

They were nomadic pastoralists who lived around 3300–2600 BC (early Bronze Age), with two-wheeled carts and four-wheeled wagons, horses, evidence of different social levels in their burial practices, metal-working, in a region where beech and birch trees can be found, along with bears, beavers, wolves, etc.

While we cannot be certain, **it seems that the ancient Indo-Europeans *were* the Yamnaya**!

Paleolinguistics

Paleolinguistics

There are competing theories, but the link to the Yamnaya culture is supported by a variety of **convergent evidence** from different fields of study: linguistics, archaeology, ecology, and genetics.

Importantly, this evidence is not just from one specific area, but from all along the various **migration paths** that the Indo-Europeans would have taken to get from the Yamanya homeland to their later historical and modern locations across Eurasia.

Reconstructed Religion

Reconstructed Religion

Given the Yamnaya's sophisticated burial practices, it is reasonable to assume they had some sort of religion. However, there is **not much physical evidence of their religious beliefs** beyond their burial mounds.

But we can use the linguistic evidence from PIE to probe their possible religious beliefs and practices.

Reconstructed Religion

From Old English *Tīw* ‘Tiw (Germanic god of war)’ and *Tīwes-dæg* ‘Tiw’s day’ (modern *Tuesday*), Hittite *šīu* ‘god’, Sanskrit *devá* ‘god’, Avestan *daēuua* ‘god, demon’, Ancient Greek *Zeús* ‘Zeus’, Lithuanian *diẽvas* ‘god’, Latin *deus* ‘god’, and Old Irish *día* ‘god’, we can reconstruct a PIE word (*dyews*) for a **god**.

They may have even had **names for specific gods**, such as *dyews-pəhter* (literally ‘god-father’) for a sky god, based on Sanskrit *dyáuṣpitṛ́* ‘Dyaus Pita (Vedic god of the sky)’, Ancient Greek *Zeû páter* ‘Father Zeus (an epithet for Zeus)’, and Latin *Iovis/Iūpiter* ‘Jove/Jupiter (Roman god of the sky)’.

Reconstructed Religion

From Old English *freht* ‘divination’, Tocharian B *prek* ‘ask, beg’, Sanskrit *prach* ‘ask, beg’, Avestan *frašna* ‘question’, Lithuanian *prašýti* ‘ask’, Old Church Slavonic *prositi* ‘ask’, and Latin *prex* ‘prayer’, we can reconstruct a PIE word (*prek*) for **prayer, especially asking for divine insight or outcomes**.

From Old English *meldian* ‘declare’, Hittite *māld* ‘recite, vow’, Old Armenian *małt‘* ‘prayer, supplication’, Lithuanian *maldà* ‘prayer’, and Old Church Slavonic *moliti* ‘pray, we can reconstruct another PIE word (*meldh*) for prayer, perhaps in the form of **ritualistic supplication** (as opposed to requests for intervention).

Reconstructed Religion

From Old Norse *tafn* 'sacrificial animal', Hittite *tappala* 'court chef', Tocharian A *tāpal* 'food', Ancient Greek *dáptō* 'devour', Old Armenian *tawn* 'feast', Latin *daps* 'sacrificial feast', and Old Irish *dúan* 'poem, song', we can reconstruct a PIE word (*dehp*) for some type of **sacrificial meal**.

From Luwian *izzitta* 'celebration, offering', Sanskrit *yáj* 'worship, sacrifice', Avestan *yaz* 'worship, sacrifice', Ancient Greek *hágios* 'holy, pious', and Latin *ieiūnus* 'fasting, hungry' and *disieiūnus* 'break fast', we can reconstruct a PIE word (*hyehg*) for some type of **worshipful sacrifice**.

Reconstructed Religion

We can even use methods similar to linguistic comparative reconstruction to compare modern and traditional myths and religious lore across Indo-European cultures and **reconstruct plots, themes, and archetypes** for ancient Indo-European religion and stories.

While some commonalities may just be coincidence, the **sheer number and specificity of the parallels** across these stories suggest that at least some may have very ancient origins, having left linguistic traces behind.

Reconstructed Religion

Some of the many parallels across Indo-European stories include:

- twins of divine birth linked to horses with one twin killing the other as part of creation
- three goddesses who control fate via weaving
- a thunder-based hero slaying a multi-headed water-based reptilian monster
- access to a supernatural realm by crossing a river with a canine guide or gatekeeper

Reconstructed Religion

It is unlikely that all of these convergent details arose independently (especially with the correlating linguistic evidence, such as similar names for parallel characters across cultures).

However, at least some of them likely reflect aspects of ancient Indo-European mythology that echoed throughout their descendants' lives for thousands of years as their stories passed down from one generation to the next.

Final Takeaway

Final Takeaway

With the right methods, we can examine these kinds of linguistic echoes and extrapolate backwards from them to get a glimpse of ancient life, even without direct physical evidence.

Thank you!