

Linguistics 051
Proto-Indo-European Language and Society
The PIE Verb

Verbal Morphology

Conjugation refers to the way in which a verb expresses inflectional categories through changes in its stem or through the addition of affixes

Primary vs. Secondary verbs

1. 'Primary' verbs

Verb stems are formed with the root plus stem formatives.

2. 'Secondary' verbs

Complex verb stems containing a root plus a 'derivational' suffix.

There are two types of secondary verbs:

2a. Deverbal ('formed from verbs') verb stems:

causatives ('make do X') with o-grade root plus *-éi-e-

*sed- 'sit down' ⇒ *sod-éie- 'seat (someone)'

iteratives ('do X over and over', 'keep doing X') with o-grade root plus *-éi-e-

*b^her- 'carry' ⇒ *b^hor-éie- 'be carrying around'

desideratives ('want to X', 'try to do X') in *(h₁)se-, with and without reduplication

*ueid- 'catch sight of' ⇒ *uéid-se- 'want to see'

*kel- 'hide' ⇒ *kíkl-h₂se- 'try to conceal'

Reduplication

Copy the onset of the root syllable and add *e or *i and prefix this to the root.

2b. Other secondary verb types: **denominal, deadjectival.** These are formed from nouns and adjectives and not from other verb stems.

demoninatives (verbs formed from nouns) in *-i-é-

*pórh₂-o- ‘passage, crossing’ ⇒ *porh₂e-ié- ‘bring across, convey’

statives (‘be X’) in *-éh₁- formed from the zero grade of ‘Caland’ roots

*h₁reud^h- ‘red’ ⇒ *h₁rud^h-éh₁- ‘be red’

factitives (‘cause to be X’) in *-eh₂- formed from adjectives

*néu-o- ‘new’ ⇒ *néu-eh₂- ‘make new, renew’

factitives (‘cause to be X’) in *-i-é- formed from adjectives

*prk-tó- ‘afraid’ ⇒ *prkto-ié- ‘frighten’

Inflectional categories of the verb

person:	1st, 2nd, 3rd
number:	singular, dual, plural
voice:	active, middle(-passive)
mood:	indicative, subjunctive, imperative, optative
tense:	present, imperfect, aorist, perfect (? + pluperfect, future)

Tense and Tense-Aspect Categories

The tense system of the PIE verb is an area of considerable debate and research.

Much of the literature (including Fortson’s description) relies on what we can call the ‘traditional’ classification based on four tenses: *present*, *imperfect*, *aorist*, and *perfect*, possibly supplemented by a *pluperfect* and maybe a *future*.

More recent work, taking into account the behavior of verbs in Anatolian languages, has suggested that the traditional names actually refer to combinations of *tense* properties and *aspect* properties.

Traditional and Revised Conception of PIE Tense/Aspect System

tense/aspect:	<i>traditional name</i>	<i>revised name</i>	
		(tense)	(aspect)
	present	present	imperfective
	imperfect	past	imperfective
	orist	(past)	perfective
	perfect	present	stative
	pluperfect	past	stative

Aspect and Aktionsart

Aspect refers to properties of a verb such as whether it refers, for example, to:

- a completed process or change of state *completive*
- a repeating process *iterative*
- an event at a point in time *punctual*
- an action taking place during an interval of time *durative*
- a static state-of-affairs true during some interval of time *stative*

The Slavic languages, for example, distinguish between two aspect types: *perfective* and *imperfective*

Perfective aspect

Perfective: the action is conceptualized as a whole: it occurred either at a single point in time ('punctual') or, if it occurred over an interval of time then that interval is complete ('completive').

Mary recited the Pledge of Allegiance. (completive → she has finished)

Nathaniel died. (punctual → he has died)

Zelda drank three beers. (completive → she finished them)

Imperfective aspect

Imperfective: the action is conceptualized not as a whole, but as a process which may or may not be complete ('continuative/durative'); if the process is instantaneous, then it occurs repeatedly or habitually ('iterative').

Mary recited the Pledge of Allegiance for an hour before she lost her voice. (iterative → she 'kept' doing it)

The airplane lands at 5 pm (habitual → the plane normally does this, over and over)

Nathaniel knew Latin in high school. (continuative: his knowledge of Latin continued during an interval of time; the interval may or may not have ended).

Zelda was drinking beer all morning. (durative: focus is on the process: no end state is entailed).

Differences between perfective/imperfective and imperfect/perfect

Note that the terms perfective and imperfective refer to aspect categories which refer to meaning; the terms 'perfect' and 'imperfect' refer effectively to form classes (ways of conjugating a verb).

In some languages the imperfect form is used to express an imperfective meaning but they are not identical.

Aktionsart: inherent aspect properties of verbs

Aktionsart refers to the type of action as determined by the meaning of the verb root itself. Some verb roots are 'inherently' punctual and others 'inherently' continuative:

John died. (→ punctual: it happened at 3:07 p.m.)

John knew Latin. (→ durative: it continued for 3 years)

Modifying Aktionsart through morphology or syntactic environment

It is important to realize that languages have means of changing the aspect that is implied by the Aktionsart of a verb root:

John was dying when the ambulance arrived.

Aktionsart: punctual

Progressive syntax: *was* __-ing → imperfective/durative

John was 'on his way to' death, but had not yet 'arrived'.

In Romance languages the use of a 'simple' past (i.e. not imperfect) form of a verb with

durative Aktionsart can give rise to an ‘inceptive’ meaning: the state/process of the verb begins at a certain point:

Quand Marie est arrivée, Jean a su qu'elle l'aimait.

When Marie is arrived, Jean has known that she him loved.

‘When Marie arrived, John realized that she loved him’

Here the verb savoir ‘to know’ is used in the perfect and entails that John’s knowing begins at a point in time: he *realizes* something.

Tense Stems

A **primary verb** could have up to three different stem forms used in different tenses. The names given to the stems differ in the ‘traditional’ vs. ‘derived’ systems of naming for the first two stem types. Stems also showed grade allomorphs used in different contexts.

	<i>traditional name</i>	<i>revised name</i>	<i>example: Root = *leik^w- ‘to leave’</i>
1.	‘present’ stem	‘imperfective’ stem	*li-ne-k ^w - ~ li-n-k ^w -
2.	‘aorist’ stem	‘perfective’ stem	*leik ^w ~ lik ^w -
3.	perfect stem	perfect stem	*le-loik ^w - ~ *le-leik ^w ~ *le-lik ^w -

For the root *leik^w- ‘to leave’, the perfective stem is formed from just the root, and appears sometimes in the e-grade and sometimes in the Ø-grade.

The imperfective stem is formed (for this root) by infixing *-ne-* immediately after the *nucleus of the zero-grade of the root*: *li-ne-k^w. This new stem then has its own full grade *linek^w- and zero-grade *link^w-

Finally, the perfect stem is formed by prefixing the onset of the root (= *l) plus *e to the o-grade of the root: *le-loik^w-. This stem also has an e-grade form *le-leik^w- and a zero-grade form *le-lik^w-.

This system of tense stems is preserved in a simplified form in many modern IE lgg.

English: *stink* (pres.), *stank* (preterite) *stunk* (pf. pple.)

Spanish: *ten-er/tien-e* (pres.), *tuv-o* (past)

French: *av-oir/av-ez* (pres.), *eu-t* (past)

Secondary verbs had only one stem in PIE, the ‘present’ (aka ‘imperfective’) stem.

Bare root stems and thematized root stems

As *leik^w- shows, some roots do not require any additional affix to become stems.

Some roots required only a **theme vowel** stem-formative in order to make a stem.

*h₂eĝ-e- 'to drive'

Alternation in the e/o theme vowel

The theme vowel varied in the verb according to the following rule:

*e appeared before obstruents (not including laryngeals), i.e. stops and *s

*o appeared everywhere else.

		later form	Latin	Spanish	French
*h ₂ eĝ-o-h ₂	'I am driving'	*aĝō	agō	-o	-e
*h ₂ eĝ-e-si	'you are driving'	*aĝesi	ages	-es	-s
*h ₂ eĝ-e-ti	'he or she is driving'	*aĝeti	agit	-e	-t
*h ₂ eĝ-o-mos	'we are driving'	*aĝomos	agimus	-emos	-ons
*h ₂ eĝ-e-te	'you (pl.) are driving'	*aĝete	agete	-ete	-ez
*h ₂ eĝ-o-nti	'they are driving'	*aĝonti	agent	-en	-ent

Relation of Aktionsart to tense/aspect category expressed by a root-stem.

In the case of *leik^w- the **root-stem is perfective** ('aorist'):

*leik^w-t means 'he or she left', not 'he or she is leaving' (imperfective).

For other roots, however, the root-stem is imperfective ('present'):

*uert-ti means 'he or she turns, is turning', not 'he or she turned' (perfective)

It has been suggested that the Aktionsart of a verb root in PIE determines whether its unaffixed root makes a present or aorist stem. This works some of the time, but not always, suggesting that the system may have been like this very early on but had become irregular by PIE.

Relation of stem formation to stem type

In late PIE — not including Anatolian and Tocharian — roots appear to have participated in a pattern of stem forms obeying the following generalizations:

single-stem verbs

1. If a root had only one tense/aspect stem, that stem was either a root stem or a thematized root stem. The single available stem could be any one of the tense/aspect types:

examples

- a. solely imperfective *h₂es-ti ‘is’, *ues-tor ‘is wearing’, *h₂eĝ-e-ti ‘is driving’
- b. solely perfective *b^húh₂-t ‘became’
- c. solely stative perfect *uóid-e ‘knows’ (‘has realized, has come to know’)

two- or three-stem verbs

2. If the root made two or three stems, either the imperfective or the perfective was a root stem or a thematized root stem; the other stems were not root stems or thematized root stems, but instead were formed with additional affixes.

basically imperfective

	impfv. stem	pfv. stem.	pf. stem
*deik-	déik-ti ‘is pointing out’	*dēik-s-t	—
*ueĝ ^h -	*ueĝ ^h -e-ti ‘is transporting’	*ueĝ ^h -s-t	—
*uert-	*uert(s)-ti ‘is turning around’	—	ue- <u>u</u> ort-e

basically perfective

	impfv. stem	pfv. stem.	pf. stem
*d ^h eh ₁ -	*d ^h é-d ^h eh ₁ -ti	*d ^h éh ₁ -t 'put'	—
*steh ₂ -	*stí-steh ₂ -ti	*stéh ₂ -t 'stood up'	*ste-stóh ₂ -e
*telh ₂ -	*t _{l̥} -né-h ₂ -ti	*telh ₂ -t 'lifted'	*te-tólh ₂ -e
*g ^w em-	*g ^w m̥-ské-ti	*g ^w ém-t 'stepped'	*g ^w e-g ^w óm-e
*sed-	*si-sd-é-ti	*séd-t 'sat down'	—
*ġenh ₁ -	*ġnh ₁ -ié-tor	*ġnh ₁ -tó 'was born'	*ġe-ġónh ₁ -e
*h ₂ nek-	—	*h ₂ nék-t 'reached'	*h ₂ eh ₂ nók-e

Stem formation processes

PIE roots formed verbal stems through various processes. These are shown below with their traditional names (O = copy of the root onset)

Present (= Impfv.) or Aorist (= Pfv.)	prefix	grade	suffix
1a. full grade root present		é ~ Ø	
1b. extended grade root present (Narten present)		é̃ ~ é	
1c. full grade 'stative' root present		é	
1d. full grade root aorist		é ~ Ø	
1e. zero grade root aorist		Ø	
2a. simple thematic present		é	-e- (~ -o-)
2b. simple thematic aorist		Ø	-é- (~ -ó-)

Only Present (= Impfv.)

	prefix	grade	suffix
3. e-reduplicated athematic present	Oé-	e ~ Ø (or o ~ Ø)	
4. i-reduplicated athematic present	Oí-	e ~ Ø	
5. i-reduplicated thematic present	Oí-	Ø	-e- (~ -o-)
6. nasal-infixed present		Ø (with -né- ~ -n-)	
7. s ^h ke-present		Ø	-s ^h k-é- (~ -s ^h k-ó-)
8. (accented root) ye/yo-present		é	-i̇-e- (~ i̇-o-)
9. (unaccented root) yé/yó-present		Ø	-i̇-é- (~ i̇-ó-)
10. nu-presents		Ø	-néu- (~ -nu-)
11. sigmatic present (or se-present)		é	-s-e- (~ -s-o-)

Only Aorist (= Pfv.)

	prefix	grade	suffix
12. sigmatic aorist (or s-aorist)		é ~ é	-s-
13. (e-)reduplicated thematic aorist	Oé-	Ø	-e- (~ -o-)

Only Perfect (= Stative Perfect)

	prefix	grade	suffix
14. root perfect		ó ~ Ø	
15. reduplicated perfect	Oe-	ó ~ Ø	

Type 14 is rare (only one known example); Type 15 is the normal perfect type.

Examples of the stem types

Present (= Impfv.) or Aorist (= Pfv.)

1a. full grade root present	*h ₁ és-	‘be’
1b. extended grade ‘Narten’ present	*h ₁ éd-	‘be eating, eat’
1c. full grade ‘stative’ root present	*k ^h éi-	‘be lying (somewhere)’
1d. full grade root aorist	*g ^w em-	‘stepped’
1e. zero grade root aorist	*b ^h uh ₂ -	‘become’
2a. simple thematic present	*b ^h ér-e-	‘carry’ (= ‘be carrying’)
2b. simple thematic aorist	*h ₁ lud ^h -é-	‘arrived’

(type 2b was *very rare* in early PIE: 1d and 12 were the normal aorist types)

(type 1e is disputed)

Only Present (= Impfv.)

3. e-reduplicated athematic present	*d ^h é-d ^h eh ₁ -	‘be putting’
4. i-reduplicated athematic present	*stí-steh ₁ -	‘be getting to one’s feet’
5. i-reduplicated thematic present	*sí-sd-e-	‘be sitting down’
6. nasal-infixed present	*li-né-k ^w -	‘be leaving’
7. s ^h ke-present	*pr ^h k-s ^h k-é-	‘keep asking’
8. (accented root) ye/yo-present	*g ^{wh} éd ^h -i _̄ -e-	‘keep asking for’
9. (unaccented root) yé/yó-present	*ur̥g̥-i _̄ -é-	‘be working’
10. nu-presents	*t _ṇ -néu-	‘be stretching’
11. s-present	*h ₂ lék-s-e-	‘protect’ (= ‘be protecting’)

Type 11 is rare and disputed.

Only Aorist (= Pfv.) (both types rare in *early* PIE)

12. sigmatic aorist (or s-aorist) * $\text{u}_\text{e}^{\text{h}}\text{g}^{\text{h}}\text{-s-}$ ‘transported in a vehicle’

13. (e-)reduplicated thematic aorist * $\text{u}_\text{e}\text{-u}_\text{k}^{\text{w}}\text{-e-}$ ‘said’ (> * $\text{u}_\text{e}\text{u}_\text{k}\text{-e-}$)

Only Perfect (= Stative Perfect)

14. root perfect * $\text{u}_\text{o}\text{i}\text{d-}$ ‘know’ (< ‘have realized’)

15. reduplicated perfect * $\text{me-m}\text{o}\text{n-}$ ‘remember’ (< ‘have had come to mind’)

* $\text{u}_\text{o}\text{id-}$ is the only known example of type 14.

Voice

Voice is a complicated matter in PIE.

Distinguish syntactic/semantic categories vs. form-classes.

syntactic category:

the function a word has in a sentence, e.g. subject, object, indirect object

semantic category: the role assigned to a participant in the action:

actor, patient, ‘affected one’, recipient/goal

form-class: a particular way of conjugating a verb

It is fairly evident that PIE had two basic form-classes for verbs.

Form Class/Conjugation I: Usually called ‘active’ conjugation: if the verb is transitive it agrees with the subject; if the verb is intransitive the subject is an ‘actor’.

Form Class/Conjugation II: Usually called ‘medio-passive’ conjugation. If the verb is intransitive the subject is a ‘patient’ (‘passive’ or ‘unaccusative’), or the subject is both actor and patient (‘reflexive’) or the subject is both an actor and an ‘affected participant’ (‘middle’).

Form Class I:

Gk *paideú-ō* 'I teach' (active: 'I am doing some teaching')

Form Class II:

Gk *paideú-omai* 'I am taught' (passive)
'I teach myself' (reflexive)
'I do something such that I am affected by the teaching but not myself taught', e.g. 'I have (my children) educated)' (middle)

These are the ordinary correlations between conjugation classes and meanings, but there are many cases that don't work quite this way.

For example, for some verbs the 'medio-passive' conjugation expresses an ordinary 'active' syntax/meaning, sometimes (but not always) as well as the meanings usually associated with the medio-passive conjugation:

Gk *dérk-omai* 'I see (something)'
L *sequ-or* 'I follow (someone)'

Some verbs never conjugate in form class I. These are called 'middle' verbs or 'deponents'. Some verbs conjugate in one class in one tense but in another class in another tense:

Gk *baí-n-ō* 'I step, go, come' ('active' conjugation)
bé-s-omai 'I will step, go, come' ('middle' conjugation)
bé-bē-k-a 'I have stepped, gone, come' ('active' conjugation)

L *aud-ē-ō* 'I dare' ('active' conjugation)
aus-us sum 'I dared' ('passive' conjugation)

Indo-Europeanists often speak of an 'active' stem and a 'middle' stem form of a verb. It is important to remember that these forms do not always correspond neatly to the meanings one might normally expect active and passive verbs to have.

Inflection for mood

The indicative mood required no special additional marking, but the subjunctive and optative were formed with stems built from the indicative stems in fairly simple ways.

Subjunctive stem =

Full grade of indicative stem + thematic vowel *-e- (~ *-o-)

☞ If the indicative stem was already thematic, then the theme vowel is doubled and become long.

Optative stem = (for *athematic* indicative stems)

Zero grade of indicative stem + optative suffix *-iéh₁- (~ *-ih₁-)

Optative stem = (for *thematic* indicative stems)

Full grade of indicative stem + -i- (or -ih₁ in the 1sg and 3pl active)

Example of a stem system:

	full grade	zero grade
PS = 'Present' Stem (= imperfective stem)	li-né-k ^w -	li-n-k ^w -
PSS = 'Present' Subjunctive Stem	li-né-k ^w -e-	
POS = 'Present' Optative Stem	li-n-k ^w -iéh ₁ -	li-n-k ^w -ih ₂ -
AS = 'Aorist' Stem (= perfective stem)	léik ^w -	lik ^w -
ASS = 'Aorist' Subjunctive Stem	léik ^w -e-	
AOS = 'Aorist' Optative Stem	lik ^w -iéh ₁ -	lik ^w -ih ₁ -
PfS = Perfect Stem	le-loik ^w -	le-lik ^w -
PfSS = Perfect Subjunctive Stem	le-léik ^w -e-	
PfOS = Perfect Optative Stem	le-lik ^w -iéh ₁ -	le-lik ^w -ih ₁ -

Example with a thematic stem:

PS = 'Present' Stem (= imperfective stem)	b ^h ér-e-
PSS = 'Present' Subjunctive Stem	b ^h ér-e-e- (= b ^h ér-ē-)
POS = 'Present' Optative Stem	b ^h ér-o-i(h ₁)-

Note that the theme vowel is always -o- before the optative suffix -i(h₁) since the suffix begins with a resonant.

Person-number-voice agreement endings (desinences)

The agreement endings are divided into two classes: *primary* and *secondary*. There is also a set of *perfect* endings which are used only with the (stative) perfect stem. They resemble but are not quite identical to the secondary endings.

1A Primary endings (active conjugation class)

2A Secondary endings (active conjugation class)

1M Primary endings (middle conjugation class)

2M Secondary endings (middle conjugation class)

Pf Perfect endings (perfect conjugation class)

Forms in [] differ from or are additional to Fortson's and are from Don Ringe's *From PIE to Proto-Germanic*. (Ringe's accentuation is added without comment, however):

	1A	2A	1M	2M	Pf
sg	1 *-m-i/*-h ₂	*-m	*-h ₂ é-r ~ *-h ₂ é-i	*-h ₂ é	*-h ₂ e
	2 *-s-i	*-s	*-th ₂ é-r ~ *-th ₂ é-i	*-th ₂ é	-th ₂ e
	3 *-t-i	*-t	*-ó-r, -tó-r ~ *-tó-i	*-ó, -tó	*-e
du	1 [*-uós]	[*-ué]	[*-uós-d ^h h ₂]	[*-ué-d ^h h ₂]	*-ué
	2 [*-tés]	[*-tóm]	?	?	?
	3 [*-tés]	[*-tám]	?	?	?
pl	1 [*-mós]	[*-mé]	[*-mós-d ^h h ₂]	[*-mé-d ^h h ₂]	*-mé
	2 *-te	[*-té]	[*-d ^h h ₂ ué]	[*-d ^h h ₂ ué]	*-é
	3 *-ént-i/*-nt-i	*-ént/*-nt (→ *-énd/*-nd)	-ró-r, -ntó-r ~ -ntó-i	*-ró, *-ntó	*-ér (< *-érs)

With indications of syllabification and laryngeal coloring, etc.

	1A	2A	1M	2M	perf.
sg	1 *-mi/*-h ₂	*-m/*-m̥	*-h ₂ ár ~ *-h ₂ ái	*-h ₂ á	*-h ₂ a
	2 *-si	*-s	*-th ₂ ár ~ *-th ₂ ái	*-th ₂ á	*-th ₂ a
	3 *-ti	*-t	*-(t)ór ~ -tói	*-tó	*-e
du	1 *-uós	*-u _̊ é	*-u _̊ ózd ^h h ₂	*-u _̊ éd ^h h ₂	*-u _̊ é
	2 *-tés	*-tóm			
	3 *-tés	*-tám			
pl	1 *-mós	*-mé	*-mózd ^h h ₂	*-méd ^h h ₂	*-mé
	2 *-te	*-té	*-d ^h h ₂ u _̊ é	*-d ^h h ₂ u _̊ e	*-é
	3 *-énti/*-nti/ *-nti	*-ént/*-nt/ *-nt	-ró-r, -ntór/ -ntór (~ *ntói)	*-ro, *-nto/ *-nto	*-ér

Some examples of the development of the endings in various PIE lgg.

		1A				
		PIE	Vedic	OCS	Gk	L H
sg	1	*-mi/*-h ₂	-mi	*-n	-mi	-m/-ō -mi
	2	*-si	-si	-ji	-(s)i	-s -ti
	3	*-ti	-ti	-tŭ	-ti	-t -tsi (< -ti)
du	1	*-uós	-vás	-wě		
	2	*-tés	-t ^h ás	-ta	-ton	
	3	*-tés	-tás	-te	-ton	
pl	1	*-mós	-más(i)	-mŭ	-men (Dor -mes)	-mus -weni
	2	*-te	-t ^h á	-te	-te	-tis -teni
	3	*-énti/*-nti/ *-nti	-ánti	*-ntŭ	:-si (Dor -nti)	-(u)nt -antsi (< -anti)

		2A			
		PIE	Vedic	Gk	H
sg	1	*-m/*-m̥	-m	-n	-un
	2	*-s	-s	-s	-s
	3	*-t	-t	-∅	-t(a)
du	1	*-uḗ	-va		
	2	*-tóm	-tam	-ton	
	3	*-tám	-tām	-tēn	
pl	1	*-mé	-ma	-men	-wen
	2	*-té	-ta	-te	-ten
	3	*-ént/*-nt/*-nt	-n	-n	-ir/-ēr

		1M					
		PIE	Vedic	Gk	Latin	TA	H
sg	1	*-h ₂ ár ~ *-h ₂ ái	-āi	-mai	-or/-r	-mār	-ḥḥar-i
	2	*-th ₂ ár ~ *-th ₂ ái	-sāi	-ai (< -sai)	-ris/-re	-tār	-tat-i
	3	*-tór ~ *-toi	-tāi	-tai	-tur	-tār	-tar-i
du	1	*-uózd ^h h ₂	-vahāi	-met ^h on			
	2	?	-t ^h āi	-st ^h on			
	3	?	-tāi	-st ^h on			
pl	1	*-mózd ^h h ₂	-mahāi	-met ^h a	-mur	-āmtār	-wastat-i
	2	*-d ^h h ₂ u _̄ é	-d ^h vāi	-st ^h e	-minī	-cār	-tumar-i
	3	-rór, -ntór/-ntói	-ntāi	-ntai	-(u)ntur	-āntār	-antar-i

		2M				
		Skt	Gk	TB	H	
sg	1	*-h ₂ á	-āi	-mēn (< -mān)	-mai	OH -ḥḥa-ri
	2	*-th ₂ á	-t ^h ās	-(s)o	-tai	-ta
	3	*-tó	-ta	-to	-te	-ta
du	1	*-uéd ^h h ₂	-vahi			
	2	?	-t ^h ām	-st ^h on		
	3	?	-tām	-st ^h ēn (< -st ^h ān)		
pl	1	*-méd ^h h ₂	-mahi	-met ^h a	-mt(t)e	-wasta
	2	*-d ^h h ₂ u _̄ e	-d ^h vam	-st ^h e	-t	-tuma
	3	*-ro, *-nto/*-ṅto	-nta	-nto	-nte	-anta

Endings matched with stems in the tense/aspect/mood categories

Traditional Name →	active	middle	perfect	
	class I	class II	perfect	← alternative Name
present indicative	PS + 1A	PS + 1M	—	pres. imperfective indic.
imperfect indicative	PS + 2A	PS + 2M	—	past imperfective indic.
aorist indicative	AS + 2A	AS + 2M	—	perfective indic.
perfect indicative	—	—	PfS + Pf	stative indic.
present subjunctive	PSS + 1A	PSS + 1M	—	imperfective subj.
aorist subjunctive	ASS + 1A	ASS + 1M	—	perfective subj.
perfect subjunctive	—	—	PfSS + 1A	stative subj.
present optative	POS + 2A	POS + 2M	—	imperfective optative
aorist optative	AOS + 2A	AOS + 2M	—	perfective optative
perfect optative	—	—	PfOS + 2A	stative optative

Development of the Moods in various Branches

The PIE optative survived as such in Greek and Indo-Iranian; it developed into forms called ‘subjunctive’ in Latin and Germanic; it disappeared in Celtic.

The PIE subjunctive survived in Indo-Iranian, Greek and Celtic; it developed into a future in Latin; and disappeared in the other branches.

	PIE subjunctive	PIE optative
Anat.	—	—
Toch.B	subjunctive/future/optative	imperfect
Gmc.	—	‘subjunctive’
Celt.	subjunctive	—
Latin	future	‘subjunctive’
BSl	—	imperative (Slavic)
IIr	subjunctive	optative
Gk	subjunctive	optative

☞ In Italo-Celtic the optative formed from thematic indicative stems *replaced* the theme vowel with *-ā- instead of adding *-ī- to the theme, as in the rest of the late PIE branches.

The Italo-Celtic optative became the ‘subjunctive’ of Latin and its Romance descendants, and the indicative *-e/o- vs. optative *-ā- theme vowel eventually gave rise to the difference in vowel endings in the indicative and subjunctive in Italian and Spanish. This is seen clearly in the *-er* and *-ir* infinitive verbs in Spanish:

	‘eat’	‘live’	
3sg pres. indicative	com + e	viv + e	e < *e-ti
3sg pres. subjunctive	com + a	viv + a	a < *ā-t

Example conjugations

'Active' conjugation

Indicative Imperfective present and past (= traditional 'present' and 'imperfect')

Present imperfective ('present') active indicative

	h_1 es- 'be'	li-né-k ^w - 'be leaving'	b ^h ér-e- 'carry'
1sg	h_1 és-mi	li-né-k ^w -mi	b ^h ér-o-h ₂
2sg	h_1 és-si (→ h_1 és-i)	li-né-k ^w -si	b ^h ér-e-si
3sg	h_1 és-ti	li-né-k ^w -ti	b ^h ér-e-ti
1du	h_1 s-uós	li-n-k ^w -uos (→ li-n-k-uos)	b ^h ér-o-uos
2du	h_1 s-tés	li-n-k ^w -tés	b ^h ér-e-tes
3du	h_1 s-tés	li-n-k ^w -tés	b ^h ér-e-tes
1pl	h_1 s-mós	li-n-k ^w -mós	b ^h ér-o-mos
2pl	h_1 s-té	li-n-k ^w -té	b ^h ér-e-te
3pl	h_1 s-énti	li-n-k ^w -énti	b ^h ér-o-nti

Past imperfective ('imperfect') active indicative

	h_1 es- 'be'	li-né-k ^w - 'be leaving'	b ^h ér-e- 'carry'
1sg	h_1 és-m	li-né-k ^w -m	b ^h ér-o-m
2sg	h_1 és-s (→ h_1 és)	li-né-k ^w -s	b ^h ér-e-s
3sg	h_1 és-t	li-né-k ^w -t	b ^h ér-e-t (→ b ^h éred)
1du	h_1 s-ué	li-n-k ^w -ué (→ li-n-k-ué)	b ^h ér-o-ue
2du	h_1 s-tóm	li-n-k ^w -tóm	b ^h ér-e-tom
3du	h_1 s-tám	li-n-k ^w -tám	b ^h ér-o-tám
1pl	h_1 s-mé	li-n-k ^w -mé	b ^h ér-o-me
2pl	h_1 s-té	li-n-k ^w -té	b ^h ér-e-te
3pl	h_1 s-ént (→ h_1 sénd)	li-n-k ^w -ént (→ link ^w énd)	b ^h ér-o-nt (→ b ^h éronnd)

Imperfective (= 'present') subjunctive active

	h_1es-e 'be'	$li-né-k^w-$ 'be leaving'	$b^hér-e-e-$ 'carry'
1sg	$h_1és-o-h_2$	$li-né-k^w-o-h_2$	$b^hér-o-o-h_2 \rightarrow b^hérōh_2$
2sg	$h_1és-e-si$	$li-né-k^w-e-si$	$b^hér-e-e-si \rightarrow b^hérēsi$
3sg	$h_1és-e-ti$	$li-né-k^w-e-ti$	$b^hér-e-e-ti \rightarrow b^hérēti$
1du	$h_1és-o-uos$	$li-n-k^w-o-uos$	$b^hér-o-o-uos \rightarrow b^hérōuos$
2du	$h_1és-e-tes$	$li-n-k^w-e-tes$	$b^hér-e-e-tes \rightarrow b^hérētes$
3du	$h_1és-e-tes$	$li-n-k^w-e-tes$	$b^hér-e-e-tes \rightarrow b^hérētes$
1pl	$h_1és-o-mos$	$li-n-k^w-o-mos$	$b^hér-o-o-mos \rightarrow b^hérōmos$
2pl	$h_1és-e-te$	$li-n-k^w-e-te$	$b^hér-e-e-te \rightarrow b^hérēte$
3pl	$h_1és-o-nti$	$li-n-k^w-o-nti$	$b^hér-o-o-nti \rightarrow b^hérōnti$

Imperfective (= 'present') optative active

	$h_1s-iéh_1-$ 'be'	$li-n-k^w-ǰéh_1-$ 'be leaving'	$b^hér-e-$ 'carry'
1sg	$h_1s-iéh_1-m$	$li-n-k^w-ǰéh_1-m$	$b^hér-o-ih_1-m$
2sg	$h_1s-iéh_1-s$	$li-n-k^w-ǰéh_1-s$	$b^hér-o-i-s$
3sg	$h_1s-iéh_1-t$	$li-n-k^w-ǰéh_1-t$	$b^hér-o-i-t \rightarrow (b^héroïd)$
1du	$h_1s-ih_1-ué$	$li-n-k^w-ih_1-ué$	$b^hér-o-i-ue$
2du	$h_1s-ih_1-tóm$	$li-n-k^w-ih_1-tóm$	$b^hér-o-i-tom$
3du	$h_1s-ih_1-tám$	$li-n-k^w-ih_1-tám$	$b^hér-o-i-tam$
1pl	$h_1s-ih_1-mé$	$li-n-k^w-ih_1-mé$	$b^hér-o-i-me$
2pl	$h_1s-ih_1-té$	$li-n-k^w-ih_1-té$	$b^hér-o-i-te$
3pl	$h_1s-ih_1-ént$	$li-n-k^w-ih_1-ént$	$b^hér-o-ih_1-ent$
	($\rightarrow h_1sih_1énd$)	($\rightarrow link^wih_1énd$)	($\rightarrow b^héroih_1end$)

Perfective ('aorist') active

	indicative	subjunctive	optative
	léik ^w - 'left'	léik ^w -e-	lik ^w -ieh ₁ -
1sg	léik ^w -m	léik ^w -o-h ₂	lik ^w -ieh ₁ -m
2sg	léik ^w -s	léik ^w -e-si	lik ^w -ieh ₁ -s
3sg	léik ^w -t	léik ^w -e-ti	lik ^w -ieh ₁ -t
1du	lik ^w -ué (→ likué)	léik ^w -o-uos	lik ^w -ih ₁ -ué
2du	lik ^w -tóm	léik ^w -e-tes	lik ^w -ih ₁ -tóm
3du	lik ^w -tám	léik ^w -e-tes	lik ^w -ih ₁ -tám
1pl	lik ^w -mé	léik ^w -o-mos	lik ^w -ih ₁ -mé
2pl	lik ^w -té	léik ^w -e-te	lik ^w -ih ₁ -té
3pl	lik ^w -ént (→ lik ^w énd)	léik ^w -o-nti	lik ^w -ih ₁ -ént (→ lik ^w ih ₁ énd)

Stative Perfect

	indicative	subjunctive	optative
	le-lóik ^w - 'have left'	le-léik ^w -e-	le-lik ^w -iéh ₁ -
1sg	le-lóik ^w -h ₂ e	le-léik ^w -o-h ₂	le-lik ^w -ieh ₁ -m
2sg	le-lóik ^w -th ₂ e	le-léik ^w -e-si	le-lik ^w -ieh ₁ -s
3sg	le-lóik ^w -e	le-léik ^w -e-ti	le-lik ^w -ieh ₁ -t
1du	le-lik ^w -ué (→ lelikué)	le-léik ^w -o-uos	le-lik ^w -ih ₁ -ué
2du	?	le-léik ^w -e-tes	le-lik ^w -ih ₁ -tóm
3du	?	le-léik ^w -e-tes	le-lik ^w -ih ₁ -tám
1pl	le-lik ^w -mé	le-léik ^w -o-mos	le-lik ^w -ih ₁₂ -mé
2pl	le-lik ^w -é	le-léik ^w -e-te	le-lik ^w -ih ₁ -té
3pl	le-lik ^w -ér	le-léik ^w -o-nti	le-lik ^w -ih ₁ -ént (→ le-lik ^w -ih ₁ -énd)

'Middle-passive' conjugation

Indicative Imperfective present and past (= traditional 'present' and 'imperfect')

Present imperfective ('present') middle indicative

	li-né-k ^w - 'be leaving'	b ^h ér-e- 'carry'
1sg	li-n-k ^w -h ₂ éi (~ -h ₂ ér)	b ^h ér-o-h ₂ ei (~ -o-h ₂ er)
2sg	li-n-k ^w -th ₂ éi (~ -th ₂ ér)	b ^h ér-e-th ₂ ei (~ -e-th ₂ er)
3sg	li-n-k ^w -tói ~ li-n-k ^w -tór	b ^h ér-e-toi ~ b ^h ér-e-tor
1du	li-n-k ^w -uósd ^h h ₂ (→ linkuozd ^h h ₂)	b ^h ér-o-uosdh ₂
2du	??	??
3du	??	??
1pl	li-n-k ^w -mósd ^h h ₂	b ^h ér-o-mosdh ₂
2pl	li-n-k ^w -d ^h h ₂ ué	b ^h ér-e-d ^h h ₂ ue
3pl	li-n-k ^w -ntói (~ -ntor)	b ^h ér-o-ntoi (~ -o-ntor)

Past imperfective ('imperfect') middle indicative

	li-né-k ^w - 'be leaving'	b ^h ér-e- 'carry'
1sg	li-n-k ^w -h ₂ é	b ^h ér-o-h ₂
2sg	li-n-k ^w -th ₂ é	b ^h ér-e-th ₂ e
3sg	li-n-k ^w -tó	b ^h ér-e-to
1du	li-n-k ^w -uéd ^h h ₂ (→ linkuéd ^h h ₂)	b ^h ér-o-ued ^h h ₂
2du	??	??
3du	??	??
1pl	li-n-k ^w -méd ^h h ₂	b ^h ér-o-med ^h h ₂
2pl	li-n-k ^w -d ^h h ₂ ué	b ^h ér-e-d ^h h ₂ ue
3pl	li-n-k ^w -ntó	b ^h ér-o-nto

Imperfective (= 'present') subjunctive middle

	li-né-k ^w - 'be leaving'	b ^h ér-e- 'carry'
1sg	li-né-k ^w -o-h ₂ ei (~ -h ₂ er)	b ^h ér-o-o-h ₂ ei → b ^h érōh ₂ ei
2sg	li-né-k ^w -e-th ₂ ei (~ -th ₂ er)	b ^h ér-e-e-th ₂ ei → b ^h érēth ₂ ei
3sg	li-né-k ^w -e-toi ~ li-né-k ^w -e-tor	b ^h ér-e-e-toi → b ^h érētoi ~ b ^h ér-e-e-tor → b ^h érētor
1du	li-né-k ^w -o-uosd ^h h ₂	b ^h ér-o-o-uosd ^h h ₂ → b ^h érōuosd ^h h ₂
2du	??	??
3du	??	??
1pl	li-né-k ^w -o-mosd ^h h ₂	b ^h ér-o-o-mosd ^h h ₂ → b ^h érōmosd ^h h ₂
2pl	li-né-k ^w -e-d ^h h ₂ ue	b ^h ér-e-e-d ^h h ₂ ue → b ^h érēd ^h h ₂ ue
3pl	li-né-k ^w -o-ntoi	b ^h ér-o-o-ntoi → b ^h érōntoi

Imperfective (= 'present') optative middle

	li-n-k ^w -ih ₁ - 'be leaving'	b ^h ér-o-i- 'carry'
1sg	li-n-k ^w -ih ₁ -h ₂ é	b ^h ér-o-i-h ₂ e
2sg	li-n-k ^w -ih ₁ -th ₂ é	b ^h ér-o-i-th ₂ e
3sg	li-n-k ^w -ih ₁ -tó	b ^h ér-o-i-to
1du	li-n-k ^w -ih ₁ -uéd ^h h ₂	b ^h ér-o-i-ued ^h h ₂
2du	??	??
3du	??	??
1pl	li-n-k ^w -ih ₁ -méd ^h h ₂	b ^h ér-o-i-med ^h h ₂
2pl	li-n-k ^w -ih ₁ -d ^h h ₂ ué	b ^h ér-o-i-d ^h h ₂ ue
3pl	li-n-k ^w -ih ₁ -ró	b ^h ér-o-i-ro

Past perfective ('aorist') middle

	indicative	subjunctive	optative
	léik ^w - 'left'	léik ^w -e-	lik ^w -ih ₁ -
1sg	lik ^w -h ₂ é	léik ^w -o-h ₂ ei (~ -o-h ₂ er)	lik ^w -ih ₁ -h ₂ é
2sg	lik ^w -th ₂ é	léik ^w -e-th ₂ ei (~ -e-th ₂ er)	lik ^w -ih ₁ -th ₂ é
3sg	lik ^w -tó	léik ^w -e-toi ~ léik ^w -e-tor	lik ^w -ih ₁ -tó
1du	lik ^w -uéd ^h h ₂ (→ likuéd ^h h ₂)	léik ^w -o-uosd ^h h ₂	lik ^w -ih ₁ -ued ^h h ₂
2du	??	?	?
3du	??	?	?
1pl	lik ^w -méd ^h h ₂	léik ^w -o-mosd ^h h ₂	lik ^w -ih ₁ -médh ₂
2pl	lik ^w -d ^h h ₂ ué	léik ^w -e-d ^h h ₂ ue	lik ^w -ih ₁ -d ^h h ₂ ue
3pl	lik ^w -ntó	léik ^w -o-ntoi (~ -o-ntor)	lik ^w -ih ₁ -ró

Additional verbal categories

1. Participle

There were both active and middle-passive participles for both the imperfective ('present') and perfective ('aorist'). In addition the stative perfect also had its own participle:

	active	middle-passive	stative
imperfective ('present')	*-ónt- ~ *-nt-	*-mh ₁ nó-	
perfective ('aorist')	*-ónt- ~ *-nt-	*-mh ₁ nó-	
perfect stative			*-uos- ~ *-us-

Examples of participles

*h ₁ sónt- ‘being’ (no pfv.)	(no mid.)	(no pf.)
*li-n-k ^w -ónt- ‘leaving’	*li-n-k ^w -mh ₁ nó- ‘being left’	
*lik ^w -ónt- ‘having left’	*lik ^w -mh ₁ nó- ‘having been left’	*lelik ^(w) -uós- ‘left’
*d ^h éd ^h h ₁ -nt- ‘putting’	*d ^h éd ^h h ₁ -mh ₁ nó- ‘being put’	
*d ^h h ₁ -ónt- ‘having put’	*d ^h h ₁ -mh ₁ nós ‘having been put’	(no pf.)
*g ^w msk̂-ónt- ‘walking’	(no mid.)	
*g ^w m-ónt- ‘having stepped’	(no mid.)	*g ^w eg ^w m-uós- ‘having the feet in place’

2. Imperative

PIE formed imperative verbs for all 2nd and 3rd person categories in all the tense/aspect stems.

The 3rd person forms had meanings like ‘let him/her (do X)’, or ‘may he/she (do X)’.

In general the imperative was the same as the *secondary endings* (2A and 2M above) for the 2nd and 3rd person dual and 2nd person plural. Thus only the 2nd and 3rd person singular and 3rd person plural had separate imperative forms. Only the active imperatives are reconstructable; the middle imperatives cannot be reconstructed with the available data.

	active	
2nd sg	-Ø or -d ^h í	
3rd sg	-t-u (or ? *t-ou)	
3 pl	*-ént-u ~ *-nt-u (or ? *ént-ou ~ -nt-ou)	

Examples:	*h ₁ és or *h ₁ sd ^h í	‘be thou!’
	*h ₁ és-tu	‘let him/her be, may he/she be!’
	*h ₁ s-éntu	‘let them be, may they be!’
	*linék ^w or link ^h í	‘be leaving!’
	*linék ^w -tu	‘may he/she be leaving!’
	*link ^w -éntu	‘may they be leaving!’
	*léik ^w or *likd ^h í	‘leave!’
	*léik ^w -tu	‘may he/she leave!’
	*lik ^w -éntu	‘may they leave!’
	*lelik ^w -d ^h í	‘may he/she have left!’

Greek alphabet

short vowels		long vowels	
ι [i]	υ [y]	ῑ [ī]	ῡ [ȳ]
ε [e]	ο [o]	εῖ [ē]	οῦ [ō]
		ἦ [ē̄]	ῶ [ō̄]
	α [a]		ᾶ [ā]
diphthongs			
υι [i̯i]			
εῖ [e̯i]	εῦ [e̯u]	οῖ [o̯i]	
		ἦ [ē̯i]	ἦυ [ē̯u]
		ῶ [ō̯i]	ῶυ [ō̯u]
	αῖ [a̯i]		

Note that the glide [i̯] after a long vowel is usually written as a little iota below the vowel. This is called the *iota subscript*.

Two facts prevent the interpretation of Greek spelling from being completely straightforward.

(1) In ordinary Greek spelling [i, ī] [y, ȳ] and [a, ā] are not distinguished. In linguistic works the macron is sometimes written to show the long vowel: \bar{i} , \bar{v} , \bar{a} . Occasionally you may also see the ‘breve’ sign to indicate the short vowel: \check{i} , \check{v} , \check{a} .

(2) In ‘classical’ Attic (late 5th century BCE) the spelling $\epsilon\iota$ represented a diphthong [ē̄] (which later changed to [ī] by the end of Hellenistic times).

However, this [ē̄] originated from two distinct sources from earlier Greek: *ē̄ (sometimes written ϵ in early Attic inscriptions) and *e̯i. After [ē̄] and [e̯i] merged in pronunciation they were both written $\epsilon\iota$.

When Greek is transliterated, $\epsilon\iota$ is normally written ei, but this could in principle mean either /ē̄/ or /e̯i/. When $\epsilon\iota$ represents original /ē̄/ it is called a ‘spurious’ diphthong, and when it represents original /e̯i/ it is called a ‘genuine’ diphthong.

Exactly the same is true for $\omicron\upsilon$, when can represent original /ō̄/ or /ou̯/. Both came to be pronounced /u:/ in the Hellenistic period and were written identically.

Consonants

π [p]	τ [t]	κ [k]
ϕ [p ^h]	θ [t ^h]	χ [k ^h]
β [b]	δ [d]	γ [g]
	σ [s]	
μ [m]	ν [n]	
	λ [l]	
	ρ [r]	
	$\rho^{\acute{}}$ [r ^h]	

ψ [ps] ζ [sd] ξ [ks] letters denoting segment sequences

Accent marks

Conventionally written Greek has three accent marks which may appear over letters representing vowels or diphthongs (sequences of vowel plus glide). When a diphthong is accented the mark appears over the letter representing the glide portion of the diphthong.

The **acute** accent [´] appears on diphthongs or short or long vowels. It probably represented a rising or sustained high tone.

The **circumflex** accent [ˆ] (also written [˘]) is written only on diphthongs or long vowels. It probably represented a falling tone.

The **grave** accent [˘] is a variant of the acute accent. A word which by itself would have an acute accent on its final syllable changes its accent to a grave if it is followed by another accented word in the sentence.

Examples:

$\acute{\alpha}$ [á] or [á:]	(length is not normally written in Greek)
$\hat{\alpha}$ [â:]	(the α must be long since the circumflex goes only on long vowels)
$\alpha\acute{\iota}$ [á̇i]	(the α must be short since if it were long the ι would be subscript)
$\hat{\alpha}\hat{\iota}$ [á̇i̇]	id.
$\acute{\alpha}\acute{\iota}$ [á̇i̇]	(the α is long because the iota is written subscript)
$\hat{\alpha}\hat{\iota}$ [á̇i̇]	id.

Breathings

In addition to accent marks, *word-initial* vowel letters also have marks to indicate so-called ‘breathings’. The ‘smooth breathing’, written [˘], indicates a plain vowel; the ‘rough breathing’, written [῀], indicates that the word begins with [h]:

ἔ [e] ἔ [he]

When breathings are combined with accents the breathing mark is placed to the left of an acute or grave accent but below a circumflex.

ἔ́ [é] ἤ́ [é:] ἤ́῀ [hé:]
 ἔ̀ [hé] ἤ̀ [ê:] ἤ̀῀ [hê:]

	phonetic	transliteration			
<i>α</i>	[a]	a	<i>μ</i>	[m]	m
<i>ᾱ</i>	[ā]	a or ā or a:	<i>ν</i>	[n]	n
<i>αι</i>	[ai]	ai	<i>ξ</i>	[ks]	ks or x
<i>ᾶ</i>	[āi]	ai or āi or a:i	<i>ο</i>	[o]	o
<i>β</i>	[b]	b	<i>οι</i>	[oi]	oi
<i>γ</i>	[g]	g	<i>ου</i>	[ō]	ou
<i>δ</i>	[d]	d	<i>π</i>	[p]	p
<i>ε</i>	[e]	e	<i>ρ</i>	[r]	r
<i>ει</i>	[ē]	ei	<i>ρ῀</i>	[r ^h]	r or rh
<i>ευ</i>	[eu]	eu	<i>σ</i>	[s]	s
<i>ζ</i>	[sd] → [zd]	zd or z	<i>τ</i>	[t]	t
<i>η</i>	[ē]	ē or ē or ē̄	<i>υ</i>	[y]	u
<i>ῆ</i>	[ēi]	ēi or ēi or ē̄i	<i>ῠ</i>	[ȳ]	u or ū or u:
<i>ηυ</i>	[ēu]	ēu or ēu or ē̄u	<i>υι</i>	[üi]	ui
<i>θ</i>	[t ^h]	th	<i>φ</i>	[p ^h]	ph
<i>ι</i>	[i]	i	<i>χ</i>	[k ^h]	kh
<i>ῑ</i>	[ī]	i or ī or i:	<i>ψ</i>	[ps]	ps
<i>κ</i>	[k]	k	<i>ω</i>	[ō]	ō or o or ō
<i>λ</i>	[l]	l	<i>ω῀</i>	[ōi]	ōi or oi or ōi

First line of the Odyssey

<i>Ἄνδρα μοι ἔννεπε, μοῦσα, πολύτροπον, ὃς μάλα πολλά</i>	Greek
[ándra moí énnēpe mô:sa polýtropon hos mála pollà]	phonetics
Ándra moi énnēpe, moûsa polútropon hòs mála pollà	transliteration
man to.me tell muse wily who very many.things	gloss
‘Tell me, O Muse, about the wily man who [endured] very many things ...’	translation

