

5 Verbal morphology

5.1 Introduction

In the documented history of many IE languages, the verbal system has undergone complex restructuring, while the nominal system remains largely unaltered. In Russian, for example, the nominal cases largely continue the forms and functions of the cases of Common Slavic, with the most significant change the loss of the dual number, but the Russian verb is radically different from the Common Slavic verb. The category of aspect has come to dominate the verbal paradigm, with a concomitant loss of tenses such as the imperfect, and the creation of new tenses such as the imperfective future. In Modern German the case system of Old High German is more or less maintained, but new periphrastic verbal formations, such as the *werden* future, have developed over the same time. In other languages, such as the Romance group or English or Swedish, the noun has lost case differences, but the categories of the verb have been maintained and even expanded (note, for example, the ‘conditional’ tense of French, or the *-ing* present of English). It appears, in Indo-European languages at least, that verbal systems undergo greater changes than nouns. If this is the case, it is not difficult to see why. Verbs typically refer to processes, actions and events, whereas nouns typically refer to entities. Representations of events are likely to have more salience in discourse, and speakers seek new ways of emphasising different viewpoints of events in discourse.

It is certainly true that, as we shall see later in this chapter, the verbal systems of the earliest IE languages are less congruent to each other than the nominal paradigms. The reconstruction of the PIE verb is correspondingly less straightforward, and there is greater room for disagreement. Indeed, there is no general agreement even about what verbal categories should be reconstructed for PIE, let alone the ways in which these categories were expressed in the verbal morphology. The continuing debate over the PIE verb makes it one of the most exciting and fast-moving topics in comparative philology. In this chapter we shall not argue for one particular reconstruction, but present and assess some of the different reconstructions that have been put forward.

Before proceeding to consider the verbal categories of PIE, we shall first emphasise an important difference between the methodology of verbal and nominal reconstruction. In section 4.2, if two different markers are used to mark the same

category of the noun, we generally attempted to explain the difference between them through phonetic changes. For instance, final **-s* is used to mark the nominative singular in most non-neuter declension classes in PIE, but the *r*-stem **ph₂ter-* has a nominative singular ending **-ēr*, without **-s*. In our reconstruction, we assumed that the category of nominative was originally the same in the *r*-stem declension as in the other athematic declensions, and that the allomorphy could be explained by hypothesising a change from **-ers* to **-ēr* in prehistory. Our reconstruction of a single marker for the nominative singular was built on the assumption that the nominal categories of case which we find in the earliest IE languages are unchanged in PIE.

For the reconstruction of the verb, however, scholars have tended to view reconstructed categories with less confidence and pay more attention to reconstructed markers. For instance, the verbal marker **-r* is used 1) in some languages to mark middle-voice forms, and 2) to mark the third person plural in the perfect paradigm (the third person plural is marked by **-nt* in other paradigms). In general, scholars have agreed that the **-r* marker of the third plural is unconnected to its allomorph **-nt*, but there have been attempts to link it to the third plural **-r* with the middle-voice marking **-r*. One theory proposes that the **-r* marker was originally used as a third plural and from there was associated with an impersonal meaning, which was later extended to middle forms (see Jasanoff (1977)). This is, perhaps, an extreme example of the tendency to accord more importance to markers than categories, but it does reflect the fact that verbal categories such as ‘tense’, ‘aspect’ or ‘middle’ are extremely ‘fluid’: they run into one another, and markers may be transferred easily from one category to another. The actual reconstructed morphs are consequently seen as providing the most secure foundations on which to build the reconstruction.

5.2 The Greco-Aryan model of the PIE verb

We have already seen in sections 2.4 and 2.5 the effect that the recognition of the Anatolian branch as IE has had on the reconstruction of PIE. Earlier models of PIE phonology and nominal morphology have been substantially revised in order to incorporate the evidence from Anatolian. In the case of the verb, the impact of Anatolian has been even more dramatic. Indeed, in order to follow the current debates on the PIE verb, it is necessary to have a full understanding of the model reconstructed before the discovery of Hittite and its sisters. This model, which we call the *Greco-Aryan model*, since it is based largely on Greek and Sanskrit, has provided a very good explanation for the origin of the verbal systems of Latin, Baltic, Slavic, Germanic, Armenian and Celtic. However, the Greco-Aryan model does not work well as an explanation for the Anatolian verb. In this section, we shall reconstruct the PIE verb as if the Anatolian languages did not exist and then examine more closely some of the ways in which the model might be modified in later sections.

Table 5.1 *Greek verbal stems.*

	Present	Aorist	Perfect	Future
Indicative	past & non-past active & medio-passive	past active & medio-passive	past & non-past active & medio-passive	non-past active & medio-passive
Subjunctive	active & medio-passive	active & medio-passive	active & medio-passive	
Optative	active & medio-passive	active & medio-passive	active & medio-passive	
Imperative	active & medio-passive	active & medio-passive	active & medio-passive	
Infinitive	active & medio-passive	active & medio-passive	active & medio-passive	active & medio-passive
Participle	active & medio-passive	active & medio-passive	active & medio-passive	active & medio-passive

We start by presenting the verbal system as it stands in Greek, Vedic, Latin and Gothic. All of these languages use fused morphs to encode a number of different categories, leading to highly intricate inflectional systems. As an example of the morphological complexity, we shall analyse a single verbal form taken from Homeric Greek, which will also serve as an introduction to the comparison of verbal systems.

tetást^hēn ‘the two of them were stretched’

3rd person dual pluperfect medio-passive indicative

The form *tetást^hēn* can be broken down into a personal ending *-st^hēn* attached to a stem *teta-*. The ending *-st^hēn* is the marker of the third person dual of the medio-passive voice in a past tense and cannot easily be further divided into morphs for third person, dual, medio-passive or past. The stem *teta-* is an allomorph of the *perfect* stem, used in Homeric Greek to form a set of tenses and moods all referring to the resultant state following the verbal action of stretching. The perfect stem contrasts with a *present* stem *tein-* which refers to the action of stretching in the imperfective aspect, an *aorist* stem *tein(a)-* used as a perfective, and a *future* stem (not attested in Homer) referring to the action in the future. The stem *teta-* is formed with reduplication of the first consonant of the verbal root, which is normally a concomitant marker of the perfect stem, although there are perfect stems formed without reduplication and non-perfect stems which are formed with reduplication. The language user must know the place of the stem within the system to be able to decode the fact that in this verb *teta-* functions as a perfect stem.

The analysis of *tetást^hēn* as the combination of a tense-aspect stem with a personal ending is fundamental. As mentioned above, in Greek different tenses and moods can be formed from the same stem, as shown in table 5.1. From the

Table 5.2 *Vedic Sanskrit verbal stems.*

	Present	Aorist	Perfect	Future
Indicative	past & non-past active & middle	past active & middle	past & non-past active & middle	non-past active & middle
Subjunctive	active & middle	active & middle	active & middle	
Optative	active & middle	active & middle	active & middle	
Imperative	active & middle	active & middle	active & middle	
Injunctive	active & middle	active & middle	active & middle	
Participle	active & middle	active & middle	active & middle	active & middle

perfect stem, the following can be formed: a past-referring and non-past indicative tense (named the *perfect* and *pluperfect*); two separate modal formations, inflected for all persons and numbers (called the *subjunctive* and *optative*); second and third person imperatives inflected for all numbers; and two nominal formations, the infinitive and participle. For each one of these categories, there is a separate paradigm for the two voices of Homeric Greek, active and medio-passive. Exactly the same array of forms can be derived from the Greek present stem and from the aorist (perfective) stem, with the exception that the aorist forms only one indicative tense (the past-referring tense), not two. The future stem is exceptional in that it only exhibits nominal forms, the infinitive and the participle, besides the indicative. The future stem and aorist stem in later Greek show a three-way opposition of voice between active, middle and passive, but this is not systematic in Homeric Greek, which only marks a paradigmatic difference between active and forms which we have labelled medio-passive, which correspond in function to either the later Greek middle, or the passive.

We can set out in summary the verbal stems of Vedic Sanskrit in table 5.2. As in Greek, there are four different tense-aspect stems, with indicative tenses and modal and nominal forms associated with each stem. Vedic Sanskrit does not show the regular correlation of an infinitive with a stem, as Greek does, so this is missing from the table. But it does have a further modal formation besides the subjunctive and optative, termed the injunctive.

Table 5.3 shows the verbal stems formed to the Latin verb. Here we see a different system from either Greek or Vedic. There is a reduction in the number of stems for each verb, and a split between the perfect active stem and the perfect passive stem. Furthermore, perfect passive indicative tenses are not given in the table, but such forms do exist in periphrastic constructions: for example, the perfect passive indicative can be expressed through a periphrasis of the participle and the present indicative of the auxiliary verb ‘to be’. In Latin, there is a reduction in the number of separate moods and participles in comparison with Greek and Sanskrit, although there is a new modal feature, the distinction between two subjunctive moods marked as past or non-past. The table does not include periphrastic infinitive forms.

Table 5.3 *Latin verbal stems.*

	Infectum	Perfect Active	Perfect Passive
Indicative	present imperfect future active & passive	perfect pluperfect future perfect	
Subjunctive	past & non-past active & passive	past & non-past	
Imperative	present active present passive future active		
Infinitive	present active present passive	active	
Participle	present active		passive

Table 5.4 *Gothic verbal stems.*

	Present	Preterite Active	Preterite Passive
Indicative	active & passive	active	
Subjunctive	active & passive	active	
Imperative	active		
Infinitive	active	active	
Participle	present active		passive

Table 5.4 shows the situation in Gothic. Here the system is even further reduced than in Latin. There are only two indicative tenses distinguished (not counting periphrastic constructions): the present and the preterite (a past-referring tense).

Most other IE languages also show some kind of distinction between a present and a preterite or past-referring stem. Some, including the Celtic languages, also show a separate stem for the future. However, no language, other than Greek and Indo-Iranian, shows a distinction between aorist and perfect stems. Where some IE languages show a verbal category and others do not, it is possible to explain the disparity in two ways. Either the category should be reconstructed for PIE, and was lost in some IE branches, or the category is an innovation made in the individual histories of the languages. One way to decide between these different accounts is to compare specific lexical forms which mark each category. If there is agreement across languages that a particular lexical form is associated with a particular verbal stem, this increases the likelihood that the category is a PIE inheritance. As table 5.5 shows, if we compare lexical forms in Greek (including early dialectal forms) and Vedic Sanskrit, there is a good correlation between specific formation types and different stems.

In Latin, Gothic and other IE languages, formations which build presents in Greek and Vedic form present stems. For example, Latin *agō* 'I drive' and *sīdō* 'I sit down' are formed in exactly the same way as the Greek and Sanskrit cognates

Table 5.5 *Comparison of stem formations in Greek and Vedic Sanskrit.*

	Greek	Vedic Sanskrit
Present stems		
verbal root $*h_2eg\acute{-}$	<i>ag-</i>	<i>aj-</i>
suffixed form $*g^w m-sk\acute{-}$	<i>bask-</i>	<i>gacch-</i>
reduplicated form $*si-sd-$	<i>hizd-</i>	<i>sīḍ-</i>
Aorist stems		
verbal root $*steh_2-$	<i>stē-</i>	<i>sthā-</i>
suffixed form $*weg^h-s-$	<i>wex-</i>	<i>vakṣ-</i>
reduplicated form $*we-wk^w-$	<i>eip-</i>	<i>voc-</i>
Perfect stem		
reduplicated form $*de-dork\acute{-}$	<i>de-dork-</i>	<i>da-darś-</i>

given in table 5.5. But Latin ‘perfect’ formations match both the Greek and Sanskrit aorist stems and the perfect stem. For example, Latin *uēx-* is the perfect stem of *uehō* ‘I drive’, derived from $*weg^h-s-$, which is an aorist formation in Greek and Sanskrit; Latin *cecīn-*, the perfect stem of *canō* ‘I sing’, is an original perfect, formed in the same way as $*de-dork\acute{-}$ ‘see’. In Old Irish, the preterite *-dairc* ‘saw’ is derived from the perfect stem $*de-dork\acute{-}$, and other preterites match Greek and Sanskrit aorists, such as *luid* ‘went’, formed in the same way as Greek *ēluthon* ‘I went’. Hence, the Greek and Sanskrit three-way split between a present, aorist and perfect stem seems to be an original distinction which has been lost in other languages.

On the other hand, if we compare future stem formations in Greek and Sanskrit, it is more difficult to find similarities of formation. Both languages use affixes involving $*-s-$ to form future tenses, for example Greek *dérksomai* ‘I shall see’ and Sanskrit *drakṣyāti* ‘he shall see’, from the root $*derk\acute{-}$ ‘see’. However, the match between the forms is not exact. When we compare future formations in other languages, we find: a) completely different formations (as in Latin and Armenian); b) formations with similarities to the Greek and Sanskrit futures (as in the Sabellian languages, Baltic and some futures in Celtic); and c) some languages where the non-past indicative or modal formations are used to describe events in the future (as in Germanic and Slavic). Since the affix $*-s-$ is also used to form present stems with desiderative meaning, it is possible to explain all the future formations which use this marker as secondary in origin, and there is consequently no need to reconstruct a future for PIE. In what follows we shall leave the future out of our discussion.

Comparison of the different modal formations also shows substantial agreement between Greek and Indo-Iranian. In Sanskrit and the early Iranian languages there are two modal formations alongside the indicative and imperative which show the same means of formation as the Greek subjunctive and optative. (Table 5.2 also gives a further modal form, the injunctive, which will be discussed more

Table 5.6 *The Greco-Aryan model of the PIE verb.*

	Present stem	Aorist stem	Perfect stem
Indicative	Present/imperfect	Aorist	Perfect/?Pluperfect
Subjunctive	Present	Aorist	?
Optative	Present	Aorist	?
Imperative	Present	Aorist	?
Participle	Present	Aorist	Perfect

fully below.) The subjunctive and optative can also be thought to lie behind the verbal systems in other languages. In Latin, for example, inherited subjunctive forms are continued as futures, and inherited optative forms are continued as subjunctives.

Accordingly, a model of the PIE verb based upon the different stems found in Greek and Indo-Iranian appears to lie behind the verbal systems of the other IE branches. Table 5.6 shows a schematic arrangement of the reconstructed verb under the Greco-Aryan model. The principal opposition is between three different stems. From each stem a number of paradigms are derived, including indicative tenses and modal formations. Where the table shows ? in a slot, this indicates that there is uncertainty about the reconstruction of a category.

The present and aorist are marked off from the perfect. The perfect stem stands apart from the other two reconstructed stems for a number of reasons. Firstly, it is morphologically distinct: as we shall see below, a basic set of endings can be reconstructed behind all the paradigms which derive from the present and aorist stems, but the perfect originally had its own special set of personal endings, and a distinct participle suffix **-wos-*. Secondly, the voice distinction between active and middle is securely reconstructed for all the present and aorist formations, but not so for the perfect. Although a distinction between a perfect active and middle / passive is found in the earliest Greek and Indo-Iranian texts, there are reasons to believe that this is a recent development. In both early Greek and Indo-Iranian, verbs which only show middle endings in the present and aorist will use the ‘active’ endings of the perfect. For example, in early Greek the verb *gígnomai* ‘I become’ has middle endings in all paradigms except for the perfect stem, where forms which are synchronically active occur, such as *gégona*. In Vedic Sanskrit, the verb *rócate* ‘shine’ inflects in the middle in the present and aorist, but in the perfect active forms occur such as *ruroca* ‘shines’. Perfect forms inflected as middle in Greek and Indo-Iranian appear to have originated by analogical extension of the active and middle distinction in the present and aorist. Indeed, the spread of the middle endings to the perfect can be seen in the history of Sanskrit and Greek. In post-Homeric Greek a new perfect form to the verb *gígnomai* appears, with middle endings: *gegénēmai*. In Vedic Sanskrit the active perfect *ruroca* means ‘shine’, but in the later language *ruroca* is restricted to a causative sense ‘make bright’, and the middle form *rurucé* is used to signify ‘shine’, in line with the

middle inflection of the present and aorist stems. Thirdly, as indicated on table 5.6, the reconstruction of the pluperfect and the modal formations of the perfect is uncertain. In both Greek and Indo-Iranian it is possible to form a past tense and moods from the perfect stem; these do not have special perfect endings, but instead show the endings of the equivalent present and aorist paradigms. It is not clear whether these paradigms are another example of the encroachment of the present and aorist system into the perfect.

Alongside its peculiar morphological status, the perfect appears to have been semantically distinct. In Greek the difference between the present and aorist stem is aspectual: broadly speaking, the present stem is imperfective, and the aorist stem perfective. The perfect principally denotes a state: for example, the perfect *téthnēke* means ‘he is dead’, distinct from present *thnēiskei* ‘he is dying’, imperfect *éthnēiske* ‘he was dying’ and aorist *éthane* ‘he died’. As can be seen in this example, the state described in the perfect follows as a result of the action described in the other tenses. In early Greek the perfect is restricted to describing the state of the subject, not the resultant state of the object. A striking example of the use of the perfect is provided by the verb *tíktō* ‘beget’ (of a man) or ‘give birth to’ (of a woman). The perfect of this verb in early Greek, *tétoka*, is collocated only with women or female animals as subjects, since in these cases the subject has undergone a physical change of state; since male parents undergo no change of state, the perfect is not used. The Greek semantics of the perfect are matched by perfect forms in other languages and can be reconstructed for PIE. For example, the perfect **woid-* ‘know’ is reconstructed from the following correspondence:

**woid-* ‘know’: Sanskrit *véda*, Greek *oîda*, Gothic *wait*, Old Church Slavonic *vědě*

In all the languages in which it appears, **woid-* functions semantically and syntactically as a *present* tense, although showing the characteristic PIE perfect endings and formation (including o-grade of the root). In order to connect it with the normal use of the perfect in early Greek, the semantics of **woid-* could be glossed as ‘he has found out and consequently is now in a state of knowing’ (the same root **weid-* is found in verbs meaning ‘see’ or ‘find’ in IE languages:

**weid-* ‘see, find’: Sanskrit *vindáti*, Greek *eídon*, Latin *uideō*, Armenian *gtanem*).

Similar correspondences could be found for other roots: Latin *meminī* ‘I remember’ and Gothic *man* ‘I think’ can be derived from an original perfect meaning ‘I have had an idea’; Vedic Sanskrit *dadhár̥ṣa* ‘he dares’ and Gothic *ga-dars* ‘he dares’ both continue an original perfect meaning ‘he has summoned up courage’.

However, in most languages such survivals of inherited perfects with present meaning are not numerous (although they did spawn a whole class of ‘perfecto-presents’ in Germanic), and the perfect has mainly been reinterpreted as a tense with past reference. We should note that this shift to past reference offers support for the notion that the perfect originally referred to the state *following an action in the past*, and was not just a stative. In this new past-reference function the perfect

Table 5.7 *Mergers of the inherited preterite formations.*

	Inherited verbal stem		
	Perfect	Aorist	Imperfect
Latin and Sabellian	Merged to create new preterite formations		Lost
Celtic	Merged to create new preterite formations		Lost
Germanic	Continued as preterite	Lost except for relic formations	Lost
Baltic and Slavic	Lost except for relic formations	Merged to form new preterite formations	
Armenian	Lost except for relic formations	Merged to form new preterite formations	
Albanian	Lost	Merged to form new preterite formations	

consequently overlapped with old aorist and imperfect formations, leading to the collapse of the three-stem system in languages outside Greek and Indo-Iranian. This merger of the perfect, aorist and imperfect seems to have taken place independently in the languages concerned, and in some cases it is possible to see two forms surviving alongside each other without difference in function. For example, in early Latin there are several examples of old aorist forms surviving alongside old perfect forms from the same root, without any functional difference between the two stems but reflecting the relatively late fusion of the aorist and perfect in the new preterite. Furthermore, across the IE languages different patterns of merger are found, as summarised in table 5.7. Many languages also created new imperfective preterite forms (usually called ‘imperfect’ tenses), including Latin, Slavic and Armenian.

We have seen at the beginning of this section that in the Greek verb *tetást^hēn* the ending *-st^hēn* is a fusional marker of the third person dual medio-passive past indicative. This one morph encodes the five different categories of person, number, voice, tense and mood, and in this respect is typical of verbal endings in IE languages. We shall now examine briefly the reconstruction of these categories, before moving to the reconstruction of the endings themselves. The marking of the categories of person and number is found in every branch of IE. All languages distinguish three persons: first (the speaker), second (the addressee) and third (neither speaker nor addressee). Some languages, such as Celtic and perhaps Umbrian, show evidence for a distinct fourth person, i.e. an impersonal form. These impersonal forms can be connected to ways of marking passives and middles, and are almost certainly late and independent developments. Indeed, IE languages typically use third person forms for verbs which prototypically lack a subject, such as the verbal expressions of weather, ‘it rains’ and ‘it snows’. All IE languages show a distinction between singular and plural number, and a dual is also found in Baltic, Slavic, Gothic, Greek and Indo-Iranian. Although the dual was clearly a category of the PIE verb, its endings are more difficult to reconstruct, and we shall leave them out of the discussion in the remainder of

Table 5.8 *Active personal endings in Sanskrit.*

	Primary	Secondary	Perfect	Imperative
1.	<i>-mi</i>	<i>-m</i>	<i>-a</i>	
2.	<i>-si</i>	<i>-s</i>	<i>-tha</i>	<i>-hi / ø</i>
3.	<i>-ti</i>	<i>-t</i>	<i>-a</i>	<i>-tu</i>
4.	<i>-mas</i>	<i>-ma</i>	<i>-ma</i>	
5.	<i>-tha</i>	<i>-ta</i>	<i>-a</i>	<i>-ta</i>
6.	<i>-nti / -anti</i>	<i>-n / -an</i>	<i>-ur</i>	<i>-ntu</i>

this chapter. The distinction between ‘inclusive’ and ‘exclusive’ uses of the first person plural and dual (i.e. ‘I and others including you’ opposed to ‘I and others excluding you’) is not marked on the verb in any early IE language. The category of ‘voice’ will be discussed in detail at section 5.5.

The interplay between tense and mood and the personal endings is complex, and can best be explained by considering the personal endings used in Sanskrit. The sets of active personal endings in table 5.8 have been abstracted from a number of different verbal paradigms. In this table, and subsequently in this chapter, we shall denote the personal endings by numbers 1–6, with 4 representing the first person plural, 5 the second person plural and 6 the third person plural.

The distribution of the endings in table 5.8 cuts across the categories of tense, aspect and mood. The set of *primary* endings are restricted to two tenses: the present indicative and the future indicative. The *secondary* endings are used for the imperfect indicative (the past tense formed from the present stem), the aorist indicative, the optative and the injunctive mood. The subjunctive mood can use either primary or secondary endings. The set of perfect endings is used only in the perfect indicative. The imperative has distinct endings, and is the only mood to do so. Sanskrit employed a further morphological marker for all persons of past-referring indicative tenses (i.e. the aorist, imperfect, and the pluperfect, the past tense of the perfect) which is also preserved in other Indo-Iranian languages, Greek, Armenian and Phrygian. This is a prefix, reconstructed as **e* and called the *augment*, following Greco-Roman grammatical terminology. In Classical Greek and Sanskrit the augment is an obligatory marker of past tenses, but it appears to have been optional at earlier stages of these languages. In Classical Armenian it is only used if the verb-form would otherwise be monosyllabic (similarly in Greek and Indo-Iranian there is a tendency to use the augment to avoid forms that would otherwise be monosyllabic with a short vocalic nucleus).

There is a further important feature in the primary and secondary endings in Sanskrit which has correspondences in other IE languages and must be reconstructed for PIE. This is the opposition between *thematic* and *athematic* endings, which appears in Sanskrit and Greek to be purely morphological, and not to have any significance for the meaning of the forms (compare the thematic and athematic nominal paradigms reconstructed in section 4.2). Some stem formations are associated with thematic endings and others with athematic. For example,

Table 5.9 *Athematic active primary endings: PIE 'to be'.*

PIE	Sanskrit	Greek	Latin	Gothic	Lith.	O.C.S.
1. <i>*h₁és-mi</i>	<i>ásmi</i>	<i>eimí</i>	<i>sum</i>	<i>im</i>	<i>esmì</i>	<i>jesmĩ</i>
2. <i>*h₁és-si</i> (or <i>*h₁ési</i>)	<i>ási</i>	<i>eî</i>	<i>ess, es</i>	<i>is</i>	<i>esì</i>	<i>jesĩ</i>
3. <i>*h₁és-ti</i>	<i>asti</i>	<i>estí</i>	<i>est</i>	<i>ist</i>	<i>ēsti</i>	<i>jestũ</i>
4. <i>*h₁s-mé</i>	<i>smás</i>	<i>esmén</i>	<i>sumus</i>	<i>sijum</i>	<i>esme</i>	<i>jesmũ</i>
5. <i>*h₁s-té</i>	<i>sthá</i>	<i>éste</i>	<i>estis</i>	<i>sijub</i>	<i>este</i>	<i>jeste</i>
6. <i>*h₁s-énti</i>	<i>sánti</i>	<i>eisí</i>	<i>sunt</i>	<i>sind</i>		<i>spotũ</i>

the root aorist, of the type **steh₂-* given in table 5.5, and the aorist formed with the suffix **-s-* (as **weg^h-s-* in table 5.5), both take athematic endings, whereas the reduplicated aorist of the type **wewk^w-* takes the thematic set of endings. Thematic endings generally show a vowel, which surfaces as **e* or **o* (termed the *thematic vowel*) between the stem and the personal markers. In Sanskrit the endings following the thematic vowel are generally the same as the athematic endings, but as we shall see later, the similarity between thematic and athematic may have been a recent development.

All other IE languages show sets of active personal endings which can be connected to the four sets given in table 5.8, primary (thematic and athematic), secondary (thematic and athematic), perfect and imperative. Moreover, there is no set of endings which cannot be linked to these types. Through comparison of paradigms with these endings we can consequently reconstruct paradigms in the Greco-Aryan model of PIE. In table 5.9 we set out the basis for comparison of one athematic active paradigm, which uses primary endings, the present tense of 'to be'.

The paradigm reconstructed in table 5.9 shows a shift in accent and ablaut between the singular and plural, comparable with the accent and ablaut shift reconstructed for the strong and weak cases in kinetic paradigms discussed in section 3.4. Other verbal paradigms are reconstructed with a static accent fixed on the root. The fluctuation in the third person plural ending between **-enti* in some languages and **-onti* or **-nti* in others stems from the generalisation of alternants associated with different original paradigms. The first and second person plural forms show considerable variation from one language to the other. For example, the first person plural ending in Latin derives from **-mos*, not **-me*; in Attic-Ionic and other East Greek dialects the ending **-men* is found. Most of these developments seem to be particular to separate branches of IE, and their significance is unknown.

In table 5.10 we give the basis for reconstruction of the secondary athematic endings, starting from a comparison of the imperfect of the verb 'to be' in Greek and Sanskrit. In the other IE languages, the original imperfect is lost as a separate category, as we saw above, and forms labelled 'imperfect' in the grammars, such as Latin *eram* 'I was' or Old Church Slavonic *běxŭ* 'I was', are new creations

Table 5.10 *Athematic active secondary endings:*
PIE 'to be'.

	PIE	Vedic Sanskrit	Greek
1.	* <i>e-h₁és-m</i>	<i>ásam</i>	<i>êa</i>
2.	* <i>e-h₁és-s</i> (or * <i>e-h₁és</i>)	<i>ás</i>	<i>êstha</i>
3.	* <i>e-h₁és-t</i>	<i>ás</i>	<i>ês</i>
4.	* <i>e-h₁s-mé</i>	<i>āsmá</i>	<i>êmen</i>
5.	* <i>e-h₁s-té</i>	<i>āstá</i>	<i>êste</i>
6.	* <i>e-h₁s-ént</i>	<i>āsán</i>	<i>êen</i>

of the languages. Even in Sanskrit and Greek the imperfect paradigm of 'to be' has been remodelled, and table 5.10 includes forms from the older stages of the languages and, in the case of Greek, a dialectal form of the third person singular.

Note the presence of the prefix **e-* (the augment) in the reconstructed forms. In persons 1, 2, 3 and 6 the secondary endings are equivalent to the primary endings minus their final **-i*. The PIE endings for 4 and 5 appear to be the same for both primary and secondary, but these are reconstructed with less confidence.

Exercise 5.1

The verb meaning 'strike' or 'kill' in Hittite and Sanskrit comes from a root **g^{wh}en-*, and some attested forms of the present tense are given in the table below. Reconstruct the PIE paradigm. (Note that **ti* develops to *zi* in Hittite.)

	Hittite	Sanskrit
1.	<i>kuenmi</i>	<i>hánmi</i>
3.	<i>kuenzi</i>	<i>hánti</i>
6.	<i>kumanzi</i>	<i>ghnánti</i>

Exercise 5.2

The table below gives the present paradigm of the verb meaning 'go' in Sanskrit, Greek and Latin. Reconstruct the PIE paradigm. (Note that **ti* develops to *si* in Greek.)

	Sanskrit	Greek	Latin
1.	<i>émi</i>	<i>eîmi</i>	<i>eo</i>
2.	<i>éši</i>	<i>eî</i>	<i>is</i>
3.	<i>éti</i>	<i>eîsi</i>	<i>it</i>
4.	<i>imás</i>	<i>ímen</i>	<i>imus</i>
5.	<i>ithá</i>	<i>íte</i>	<i>itis</i>
6.	<i>yánti</i>	<i>íasi</i>	<i>eunt</i>

Which forms in the individual languages are replacements of the original forms?

Exercise 5.3

The table below gives some forms of the paradigm of the verb *duh-* ‘milk’ in Sanskrit. Work out what sound-changes have taken place to give these forms from the inherited paradigm. (Hint: you may wish to refresh your memory of some of the sound-changes given in table 2.3.)

	Present active	Imperfect active
2.	<i>dhókṣi</i>	
3.	<i>dógdhi</i>	<i>ádihok</i>
6.	<i>duhánti</i>	<i>áduhan</i>

The thematic conjugation is in many respects analogous to the thematic nominal declension reconstructed at section 4.2. Both paradigms show a vocalic affix which surfaces as either **e* or **o*, and neither paradigm appears to show any evidence for the accent and ablaut alternations reconstructed for the corresponding athematic classes. We have already seen how the thematic nouns share some endings with the athematic noun classes, but show some endings which are unique to them (such as the ablative singular **-ōd*). In the same way, the thematic verbal endings cannot be reconstructed simply as an agglomeration of thematic vowel and athematic endings. In the primary first person singular active, the thematic ending is not, as might be expected, **-e/o-mi* but **-ō* (probably from original **-oh₂*). This ending is widespread across IE languages: compare the reconstruction of the first person singular of the verb meaning ‘carry’:

**b^her-ō* ‘I carry’: Greek *phérō*, Latin *ferō*, Gothic *baira*, Old Irish *-biur*.

In Sanskrit, the primary first person ending of the thematic class is *-āmi*, except in the subjunctive paradigm, where the ending *-ā* is found in early texts. The thematic ending consequently appears to have been ‘extended’ in Sanskrit with the athematic marker **-mi* added to the original ending **-ō*. Avestan, the ancient representative of the Iranian branch, still shows *-ā* as a first person indicative marker. The other reconstructed thematic endings in the Greco-Aryan model are usually reconstructed as in table 5.11.

There are some problems with this reconstructed paradigm. It has been argued that the thematic endings of the second and third person singular in Latin and Sanskrit have been assimilated to the athematic paradigm, and that the original endings were substantially different. This hypothesis rests on the Greek endings *-eis* and *-ei*, which cannot directly continue **-esi* and **-eti* without the assumption of ad hoc sound-laws (see Cowgill 1985). However, while some languages (such as Baltic and Slavic) also show different endings in the thematic singular, their endings cannot be easily reconciled to the ones found in Greek, and it is not possible to reconstruct an alternative set of thematic endings with any confidence.

Table 5.11 *Reconstructed thematic primary and secondary endings.*

	Primary				Secondary		
	PIE	Sanskrit	Greek	Latin	PIE	Sanskrit	Greek
1.	*-ō	-āmi	-ō	-ō	*-om	-am	-on
2.	*-esi	-asi	-eis	-is	*-es	-as	-es
3.	*-eti	-ati	-ei	-it	*-et	-at	-e
4.	*-ome	-āmas	-omen	-imus	*-ome	-ama	-omen
5.	*-ete	-atha	-ete	-itis	*-ete	-ata	-ete
6.	*-onti	-anti	-ousi	-unt	*-ont	-an	-on

Exercise 5.4

The following tables give the present of the thematic verbal stem built from the root **h₂eg-*, meaning ‘lead’ or ‘drive’ in Sanskrit, Greek and Latin, and the imperfect in Sanskrit and Greek. Reconstruct the PIE paradigms. (Hint: remember that in Greek long *ē* can derive from an earlier long *ā*, which may in turn derive from a contraction of vowel or vowels with the laryngeal **h₂*.)

Present tense

	Sanskrit	Greek	Latin
1.	<i>ājāmi</i>	<i>ágō</i>	<i>agō</i>
2.	<i>ājasi</i>	<i>ágeis</i>	<i>agis</i>
3.	<i>ājati</i>	<i>ágei</i>	<i>agit</i>
4.	<i>ājāmas</i>	<i>ágomen</i>	<i>agimus</i>
5.	<i>ājatha</i>	<i>ágete</i>	<i>agitis</i>
6.	<i>ājanti</i>	<i>ágousi</i>	<i>agunt</i>

Imperfect

	Sanskrit	Greek
1.	<i>ájam</i>	<i>êgon</i>
2.	<i>ájas</i>	<i>êges</i>
3.	<i>ájat</i>	<i>êge</i>
4.	<i>ájāma</i>	<i>êgomen</i>
5.	<i>ájata</i>	<i>êgete</i>
6.	<i>ájan</i>	<i>êgon</i>

The perfect endings are reconstructed through comparison of the terms for ‘know’ attested in different IE languages, which, as we saw above, continued an old perfect form. The perfect paradigm also showed an alternation of ablaut and

Table 5.12 *The reconstructed perfect: PIE 'know'*.

PIE	Greek	Sanskrit	Latin	Gothic
1. *wóid-h ₂ e	<i>oída</i>	<i>véda</i>	<i>uīdī</i>	<i>wait</i>
2. *wóid-th ₂ e	<i>oístha</i>	<i>véttha</i>	<i>uīdistī</i>	<i>wait</i>
3. *wóid-e	<i>oíde</i>	<i>véda</i>	<i>uīdit</i>	<i>wait</i>
4. *wid-m-	<i>ídmen</i>	<i>vidmá</i>	<i>uīdimus</i>	<i>witum</i>
5. ?*wid-é	<i>íste</i>	<i>vidá</i>	<i>uīdistis</i>	<i>witup</i>
6. *wid-r-	<i>ísāsi</i>	<i>vidúr</i>	<i>uīdēre</i>	<i>witun</i>

accent, again with a difference between the singular and the plural. However, the ablaut pattern of this paradigm is dissimilar to that of any nominal paradigm in that there is an alternation between accented *o* and zero-grade in the root, rather than the more usual accented *e*. Table 5.12 sets out the basis for the reconstruction of the perfect endings.

The endings of persons 4 and 5 are again reconstructed without much certainty, but it is clear that for the second person plural the forms in all languages other than Sanskrit have been influenced by the active ending of the present and aorist systems. Influence from the active paradigm also explains the third person plural forms of Greek and Gothic, where the original ending has been replaced. In one sense the paradigm for 'know' appears to be atypical of perfect formations: it is not formed with reduplication of the initial consonant of a root. In Greek and Indo-Iranian, reduplication is a characteristic mark of the perfect, and reduplicated perfect stems are also found in Latin and Germanic, although reduplication there is not obligatory. It is uncertain whether the lack of reduplication in the paradigm for 'know' is a preservation of an archaic feature or not; it has been argued that the loss of reduplication in this paradigm is an innovation originating in the participle, where the expected ***we-wid-wos-* was simplified to **weid-wos-* (Greek *eídōs*).

The final set of endings to be considered are the markers of the imperative. The Sanskrit forms given in table 5.8 can be compared to material in other IE languages. In the second person singular active, most languages exhibit either the bare stem as an imperative or a marker *-*d^hi*. The bare stem is found as an imperative in both athematic stems (e.g. Latin *ī* 'go!' < **h₁ei*) and thematic stems (e.g. Greek *phére* 'carry!' < **b^her-e*), but the overt marker *-*d^hi* is only found attached to athematic stems (Greek *íthi* 'go!' < **h₁i-d^hi*). Given this distribution, and the fact that there are examples of both types of formation for the same verbal stem, it seems likely that the marker *-*d^hi* was originally an optional particle, which became partially grammaticalised to mark out the athematic imperatives and add phonological weight to monosyllabic forms.

The second person singular imperative is, in a sense, the only 'true' imperative form reconstructable for PIE. The original form of the second person plural imperative is the same as the indicative *-*te*, and the difference between an imperative and indicative use of this form must have been derived from context. What grammars traditionally call 'third person imperatives' are not in fact

imperatives at all. They are modal forms signifying the speaker's desire that a third party should act in some way. There are many different ways of expressing these third person imperatives in different languages, of which two can certainly be reconstructed for PIE: 1) a suffix *-u* added to the secondary third person endings **-t*, **-nt*, and 2) a suffix **-ō*, also added to the secondary endings:

**-u*: Sanskrit *ástu* 'let it be', derived from **h₁es-t-u*

**-ō*: Latin *estō*, Greek *éstō* 'let it be', derived from **h₁es-t-ō*

The identification of secondary endings at the base of these forms corresponds to the employment of injunctive forms, that is, verb-forms with secondary endings but no augment, in negated imperatives in Indo-Iranian (see further discussion in section 5.3), and the most likely ultimate origin of these third person imperatives is through a combination of the precursor of the injunctive with additional particles.

5.3 Reconciling Anatolian to the Greco-Aryan model

The Anatolian verbal system is radically different from that of Greek and Vedic and from that reconstructed for PIE. Each verb has a present and preterite indicative, marked only by different endings, and a separate set of imperative endings. There are no verbal moods other than indicative and imperative, there is no separate 'perfect' system, there is no distinction between aspect-marked stems, and there are no separate thematic and athematic conjugations. In Hittite, the Anatolian language for which we have by far the greatest amount of information, verbs either follow the *-mi* conjugation (with a third person singular ending *-zi* derived from **-ti*), or the so-called *-hi* conjugation, which has a first person singular *-hi* and third person singular *-i*. In this very different verbal landscape there are, however, exact formal matches to stems, suffixes and whole paradigms in other IE languages, as shown in table 5.13.

However, the number of exact matches is small, and sometimes the conjugation of a root in Hittite is at odds with the evidence of other IE languages. For example, the verb which means 'guide' in Hittite continues a root **ney(H)-* which is also found in Indo-Iranian (the bracketed *(H)* at the end of the reconstructed root means that there is doubt whether the root originally ended in a laryngeal, and, if it did, which laryngeal was involved). The Hittite third person singular of the present *nai* 's/he leads' looks unlike the Vedic third person singular present *náyati* 's/he leads'. The third person singular of the preterite of this verb in Hittite is *nais* 's/he led', which can be directly compared with the Vedic Sanskrit aorist *anaīṭ* 's/he led', and both forms can be derived from an original verb-form **(e)-nēy(H)-s-t*. However, in Hittite the final *-s* is a personal ending, whereas the *s* of the Vedic aorist (although lost through particular sound-changes affecting the third person) is a suffix present throughout the aorist paradigm, for example, the subjunctive *neṣat* 'may s/he lead'.

In general, scholars have adopted three different approaches to reconstruction of the verb following the decipherment of Hittite. The first, in its crudest form,

Table 5.13 *Exact matches between Anatolian and Sanskrit verbal forms.*

Anatolian form	Sanskrit form	PIE	Category
Hittite <i>estu</i> 'let it be'	<i>ástu</i> 'let it be'	* <i>h₁es-tu</i>	Imperative
Hittite <i>kuenmi</i>	<i>hánmi</i>	* <i>g^{wh}en-mi</i>	Present Tense
<i>kuenzi</i>	<i>hánti</i>	* <i>g^{wh}en-ti</i>	Active
<i>kunanzi</i> 'I, s/he, they kill'	<i>ghnánti</i> 'I, s/he, they kill'	* <i>g^{wh}n-enti</i>	
Luwian <i>ziyar</i> 's/he lies'	<i>śáye</i> 's/he lies'	* <i>k'ey-o-</i>	Present Tense Middle
Hittite <i>tepnuzzi</i> 's/he makes small'	<i>dabhnóti</i> 's/he cheats'	* <i>d^heb^h-ne-u-ti</i>	Causative Present Tense Active

accepts the Greco-Aryan model, or something not radically dissimilar from it, as essentially correct, and seeks to explain the Anatolian divergences from this model through specific developments in the prehistory of this branch, principally the loss or merger of categories. An alternative is to redraw the picture of the PIE verb altogether and to construct a new model for the verbal system, which may entail a more complicated prehistory for Greek and Indo-Iranian. In this model, the PIE verbal system has fewer categories than previously thought, and some languages, in particular Greek and Indo-Iranian, have expanded the number of verbal moods and tenses. The third approach, championed most notably by Cowgill, combines the two alternatives. Something like the Greco-Aryan model is reconstructed for the stage of PIE after the Anatolian languages (and probably also Tocharian) broke off from the other languages, and a different model is constructed for an earlier stage of the PIE verb (see further section 1.4 on the question of the original PIE 'family tree'). The last two approaches assume a rather different type of change in the verbal system from that observed in the prehistory of most IE languages, where categories are lost and merged. In these accounts there would actually have been an expansion of verbal categories, and a creation of new tenses and new formations, in post-Anatolian PIE.

In the rest of this chapter, we shall examine some of the features reconstructed in the Greco-Aryan model in more detail, in light of the Anatolian material. In this section we examine areas where the categories reconstructed in the Greco-Aryan model can be 'slimmed down' in order to bring them closer to the picture of the Anatolian verb. In the next section, we examine the problems posed by the Hittite *hi*-conjugation, and possible analogues in the rest of PIE.

Even without the Anatolian perspective on the PIE verb, some of the verbal categories reconstructed on the base of shared stems and endings in Greek and Indo-Iranian could be assumed to be recent developments. The clearest example is provided by consideration of the injunctive. As we saw, this modal formation is only extant as a separate category in Indo-Iranian. Its distinctive morphological

Table 5.14 *The injunctive compared with indicative tenses.*

	Sanskrit	PIE
Present indicative	<i>bhárati</i> ‘s/he carries’	* <i>bheret-i</i>
Imperfect indicative	<i>ábharat</i> ‘s/he was carrying’	* <i>e-bheret</i>
Present injunctive	<i>bhárat</i> ‘carry’	* <i>bheret</i>

feature is the absence of special markers, rather than any particular affix. This is illustrated by comparing the Sanskrit third person singular of the present injunctive, alongside the same person in the present and imperfect indicative, as in table 5.14, which also gives the reconstructed forms.

In morphological terms, the injunctive is unmarked with respect to both the present tense, which can now be analysed as containing an extra affix *-i, and the past imperfect tense, which has an extra prefix *e- (the augment). In the earliest Sanskrit texts (the Vedic hymns) and the Iranian language Avestan, the injunctive has two principal functions. It occurs 1) in prohibitions with a negative particle *má*; and 2) as a replacement for another tense or mood in a string of verb-forms. The second function can be explained through what Kiparsky termed *conjunction reduction*: the overt markers of tense or mood are not repeated in strings of verbs with the same tense or mood reference. The following textual examples can serve as an illustration. Note that in (1) there is a change of subject between the two verbs, which marks conjunction reduction off from serial verb constructions in other languages.

- (1) *RV 5.29.7 . . . ápacat . . . pibat*
 COOK-IMPERFECT drink-INJUNCTIVE
 ‘(Agni) cooked . . . (and) (Indra) drank . . .’
- (2) *RV 9.95.1 . . . kṛṇute janayata*
 make-PRESENT cause-to-be-born-INJUNCTIVE
 ‘he makes . . . (and he) causes to be born’
- (3) *RV 2.2.5 pári bhūtu . . . citayat*
 encompass-IMPERATIVE quicken-INJUNCTIVE
 ‘let him encompass . . . (and) let him quicken’

This function of conjunction reduction can lead to further nuances of the injunctive. For example, in a classic study by Hoffmann (1967), it is shown that in the Vedic hymns the injunctive refers to events which were already known to the hearer, for example in reference to the action of gods and heroes in mythical context. In this case, the context is enough to guarantee to the hearer that the action took place in the past, and so there is no need to indicate this by a past verb-form. Indeed, it may be possible to see the use of the injunctive in prohibitions as a further example of conjunction reduction. In this case, the particle *má* gives sufficient indication of the illocutionary force, so that it need not be encoded in the verb.

Table 5.15 *PIE eventive endings.*

	Athematic	Thematic
1.	*-m	*-om
2.	*-s	*-es
3.	*-t	*-et
4.	*-mé	*-ome
5.	*-té	*-ete
6.	*-ént / *-nt	*-ont

There is little available comparative evidence for the injunctive in languages outside Indo-Iranian. The only languages other than the Indo-Iranian group which preserve the augment are Greek, Armenian and Phrygian, so it is only here that we might find oppositions between augmented and non-augmented verb-forms with secondary endings. In early Greek there are a few examples of non-augmented past tenses following present-tense forms, all referring to habitual actions of divine beings: in Hesiod *Theogony* 4–10 a description of the Muses' activities begins with a verb in the present *orkheûntai* 'they dance', which is later followed by *steîkhon* 'they process', an imperfect without augment. It is possible that examples such as this show a relic of the same conjunction reduction which is found in Indo-Iranian.

The injunctive in Indo-Iranian therefore appears to be in origin a verb-form unmarked for tense or mood. To arrive at the most economical picture of the PIE verb, we need not reconstruct a present, imperfect and injunctive, but merely a single category unmarked for tense. The extra *-i found in the present-tense endings and the augment of the imperfect can be explained as having arisen later through grammaticalisations of originally independent, adverbial elements. Some accounts of the PIE verb refer to this unmarked verb form as the injunctive, since it does underlie the Indo-Iranian injunctive verb-forms, but we shall use the term *eventive* in order to avoid confusion.

The reconstruction of an eventive verb-form therefore slims down our reconstruction for verbal categories. The primary and secondary endings of the present and aorist system, reconstructed in tables 5.9, 5.10 and 5.11, can be derived from a single set of endings, given in table 5.15. Nearly all the primary endings can be derived from the eventive endings by the addition of final *-i. The exceptions are the first and second person plural endings and the first person singular ending of the thematic conjugation, reconstructed as *-ō or *-oH. The reduction in the marking of the first and second person plural forms is not particularly troublesome for the theory, since it is paralleled in other paradigms cross-linguistically; a comparable case is the loss of person distinction in the plural of the passive paradigms in Gothic. More problematic is the thematic ending of the first person singular, which cannot be derived from an eventive ending *-om followed by

*-i without resorting to unparalleled phonetic changes. The explanation for this ending is obscure; see further section 5.4.

The PIE present and aorist paradigms share the same set of endings, and it is possible to explain both of these as the outgrowth of a single paradigm, thereby further reducing the reconstructed categories of the verb. It is important, however, to keep in mind that the two paradigms must both be reconstructed to explain the non-Anatolian languages. Although the distinction between present and aorist is preserved only in Greek and Indo-Iranian, the opposition between them cannot be explained as a separate creation of these languages, since aorist formations underlie preterite formations in several of the other IE languages. The aspectual distinction between the two stems, reconstructed on the basis of Greek, also seems to underlie other IE verbal systems (despite the doubts of e.g. Szemerényi (1996)). Support for the reconstruction of aspect comes from the expression of prohibitions in IE languages. In Vedic Sanskrit, where prohibitions were expressed by the particle *mā́* and the injunctive, there is an observable difference between present-stem injunctives, which are used to stop an ongoing action (inhibitives) and aorist-stem injunctives which are employed in circumstances where a future action is forbidden (preventatives). Latin and Tocharian may show a similar distribution of stems in inhibitives and preventatives, and it is possible that this is an inherited PIE syntactic rule (see further 6.1). The opposition between inhibitive and preventative functions can be seen to correspond to one of aspect: inhibitives refer to ongoing activities, as do imperfective verbs, whereas a preventative envisages the verbal action as a whole in the same way as the perfective aspect.

Despite these signs of the antiquity of the aorist and present opposition, many scholars have argued that they both ultimately derive from a single paradigm. The reasoning behind this view is clear: both present and aorist paradigms use the same personal endings, and both can be formed by attaching the endings directly onto the verbal root. Indeed, in Greek and Indo-Iranian it is not possible to tell whether an isolated root formation with secondary endings is an imperfect or an aorist. The identification of a stem as present can only be guaranteed by the use of primary endings (which are not used in the perfective aorist forms); the identification as aorist is made by the opposition with a present stem in the same paradigm. As illustration, compare the following two reconstructions:

**d^heh₁-t* ‘s/he put’: Greek (dialectal) *éthē*, Sanskrit *ádhāt*, Armenian *ed*

**h₂weh₁-t* ‘s/he blows’: Greek *áwēsi*, Sanskrit *vā́ti*.

The verbal formation **h₂weh₁-t* ‘s/he blows’ must be reconstructed as a present stem, since it can occur with primary endings in Greek and Sanskrit, but the stem **d^heh₁-t* ‘s/he put’ does not occur with primary endings, and it is opposed in Greek, Sanskrit and Armenian by different present-tense stems (Greek *títhēsi*, Sanskrit *dádhāti* and Armenian *dnê*). If there is no difference between the endings or the stem-formation of the present and aorist stems, what governs the assignment of one verb to the aorist and the other to the present? The usual answer given is that the distinction between the two stems relies upon the inherent

lexical aspect of the root. Some verbal roots refer to states of affairs which are most naturally understood to be ‘perfective’, such as ‘put’, ‘give’, ‘die’. All of these describe events which are envisaged as having an end-point, and are consequently termed *telic* (Greek *télos* ‘end’). Root-formations from telic verbs are normally classed as aorists (as **d^heh₁-t* ‘put’ cited above). Other verbal roots, termed *atelic*, refer to processes or events without reference to an end-point, and root-formations from these are usually presents (as **h₂weh₁-t* ‘blow’ cited above). Other examples of telic roots include **deh₃-* ‘give’, **g^werh₃-* ‘swallow’, **mer-* ‘die’, **pleh₁-* ‘become full’, for all of which there is good evidence for an original root-aorist. The roots **b^heh₂-* ‘speak’, **h₁es-* ‘be’, **h₁ey-* ‘go’, **ses-* ‘sleep’ and **sneh₁-* ‘spin’ all have presents formed directly from the root and are all clearly atelic. In some cases, however, the meaning of the verb and that of the root-formation appear to be at odds. Take the case of the root **g^weh₂-*, which forms a root-aorist (Greek *ébē* ‘s/he went’, Vedic *ágāt* ‘s/he went’), but appears to have atelic meaning ‘go’. This would be a problem for the theory, were it not possible to show through more careful consideration of the original attestations and the meaning of derived forms (such as Greek *bêma* ‘a step’ and Avestan *jāman-* ‘a step’) that the original meaning was actually telic ‘step’, from which ‘go’ was a secondary development. Similar discrepancies are found with other roots, which cannot always be explained so easily: **g^wen-*, cited in table 5.13, forms a root-present, but its meaning is ‘kill’ or ‘hit’ in all the early IE languages. Other examples include **g^wem-* ‘come’, which forms a root-aorist ‘come’; **k^lew-* ‘hear’, which forms a root-aorist; and **wemh₁-* ‘vomit’, which forms a root-present in Sanskrit.

Given the formal equivalence in the personal endings, it is therefore possible to reconstruct a stage of PIE at which time there was no difference between the present and aorist; and this becomes especially attractive if one is attempting to account for the absence of the category ‘aorist’ in Anatolian languages. By this hypothesis (sketched out most fully by Strunk (1994)), at an early stage of PIE there would have been no difference of aspect, just eventive forms of the type **d^heh₁-t* and **h₂weh₁-t*. Alongside these forms, there would have been characterised forms, with additional affixes signifying some extra nuance of meaning – for instance, reduplicated **de-d^hoh₁-t* might mean something like ‘s/he keeps putting’. Root-formations with telic meaning would not normally have been used in reference to events or processes ongoing at the same time as the utterance; for these a speaker would use a characterised form. But both telic and atelic root-formations could be used with reference to past time. If one hypothesises that at this same stage of the language tense is beginning to become grammaticalised, we can imagine a scenario as presented in table 5.16.

At the stage represented in table 5.16, there was a contrast between two past-referring formations meaning ‘(s)he put, placed’, one of which had a perfective meaning (**(e-)d^heh₁-t*), and the other an imperfective meaning (**(e-)de-d^hoh₁-t*). Telic verbs could thus at this stage exhibit aspectual differences between a perfective root and a characterised imperfective form, but aspect was not yet fully

Table 5.16 *Eventive formations in early PIE.*

	Atelic root	Telic root	Characterised telic root
present-referring:	* <i>h₂weh₁-t(-i)</i>		* <i>de-d^hoh₁-t(-i)</i>
past-referring:	* <i>(e-)h₂weh₁-t</i>	* <i>(e-)d^heh₁-t</i>	* <i>(e-)de-d^hoh₁-t</i>

systematic. The crucial step in the grammaticalisation of aspect appears to have taken place when atelic verbs were also able to form characterised perfective stems. The means of forming a perfective stem to an atelic root appears to have been the affix **s*, which survives as an aorist marker in Greek and Indo-Iranian and lies behind past-tense stems in many IE languages (compare the aorist stem **weg^h-s-* ‘drove’ referred to in table 5.5).

This is a plausible hypothesis for the creation of an aspect distinction in PIE, but when did the process of the grammaticalisation of aspect occur? It has been argued that the spread of **s* as a marker of the aorist took place late in PIE, and in some languages it even post-dates the end of the common period (for details see Strunk (1994)). Significantly, there is no evidence for an **s* as a perfective stem formant in Anatolian, and one theory suggests that the suffix originated in the generalisation of a marker once restricted to the third person singular (as in Hittite *nais* ‘s/he guided’ discussed above). This would fit with the theory that the creation of aspect was a recent event in PIE. However, we must be careful not to confuse structures with markers. It is perfectly possible for an old category to be formally renewed, and the apparent spread of **s* as a marker of the aorist does not necessarily mean that the category of aorist is itself late. Similarly, the co-existence of root-aorists and root-presents need not entail that the creation of separate grammatical categories of perfective and imperfective is a recent phenomenon, and there are some grounds for believing that such an opposition does underlie all IE languages, including Anatolian.

We saw above that semantic change has in some cases obscured the relationship between the original lexical aspect of the root and the formation of a root-present or a root-aorist. For instance, the root **g^weh₂-* changed its meaning from telic ‘step’ to atelic ‘go’ within the recent history of IE languages. Some problematic cases were left unresolved, including the telic root **g^{wh}en-*, meaning ‘strike’ or ‘kill’, which forms a root-present. Several scholars (see especially García Ramón (1998)) have proposed that the root originally had an atelic meaning, something like ‘beat’ rather than ‘strike’. The change of meaning must have occurred after the separation of different aspect stems, or otherwise the root-formation would have been assigned to the aorist rather than to the present. If the grammaticalisation of aspect, and the creation of separate present and aorist stems, arose after the isolation of the Anatolian languages, we would expect to find **g^{wh}en-* meaning ‘beat’ in Anatolian, but ‘strike’ elsewhere. However, as we saw at table 5.13, Hittite *kuenzi* is an exact formal and semantic match with Sanskrit *hánti*, which suggests that the change of meaning of the root had taken

Table 5.17 *The athematic optative of PIE 'to be'.*

	PIE	Sanskrit	Greek	Early Latin
1.	* <i>h₁s-yéh₁-m</i>	<i>syám</i>	<i>eíēn</i>	<i>siēm</i>
2.	* <i>h₁s-yéh₁-s</i>	<i>syás</i>	<i>eíēs</i>	<i>siēs</i>
3.	* <i>h₁s-yéh₁-t</i>	<i>syát</i>	<i>eíē</i>	<i>siēd</i>
4.	* <i>h₁s-ih₁-mé</i>	<i>syáma</i>	<i>eímen</i>	<i>sīmus</i>
5.	* <i>h₁s-ih₁-té</i>	<i>syáta</i>	<i>eíte</i>	<i>sītis</i>
6.	* <i>h₁s-ih₁-ent</i>	<i>syúr</i>	<i>eíen</i>	<i>sient</i>

place before the separation of the Anatolian languages. Further research into the prehistory of the Anatolian verbal system may help to decide the question of when the split between present and aorist stems took place.

The categories of optative and subjunctive can also be seen as late developments in PIE. The endings of these moods are not marked against the indicative, and they can be derived from the same set of eventive endings reconstructed in table 5.15. In some IE languages the optative and subjunctive are formed to the verbal root, rather than associated with a particular tense-aspect stem. This is the case for Tocharian (Pinault 1989: 124f.), and in the Sanskrit of the Vedic hymns optatives and subjunctives formed to verbal roots significantly outweigh those formed to derived stems. This suggests that the formations which later became optatives and subjunctives originally existed alongside other derived stems and were not formed from derived stems. In other words, they were themselves separate derived stems, and only later became grammaticalised as markers of mood and incorporated into the verbal paradigm.

Some evidence to support this theory comes from the details of the formation of the moods in the IE languages. The optative is constructed differently with athematic and thematic stems in the daughter languages. For athematic stems, an ablauting suffix *-yeh₁- / *-ih₁- can be reconstructed, as seen in table 5.17. The Latin forms included in the table are known as the subjunctive in the grammars, but they in fact represent the continuation of the original optative.

For thematic stems, an optative suffix *oi can be reconstructed from the correspondence of Gothic (again the forms are usually called subjunctive in grammars), Indo-Iranian and Greek. This suffix does not ablaut, as the following correspondence sets reveal:

**bher-oi-t* 's/he might carry' (optative): Greek *phéroi*, Sanskrit *bháret*, Gothic
bairai

**bher-oi-me* 'we might carry' (optative): Greek *phéroimen*, Sanskrit *bhárema*,
Gothic *bairaima*.

The thematic optative endings are clearly connected in some way to the athematic endings, but it is difficult to account for the shape of the thematic affix *-oi-, apparently without a laryngeal, beside the athematic affix *-yeh₁- / *-ih₁-.

In Tocharian, the thematic optative is formed differently: the affix **-ih₁-* is added directly to the verbal stem, with loss of the thematic vowel:

Tocharian B thematic present *klyauṣäm* ‘I hear’, derived from a stem **k^lew-s-e/o-*
 Tocharian B optative *klyauṣim* ‘I might hear’, derived from a stem **k^lew-s-ih₁-m*

This unusual formation may well be original, as it is closer to the athematic optative formation. It is possible to see that the thematic optative suffix **-oi-* is in fact a creation of late PIE, after the Tocharian branch has split from the parent. The form of the suffix can be explained by analogy to the athematic suffix, and its form might be explained if at the time of its creation the combination **-ih₁-* had developed to **-ī-*:

	<i>*h₁s-mé</i>	: <i>*h₁sih₁-mé</i>	::	<i>*b^héro-me</i>	: X
or	<i>*s-mé</i>	: <i>*sī-mé</i>	::	<i>*b^héro-me</i>	: X
	‘we are’	‘we might be’		‘we carry’	‘we might carry’
athematic indicative	:	athematic	::	thematic	: thematic optative
		optative		indicative	

$X = *b^h\text{eroih}_1\text{me}$ or $*b^h\text{ero}\bar{i}me$, then simplified to $*b^h\text{eroime}$.

If this is correct, it offers some support for the hypothesis that the optative was only grammaticalised late in the prehistory of PIE, since we can see the process whereby it develops separate forms for the thematic and athematic paradigms. The details of the formation of the PIE subjunctive may also reveal something about the immediate prehistory of the IE verb (see further section 5.6). Subjunctives of athematic stems are formed by the simple addition of the thematic vowel. Subjunctives of athematic verbs consequently look exactly like thematic indicative forms. For example, Sanskrit *gámat* ‘s/he may come’ is the third person singular subjunctive of the root-aorist, which has an athematic indicative *ágan* ‘s/he came’. The PIE equivalents of these Sanskrit forms are subjunctive $*g^w\text{em-e-t}$ and aorist $*e-g^w\text{em-t}$. The subjunctive is therefore formed in exactly the same way as the thematic stem, such as Sanskrit *bhárati* ‘he carries’ from $*b^h\text{er-e-t-i}$. The thematic subjunctive is formed with lengthened thematic vowel, as can be seen from the reconstructed third person singular subjunctive of the thematic present of the root $*b^h\text{er-}$ (in Latin, the subjunctive is used as a future):

$*b^h\text{er-}\bar{e}-t(i)$ ‘s/he may carry’: Sanskrit *bhárāti*, Greek *phérēsi*, Latin *feret*

It is easy to see how the thematic subjunctive may have arisen by analogy to the athematic form through generalisation of a rule that the subjunctive is formed by the insertion of a thematic vowel between the stem and endings. We shall return to examine the origin of the curious similarity between the thematic stems and the subjunctive in section 5.6.

In conclusion, we have seen how many of the categories reconstructed for the verbal system in the Greco-Aryan model may be seen as recent developments. In comparison with the reconstructed system sketched out in table 5.6, an ‘improved’

Table 5.18 An ‘improved’ Greco-Aryan model of the PIE verb.

	Eventive	Perfect
Indicative	Eventive indicative	Perfect indicative
Imperative	Eventive imperative	?Perfect imperative
Participle	*-nt- participle	*-wos- participle

model of the PIE verbal categories would take the form of the system given in table 5.18.

The categories of the Anatolian verb can be accounted for by the improved model reconstructed in table 5.18. The PIE eventive paradigm must lie behind the present and the preterite paradigms of the Anatolian *-mi* conjugation; we have already seen the close fit between the Hittite verb *kuenmi* ‘I kill’ and the Sanskrit cognate in table 5.13. In the prehistory of Anatolian, as in all other IE languages, the optional marker **-i* of non-past endings has become obligatory to give the endings of the *-mi* conjugation. In the next section we shall consider how the reconstructed category of the perfect corresponds to forms in Hittite.

Our improved model of table 5.18 works on the assumption that the distinction between a ‘present’ and ‘aorist’ stem arose recently in the history of PIE. This is far from certain, and it would be equally possible to explain the Anatolian from a model such as that given in table 5.19, where there is a nascent distinction between present and aorist stems in PIE. Indeed, this model might explain some of the supposed relics of specifically aorist forms in Anatolian.

Table 5.19 An alternative ‘improved’ Greco-Aryan model of the PIE verb.

	Eventive		Perfect
Indicative	Present	Aorist	Perfect indicative
Imperative	Present imperative	Aorist imperative	?Perfect imperative
Participle	*-nt- participle	*-nt- participle	*-wos- participle

5.4 The Hittite *-hi* conjugation

One of the most puzzling aspects of the Hittite verb for Indo-Europeanists has been the existence of a parallel verbal conjugation to the *-mi* conjugation. This is called the *-hi* conjugation, after the first person singular ending, and is given in table 5.20.

Many verbs in the *-hi* conjugation show ablaut differences between the singular and plural. It is generally agreed that the ablaut pattern seen in Old Hittite verbs

Table 5.20 *The Hittite -hi and -mi active conjugations.*

	<i>-hi</i> Conjugation		<i>-mi</i> Conjugation	
	Primary	Secondary	Primary	Secondary
1.	<i>-hi</i>	<i>-hun</i>	<i>-mi</i>	<i>-un</i>
2.	<i>-ti</i>	<i>-ta</i>	<i>-si</i>	<i>-ta</i>
3.	<i>-i</i>	<i>-s</i>	<i>-t</i>	<i>-ta</i>
4.	<i>-weni</i>	<i>-wen</i>	<i>-weni</i>	<i>-wen</i>
5.	<i>-teni</i>	<i>-ten</i>	<i>-teni</i>	<i>-ten</i>
6.	<i>-anzi</i>	<i>-ir</i>	<i>-anzi</i>	<i>-ir</i>

such as *sākki* ‘he knows’, *saktēni* ‘you (pl.) know’, or *āri* ‘he arrives’, *aranzi* ‘they arrive’ is original, the root-vowel *ā* reflecting an accented **o* in the singular of the paradigm and the vowel *a* in the plural deriving from an earlier zero-grade. This ablaut pattern, with accented o-grade in the strong forms and zero-grade in the weak, is not matched by any paradigm in the Hittite *mi*-conjugation. There is no functional difference between verbs conjugated in *-hi* and verbs in *-mi*. The *-hi* conjugation appears to have been common to the whole Anatolian branch. Note the correspondence between third person singular forms such as Hittite *pai* ‘he gives’ and Hieroglyphic Luwian *pi-ai-i* ‘he gives’.

Hittite *-hi* conjugation verbs often have respectable etymological links with verbal roots in other languages, but there is no clear correspondence between them and a particular paradigm of the other IE languages, as can be seen by the following comparisons of Hittite *-hi* conjugation verbs and their cognates:

Hittite *dai* ‘s/he takes’ derived from PIE **deh₃-* ‘give’

reduplicated present **de-doh₃-ti* in Sanskrit *dādāti*, Greek *dídōsi*

root aorist *(*e-*)*deh₃-t* in Sanskrit *ádāt*, Armenian *et*

Hittite *nai* ‘s/he guides’ derived from PIE **ney(H)-* ‘lead’

thematic present **ney(H)-e-ti* in Sanskrit *náyati*

s-aorist *(*e-*)*nēy(H)-s-t* in Sanskrit *ánait*

Hittite *pasi* ‘s/he swallows’ derived from PIE **peh₃-s-* ‘drink’

reduplicated present **pi-ph₃-e/o-* in Sanskrit *píbatī*, Latin *bibit*

root aorist **e-peh₃-t* in Sanskrit *ápāt*

Two of the above verbs are cognate with verbs which form root-aorists elsewhere, but it does not make sense to connect the Hittite *-hi* conjugation with the root-aorist, since other reconstructed root-aorists have Hittite cognates which are *-mi* verbs – for example, the root-aorist with third singular *(*e-*)*d^heh₁-t* meaning ‘s/he placed, put’ (Greek (dialectal) *éthē*, Sanskrit *ádhāt*, Armenian *ed*) is cognate with Hittite *temi* ‘I say’.

Hittite is the earliest attested IE language, and the *-hi* conjugation appears to be an archaism even in Anatolian (the difference between the *-hi* and *-mi*

conjugations is levelled in the youngest Anatolian language, Lycian). The fact that the *-hi* conjugation does not slot conveniently into a single reconstructed category of PIE calls for an explanation if we are to have any confidence in the reconstructed models of PIE given in tables 5.18 and 5.19. There are many explanations for the origin of the *-hi* conjugation. We shall first examine in turn the grounds for seeing a connection between the *-hi* conjugation with the thematic conjugation and the PIE perfect.

The endings of the *-hi* conjugation were first compared to the endings of the thematic verbs by Kuryłowicz as long ago as 1927, and there are some similarities which encourage the connection. Firstly, the morphological distinction between thematic and athematic personal endings corresponds to no functional opposition in the attested IE languages, just as there is no functional difference between *-hi* and *-mi* conjugations in Hittite. Secondly, there is a similarity between the first person singular in *-hi* and the reconstructed first person singular of the thematic conjugation **-oH*. The *-hi* conjugation ending of the third person singular, *-i*, can be directly compared to the Greek thematic third singular ending *-ei*. Moreover, if the *-hi* conjugation does continue the PIE thematic conjugation, then we can keep our reconstructed model of the verbal system largely intact. Unfortunately, the connection cannot be upheld, for the following reasons:

- i) There are very few good etymological correspondences of *-hi* class verbs to thematics (the connection between Hittite *nai* ‘he guides’ and Vedic *náyati* ‘he leads’ given above is one of them). Hittite *-hi* conjugation verbs are often cognate with athematic verbs in other IE languages, for example *dai* ‘he takes’ < **deh₃-* ‘give’.
- ii) Verbal suffixes which take thematic endings in other IE languages are continued by Hittite *-mi* class verbs – for instance, a reconstructed PIE suffix **-ske/o-* is inherited into Hittite with *-mi* endings, third person singular *-skizzi* < **-sketi*.
- iii) The root-ablaut of the *-hi* conjugation (with o-grade of the root in the singular and zero-grade in the plural) has no counterpart in the PIE thematic conjugation. Thematic verbs in IE languages show no ablaut or accent differences between the singular and plural.

Most scholars now see the perfect as the most likely ancestor of the *-hi* conjugation. Hittite does not have a perfect, and, if the *-hi* conjugation does continue the original perfect, then Hittite would fit well with the ‘improved’ Greco-Aryan model. Formally, the link between the perfect and the *-hi* conjugation is much better than the link with the thematic conjugation. Almost all the endings of the *-hi* conjugation can be derived from the perfect endings reconstructed in table 5.12 or else explained as contaminations from the *-mi* conjugation. The primary endings also show the addition of a final **-i*, which is paralleled in the eventive endings. Furthermore, the distinctive o-grade of the verbal root in the strong forms of the perfect is matched by the ablaut of the *-hi* conjugation. There are, however, two formal differences between the PIE perfect and the *-hi* conjugation.

Firstly, reduplication is closely associated with the perfect in other branches of IE (although it is lacking with the verb **woid-* ‘know’ reconstructed in table 5.12), but is not found in the *-hi* conjugation. Secondly, in Hittite it is possible to form derived stems in the *-hi* conjugation – for example, verbs formed with the suffixes *-ess-* and denominative verbs in *-ahh-* use the set of *-hi* endings. But in the other IE languages, the perfect was originally attached only to roots, and there is only one perfect formed from each root.

The formal match between the perfect and the *-hi* conjugation is therefore close, if not exact. The semantic and functional equation is much more difficult. As we have seen, the PIE perfect was used to denote the state resultant from an action. Although some Hittite verbs, such as *sākki* ‘s/he knows’ are stative, many are not, for example *aki* ‘s/he dies’, *waki* ‘s/he bites’, *dai* ‘s/he takes’, *pai* ‘s/he gives’ and *nai* ‘s/he guides’. How do we get from a stative meaning to these forms? According to the proponents of the theory linking the *-hi* conjugation with the perfect, the process must have taken place in separate stages. One must first assume that the small class of stative verbs, such as *sākki*, are relics of true perfect forms, but for most other verbs the perfect must have developed to a simple preterite, as it has in Latin and Germanic. The new preterite perfect formation did not merge with the preterites to *-mi* verbs (which continue PIE imperfects and aorists). Next, by analogy to verbs of the *sākki* type, a new present was developed alongside these preterite forms. Existing verbal paradigms were then assigned to the *-mi* and *-hi* conjugations, with some interchange on the basis of root-vocalism and root-shape.

This explanation of the *-hi* conjugation is now widely accepted by scholars in the German-speaking world, but it has found less favour in the USA, and has particularly been criticized by Cowgill and Jasanoff. Cowgill’s objections are three-fold. Firstly, Hittite is our earliest attested language, and it is not feasible that such an extensive restructuring of the verbal system had taken place (without leaving any relics of the earlier system) so much sooner than it happened in other IE languages. Secondly, he knew of no parallel to the back-formation of a new present tense from a preterite. And thirdly, there are very few good word-equations between Hittite *-hi* verbs and PIE perfects. Indeed, we can go further and say that some *-hi* verbs derive from roots which are unlikely ever to have had a perfect of the type reconstructed for PIE, where the perfect is surmised to have denoted the state of the subject following a verbal action. This is an unlikely formation for a root such as **deh₃-* ‘give’ (Hittite *dai* ‘takes’) or **neyH-* ‘lead’ (Hittite *nai* ‘guides’). Admittedly, a perfect with preterite function does develop in other IE languages for the root **deh₃-*, cf. Latin *dedit* ‘s/he gave, s/he has given’, but this appears to be a separate, and fairly late, development. The active perfect in Greek, *dédōka* ‘I have given’, is first attested in the language after the earliest Mycenaean and Homeric texts. In order to explain the Hittite verbal system according to this model, one must assume that the language has already progressed far beyond the stage reached in Greek only in the sixth century BC, a thousand years later than the Old Hittite texts.

Cowgill's arguments against the 'perfect' model are not conclusive; it is *possible* that the Anatolian branch radically recast its verbal system at a much faster rate than any of the other IE languages, and the absence of evidence for a good parallel to the creation of a marked present paradigm from a past tense does not necessarily mean that the change has not happened. However, it follows from the arguments put forward in section 5.3 that we can get a closer fit between Hittite and the Greco-Aryan model if we assume that considerable changes to the PIE verbal system took place after the separation of Anatolian from the rest of PIE. It accordingly makes sense to revise our model of the perfect as well, and to derive both the Greco-Aryan perfect and the Anatolian *-hi* conjugation from an earlier formation, not one from the other. We shall move on to consider two alternative ways of doing this in the next section. Before we can look at the proposed models of the early PIE verb, we must first look in detail at the reconstruction of the PIE middle, which we have delayed considering until now.

5.5 The PIE middle

We have already mentioned the opposition of voice or diathesis, which could be reconstructed for the present system and the aorist system but not for the perfect. The two voices traditionally reconstructed for PIE are known by the rather unhelpful labels *active* and *middle*, taken over from Ancient Greek grammatical terminology; and the opposition between them is not altogether clear-cut. Whether a particular verb is conjugated as active or middle is partly determined lexically, as shown in table 5.21. In this table, roots which form verbs with active or middle diathesis are grouped together, and two roots are included which show variation within the same paradigm between active and middle forms.

We shall return to the semantics of these verbal roots below. But first we should consider how the middle functions in opposition to the active. Active and middle paradigms are preserved in Anatolian, Greek, Indo-Iranian, Celtic, Tocharian, Latin and Gothic. In Latin and Gothic the middle functions as a passive, except for a few *deponent* verbs in Latin which are conjugated as middles but without passive sense; *fātur* in table 5.21 provides an example. In Celtic, and for the most part in Tocharian, the choice between the active and middle conjugation is wholly lexically determined. The three branches to retain a productive opposition between active and middle are therefore Greek, Indo-Iranian and Anatolian. In these languages, the following functions are associated with middle forms when in opposition to the active of the same verb (note that the active can be reckoned as the unmarked voice):

1. Personal involvement: Greek *lúō* (active) 'I set free', *lúomai* (middle) 'I ransom'; Vedic *yájati* (active) 's/he performs a sacrifice' (said of

Table 5.21 *Lexical assignments of roots to active or middle paradigms.*

Active	Middle
* <i>h₁es-</i> ‘be’	* <i>k’ey-</i> ‘lie’
* <i>wemh₁-</i> ‘vomit’	* <i>men-</i> ‘think’
* <i>sneh₂-</i> ‘swim’	* <i>wes-</i> ‘wear’
* <i>men-</i> ‘wait’	
	* <i>b^heh₂-</i> ‘speak’
Greek present <i>phēmi</i>	Greek aorist <i>éphato</i> , Latin <i>fātur</i>
	* <i>h₁eh₁s-</i> ‘sit’
Old Hittite present <i>eszi</i>	Sanskrit <i>áste</i> , Greek <i>hēstai</i> , Hittite preterite <i>esa</i>

the priest), *yájate* ‘s/he performs a sacrifice’ (said of person for whose benefit the sacrifice is made).

2. Reflexivity: Greek *louō* (active) ‘I wash’, *louomai* (middle) ‘I wash myself.’
3. Reciprocity: Hittite *appanzi* (active) ‘they take’, Hittite SU-*za appan-tat* (hand take-MIDDLE) ‘they took each other by the hand’.
4. Passivity: the default meaning in Latin and Gothic, also found in Greek and Anatolian.

It is worth stressing that the active and middle diathesis does not seem to be connected with an opposition between transitivity and intransitivity, or with a reduction in the valency of the verb. Some verbs which are conjugated as active may be used transitively or intransitively without any change in voice, and in function 1) above verbs may be conjugated as middle with no effect on their syntactic arguments. The distinction between active and middle is therefore not a syntactic one, but semantic. Combining the functions of the middle in opposition to the active and the semantics of the lexical stems which are associated with the middle, we can say something of the prototypical use of the middle, which appears to be dependent on how speakers view the semantic role of the subject. The middle is the voice used to denote that the subject is in some way affected by the verbal action. Thus, for transitive verbs the active typically represents the subject as the actor, and the middle represents the subject as the undergoer. For intransitive verbs the middle is preferred when there is some notion of control over the verbal action (hence the middle inflection of ‘think’ and ‘speak’), but if the verb denotes an event or action where the participant cannot have control, the active is used (thus ‘be’, ‘vomit’ and ‘wait’).

The endings of the middle have proved difficult to reconstruct. The attested personal endings are set out in table 5.22. For Latin, Old Irish and Gothic there is no distinction between primary and secondary endings preserved, and the same endings have been repeated twice in the table.

Table 5.22 *Middle endings in IE languages.*

Hittite	Tochar. A	Sanskrit	Greek	Latin	Old Irish	Gothic
Primary endings						
1. <i>-ha(ri)</i>	<i>-mār</i>	<i>-e</i>	<i>-mai</i>	<i>-r</i>	<i>-ur</i>	<i>-da</i>
2. <i>-ta(ri)</i>	<i>-tār</i>	<i>-se</i>	<i>-oi</i>	<i>-ris</i>	<i>-ther</i>	<i>-za</i>
3. <i>-(t)a(ri)</i>	<i>-tār</i>	<i>-te</i>	<i>-toi</i>	<i>-tur</i>	<i>-thir</i>	<i>-da</i>
4. <i>-wasta</i>	<i>-mtār</i>	<i>-mahe</i>	<i>-metha</i>	<i>-mur</i>	<i>-mir</i>	<i>-nda</i>
5. <i>-tuma</i>	<i>-cār</i>	<i>-dhve</i>	<i>-sthe</i>	<i>-mini</i>	<i>-the</i>	<i>-nda</i>
6. <i>-anta(ri)</i>	<i>-ntār</i>	<i>-nte</i>	<i>-ntoi</i>	<i>-ntur</i>	<i>-tir</i>	<i>-nda</i>
Secondary endings						
1. <i>-hat</i>	<i>-e</i>	<i>-i</i>	<i>-mān</i>	<i>-r</i>	<i>-ur</i>	<i>-da</i>
2. <i>-tat</i>	<i>-te</i>	<i>-thās</i>	<i>-o</i>	<i>-ris</i>	<i>-ther</i>	<i>-za</i>
3. <i>-at</i>	<i>-t</i>	<i>-ta</i>	<i>-to</i>	<i>-tur</i>	<i>-thir</i>	<i>-da</i>
4. <i>-wastat</i>	<i>-māt</i>	<i>-mahi</i>	<i>-metha</i>	<i>-mur</i>	<i>-mir</i>	<i>-nda</i>
5. <i>-tuma</i>	<i>-c</i>	<i>-dhvam</i>	<i>-sthe</i>	<i>-mini</i>	<i>-the</i>	<i>-nda</i>
6. <i>-antat</i>	<i>-nt</i>	<i>-nta</i>	<i>-onto</i>	<i>-ntur</i>	<i>-tir</i>	<i>-nda</i>

Exercise 5.5

The following table gives the present paradigms of the middle (or, in the case of Latin, the passive) indicative of the thematic stem **h₂eg-*, which we have already met in exercise 5.3. Compare these endings with the ones given in exercise 5.3 and identify possible motivating factors for the choice of **e* or **o* as the realisation of the thematic vowel. (There is no need to attempt to reconstruct the endings. Hint: in Latin both **e* and **o* develop to *i* in open medial syllables; in closed medial syllables **o* regularly develops to *u*.) Now compare the thematic nominal endings from table 4.7 and exercise 4.4. Do the same factors govern the choice of thematic vowel in the nominal endings?

	Sanskrit	Greek	Latin
1.	<i>áje</i>	<i>ágomai</i>	<i>agor</i>
2.	<i>ájase</i>	<i>ágeai</i>	<i>ageris</i>
3.	<i>ájate</i>	<i>ágetai</i>	<i>agitur</i>
4.	<i>ájāmahe</i>	<i>agómetha</i>	<i>agimur</i>
5.	<i>ájadhve</i>	<i>ágesthe</i>	<i>agiminī</i>
6.	<i>ájante</i>	<i>ágontai</i>	<i>aguntur</i>

Hittite, Tocharian, Latin and Old Irish have a final element *-r* or *-ri* attached to the middle forms. Two of these languages, Hittite and Tocharian, show forms with *-r* that appear in the primary endings only. The morph **-r* appears therefore to have acted as the analogue to **-i* in the active endings and originally marks the

Table 5.23 *Reconstruction from archaic middle endings.*

	PIE	Hittite	Sanskrit	Tocharian A	Old Irish
1.	*-h ₂ -	-ha(ri) / -hat	-e / -i	-e	
2.	*-th ₂ -	-ta(ri) / -tat	-thās	-tār / -te	-ther
3.	*-o	-a(ri) / -at			

'here and now' of middles. This explanation, proposed by Cowgill (1968: 25–7), also accounts for the absence of *-r in Greek and Vedic middle endings: at one stage these languages must have replaced the primary marker *-r with *-i on the analogy of the active endings.

The personal endings given in table 5.22 are not susceptible to normal processes of comparative reconstruction. There is no phonetic similarity between, for example, the Latin first person singular ending -or and Greek -mai. The reason for this divergence in the personal endings appears to be interference from the active forms. We have already mentioned that the middle was the marked member of the pair of active and middle, and in the history of many languages the personal endings of the middle appear to have been refashioned following a general analogical principle that the middle endings were equivalent to active endings with an additional middle marker.

This process can be seen in the history of Latin, where the original third person singular and plural endings *-tor and *-ntor have been reinterpreted as active endings -t and -nt followed by a marker involving *-r, leading to the replacement of the inherited first person singular with a new ending -or, formed by combining the active ending -ō with -r, and a first person plural ending -mur by analogy to active -mus. Similar analogical patterns have affected the middle endings of many other languages. In Greek and Tocharian, for example, the first person singular ending incorporates the characteristic *-m of the first person singular active. Indeed, in all but a few paradigms, the middle endings in the singular can be connected to the active singular markers *-m (or *-ō), *-s and *-t. The middle endings of table 5.22 which do *not* show any connection to the active morphs may therefore be taken to be archaic forms. Table 5.23 uses the archaic forms found in the singular of the middle paradigms as a basis for the reconstruction of PIE middle endings. It should be noted that in the Tocharian active the second person singular ending is also marked with a -t. The Gothic first person singular ending is excluded from the above table, since it appears to show a different sort of analogy, the spread of the ending from the third person to the first person.

The reconstructed markers of table 5.23 appear to be based on little comparative evidence, but they can help to explain the detailed development of the middle endings in other languages. As an example, let us consider the case of the first person markers -mai and -mān in Greek. As we have seen, these can be explained through incorporation of the active first singular marker *-m- into the middle

Table 5.24 Vedic Sanskrit third singular middle forms without *t*.

	‘lie’	‘give milk’
3. (primary) without <i>t</i>	<i>śáye</i> < * <i>k’éy-oi</i>	<i>duhé</i> < * <i>d^hug^h-oi</i>
3. (primary) with <i>t</i>	<i>śéte</i> < * <i>k’éy-toi</i>	
3. (secondary) with <i>t</i>	<i>á-śayat</i> < * <i>e-k’éy-o-t</i>	<i>á-duh-at</i> < * <i>e-d^hug^h-o-t</i>

ending. The reconstructed middle endings given can be used to explain exactly how this change took place:

primary	*- <i>h₂ei</i> → *- <i>mh₂ei</i> > *- <i>mai</i>
secondary	*- <i>h₂</i> → *- <i>mh₂</i> > *- <i>mā</i> .

The actual secondary ending of Greek, *-mān*, can be explained as a further re-marking of *-*mā* through the adoption of the *-*m* of the secondary active ending (which regularly developed to Greek *-n*).

The reconstructed ending for which there is the least comparative support in table 5.23 is the third person singular ending *-*o*. The evidence, however, is not completely limited to Anatolian; a few verbs inflected in the middle in Vedic Sanskrit also have third person singular forms without *-*t*. The relevant forms from the verbs *śe-* ‘lie’ and *duh-* ‘give milk’ are given in table 5.24.

The forms without *t* are completely replaced by the forms with *t* in the later language, showing the influence of the active third person singular ending *-t*. The secondary forms synchronically look like active forms, but it would be unusual to have an active secondary ending alongside a primary middle ending, and these forms are better explained diachronically if they derive from middle forms which are secondarily re-marked with the active ending *-t*. It is possible to observe the same process of replacement of an older middle form without *t* in Hittite, where an archaic middle ending *-a* loses out to *-ta* – for example, Old Hittite *hi-in-ga* /hinka/ ‘s/he bows’, and Old and Middle Hittite *hi-in-kat-ta* /hinka/ ‘s/he bows’ (see Yoshida (1990: 70 n.18)). There are also scattered examples of a putative original ending *-*o* outside Anatolian and Indo-Iranian. For example, some verbs in Old Irish have a passive or impersonal form derivable from *-*or(i)*, as *berid* ‘s/he carries’, which forms a passive *berair* / *·berar* ‘s/he is carried’. It is likely, therefore, that the process of replacement of the original ending *-*o* by *-*to*, which can still be observed in Sanskrit and Hittite, took place prehistorically in all other branches of IE, and perhaps had even begun during the PIE period.

Once the third singular ending *-*to* has been generalised, it can serve as an analogical pivot for the replacement of other parts of the paradigm. The original second person ending was reconstructed as *-*th₂*- in table 5.23. In many languages this is replaced by *-*so*, which lies behind the endings *-se* in Sanskrit, *-ris* in Latin,

Table 5.25 Vedic Sanskrit third plural middle forms with *r*.

	‘lie’	‘give milk’
6. (primary)	<i>śére</i> < * <i>kéy-ro+i</i>	<i>duhré</i> < * <i>d^hug^h-ro+i</i>
6. (secondary)	<i>áséran</i> < * <i>e-k’éy-ro+nt</i>	<i>aduhrán</i> < * <i>e-d^hug^h-ro+nt</i>

-oi in dialectal Greek and *-za* in Gothic. This ending can be derived by a four-part analogy:

-t (3 active) : *-to* (3 middle) :: *-s* (2 active) : X (2 middle)

X = *-so*.

If **-so* and **-to* are to be explained as replacements of earlier middle endings, then it seems likely that the widespread third plural middle ending **-nto* is also an analogical formation, constructed by combining the active ending **-nt* and the middle **-o*. The earlier form of the third plural middle may be preserved in the plurals of the Vedic Sanskrit verbs with a third singular without *t*, *śáyē* and *duhé* given in table 5.24. Table 5.25 gives the endings which occur for these verbs, which both show evidence of an archaic third plural ending.

The endings in table 5.25 can be explained if we posit an original third plural ending **-ro(i)*. In the imperfect the form *aduhrán* shows re-marking of an anomalous verb-form **aduhrá* with the active ending **-nt* (with loss of *t* in word-final position after a consonant) in exactly the same way that the third singular **áduha* was re-marked with active *-t* to give *áduhat*. There is not as much comparative support for an original ending **-ro* as there is for an original third singular ending **-o*. However, Latin and the Sabellian languages and Celtic share a middle third plural ending **-ntro*, which is directly continued in the Sabellian (Marrucian) form *ferenter* ‘they are carried’ < **b^her-ntro*, and can be argued to lie behind various other forms (such as Old Irish third person singular deponent endings *-thir* / *-tar* < **-tro* formed by analogy to **-ntro*). Combining all the evidence for the archaic middle endings, it is possible to reconstruct the singular and the third plural as in table 5.26.

Table 5.26 Reconstruction of PIE middle endings.

	PIE	Hittite	Sanskrit	Tocharian A	Sabellian	Old Irish
1.	* <i>-h₂-</i>	<i>-ha(ri)</i> / <i>-hat</i>	<i>-e</i> / <i>-i</i>	<i>-e</i>		
2.	* <i>-th₂-</i>	<i>-ta(ri)</i> / <i>-tat</i>	<i>-thās</i>	<i>-tār</i> / <i>-te</i>		<i>-ther</i>
3.	* <i>-o</i>	<i>-a(ri)</i> / <i>-at</i>	<i>śáy-e</i>			
6.	* <i>-ro</i>		<i>śé-re</i>		<i>-nter</i>	

Note that only one set of endings is reconstructed; the difference between primary and secondary endings may be a secondary grammaticalisation of originally separate particles, as we saw with the eventive endings reconstructed in table 5.15.

Table 5.27 Comparison of PIE middle endings, perfect endings and the *-hi* conjugation.

PIE Middle	PIE Perfect	Hittite <i>-hi</i> conjugation	
		Primary	Secondary
1. <i>*-h₂-</i>	<i>*-h₂e</i>	<i>-hi</i> < <i>*-h₂ei</i>	
2. <i>*-th₂-</i>	<i>*-th₂e</i>	<i>-ti</i> < <i>*-th₂ei</i>	
3. <i>*-o</i>	<i>*-e</i>	<i>-i</i> < <i>*-ei</i>	
6. <i>*-ro</i>	<i>*-r-</i>		<i>-ir</i>

The comparative evidence does not allow us to be certain about the final vowel of the first and second person endings.

Exercise 5.6

Look again at table 5.22 and see which of the middle endings of the different IE languages you can explain using the reconstructed endings of table 5.26 and the analogical processes of changed described in this section.

The endings reconstructed in table 5.26 share a number of similarities both with the endings in the Hittite *-hi* conjugation and the endings of the reconstructed PIE perfect, as is shown in table 5.27. Since these endings have been reconstructed for three different categories, we shall refer to them as the *h₂-series* of endings to avoid confusion (and from now on we shall call the set of endings 1. **-m*, 2. **-s*, 3. **-t*, 6. **-nt* the *m-series*). The coincidence of form between original perfect and middle endings is not necessarily a problem for the comparativist. Both the perfect and the middle are ‘subject-orientated’: the perfect is reconstructed as the paradigm which denotes the state of its logical subject following the verbal action, and the middle typically has as its subject the undergoer of the action, or the affected participant. Although verbs conjugated as middles and verbs conjugated as perfects may take complements, they are both subject-focussed. More difficult is the association of the same series of endings in both the middle and the Hittite *-hi* conjugation. Since Hittite has a fully functioning paradigmatic middle, the *-hi* conjugation cannot be a direct continuation of the middle, and such an explanation helps little to explain why verbs such as ‘take’ and ‘guide’ are in this conjugation.

Not everyone agrees that the middle endings have undergone such widespread restructuring, and one current theory holds that it is incorrect to reconstruct ‘original’ middle endings 2. **-th₂-*, 3. **-o* and 6. **-ro*, and a set of later replacements 2. **-so*, 3. **-to* and 6. **-nto*, but instead that there were two separate sets of endings, associated with two different categories. Indeed, a few verbs in Indo-Iranian appear to show both sets of endings in the third person, with a difference

of meaning between the two formations. For example, besides the plural form *duhré* ‘they give milk’, cited in table 5.25, there is also a middle form *duhaté* which means ‘they milk’, with an ending which continues PIE **-nto-i*. In other verbs the semantic opposition between the two formations is clearer: verbs with third person endings derived from **-o* or **-ro* function as passives or as statives (for example, *mahe* ‘is capable’, *ávasran* ‘they wear’). Consequently, scholars who reconstruct an original opposition between two sets of endings propose that the paradigm with **-o* and **-ro* is an original *stative*, opposed both to the active and the middle (Kümmel 1996). The similarity between the stative and the perfect endings reflects the fact that the perfect denotes a state. The paradigm with endings 2. **-so*, 3. **-to* and 6. **-nto* is seen as an independent medio-passive, ultimately derived, according to Rix (1986), from an original reflexive, formed by the combination of the active endings with a pronoun **o*.

The two theories for the explanation of the middle endings lead to two very different prehistories of the IE verb, which we shall sketch out briefly. The first theory has been most fully put forward by Jasanoff (2003), and we shall call it the ‘middle theory’. This proposes that at an early stage in PIE there were two separate paradigms which lie behind the PIE active and middle, marked by the *m*-series of endings and *h*₂-series respectively. It is no longer possible to recover the original functional opposition between these paradigms. Within the history of PIE, the original *h*₂-series endings were used both for the formation that became the PIE perfect and the Hittite *-hi* conjugation. Whether the Hittite *-hi* conjugation was once the same formation as the perfect, or whether it represents a separate paradigm which took middle endings but lost distinctly middle semantics, is uncertain. This system underwent further alterations, as the middle endings were progressively assimilated to the active endings, and the connection between the perfect, *-hi* conjugation and the middle was lost, leading to the creation of a new perfect middle paradigm and a new middle to the *-hi* conjugation. Since relics of the old middle endings still survive in Vedic and Hittite and perhaps elsewhere, these changes must have taken place after the period of shared IE unity.

The alternative theory, which we call the ‘stative theory’, sees the fundamental opposition between an active and a stative paradigm at the earliest reconstructable period of PIE, with the stative marked by the *h*₂-series. The stative endings were used in one particular paradigm to denote the state resultant from a verbal action, and this formation was grammaticalised as the PIE perfect (and through a secondary series of changes, the Hittite *-hi* conjugation). The grammaticalisation of active forms followed by a reflexive pronoun led to a new category, the middle. At the last stage of PIE we therefore have to reconstruct four separate paradigms: active, stative, middle and ‘proto-perfect’. In the subsequent prehistory of the IE languages, the perfect paradigm became detached from other stative formations, which were merged, to a lesser or greater extent, with the new middle. The merger of the old stative and middle reflects an overlap of function: the middle originally denoted reflexivity, from which arose secondary meanings of personal

involvement and passivity; the stative is naturally the voice used to denote passive states. As we have seen, the stative still survives opposed to the middle in some relic formations in Indo-Iranian.

These two competing theories operate at stages of reconstructed PIE a long way removed from the attested IE languages. But they do have consequences for the interpretation of historical data, as we shall demonstrate through the analysis of one particular root, **wes-*, according to the rival theories. The root relates to wearing clothes, and can be reconstructed from the following correspondence set:

**wes-* ‘wear’: Hittite *wes-*, Sanskrit *vas-*, Greek *heîmai*, English *wear*, Armenian *zgenum*, Tocharian B *wäs-*, Albanian *vesh*

The following verbal root-formations of **wes-* are found in Greek, Hittite and Indo-Iranian:

**wés-o* nowhere attested

**wés-ro* Vedic third plural *ávasran* interpreted as ‘they have clothed themselves’ or ‘they were wearing’

**wés-to* Vedic *váste* ‘s/he wears’ / ‘s/he puts on’; Hittite *westa* ‘s/he was wearing’; Greek *hésto* ‘s/he was wearing’

**wés-nto* Vedic *vásate* ‘they wear’, ‘they put on’; Hittite *wessanta* ‘they were wearing’; Greek *heíato* ‘they were wearing’

The forms **wés-to* and **wés-nto* everywhere have the meaning ‘wear’. According to the middle theory, **wés-to* and **wés-nto* must be replacements of earlier **wés-o* and **wés-ro*, made separately but in exactly the same way in Greek, Vedic and Hittite. The root meaning must have been something like ‘dress’, and the verb could refer either to getting dressed or wearing clothes. Vedic preserves that original double sense of the middle in *váste*, but only the secondary meaning ‘wear’ in the relic formation **wés-ro*. In Hittite and Greek, derived formations have taken the sense of ‘put on’.

For proponents of the stative theory, the meaning ‘wear’ was originally restricted to the stative paradigm, and the meaning ‘put on’ of Vedic *váste* must reflect the original meaning of the middle **wés-to*. However, **wés-to* ‘put on’ was replaced separately in Hittite and Greek by new formations, and then Greek, Vedic and Hittite have separately replaced **wés-o* ‘wears’ by **wés-to* ‘wears’. Thus the stative theory still has to operate for a replacement of the endings **-o* by **-to* and **-ro* by **-nto*. For this root, the stative theory consequently requires the reconstruction of an additional category, but without any pay-off in reducing the number of changes which must be reconstructed.

The process of working out the best model for the prehistory of the PIE verb is still taking place. The correspondence between the personal endings of three very different categories – the *-hi* conjugation, the PIE perfect and archaic middle formations – provides a tantalising avenue into the earlier verbal system of PIE. Fitting all the pieces together in terms of their original function, within a viable

chronology, is still contentious, and research into the PIE verb is likely to continue for many years to come.

5.6 Roots and stems

Pour se faire une idée du système verbal indo-européen, il faut oublier la «conjugaison», telle qu'elle apparaît en latin, en germanique, en balte, en slave, en arménien, en grec moderne, etc. (Meillet 1964: 195)

In order to get an idea of the verbal system of IE, it is necessary to forget 'conjugations' as they appear in Latin, Germanic, Baltic, Slavic, Armenian, Modern Greek, etc.

Meillet's injunction stands at the beginning of his chapter on the verb in his classic handbook of IE reconstruction (Meillet 1964). Meillet saw the organisation of verbal stems in PIE as fundamentally different from the system found in modern IE languages, where each verb will belong to a *conjugation* with a discrete number of stems and forms. Comparative study of the verb shows a wide range of differing formations attested as present or aorist tense stems from the same root. Table 5.28

Table 5.28 *Present and aorist formations from three roots.*

Root	Present	Aorist
* <i>leik^w</i> - 'leave'	1. * <i>li-ne-k^w</i> - Sanskrit <i>riṅákti</i> , Latin <i>linquit</i> 2. * <i>leik^w-e</i> - Greek <i>leípō</i> , Gothic <i>leihwan</i>	1. * <i>leik^w</i> - Sanskrit <i>rikthás</i> 2. * <i>leik^w-s</i> - Sanskrit <i>áraig</i> 3. * <i>lik^w-e</i> - Greek <i>élipon</i> , Armenian <i>elik</i> '
* <i>deik</i> '- 'show'	1. * <i>deik'-nu</i> - Greek <i>deíknūmi</i> 2. * <i>di-deik'</i> - Sanskrit <i>dídeṣ-</i> 3. * <i>deik'-e</i> - Latin <i>dīcō</i> 'I say', Gothic <i>ga-teihan</i>	1. * <i>deik'</i> - Sanskrit <i>ádiṣta</i> 2. * <i>deik'-s</i> - Greek <i>édeiksa</i> , Latin <i>dīxī</i> 'I said'
* <i>d^heh₁(y)</i> - 'suckle'	1. * <i>d^hi-d^heh₁</i> - Luwian <i>títaimi</i> - 'nurtured' 2. * <i>d^hi-ne-h₁</i> - Sanskrit <i>dhinóti</i> 3. * <i>d^heh₁-ye</i> - Armenian <i>diem</i> , Old High German <i>taen</i> 4. * <i>d^hh₁-eye</i> - Sanskrit <i>dháyati</i>	1. * <i>d^heh₁-s</i> - Greek <i>thésato</i>

gives some of the different present and aorist formations found in IE languages from three different roots.

In order to explain the number of different stem formations with the same function, Meillet supposed that in the parent language not just one present stem was opposed to one aorist stem, but rather it was possible to form several present and aorist stems from the same root. These stems were held to show different ‘nuances’ of aspectual meaning (or, to use the German term, *Aktionsart*), such as punctual, repeated or incipient action. Each root could show a wide variety of different formations, none of which presupposed the other. The two modes of forming a present of the root **leik^w*- in table 5.28 were consequently reconstructed with different meanings: the nasal infix present (1) was ‘perfective’ and the thematic formation (2) ‘imperfective’ (Pokorny 1959: 669).

Exercise 5.7

The table below gives the present paradigm of the verb *riṅákti* ‘leave’ in Sanskrit. Work out what the reconstructed PIE paradigm is likely to have been, using the athematic endings given in table 5.9 and deciding on the most likely pattern of ablaut variation in the verb.

Present active

1. *riṅájmi*
2. *riṅákṣi*
3. *riṅákti*
4. *riṅjmas*
5. *riṅkthá*
6. *riṅjánti*

However, better knowledge of the earliest attested IE languages has led to a revision of this view, and researchers have increasingly become aware that if two stems can be reconstructed for PIE, one may represent an archaism and the other an innovatory replacement. Thus athematic verbs are in general a relic class, replaced over the history of individual languages by thematic formations. Motivation for the replacement of athematic verbs is not difficult to find: the juxtaposition of root-final consonants and the athematic endings (mostly consonant-initial) led to clusters which were often simplified or otherwise altered, so that the boundary between root and desinence, or suffix and desinence, became opaque to speakers. In some languages, paradigms still survive which exemplify the extent to which regular phonological developments can conceal the form of the root and the suffix. For example, the active conjugation of the athematic present formed to the root *duh-* ‘milk’ in Vedic Sanskrit gives second person singular *dhókṣi* ‘you milk’, third person *dógdhi* ‘s/he milks’. This paradigm is later replaced by a present formed with a suffix *-ya-*, *duhyati* ‘s/he milks’ in Classical Sanskrit.

It is possible, therefore, that the thematic presents **leik^w-e-* and **deik^h-e-*, and the thematic aorist **lik^w-e-*, reconstructed in table 5.28, are in fact replacements of earlier athematic formations. Support for this hypothesis comes from the observation that thematic presents formed on the pattern of **leik^w-e-* and **deik^h-e-*, with the root in e-grade and thematic vowel added directly to it, are extremely rare, if not completely absent, in the Anatolian languages (and there are only very few verbs of this type in Tocharian). This suggests that the process of replacement of athematic verbs by thematics may not have been underway at the time when the ancestor of Hittite separated from the other IE languages. The class of thematic aorists of the type **lik^w-e-* is found in several languages, but there is little cross-linguistic agreement on which verbs formed an aorist of this type, and it was argued by Cardona (1960) that hardly any thematic aorists could be securely reconstructed for PIE. Similarly, many examples of the aorist formed with a suffix **s* can be explained as post-PIE extensions of the suffix.

Consequently, the most recent dictionary of PIE verbs, edited by Rix *et al.* (1998), reconstructs only one present formation for the root **leik^w-*, the nasal infix present **li-ne-k^w-*, and one aorist formation, the athematic root aorist **leik^w-*. Since the semantics of ‘to leave’ are basically telic, this is in accord with the theory sketched out at section 5.2, that there is a relationship between the root-formation and the inherent lexical aspect of a verb, with telic verbs assigned to the aorist. We are therefore back to something like a ‘conjugation’ for the verb **leik^w-* in PIE, rather than the reconstruction of a verbal root with many possible formations.

Meillet’s rejection of the reconstruction of paradigms was based on his contention that the existence of one verbal stem did not presuppose or rely upon the existence of any other: each stem was separately derived from the root. Some roots do still show a bewildering array of different formations. The root **d^heh₁(y)-* in table 5.28 is one such example. It is not possible to reduce the four present stems given there down any further (the reconstruction follows Rix *et al.* (1998)). But Meillet’s claim is looking less likely for a number of other roots, where patterns of associations between certain present stems and aorist stems have started to emerge. Nasal infix presents, of the type of **li-ne-k^w-t*, are overwhelmingly found beside root aorist formations, as can be seen by the count of aorist formations beside reconstructed nasal infix presents in table 5.29 taken from the material in Rix *et al.* (1998). Since root aorists are hypothesised to reflect originally telic roots, the nasal infix present can be seen as a productive way of forming imperfective forms to verbal roots with an inherently perfective aspect. The nasal infix need not have any particular *Aktionsart* in late PIE: it is just one marker of the present stem.

Although affixes such as the nasal infix may have been grammaticalised as markers of tense and aspect stems in late PIE, there is much current research attempting to elucidate their earlier function. In some cases we may be fortunate enough to have sufficient clues to unearth earlier functions of suffixes. For example, the nasal infix retains a causative function in the verb **d^heb^h-ne-u-* ‘makes small’ which is derived from the adjective **d^heb^h-u-* ‘small’, and was, as we saw

Table 5.29 *Aorist formations from nasal infix presents.*

Root aorist	Sigmatic aorist	Reduplicated aorist	No aorist attested
129 (32 uncertain)	17 (7 uncertain)	1 (1 uncertain)	90 (37 uncertain)

in table 5.13, one of the examples of an exact correspondence between Hittite and Sanskrit.

**d^heb^h-ne-u-ti* ‘makes small’: Hittite *tepnuzzi* ‘makes small’, Sanskrit *dabhnóti* ‘cheats’

**d^heb^h-u-* ‘small’: Hittite *tepu-*, Sanskrit *dabhrá-* < **d^heb^h-ro-*

The nasal infix can also be seen to have a causative function in other derivatives, such as Latin *pangō* ‘I fix’ (from a root **peh₂g-* ‘firm, fast’). However, for many other verbs, including the root **leik^w-*, a causative meaning is not appropriate. In order to address this problem, Meiser (1993) has argued that the nasal infix originally functioned, not as a causative, but as a marker of transitivity. In order to explain the use with the root **leik^w-* ‘to leave’, Meiser further proposes that the root originally had an intransitive meaning ‘to get away (from)’, a use that survives in Avestan, and the form **li-ne-k^w-* originally denoted the transitive sense ‘leave’. Meiser’s reconstruction of the original function of the nasal infix clearly operates at an earlier level of the language than the paradigmatic opposition of present and aorist, where, as we saw, the nasal infix is just one way of forming a present stem. The reconstruction of the nasal infix as a marker of transitivity is one possible way of explaining a number of various facts. However, fitting the pieces of the jig-saw together is still problematic. The nasal infix is used in late PIE to form imperfective present stems from telic verbs. Cross-linguistically, transitivity aligns with the perfective, rather than the imperfective, aspect. For example, a punctual act, such as ‘kill’, is typically more readily encoded as a transitive than a non-punctual one such as ‘fight’. We might therefore expect to see a marker of transitivity used to mark the perfective aspect (i.e. the PIE aorist) rather than the imperfective, but in fact the opposite happens.

For other stem-forming affixes, the reconstruction of the PIE background may be even more complex. We have already seen that the thematic vowel is used as a suffix to form present stems for some roots, often replacing earlier athematic stems. In section 5.2 we noted that the thematic vowel also forms subjunctives to athematic indicatives, and that the subjunctive mood has the hallmarks of a derived formation which had been grammaticalised as a mood. The thematic vowel is consequently used in two different ways in the verbal system. With some roots, it has become a lexicalised marker of the present, or the aorist, stem. With all roots, it has become grammaticalised as a marker of mood. However, there is no subjunctive mood in the Anatolian languages, and scarcely a good example of a present stem formed in the same way as **leik^w-e-*, with the root

followed by the thematic vowel and personal endings. This suggests that both extensions of the thematic vowel took place only recently in the prehistory of PIE. In Tocharian, a language branch which probably also derives from an early stage of PIE, only a handful of inherited presents were formed through the addition of the thematic vowel directly to the root, but there is better evidence for original subjunctive formations with the thematic vowel (see the data collected by Ringe (2000)). This suggests that the thematic vowel was originally a functional suffix which was later reanalysed, but the details of the development are difficult to work out (Jasanoff (2003) is the latest to attempt to answer this question). Why were some occurrences of root and the thematic vowel reinterpreted as present indicatives, while others were not? And if thematics and subjunctives were not around at the time of the stage of PIE ancestral to Anatolian, how did they subsequently develop? These questions will continue to occupy linguists in the future.

Further reading

Introductory surveys in English of the verb in IE languages are provided by Kerns and Schwarz (1972), which contains verbal paradigms for all IE languages, but is very unreliable with many errors, and Hewson and Bubenik (1997), which provides an overview of different tense / aspect systems within the individual branches. Sihler (1995) gives a comprehensive overview of the Greek and Latin verbal systems, and one of the more readable introductions to the reconstructed system. Sihler's work builds largely on the teaching of Warren Cowgill, who drew attention to the inadequacy of the Greco-Aryan model as a way of explaining Hittite (see in particular Cowgill (1979)). Cowgill (1985) argues against a special 'thematic' set of verb-endings (this paper was published posthumously and is consequently rather condensed).

Calvert Watkins published two important books on the PIE verbal system early in his career (Watkins 1962 and 1969); his 1969 book has been heavily criticised for its over-ambitious attempts to reconstruct on the basis of personal endings alone, and Watkins himself has since rejected some of the claims he made. Watkins' former student Jasanoff has advanced and modified Watkins' approach (see particularly Jasanoff (1978 and 2003)), and he has constructed elegant models of the PIE verb which do not rely on the primacy of the Greco-Aryan model (it should be noted that the 'Stative' referred to in Jasanoff's 1978 book 'Stative and Middle' is a different category from the 'stative' discussed in section 5.5). The first chapter of Jasanoff (2003) sets out the problems concerning the connection of the Hittite *-hi* conjugation with the reconstructed PIE verb brilliantly, and we have used it in the above discussion, and one scenario for the internal history of the PIE verb according to the 'middle theory', given in section 5.5, follows Jasanoff's explanation of the Hittite *-hi* conjugation.

While the focus of much American research into the verb has been the elucidation of the history of personal endings, the best of the European research has been directed at elucidating the categories of the verb and the relationship between different stem-building processes. This tradition of research is crowned by the *Lexikon der Indogermanischen Verben* (Rix *et al.* 1998, second edition 2001), which includes a concise introduction to the PIE verb as reconstructed by Rix and his students. Rix is himself partly responsible for the ‘stative theory’ sketched out in section 5.5 (see Rix (1988), who develops the idea of Oettinger (1976)), although the fullest expression of the stative theory is in the work of Kümmel (1996 and 2000). Rix’s explanation of the secondary character (Rix 1986) of the IE moods is a classic piece of internal reconstruction.

There are numerous treatments of individual aspects of the reconstructed PIE verb and the development of the verb in individual languages. For the PIE verb, the perfect has recently been handled by di Giovine (1990–6, see also Kümmel 2000). Bendahman (1993) discusses the reduplicated aorist; Drinka (1995) the sigmatic aorist; Cardona (1960) the thematic aorist; Giannakis (1997) and Niepokuj (1997) reduplication; Strunk (1967) and Meiser (1993) the nasal present; Forssman (1985) the imperative; Rix (1986) and Euler (1992) moods; and Stempel (1996) (supported by Klaiman (1991) and Kemmer (1993)) voice. Further references, particularly to discussion of individual paradigms and stem formations, are given in Szemerényi (1996: 230–338) and Meier-Brügger (2003: 163–87).

Discussion points

1. The paradigm of the verbs ‘to be’ and ‘to know’ are ‘irregular’ in most of the IE languages, yet they are reconstructed as regular paradigms for PIE. Should this worry the comparativist?
2. Many IE languages have a category of ‘infinitive’, yet this is not reconstructable for PIE. How might infinitives have arisen? What other categories of the verb are new creations in any branch of IE with which you are familiar, and what is their origin?
3. ‘The middle is the voice used to denote that the subject is in some way affected by the verbal action.’ How can this prototypical meaning of the middle be related to a) the meanings which develop in the daughter languages, and b) the middle verbs in any branch of IE with which you are familiar?
4. ‘Indo-Europeanists are very good at finding ways of linking morphological forms in different languages. They are less good at finding convincing semantic pathways to explain the morphology.’ Is this fair criticism?