Reconstructing Semantic Roles: Proto-Indo-European **-b^{hi}*

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Abstract

Traditional approaches to the reconstruction of Proto-Indo-European nominal morphosyntax have operated by first reconstructing the set of morphological cases for every declensional type, and then attempting to establish the meaning of the different cases, regardless of the specific ending that was used for each declensional type. However, more insight can be gained into the reconstruction of the nominal syntax of proto-languages by applying the concepts and methodologies developed in recent years in functional-typological approaches to language study. Under this approach, the aim of syntactic reconstruction in the nominal domain lies not in determining the meaning of a given case as a whole but rather in elucidating the semantic role(s) that a specific formative could be used for and, to the extent that this is possible, how those semantic roles relate to each other in historical terms. In this article we survey the semantic roles related to **-b^{hi}*-endings in the old Indo-European languages. In the traditional reconstruction, **-b^{hi}* has been considered the suffix expressing the Instrumental plural of the athematic declension. However, in the various branches of the family in which it is attested, **-b^{hi}*-endings express a broad array of semantic roles. When charted on a diachronic semantic map of Instrument and related semantic roles, the **-b^{hi}*-endings appear to cover neighbouring areas, and it becomes clear that they have followed well-known paths of semantic change. If we add the information about **-b^{hi}* in the pronominal declension and its etymology, a neat grammaticalisation process is revealed. This results in a 'dynamic' reconstruction of the morphosyntax of the proto-language, which is more in accord with what we know about the actual processes of semantic change in grammatical markers and paradigmatisation of markers more generally.

1 Introduction: Reconstructing Semantic Roles

In this article we explore a new type of approach to the reconstruction of Proto-Indo-European (PIE) case syntax.¹ We apply the concepts and methodologies developed in recent years in functional-typological approaches to language to the reconstruction of the nominal syntax of a proto-language. Therefore, instead of trying to reconstruct the possible meanings of a given syntactic case in PIE by comparing the meanings associated with that syntactic case in the Old Indo-European languages, we will focus on a specific formative and will analyse in depth which semantic roles are expressed by means of that form in the various daughter languages.

The study of semantic roles already has a long tradition in linguistics, and semantic roles have been the object of intensive research in syntax in the last years (see Luraghi & Narrog 2014: 1–12, with further references). However, to the best of our knowledge, whether an approach based on the analysis of the semantic roles expressed by a specific form can help to refine syntactic reconstruction has not yet been explored. From this perspective, the aim of syntactic reconstruction in the domain of nominal syntax would not be to determine the meaning(s) of a case as a whole in a proto-language, that is, the meaning(s) and use(s) of the Accusative, the Dative, and so on. The goal would be, instead, to elucidate the semantic role(s) that a particular case ending could be used for, and, to the extent that this is possible, establish how those semantic roles relate to each other in historical terms, and what semantic changes can account for the different meanings across the languages of the family.

In contrast to more traditional approaches, some previous studies have already focused on the processes by which certain endings came to be used, aiming to recover their original functions and analysing how they entered the nominal declension. This was, for example, the case with Villar's (1981) approach to the reconstruction of the Dative and Locative endings **-ei/-i* in Proto-Indo-European, elaborating on previous ideas that go back to W. D. Whitney and K. Brugmann. However, those studies were not framed in the same methodological perspective that we will be applying now.

In this article, we will take the PIE 'Instrumental' ending **-b^{hi}i* as a case study. After reviewing the traditional approaches to the syntax of the Instrumental

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case in PIE and pointing out some of their flaws, we will carry out a thorough revision of the data about **-b^{hi}*-endings in the ancient Indo-European languages, identifying which semantic roles they can express in the languages in which they are attested. This will be the empirical basis for an integrated account of the data in terms of reconstruction and historical development.

Relying on the scholarly literature on the grammaticalisation of Instruments and related cases, we will try to understand which semantic changes must have taken place before the form came to express the variety of semantic roles that it is used for in the Old Indo-European languages. A helpful tool for that analysis will be semantic maps, which can be used to represent the linguistic relationship between forms and meanings or functions, as well as their closeness and similarity. We will chart our findings on the semantic maps proposed so far for the domain of the Instrument and related semantic roles to see whether a consistent pattern emerges for the data provided by the Old Indo-European languages. Finally, based on our findings, we will argue in favour of an etymology for the suffix **-b^{hi}*.

The structure of the article is as follows: we first discuss certain problems in traditional approaches to the reconstruction of case syntax in Proto-Indo-European (Section 2) and review the proposals for the reconstruction of a PIE Instrumental case ending **-b^{hi}* (Section 3). After this, we provide the results of a thorough analysis of the semantic roles associated with **-b^{hi}*-endings in the various branches of the Indo-European family in which they occur in the nominal inflection: Old Indic (Section 3.1.1), Iranian (Section 3.1.2), Armenian (Section 3.1.3), Greek (Section 3.1.4), and Celtic (Section 3.1.5). We then bring together the data of all these branches (Section 3.2) and add the information about the use of **-b^{hi}*-forms in the pronominal declension, which are significantly different (Section 3.3). On this basis we attempt a reconstruction of the original meaning of the PIE suffix **-b^{hi}* and the paths that it must have followed before it came to be associated with the various semantic roles that it expressed in the Old Indo-European languages (Section 3.4). In the light of our research, we review the etymologies proposed so far for this marker and reconstruct the grammaticalisation process that it must have undergone (Section 3.5). The final part provides a summary of our findings and conclusions (Section 4).

2 Problems with Traditional Approaches to the Reconstruction of Case Syntax

Traditional approaches to the reconstruction of Proto-Indo-European nominal morphosyntax have operated by first reconstructing the set of morphological cases for every declensional type and then by trying to establish the meaning

of the different cases, regardless of the specific form that was used for each declensional type (e.g. Fritz 2003: 261–274).

An Instrumental case has traditionally been reconstructed for all declensional types in Proto-Indo-European. According to Fortson (2010: 115–129), the endings would be as shown in Tables 9.1 and 9.2 for the athematic and thematic declensions.

Nevertheless, we find differences in the details of the reconstructed suffixes in the vast academic literature on this topic. We cannot review this literature here in full, so we will mention just a few examples of the different reconstructions proposed for the Instrumental and other oblique cases. We will not go into the details of the arguments in favour of reconstructing all of them, since we will argue below that a different kind of approach is needed.

TABLE 9.1 Reconstruction of the endings of the athematic declension
in PIE according to Fortson (2010: 115–118)

	Singular	Plural
NOMINATIVE	-s	-es
ACCUSATIVE	-m	-ns
GENITIVE	-(é)s	-ōm ?
DATIVE	-ei	-bh(i)os
INSTRUMENTAL	-(e)h ₁	-bhi(-)
LOCATIVE	-i	-su

TABLE 9.2 Reconstruction of the endings of the thematic declension
in PIE according to Fortson (2010: 126–129)

	Singular	Plural
NOMINATIVE	-os	-ōs
VOCATIVE	-e	-ōs
ACCUSATIVE	-om	-ons
GENITIVE	-os ?	-ōm
ABLATIVE	-ōt	-o(i)bh-
DATIVE	-ōi	-o(i)bh-
INSTRUMENTAL	-ō	-ōis
LOCATIVE	-oi	-oisu

TABLE 9.3 Reconstruction of Instrumental and related endings according to different scholars

	Instr. sg.	Instr. pl	Dat. pl.	Abl. pl.
Szemerényi (1996: 155–192)	*-e/-o *-bhi/-mi	*-ōis *-bhis/-mis	*-bh(y)os/-mos	*-bh(y)os/-mos
Mallory – Adams (2006: 57–58)		*-ōis *-bhi	*-oibh(y)os/-omus *-mus	*-om *-bh(y)os
Beekes (2011: 186)		*-ōis *-bhi,	*-omus *-mus	*-ios

Szemerényi (1996: 155–192) reconstructs both **-e/-o* and **-b^{hi}/-mi* for the Instrumental singular, **-b^{his}/-mis* and **-ōis* for the Instrumental plural and **-b^h(y)os/-mos* for the Dative-Ablative plural. Like Fortson, Mallory and Adams (2006: 57–58) reconstruct Instr. Pl. **-b^{hi}*, Abl. Pl. **-b^h(y)os* and Dat. Pl. **-mus* for the athematic declension, while for the thematic declension they propose Dat. Pl. **-oib^h(y)os/-omus* and Inst. Pl. **-ōis*, but Abl. Pl. **-om* (same ending as the Gen. Pl.). Beekes (2011: 186) proposes Instr. Pl. **-b^{hi}*, Dat. Pl. **-mus* and Abl. Pl. **-ios* for the athematic declension, and Instr. Pl. **-ōis* and Dat. Pl. **-omus* for the thematic declension. On the basis of Indo-Iranian (Skt. Instr.-Dat.-Abl. *-bhyām*, Av. *-bya*, etc.), some scholars also reconstruct a PIE Instr. Du. **-b^{hi}ih₁* (see, e.g., Mallory and Adams 2006: 57). Some of the proposed reconstructions are summarised in Table 9.3.

In summary, relying on the evidence provided by the oblique endings of some ancient Indo-European languages, it could at most be argued that a **-b^{hi}*-ending must have been used in Proto-Indo-European, but what its precise array of meanings and functions was is far from clear.

Fritz (2003: 268) has summarised the values of the Instrumental case in Proto-Indo-European as follows:

- Instrumental of accompaniment
- Instrumental of means
- Instrumental of route
- Instrumental of constitution
- Instrumental of accompanying circumstances
- Instrumental of reason
- Instrumental of comparison

In traditional approaches, it has been customary to quote sentences from different ancient Indo-European languages when reconstructing the values of the Proto-Indo-European Instrumental, regardless of what the actual forms

are and what place they occupy inside the whole declensional system of the language. For instance, under the heading “instrumental of accompaniment” Fritz (2003: 268) provides the following examples:

LATIN:

- (1) Postquam utrimque exitum est maxima copia (Plaut.*Amph.*219)
after on.both.sides gone is great.ABL.SG quantity.ABL.SG
‘after they marched up in great numbers on both sides’

GREEK:

- (2) enthá d’ hikáneis nēí te kai hetároi (Od.11.160–161)
here but arrive.2SG ship.DAT.SG and companion.DAT.PL
‘you arrive here with the ship and the companions’

VEDIC:

- (3) vísvair ūmebhir á gahi (RV 5.51.1)
all.INST.PL helpers.INSTR.PL here come.2SG.IMPV
‘come here with all the helpers’

The problem with this type of approach is that the actual position of the Instrumental case is radically different in the three languages. As can be seen in Table 9.4, in Latin the Instrumental and the Ablative have merged into the Ablative case and, as shown in Table 9.5, in Greek the only grammaticalised oblique case is Dative, while in Vedic (Table 9.6) we have a proper Instrumental case. In our view, it is too risky to assume that the Ablative in Latin and the Dative in Greek provide evidence at the same level for the reconstruction of the meaning and function of the Proto-Indo-European Instrumental as Vedic or other Indo-European languages that have a proper, devoted Instrumental case, which, if it did exist in PIE, must have had a different form from those found in Latin and Greek.

TABLE 9.4 Latin declension (athematic)

	Singular	Plural
NOMINATIVE	<i>consul</i>	<i>consules</i>
VOCATIVE	<i>consul</i>	<i>consules</i>
ACCUSATIVE	<i>consulem</i>	<i>consules</i>
GENITIVE	<i>consulis</i>	<i>consulum</i>
DATIVE	<i>consuli</i>	<i>consulibus</i>
ABLATIVE	<i>consule</i>	<i>consulibus</i>

TABLE 9.5 Greek declension (athematic)

	Singular	Plural
NOMINATIVE	<i>phúlaks</i>	<i>phúlakes</i>
VOCATIVE	<i>phúlaks</i>	<i>phúlakes</i>
ACCUSATIVE	<i>phúlaka</i>	<i>phúlakas</i>
GENITIVE	<i>phúlakos</i>	<i>phulákōn</i>
DATIVE	<i>phúlaki</i>	<i>phúlaksi</i>

TABLE 9.6 Vedic declension (athematic)

	Singular	Plural
NOMINATIVE	<i>marút</i>	<i>marútas</i>
VOCATIVE	<i>marút</i>	<i>marútas</i>
ACCUSATIVE	<i>marútam</i>	<i>marútas</i>
GENITIVE	<i>marútas</i>	<i>marútām</i>
ABLATIVE	<i>marútas</i>	<i>marúdbhyas</i>
DATIVE	<i>marúte</i>	<i>marúdbhyas</i>
INSTRUMENTAL	<i>marútā</i>	<i>marúdbhis</i>
LOCATIVE	<i>marúti</i>	<i>marútsu</i>

There are further problems concerning the reconstruction of an Instrumental case for PIE. To start with, it is doubtful whether a morphologically differentiated Instrumental case can be reconstructed for Proto-Indo-European. As Smitherman & Barðdal (2009: 268) have argued, relying on the evidence provided by the ancient Indo-European languages, it seems more reasonable to assume an “oblique, vaguely instrumental role to **-b^hi*” without assigning it “a specific inflectional role in the Proto-Indo-European declension system”.

Furthermore, the fact that the **-b^h-* and **-m-* endings of the oblique cases of the plural are absent from the Anatolian branch of the family strongly suggests that this is a late development in Proto-Indo-European (Fortson 2010: 118–119, among others). However, given that in Balto-Slavic and Germanic the oblique cases of the plural show endings in *-m-* instead of **-b^h-*, it has been argued that in Proto-Indo-European the Dative-Ablative plural ending was **-mos*, and the Instrumental plural ending was **-b^hi*. The dialectal distribution of **-m-* and **-b^h-* endings would thus be the result of different processes of analogical

TABLE 9.7 Instrumental case markers in Sanskrit in the various declensions

	Athematic	Thematic	Feminine
SINGULAR	-ā	-ā/-ena	-ā/-ayā
PLURAL	-bhis	-ais/-ebhis	-ābhis
DUAL	-bhyām	-bhyām	-bhyām

levelling, resulting in **-b^hos/-b^hi(s)* and **-mos/-mi* (see Meier-Brügger 2003: 197 with further references). Finally, languages that have a proper Instrumental case display different endings for the Instrumental singular and plural in the various declensional types, as typified by Sanskrit (Table 9.7).

3 Case Study: Indo-European **-b^hi*

As we have already noted, the ancient Indo-European languages can be classified into two groups according to the endings used for the formation of the oblique cases of the plural number (Instrumental, Dative, Ablative, and Locative): **-m*-endings are found in Germanic and Balto-Slavic, while **-b^h*-endings occur in Indo-Iranian, Armenian, Greek, Italic (including Latin), and Celtic. There are both **-mo/-mi*- and **-b^ho/-b^hi* endings, and they show different values, as shown in Table 9.8.

As we have discussed above, in the traditional reconstruction, **-b^hi* has usually been considered the marker of the Instrumental plural of the athematic declension. The final *-s* of **-b^his* has been variously interpreted: plural marker *-s* or adverbial *-s* as in the adverbs of various ancient Indo-European languages such as Lat. *bis* ‘twice’, Gk. *pyks* ‘with the fist’, etc. Jasanoff (2009:

TABLE 9.8 *-mo/-mi*- and **-b^ho/-b^hi*-endings (adapted from Meier-Brügger 2003: 197)

	Latin	Greek	Indo-Iranian	Proto-Germanic	Balto-Slavic ^a
ABLATIVE	-bus		*-b ^h ias	*-m-	*-mos
DATIVE	-bus		*-b ^h ias	*-m-	*-mos
INSTRUMENTAL		-p ^h i	*-bhis	*-m-	*-mi(s)

a According to Olander (2014: 267–286), however, the Dative plural ending of Proto-Balto-Slavic must have been **-mas* and the Instrumental plural ending (except for *o*-stems), **-mīs*.

138–144) has proposed that it comes from **-b^{hi}* with the addition of what he considers to be the oldest Instrumental marker in Indo-European, **-is*. In any case, morphologically, the ending can only have been originally **-b^{hi}*, as proved by the Greek evidence – a loss of the final *-s* cannot be accounted for in Old Greek, so the Indo-Iranian Instrumental ending *-bhis* must be an innovation of this branch of the family.

The evidence for reconstructing a **-b^{hi}*-ending is the following:

- Greek (Mycenaean and Homeric) *-phi*
- Armenian: Instrumental singular *-w/-b/-v/-Ø* (< **-b^{hi}*), Instrumental plural *-wk'/-bk'/-vk'/-k'* (with plural marker *-k'*) (see further explanations in Schmitt (1981: 92))
- Old Indic (Vedic and Sanskrit): Instrumental plural *-bhis*, Dative-Ablative plural *-bhyas*, Instrumental-Dative-Ablative dual *-bhyām*
- Iranian: Avestan: Instrumental plural *-bīš*, Dative-Ablative plural *-bīō*, Instrumental-Dative-Ablative dual *-bīiā* (there is also *-βe* and an isolated instance of *-bīiām* [case uncertain], see Hoffmann & Forssmann 1996: 115); Old Persian Instrumental plural *-biš*, Instrumental-Dative-Ablative dual *-biyā*; etc.
- Celtic: Gaulish *-bi/-be*, Old Irish Dative *-(a)ib*, etc.

In principle, the Dative-Ablative plural ending *-fs* of the Sabellic languages might also come from PIE **-b^{his}*, but the correspondences with other Italic and Indo-European Western languages rather point to **-b^{hos}* (Meiser 1998: 128–129). Shields (1974: 281–286) argued that **-b^{hi}* was to be found in Tocharian Genitives in *-pi* (Toch. B *-epi*, Toch. A *-āp/-yāp*); see also Pinault (1989: 89).

The uses of the **-b^{hi}*-endings, however, differ from language to language. Thus, in Vedic we have Instr. Pl. *-bhis*, Dat.-Abl. Pl. *-bhyas* and Instr.-Dat.-Abl. Dual *-bhyām*, the three of them serving for the expression of a wider range of semantic roles than those referred to by the name of the case. In Mycenaean Greek *-pi* (phonetically [-p^{hi}]) is not only Instrumental, but also Locative and it is even used with prepositions; further possibilities are found in Homeric Greek. In Gaulish, *-bi* also occurs and it is used with a Sociative value. In the following sections we will undertake a thorough review of those values.

In addition, **-b^{hei}*, the *e*-grade variant of the same form (**-b^{hi}*) appears in the Dative case of the personal pronouns of some Indo-European languages. We will return to this later, after having discussed the meanings and functions of the **-b^{hi}*-endings in Section 3.1 below.

The interpretation of the *-bhyo(-s)* endings of the Indo-Iranian languages is uncertain. They might be related to the oblique ending **-bos* in the Western Indo-European languages (Latin, Italic, Celtic, Lusitanian ...), if we could somehow assume that these have irregularly lost their intervocalic *-y-*, but this is a

rather unlikely scenario. Furthermore, even if the regular ending in Sanskrit is *-bhyas*, there are instances of *-bhya* in Vedic, showing thus that *-s* is a later addition, as the Iranian data also suggests (cf. Avestan *maibiiā*, *ahmaibiiā*, etc.).

3.1 *Semantic Roles of *-b^{hi} in the Old Indo-European Languages*

We restrict our review to the adpositionless **-b^{hi}*-forms now, but in Table 9.10 we also include information on whether the use of adpositions is possible or not in a given language. This is important, since, as Luraghi (2001a: 39) has warned, we should avoid calling syncretism the fact that the same grammatical case is used with different values if those values depend on the adposition that it goes with.

It is also important to distinguish between lexical semantics and grammatical semantics, for as Luraghi (2001a: 41) remarks for the Dative in Classical Greek, the specific lexemes that occur in a plain case (i.e. with no adposition) can be unambiguously interpreted as expressing a given semantic role according to its lexical features. We will see that this is the case with some of the semantic roles associated with **-b^{hi}*-forms in certain Indo-European languages, and this will also help us to explain the different semantic and syntactic evolution in the nominal and pronominal declensions.

3.1.1 Old Indic

Old Indic is especially interesting for the development and extension of the **-b^{hi}*-endings, given that there is internal evidence of the spread of its use. In the Vedic language, the Instrumental plural of the thematic declension can be either **-ais* or **-eb^{his}*. The former has clear parallels in other Indo-European languages and must go back to PIE **-ōis*, while the latter is clearly an innovation in Old Indic due to analogy with the athematic declension and its ending *-bhis*.

As with other Instrumental endings, the values of *-bhis* in Vedic are the following:²

INSTRUMENT

- (4) śatām cākṣāṇo akṣábhīḥ (*RV* 1.128.3)
 hundred see.PTCP.NOM.SG eye.INSTR.PL
 '(the god) seeing with his hundred eyes'

2 We have conducted our own research on Vedic texts, but we have also taken into account previous work by Wenzel (1879) and Haudry (1977).

INTERMEDIARY

- (5) yáḥ ... dabhrébhiḥ ... háṃsi úyasaḥ (*RV* 1.31.6)
 REL.NOM.SG little.INSTR.PL destroy.2SG more.numerous.ACC.PL
 ‘You, who destroy the more numerous (enemies) by means of few (friends).’

COMITATIVE

- (6) devó devébhir á gamat (*RV* 1.1.5)
 god.NOM.SG god.INSTR.PL to come.SUBJ.3SG
 ‘May the god come with the gods.’

As Luraghi (2001a: 44) remarks, this value of the Instrumental is not as common in Vedic and *sam* ‘together (with)’ usually accompanies Instrumentals with this meaning. Significantly, it has been observed that the Comitative value of the plain Instrumental case in Vedic is mostly limited to plural referents, specifically count nouns, which, as Luraghi (2001b) observes, makes it close to the meaning ‘among’.

CAUSAL

- (7) mā tvā rudra cukrudhāma námobhir (*RV* 2.33.4)
 NEG 2SG.ACC Rudra.VOC irritate.1PL.SUBJ reverence.INSTR.PL
 ‘May we not irritate you with our reverences, Rudra.’

AGENT (with passives)

- (8) ṛṣibhir matíbhiḥ ... hitám (*RV* 9.68.7)
 poet.INSTR.PL mind.INSTR.PL arranged
 ‘Arranged ... by the poets [Agent] with their minds.’

PERLATIVE

- (9) antárikṣe pathíbhiḥ pátantam (*RV* 10.87.6)
 air.LOC.SG path.INSTR.PL flying.ACC.SG
 ‘flying along the paths in the air’

TIME (DURATION)

- (10) pūrvíbhiḥ hí dadāśimá śarádbhiḥ (*RV* 1.86.6)
 many.INSTR.PL indeed honour.PERF.1PL autumn.INSTR.PL
 ‘We have worshipped for many years.’

LOCATIVE

- (11) dhārābhir ójasā ā índrasya pītáye
 stream.INSTR.PL strength.INSTR.SG PTCL Indra.GEN drink.INF.DAT
 víša (*RV* 9.65.14)
 enter.IMPV
 ‘Enter them (the jars) with strength in the streams of water, so that Indra
 can drink.’

Interestingly, all the examples of the Locative value provided by Haudry (1977: 101–103) are found with *-bhis*, not with the other endings of the Instrumental plural.

3.1.2 Iranian

3.1.2.1 Old Persian

In Old Persian **-b^{hi}*-endings typically accompany the prepositions *hadā* and *hacā*, with a Comitative and an Ablative value. Nevertheless, a few prepositionless occurrences of the **-b^{hi}*-endings are found in the corpus.

INSTRUMENTAL/MEANS

- (12) vašnā : auramazdāhā : tya-maiy :
 grace.INSTR.SG Ahuramazda.GEN.SG REL.NOM.SG-PRON.GEN.SG
 kartam : imaibiš : akunavam : ūvnaraibiš :
 do.PTCP.NOM.SG DEM.INSTR.PL do.1SG.PERF quality.INSTR.PL
 ‘By Ahuramazda’s grace, what I did, I did with those qualities.’ (DNb 48)

There are also some examples of Dual instrumental which are found in natural pairs of the human body:

- (13) yāumainiš : ahmiy : utā : dastaibiyā : utā : pādaibiyā :
 skilled.NOM.SG be.PRS.1SG and hand.INSTR.PL and foot.INSTR.PL
 ‘I am skilled with the hands and with the feet’, i.e. ‘I have developed my
 skills with the hands and with the feet.’ (DNb 41)

COMITATIVE/ACCOMPANIMENT

We have found one example of the Comitative in the Achaemenid inscriptions, *viθbiš* ‘with the houses’, but it is not a prototypical one given that this is an inanimate entity. This kind of inanimate Comitative is usually called Accompaniment (e.g. Luraghi 2003: 28):

- (14) adam : niyačārayam : kārahyā : abicariš :
 1SG.NOM restore.1SG.PERF people.DAT.SG farmstead.ACC.PL
 gaiθām-cā : mānīyam-cā : viθbiš-cā :
 livestock.ACC.PL-and meanial.ACC.SG-and house.INSTR.PL-and
 tyādiš : Gaumāta : hya : maguš : adīnā :
 REL.ACC.PL NOM.SG REL.NOM.SG magus.NOM.SG spoil.PERF.3SG
 'I restored to the people the farmstead, the livestock, the menial and
 (together with) the houses, of which Gaumāta the magus had spoiled
 them.' (after Schmitt's 1991: 53 edition and translation) (DB I 65)

3.1.2.2 *Old Avestan*

The uses of **-b^{hi}-*endings in Old Avestan are similar to those found in Vedic. A list of values of the Instrumental can be found in Reichelt ([1909]1978: 232–239).

INSTRUMENT/MEAN

In Old Avestan the only examples of **-b^{hi}-*endings with the role of Instrument are found with body parts:

- (15) tām ahmākāiš azdōbīš-cā
 PRON.ACC.SG POSS.INSTR.PL bone.INSTR.PL-and
 uštānāiš-cā yazamaidē
 life.force.INSTR.PL-and venerate.PRS.1PL
 'we venerate him with our bones and souls' (Y.37.3)

In contrast, numerous examples of non-prototypical Instrumental, that is Instrumental of means, can be found in the texts analysed:

- (16) vohū θβā manəḡhā vohū
 divine.INSTR.SG PRON.ACC.SG thought.INSTR.SG divine.INSTR.SG
 θβā ašā vaṇhuiiā θβā
 PRON.ACC.SG harmony.INSTR.SG divine.INSTR.SG PRON.ACC.SG
 cistōiš šīiaoθənāiš-cā vacōbīš-cā
 divine.understanding.GEN.SG ceremony.INSTR.PL-and word.INSTR.
 pairijasāmaidē
 PL-and serve.1PL.PRS
 'with the divine Thought, with the divine Harmony, through the ritual
 acts and words of the divine understanding, we serve you' (Y. 36.4)

COMITATIVE

- (17) *kōi* *drəguuō.dəbīš*, *xrūrāiš*
 PRON.NOM.PL supporters.of.deception.INSTR.PL bloodthirsty.INSTR.PL
rāmam *dāntē*
 peace.ACC.PL give.3PL.INJ
 ‘Who will settle peace with the bloodthirsty supporters of deception?’
 (Y. 48.11)

PERLATIVE

In Old Avestan there are no examples of nouns with **-b^{hi}*-endings with the prototypical role of Perlative. However, we have found one instance of a metaphorical Perlative:

- (18) *kauuā* *vīštāspō* [...] *naṣaṭ* *vaṇhəuš*
 sage.NOM.SG Vištāspa.NOM.SG reach.3SG.INJ divine.GEN.SG
padəbīš *manahō* ...
 path.INSTR.PL thought.GEN.SG
 ‘By the paths of the divine Thought the sage Vištāspa reaches (the idea that ...)’ (Y. 51.16)

3.1.3 Classical Armenian

In Classical Armenian we find the ending **-b^{hi}* for both the Instrumental singular and the plural (see Clackson 1994: 68–74 on different hypotheses about this).³ Although other semantic roles such as Force, Cause or Quantity could be expressed by the instrumental case in the text of our corpus, the examples found are not undisputed. The nouns with this ending are associated with the following semantic roles:

INSTRUMENT

- (19) *cecein* *z-glowx-n* *elegamb* (*Mk.* 15,19)
 hit.3PL.IMPF ACC-head.ACC.SG-ART.SG cane.INSTR.SG
 ‘they hit his head with a cane’

COMITATIVE

Comitatives are usually expressed by means of a phrase combining the postposition *handərj* ‘with’ and the Instrumental case of the noun (Schmitt 1981: 92), but there are a few occurrences in which the plain Instrumental has this role by itself.

3 In addition to checking grammars and studies, such as A. Meillet (1936²), H. Jensen (1959), R. Schmitt (1981) or J. Matzinger (2005), we have analysed all the occurrences of the Instrumental in the Armenian translation of the New Testament (the four Gospels).

- (20) ałakein amenayn bazmowt'eamb-n (*Lk.* 23, 18)
 shout.IMPf.3SG all mass.INSTR.SG-ART
 'they shouted together with all the people'

AGENT

The Instrumental case can be used for Agents in passives, as in the following example:

- (21) kataresc'én amenayn grealk'-n
 fullfilAOR.PASS.3PL. everything write.NOM.PL.PTCP-ART
 margarēiwk'
 prophet.INSTR.PL
 'everything written by the prophets will be accomplished' (*Lk.* 18, 31)

Jensen (1959: 180) claimed that in Armenian the Agent was expressed by means of a preposition and the ablative case if the Agent noun refers to a human entity; in contrast, if the Agent noun refers to a non-animate entity, it would be expressed by the instrumental case, but this goes against the definition of the semantic role of Agent itself, because the entity that is assigned the semantic role of Agent must be animate.

MANNER

- (22) k'alc'rowt'eámb lsēr nma (*Mk.* 6, 20)
 sweetness.INSTR.SG listen.IMPf.3SG DEM.DAT.SG
 'He (Herod) listened to him (John) with sweetness'

TIME

- (23) xndrēr t'e ziard parapov matnesc'ē
 seek.3SG.IMPf CONJ how moment.INSTR.SG betray.AOR.SUBJ.3SG
 zna
 3SG.ACC
 'He sought how he might in the appropriate moment betray him'
(*Mk.* 14, 11)

LOCATIVE

We have not found any occurrences of the plain Instrumental as a prototypical Locative in our corpus. Prepositional phrases with *ar* ('near'), *and* ('under'), *z-* ('above') and *šowrj* ('around') plus Instrumental are the usual way to convey that meaning in Classical Armenian (see Minassian 1976: 251–256). Nevertheless, there are a few examples of metaphorical Location:

- (24) *zi héz em ew xonarh srtiw* (Mt. 11, 29)
 because mild be.PRS.1SG and humble heart.INSTR.SG
 'since I am mild and humble at heart'

3.1.4 Greek

The ending *-phi* occurs only in the oldest extant records of the Greek language. In Mycenaean it appears as *-pi* (= [p^{hi}]), usually with an Instrumental value. For the syntax of these forms in Mycenaean, see Bernabé & Luján (2006: 228–229) and Jiménez Delgado (2016: 93–98). A more detailed functional analysis of the Mycenaean *-pi*-ending, can be found in López Chala (2014: 113–124) and a comprehensive list of the occurrences of *-pi* is available in Francisco Aura's "Inverse index of the groups of transliterated syllabograms" in the web page of the *Diccionario Micénico* [Mycenaean Dictionary].⁴

However, the Instrumental use of *-pi* in Mycenaean is not the most prototypical, as shown in PY Ta 714.3:

- (25) *ta-ra-nu a-ja-me-no ku-wa-no*
 footstool.NOM.SG inlaid.NOM.SG lapislazuli(?).DAT.SG
pa-ra-ku-we-qe ku-ru-so-qe ku-ru-sa-pi-qe
 emerald.DAT.SG-and gold.DAT.SG-and golden.INSTR.PL-and
ko-no-ni-pi
 fringe.INSTR.PL
 'a footstool inlaid with lapislazuli(?) and emerald(?) and with golden fringes' (PY Ta 714.3)

Given its specific use in the extant Mycenaean tablets, Waanders (1997: 69–74) remarks that its meaning is not exactly Instrumental, but "ornamental" or "supplementary".

Interestingly, *-pi*-forms are frequently found with place-names. It has been disputed whether they should be interpreted as Locatives or Ablatives. According to the evidence found in the Linear B tablets this possibility was restricted to occurrences in which the noun suffixed by *-pi* was a place-name, as in the following example:

- (26) *ma-ro-pi pa-ro ro-ko pa-ra-jo* OVIS^m 150 (PY Cn 40.8)
 Malon.INSTR from Lokhos.DAT.SG old.NOM.PL ram 150
 'in Malon, from Lokhos, old rams, 150'

4 <http://bib.cervantesvirtual.com/portal/diccionariomicenico/contenido/inverso.jsp>.

In one case (PY Un 1426.5), the ending *-pi* combines with a noun that may refer to a group of female workers (*]ki-ri-te-wi-ja-pi*), but the context of the tablet does not allow for a straightforward interpretation. It has been suggested that it has an Ablative function, but an agentive or comitative interpretation cannot be completely ruled out, either (see Hajnal 1995: 204–207 for a possible interpretation as a Comitative; however, in a recent article Bernabé 2014: 13–15 has argued that this term is an abstract, which would exclude that interpretation).

A form with *-pi* is also found with the preposition *o-pi* (= *opî*), which usually governs Datives referring to human beings. This only occurs with the phrase *o-pi ... qe-to-ro-pi* (= *opî k^wetrópopphî*) ‘(watching) over the cattle’ in PY Ae 108.a. In the last published tablet from Thebes there is a new occurrence of a prepositional phrase with a *-pi*-form: *pa-ro te-qa-jo qa-si-re-u-pi* ‘from the Theban chiefs’, in a quite interesting combination with a noun referring to humans.

In Homeric Greek, the instrumental ending *-phi* poses various morphological problems that will not be dealt with in this article (for an excellent account of the Homeric facts see Nieto 1987, where different theories about the syntactic values of *-phi* can be found). From a syntactic point of view, it has been argued (e.g. Lejeune 1956: 208) that *-phi* is used as both Genitive and Dative, but this assertion must be understood in the sense that it shares some of the values of those morphological cases. Specifically, it shares the Ablative value with the Genitive of Homeric Greek; however, it should be noted that the Ablative value of the *-phi*-forms in Homer is almost exclusively restricted to prepositional phrases – only one occurrence of an Ablative value without preposition is attested (Nieto 1987: 297):

ABLATIVE

- (27) *naûphin* *amunómenoi* *metà Boiôtôn*
 ship.INSTR.PL protect.PTCP.PRES.NOM.PL with Beotians.GEN
emákhonto
 fought.3PL
 ‘They fought together with the Beotians to protect (the ships by keeping the enemies) from the ships.’ (*Il* 13.700)

LOCATIVE

The Locative value of the *-phi*-case in Homer is well attested:

- (28) *dóru* *makrón,* *ho* *hoi* *klisiēphi*
 spear.ACC.SG big.ACC.SG REL.ACC.SG 3SG.DAT tent.INSTR
léleipto
 leave.3SG.MID.PLPF
 ‘the big spear that he had left in his tent’ (*Il* 13.168)

INSTRUMENT

- (29) autàr Odysseùs kheír' epimassámenos
 but Odysseus.NOM.SG hand.DAT.SG feel.for.PTCP.NOM.SG
 pháryngos lábe deksiterêphi
 throat.GEN.SG took.3SG right.INSTR
 'Odysseus felt for her throat and took it with his right hand' (*Od.* 19.480)

DATIVE

The only clear instance is *Iliad* 2.363, for the rest of the alleged occurrences appear in combination with the verb *pepoithénai* 'persuade'.

- (30) hōs phrétrē phrétrēphin arégēi (*Il.* 2.363)
 so clan.NOM.SG clan.INSTR succour.PRS.SUBJ.3SG
 'so that the clan succours the clan'

SOURCE

- (31) ... hoppóte naûphin aphormêtheíen Achaioí (*Il.* 2.794)
 when ship.INSTR.PL depart.IMPV.OPT.3PL Achaeans. NOM.PL
 '... when the Achaeans would depart from their ships'

It could also be argued that in certain occurrences the *-phi*-endings are associated with the roles of Manner, Cause, and Comparison in Homeric Greek, but the examples are rare and uncertain.

Outside Mycenaean and Homer, the ending *-phi* only occurs in certain poets (Hesiod, Alcman and Ibycus) as a Homerism, in an inscription from Cyrene (*karophi*), and in three glosses in Hesychius' lexicon (*eurésphi*, *Ídēphi*, *pasalóphi*), who characterises them as belonging to the Beotian dialect.⁵ The fact that this dialect must have had this ending can be supported by the adjective *epipatrophion*, occurring on an inscription from Tanagra, which presupposes the phrase *epi patrophí (see Nieto 1987: 274 with further references).

3.1.5 Celtic

In continental Celtic **-b^{hi}*-endings are only attested in Gaulish (not in Celtiberian). We will analyse the evidence provided by this language in full and will then refer briefly to the evidence provided by Irish.

5 SEG XX 756. The meaning is not clear; different interpretations of this inscription can be found in Morpurgo-Davies (1969: 49).

3.1.5.1 *Gaulish*

In Gaulish the ending *-bi* appears in the inscription from Alise-Sainte-Reine (*RIG* L-13), which reads as follows (a complete analysis of the meaning and uses of this ending in Gaulish can be found in López Chala 2015: 13–21):

- (32) *Martialis · Dannotali / ieu ru ·*
 Martial.NOM.SG Dannotalos.GEN.SG consecrate.PRT.3SG
Vcuete · sosin / celicnon etic / gobedbi ·
 Vcuetis.DAT.SG DEM.ACC.SG building(?).ACC.SG CONJ smith.INSTR.PL
dugiiont-io / Vcuetin / in [...] Alisiia
 revere.3PL.PRS-REL Vcuetis.ACC.SG in Alisia.LOC.SG
 'Martial, son of Dannotalos, consecrated this building (?) to Vcuetis
 and (he did this) together with the smiths that revere Vcuetis at Alisia'

The word *gobedbi* has been identified since the early years of the 20th century as the 'Dative' plural of the noun meaning 'smith' based on parallels in insular Celtic, but its syntactic analysis as a Comitative was first proposed by Lejeune (1979) and it is generally accepted by the research community (Lambert 1994: 99–100). Meid (1992: 29–30), however, believed that *gobedbi* and *Vcuete* were Beneficiaries, while, according to Schriver (1997: 182) *gobedbi* would be the Agent of this sentence.

The Comitative value of this ending recurs in the inscription from Nériss-les-Bains (*RIG* L-6):

- (33) *Bratonos / Nanton{t}in(os) / Epadatexto/rigi ·*
 Bratonos.NOM.SG PATR.NOM.SG Epadatectorix.DAT.SG
leucutio / suiorebe · logi/toi
 sacred.forest(?).ACC.SG sister.INSTR.PL establish.PRT.3SG
 'Bratonos, son of Nantonos, established a sacred forest (?) for Epadatec-
 torix together with his sisters'.

Suiorebe, with the phonetic evolution of final *-i* into *-e*, shows the ending *-bi* in the word meaning 'sister', so it could probably be interpreted as a Comitative. Possibly, the ending *-bi* must also be identified in the sequence *eiabi*, the Dative plural of the anaphoric pronoun in the Larzac lead inscription (Lambert 1994: 57). In this case, the syntax of the inscription allows for its interpretation as a Comitative 'with them (the women)'.

The ending is now attested on the Châteaubateau tile, the text of which is far from clear, and its interpretation is, as a result, rather controversial.⁶ The

6 On the Châteaubateau tile see Lambert (1998–2000) and Schrijver (1998–2000).

word *anmanbe* appears twice on this inscription. It is possibly the Gaulish word for ‘name’ with a *-be*-ending, thus being an Instrumental plural with the semantic role of Means. We provide one of the occurrences below, and suggest a very tentative interpretation, based on Lambert’s (1998–2000) and Schrijver’s (1998–2000) proposals.

- (34) *neI anmanbe gniIou (RIG L-93)*
 NEG name.INST.PL know.PRS.1SG
 ‘and I do not know (her) by her names’

The ending *-bi* is also to be identified in the words *mesamobi* ‘worst’ (cf. OIr. *messam*) and *gandobe* ‘rare (?)’ (cf. OIr. *gand* ‘rare’), both in an inscription on a dish from Lezoux (*RIG L-66*) (Lambert 1994: 146–147). The context, however, is too fragmentary to propose a syntactic analysis. Most probably, though, *-bi* has an Instrumental value there.

3.1.5.2 *Old Irish*

The plural Dative case of Old Irish comes from **-b^{hi}(s)*, as demonstrated by the palatal character of the final *-b* of this case, as in the examples shown in Table 9.9.

Traditionally, the Dative plural ending of Old Irish has been reconstructed as **-b^{his}* with final *-s* based on the alleged correspondence with Skt. *-bhis*, but, as Thurneysen (1946: 182) remarked, the Irish data do not allow for deciding whether that final *-s* was lost or never existed. As discussed above, the Gaulish data seem to favour the view that the ending was **-b^{hi}* and, as a matter of fact, the last part of the Ardmore Ogham inscription (Macal. no. 208) reads: *Dolatibigaisgob ...* It probably includes a *-bi* Dative.⁷

TABLE 9.9 Dative plural and dual in Old Irish (examples)

NOM. SG.	<i>fer</i> ‘man’	<i>túath</i> ‘tribe, people’	<i>cathir</i> ‘town’
DAT. PL.	<i>fer(a)ib</i>	<i>túath(a)ib</i>	<i>cathrach(a)ib</i>
DAT. DU.	<i>fer(a)ib</i>	<i>túath(a)ib</i>	<i>cathrach(a)ib</i>

7 Against Thurneysen (1946: 182) himself, who, despite acknowledging that there were no reasons for reconstructing the *-s* in **-b^{hi}*, still thought that it was more probable.

As for the values of the so-called ‘Dative’ of the Old Irish, it is important to stress that it is a prepositional case with no inherent syntactic meaning of its own, but its meaning completely depends on the preposition that governs it. In fact, in his textbook, Stifter (2006: 37–38) has chosen to call it the ‘prepositional case’ instead of Dative. He states:

The prepositional case is called *dative* in all traditional grammars. In my view this is an unfortunate designation, since the Old Irish prepositional is a syncretism case going back functionally and formally to four different Common Celtic and Indo-European cases: dative, instrumental, ablative, and locative. The datival function (that is, the function as the indirect object of the verb) of this case is nowhere prominent in Old Irish.

Stifter (2006: 38) notes that in poetry and legal texts, which can be considered representative of an “archaic” language, independent occurrences of this case are found, practically with all readings. In most instances, however, its value is Instrumental, even if, in some of them, this may be a non-prototypical Instrument. This is the case with *segdaib súiliub seallglausaib* ‘with shining blue-grey eyes’, which appears in the description of a woman in one of the poems included in *The Exile of the Sons of Usnech* (Windisch 1880: 69).⁸ In fact, this use is to a great extent similar to what we found in Mycenaean (see § 3.1.4). On the uses of the Dative in Old Irish, see also Müller (1999: 177–178), who found occasional occurrences of prepositionless Datives as Instrumentals in her corpus, almost exclusively in legal texts. She also pointed out that she found three examples of the prepositionless dative denoting Manner rather than Instrument. However, *-ib* has sometimes a Sociative meaning, as in the phrase *cléirchib tuathaib* ‘with clergymen and laymen’ (Lambert 1994: 62).

3.2 General Overview of the Data

Table 9.10 summarises the semantic roles associated with nouns marked by **-b^{hi}*-endings in the relevant ancient Indo-European languages.

⁸ We thank an anonymous reviewer for pointing us to this example.

TABLE 9.10 Semantic roles associated **-b^{hi}*-endings in the nominal declension and in pronouns (other than personal)

		Instrument	Locative	Sociative	Agent (with passives)	Ablative	Means	Manner	With adposition
Greek	Mycenaean	x	x (only with place- names)	(x)					x (with <i>o-pi</i> and <i>pa-ro</i>)
	Homer	x	x			(x)			x
Celtic	Old Irish	x (most frequent use of indepen- dent 'Dative' in archaic language)		x					x
	Gaulish	(x)		x (only with human beings)					
Vedic		x	x	x	x		x	x	x
Old Persian		x		x (non proto- typical)			x		x
Avestan		x	x (Perlative)	x			x		
Armenian		x		x	x		x	x	x

3.3 **-b^{hi} in the Pronominal Declension*

A variant of **-b^{hi}* also appears in the Dative case with certain personal pronouns, such as 2nd Sg. Skt. *tubhyam* or Latin *tibi*. The long *-ī* has usually been analysed as resulting from the *e*-grade (**-b^{hei}*), however, Jasanoff (2009: 140) analyses **-b^{hei}* as a reshaping of **-b^{hi}* with the Dative singular ending **-ei*.⁹

9 See Mendoza (1998: 37–38) for an analysis of these forms. Szemerényi (1996: 218) analysed **t(w)-ebhi* (> *tibi*) as containing the postposition **ebhi* ‘to’, which, with either *e*- or *o*-grade, results in Skt. *abhi*, OPers. *abi*y, and OCS *obŭ*.

The attested forms are the following:

- Sanskrit 2nd sg. Dative *tubhya(m)*, 2nd pl. Dative *yuṣmábhya(m)*, 2nd pl. Instrumental *yuṣmábhīḥ*, 1st pl. Dative *asmábhya(m)*, 1st pl. Instrumental *asmábhīḥ*
- Old Avestan: 1st sg. Dative *maibiiā*, 1st pl. Dative *ahmaibiiā*, 2nd sg. Dative *taibiiā*, 2nd pl. Dative *yūšmaibiiā* and *xšamaibiiā*
- Classical Armenian: 1st sg. Instrumental *inew*, 1st pl. Instrumental *mewkʻ*, 2nd sg. Instrumental *kʻew*, 2nd pl. Instrumental *jewkʻ*; Reflexive pronoun sg. Instrumental *iwrew*, *iwreaw*, *iwreamb*, pl. Instrumental *iwreambkʻ*
- Slavic: OCS 2nd sg. Dative-Locative *tebě*, Reflexive pronoun Dative-Locative *sebě*
- Baltic: OPr. 2nd sg. Dative *tebbei*, Reflexive pronoun Dative *sebbei*
- Latin: 2nd sg. Dative *tibi*, 2nd pl. Dative-Ablative *uōbīs*, 1st pl. Dative-Ablative *nōbīs*, Reflexive pronoun Dative *sibi*
- Oscan 2nd sg. Dative *tfei*, Reflexive pronoun Dative *sibei*; Umbrian *tefe*

The fact that Latin has *nobiscum* ‘with us’ (Dat. *nobīs* + *cum* ‘with’) and *uobiscum* ‘with you’ (Dat. *uobīs* + *cum* ‘with’) as special forms for the Sociative cannot be taken as evidence that there was an evolution from Instrument to Comitative, as argued by Stolz (1998), because with 1st and 2nd persons an Instrumental value can hardly be expected. Instead, they must be accounted for along the same lines as Luraghi (2001a) argued for the Greek prepositions *syn* and *metá*: when the Comitative markers come to be used as Instruments, they need to be further characterised to keep them distinct.

Table 9.11 provides a summary of the values of the *-b^{hi}* forms in the pronouns. For our purposes, we use labels corresponding to at least two levels of case,

TABLE 9.11 Meanings associated to personal pronouns with **-b^h(e)i*-endings

	Ablative	Dative	Locative	Instrumental ?	Comitative
Latin <i>tibi</i>	NO (<i>te</i>)	x	NO (<i>te</i>)	NO (<i>te</i>)	NO (<i>tecum</i>)
Latin <i>nobis/uobis</i>	x	x			NO: <i>nobiscum/uobiscum</i>
OCS		x	x		
Vedic	NO (<i>tvat</i>)	x	NO (<i>tvayi</i>)	NO (<i>tvayā</i>)	NO (<i>tvayā</i> , usually with <i>sam</i> or other)
Old Avestan		x			
Classical Armenian				x	

including morphological case and semantic function. However, the standard grammars of the Old Indo-European languages do not provide consistent information about the semantic roles associated with the various pronominal cases. For discussion of this problem and its consequences for typological cross-linguistic comparison when trying to draw semantic maps, see Narrog (2010: 237–238).

3.4 *Semantic Roles of the *-b^{hi}-endings*

We now aim at providing an interpretation of the data involving the *-b^{hi}-endings that we have found in the ancient Indo-European languages. However, before discussing those data, it will be convenient to quickly revise the evidence generally accepted for the grammaticalisation of Instruments. Like Narrog (2010: 236), we can assume with the scholarly literature on grammaticalisation (e.g. Heine 2003: 579, Hopper & Traugott 2003: 125) that, concerning the relationship between synchronic multifunctionality and diachronic meaning extension, a morpheme is expected to acquire a new function (B) while retaining the older one (A) and only at a later stage will the older meaning eventually be given up. Schematically, the expected semantic evolution is: A > A+B (>B). That is, for our purposes, it is expected that the various meanings associated with *-b^{hi}-endings in the Old Indo-European languages can be linked with each other in this way, through a series of semantic changes.

Concerning the specific evidence generally assumed for the grammaticalisation of Agents and Instruments, the information provided in the *World Lexicon of Grammaticalization* (Heine & Kuteva 2002) is summarised in Table 9.12.¹⁰

TABLE 9.12 Paths of grammaticalisation of Agents and Instruments
(based on the data of Heine & Kuteva 2002)

Source	Target
COMITATIVE >	INSTRUMENT
INSTRUMENT >	ERGATIVE
	MANNER
COMITATIVE >	AGENT*
	INSTRUMENT
	MANNER*
	TEMPORAL*

10 For the concepts of “source” and “target” of grammaticalisation and how they can be framed in the general theory of grammaticalisation, see Heine & Kuteva (2002: 6).

Bearing this background information in mind, we can now return to the analysis of the meanings of the **-b^{hi}i*-endings and the interpretations proposed so far. Burrow (1973: 239) and Villar (1974: 325–326) argued that the **-m*- and **-b^h-* must have originally had a wider and vaguer use, which was later restricted in the individual languages when they were grammaticalised as cases of the nominal inflection. This view, however, seems to go against the evidence of the grammaticalisation processes that we know now. Nevertheless, Villar must be right when he states that **-b^h-* endings were originally not marked for number. He analyses **-bhyas* as having Gen.-Abl. *-as* < **-os*, *-bhyām* as having the dual ending **-ā* < **-ō*, and *-bhis* as showing the plural marker *-s*.

The evidence provided by the ancient Indo-European languages combined with what we know about semantic extension and change in the domain of the Instrumental-Comitative supports the view that the **-b^{hi}i*-forms were originally used as Comitatives (see Stolz, Stroh & Urdze 2006: 363–363 for unidirectionality in the evolution from Comitative to Instrument). This has been, in fact, the traditional assumption in Indo-European linguistics, as Luraghi (2001b) points out. This goes back to Delbrück (1867: 50), Wenzel (1879) and also Hübschmann (1875) for the Iranic Instrumental case.

In the nominal declension, these forms evolved into Instruments. We can hypothesise that this happened via its uses as non-prototypical Comitatives, as suggested by the evidence of the Old Indo-European languages themselves and paralleled by better documented changes (Luraghi 2001b). Once these forms evolved into Instruments they followed the different paths of semantic change and extension that we have summarised in Figure 9.1, according to the data that we analysed in the previous sections.

Following a tendency for Comitative to require more morphological marking than Instrument (Stolz 1998, Luraghi 2001b), plain **-b^{hi}i*-forms only rarely appear with this value in the ancient Indo-European languages. They have been replaced in such uses by combinations of Instrumental plus adposition, as clearly shown by Latin *nobiscum* and *uobiscum*. The only exception seems to be Gaulish, in which, in contrast to the other Old Indo-European languages, the Comitative value of the *-bi*-forms is clearly attested; however, given the fragmentary preservation of this language we cannot be sure that Comitative was actually the most frequent meaning of the ending in that language. Some instances of the Comitative value of the plain Dative can be found in Old Irish, but the Instrumental value is more frequent in “archaic texts”, as stated above.

In contrast, in the pronominal inflection, given that the personal and reflexive pronouns intrinsically refer to human beings (and other animate entities

such as gods) this change would not be expected. This is why **-b^hei*-forms do not appear as Instruments in the pronominal declension unless there has been an analogical extension from the nominal declension (as in 1st and 2nd plural personal pronouns in Sanskrit). The **-b^hei*-forms in the pronominal declension have evolved, instead, from Comitatives into Datives, which is also a semantic role prototypically assigned to human beings.

We have mapped all the information that we have been able to recover about the *-b^hi*-endings from the analysis of the ancient Indo-European languages in the semantic map in Figure 9.1. Semantic maps have been developed in recent years as an important methodology for the analysis of the multifunctionality of grammatical morphemes. As stated by Haspelmath (2003: 213), a semantic map has the advantage that it “does not imply a commitment to a particular choice among monosemic and polysemantic analyses”. From a cognitive perspective, assuming that grammatical morphemes, like any other meaningful element in language, have a structured polysemy (cf. Geeraerts 1997), the aim of syntactic reconstruction would be to recover the syntactic and semantic path followed by a given ending until it reached its attested meaning in the older languages.

The map in Figure 9.1 has been adapted from Narrog’s (2010) article, in which he reviews the evidence offered in previous studies concerning the semantic extension of the grammatical markers for Instrument and related semantic

FIGURE 9.1 Semantic map of the **b^hi*-endings in the ancient Indo-European languages (based on Narrog’s 2010 map of the comitative-instrumental area)

roles (cf. also Narrog & Ito 2007). Narrog rightly points out that when the diachronic dimension is added, “classical” semantic maps allow for possibilities of representation that other types of map do not. We have charted onto his semantic map the actual extension of the **-b^{hi}*-endings in the ancient Indo-European languages. For a general view about semantic maps and their use in the diachronic analysis of polysemy see Malchukov & Narrog (2008).

3.5 On the Etymology of **-b^{hi}*

Further insights into the semantic and syntactic evolution of **-b^{hi}*-forms can be obtained if we look into the etymology of these forms. This ending has traditionally been related to the preposition **bi* found in the Germanic languages (Haudry 1982: 24–25; Schmitt-Brandt 1998: 216; Fortson 2010: 118–119, among others): Goth. *bi*, OHG *bī*, etc. This preposition appears as a complex preposition in other languages, such as Gk. *amphí*, OHG *umbi*, OCS *obi*, etc. It also appears in adverbs such as Lat. *ubi* ‘where?’, *ibi* ‘there’, Gk. *νόσφι* ‘far away’ or Hitt. *kuwapi* ‘ever’.

According to Berenguer (2000: 394–404) and Jasanoff (2009: 199) the following adverbs are reconstructable for Proto-Indo-European:¹¹

- **h₂e/o-b^{hi}* ‘thereabouts, by that way’ > ‘to, near, across around’: Ved. *abhí*, OCS *obī*, Goth. *bi*
- **h₂(e)mb^{hi}* ‘sidewise’ > ‘around, on both sides of’ (reconstructed as **h₂nt-b^{hi}*, cf. *h₂(e)nt-* ‘front, side’ by Jasanoff 1976): Gk. *amp^{hi}*, Lat. *am(b)-*, Gaulish *ambi-*, OIr. *imm*, OHG *umbi*, etc.
- **w^o-b^{hi}* ‘where, when’: Hitt. *kuwapi*, Lat. *alic(ubi)*

This evidence would strongly suggest that **-b^{hi}* was some kind of adverb or postposition meaning ‘near’ or ‘next to’; that is, it conveyed the meaning ‘physical proximity’ that is charted in Figures 9.2 and 9.3 below. If so, this presupposes that the Sociative value that can be assumed as the starting point for the later development of the Instrumental value in the nominal declension and its usages as a Dative in the pronominal declension would have originated in turn from that local meaning ‘near’ or ‘next to’. This seems to be in accordance with what we know about the semantic evolution of markers with local value. We have highlighted the probable paths of change in the nominal declension and in the pronouns of the ancient Indo-European languages in Figures 9.2 and 9.3 below.

11 Hewson & Bubenik (2006: 345) suggest that in Indo-Iranian we may have a merger of **h₃eb^{hi}* ‘to(wards)’ and **h₂mb^{hi}* ‘about, around’.

FIGURE 9.2 Path of change of **-bʰi*-endings in nominal inflection (based on Narrog’s 2010 map of the comitative-instrumental area)

FIGURE 9.3 Path of change of **-bʰi*-endings in pronominal inflection (based on Narrog’s 2010 map of the comitative-instrumental area)

4 Concluding Remarks

Our aim has been to explore a new approach to reconstructing the nominal morphosyntax of a proto-language. Instead of trying first to reconstruct the

set of cases that may go back to the proto-language and then to assign them to an array of syntactic functions, regardless of the specific markers that are used for each of them, we have taken a different path. We have analysed in detail the semantic roles denoted by the words marked by a specific ending in the oldest phases of the languages of the Indo-European language family (Section 3.1). Our aim has been to comprehend how those meanings may relate to each other and what semantic changes must be reconstructed in order to account for the whole constellation of meanings.

We have focused on the 'Instrumental' **-b^{hi}i*-marker in the Indo-European language family. In the various branches of the family in which this ending occurs (Indo-Iranian, Greek, Armenian, and Celtic), **-b^{hi}i*-endings express a whole array of semantic roles, which encompass not only Instrument, Means, Intermediary or Comitative and Accompaniment, but also Agent, Cause and Manner, as well as local semantic roles, such as Locative and Perlative, and Time (Sections 3.1 and 3.2).

The range of meanings that **-b^{hi}i*-endings are associated with in the Old Indo-European languages is, however, far from chaotic. When the meanings occurring in the different branches are charted in a diachronic semantic map of Instrument and related semantic roles (Figure 9.1), they appear to cover neighbouring areas and it becomes clear that they have followed well-known lines of semantic change. If we then apply recent knowledge about directionality in semantic change, a clear pattern emerges: when the semantic maps for the different branches are brought together (Section 3.4 and Figure 9.1), all the meanings displayed by **-b^{hi}i*-endings can be diachronically derived from the core area of the Comitative and Instrument roles, even if some branches may have gone further in the evolution along a given line (e.g., passive Agent, Duration or Manner). The meanings associated with the endings are better accounted for if we analyse them in an integrated way.

Furthermore, when the information about the semantic roles expressed by **-b^{hi}i*-endings in the pronominal declension is added (Section 3.3), an even more interesting pattern surfaces: pronominal **-b^{hi}i*-endings are quite systematically related to the Dative case (i.e. the case that typically expresses the Recipient) in the Old Indo-European languages. The link to the Instrumental value in the nominal declension lies in the Comitative. The different semantic evolution in the nominal and the pronominal declensions can be explained on the basis that 1st and 2nd person pronouns refer to humans and a change from Comitative > Instrument cannot, therefore, be expected, since the semantic role of Instrument is associated with non-human, inanimate entities. In contrast, a change from Comitative > Recipient is in line with the fact that both semantic roles are typically associated with animates, specifically humans. This

shows that the semantic and lexical features associated with the base to which the case ending is added are relevant to account for the divergent evolution of the meanings of the same ending in the nominal and pronominal inflections.

If we then integrate the etymological information about the ending **-b^{hi}*, which is related to adverbs and adpositions in various Indo-European languages, a clear grammaticalisation process is unveiled (Section 3.5). It starts with a postposition meaning ‘near’ or ‘next to’ and results in a grammatical case associated with a Comitative value and, later on, either to Recipient (pronominal declension) or Instrument (nominal declension) (Figures 9.2 and 9.3). The change Comitative > Instrument is further supported by the fact that in various Old Indo-European languages Comitatives cannot be expressed by the plain **-b^{hi}*-endings and need additional marking (prepositions), a tendency that has been pointed out in previous studies: when a Comitative marker comes to also express Instrument, the old marker is usually not enough to encode the Comitative.

In conclusion, the perspective that we have adopted in this article allows for understanding the semantic changes undergone by the **-b^{hi}*-marker and reconstructing the paths of change, from the oldest reconstructable stages to the actual attested meanings in the earliest phases of the languages. This results in a ‘dynamic’ reconstruction of the morphosyntax of the proto-language. This in turn is more in accord with what we know about the actual processes of semantic change in grammatical markers and paradigmatisation of markers, as opposed to a more traditional, ‘static’ reconstruction. In those older approaches, even when the morphological reconstruction is not straightforward, morphology and syntax operate at two separate levels and in two successive operational phases, with syntax only entering the stage once the morphological level has been reconstructed. In contrast, our dynamic approach allows for a more detailed and realistic reconstruction.

Abbreviations

ABL	ablative
ACC	accusative
<i>Amph.</i>	<i>Amphitruo</i>
AOR	aorist
ART	article
Av.	Avestan
CONJ	conjunction
DAT	dative

DB	Inscription of Darius I from Bisutun
DEM	demonstrative
DNb	Inscription of Darius in Naqsh-i-Rustam (text b)
DU	dual
GEN	genitive
Gk.	Greek
Goth.	Gothic
Hitt.	Hittite
<i>Il.</i>	<i>Iliad</i>
IMPF	imperfect
IMPV	imperative
INF	infinitive
INJ	injunctive
INSTR	instrumental
Lat.	Latin
<i>Lk.</i>	Gospel of Luke
LOC	locative
MID	middle
<i>Mk.</i>	Gospel of Mark
<i>Mt.</i>	Gospel of Matthew
NOM	nominative
NEG	negation
OCS	Old Church Slavonic
<i>Od.</i>	<i>Odyssey</i>
OHG	Old High German
OIr.	Old Irish
OPers.	Old Persian
OPT	optative
PASS	passive
PATR	patronymic
PERF	perfect
PIE	Proto-Indo-European
PL	plural
Plaut.	Plautus
PLPF	pluperfect
POSS	possessive
PRT	preterite
PRON	pronoun
PTCP	participle
PTCL	particle

PRS	present
PY	Pylos
REL	relative
RIG	<i>Recueil des Inscriptions Gauloises</i>
RV	<i>R̥gveda</i>
SEG	<i>Supplementum Epigraphicum Graecum</i>
SG	singular
Skt.	Sanskrit
SUBJ	subjunctive
Tokh.	Tokharian
Ved.	Vedic
VOC	vocative
Y.	Yasna

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