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Reconstructing Proto-Italo-Celtic:

On the common origins of the phonemic systems and verbal TAM categories of Italic and Celtic

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Abbreviations

Languages

- Alb. = Albanian
- BSl. = Balto-Slavic
- Celtib. = Celtiberian
- Du. = Dutch
- Fal. = Faliscan
- Gaul. = Gaulish
- Got. = Gothic
- Gr. = Greek
- It. = Italian
- Lat. = Latin
- Lith. = Lithuanian
- Marruc. = Marrucinian
- MW = Middle Welsh
- O. = Oscan
- OHG = Old High German
- OIr. = Old Irish
- Pael. = Paelignian
- PC = Proto-Celtic
- PGm. = Proto-Germanic
- PIC = Proto-Italo-Celtic
- PIt. = Proto-Italic
- Sab. = Sabellic
- Sp. = Spanish
- U. = Umbrian
- Vol. = Volscan

Other abbreviations:

- aor. = aorist
- fut. = future
- impv. = imperative
- pf. = perfect
- plpf. = pluperfect

- prs. = present
- prt. = preterit
- subj. = subjunctive

1. *Introduction*

The long-debated idea of an Italo-Celtic branch on the Indo-European family tree, originally proposed by Lottner (1861), hardly needs an introduction. The issue, which has had a host of enthusiasts as well as fervent opponents, has largely revolved around the acceptance or rejection of specific features supposedly shared between Italic and Celtic. Indeed, any evidence in favour of Italic and Celtic being more closely related to each other than to the other IE languages should consist of shared innovations. Some of the innovations that have been proposed to be shared between Italic and Celtic, are phonological or morphological developments that are striking from an Indo-European perspective. These include the sound change **p…kʷ* > **kʷ…kʷ* (e.g. Lat *quinque,* OIr. *cóic* < PIE **penkʷe* 'five'), the superlatives in **-ism̥mo-* (e.g. Lat. *fortissimus*; Cowgill 1970) and the subjunctive in *-ā-* (e.g. 3sg.prs.subj. Lat. *ferat*, OIr. *˙bera* 'to carry'; cf. Jasanoff 1994, 212). While specific developments like these could be the result of shared developments, they are few in number and have been argued to be trivial and thus perhaps coincidental convergences (e.g. Hoenigswald 1966, 10; Watkins 1966). It is no surprise that the Italo-Celtic unity has been described as a brief affair, before the various Indo-European branches were substantially differentiated (cf. Cowgill 1970, 113–14). Other features common to both Italic and Celtic appear to be present in other branches as well; e.g. primary middle forms in **-r,* which also occur in Tocharian, and **H̥* > **a*, also found in Germanic and Armenian. These features are not useless, however. Even if a language undergoes nothing but the most trivial changes (be it phonological, morpho-syntactic, or lexico-semantic), the resulting system can be rather distinct from the original one. By trying to reconstruct the language system from which both Italic and Celtic can be derived (i.e. their last common ancestor), we may be able to get a more fine-grained understanding of their relationship with each other and with the rest of the family tree. For a detailed overview of the Italo-Celtic debate, see De Goede (2014, 3–5) and Schrijver (2016, 1).

In my thesis, I will further explore the Italo-Celtic hypothesis by working towards a reconstruction of two parts of the Proto-Italo-Celtic language system: its phonology and the verbal system. Besides brief discussions of several individual problems by Kortlandt (1981a; 1981c; 2007) and some observations made by Schumacher (2004), there has not been an in-depth comparative discussion of the Italic and Celtic verbal systems. For nominal morphology, this has been done by De Goede (2014). The discussion and reconstruction of the phonological system is necessary as a tool to realistically reconstruct the Proto-Italo-Celtic verbal system in a synchronic fashion, rather than having to resort to anachronous representations using reconstructed PIE phonology which might obscure our understandings of certain developments. The premise of this research is the fact that there must be a common ancestor to the Italic and Celtic branches. The question that is

pursued here is whether this common ancestor was (dialectal) Proto-Indo-European itself, or whether it is sufficiently different from PIE to consider it a separate language.

The phonological part (§ 2 - 6) builds on Schrijver's (2016) set of phonological developments proposed to be shared by Italic and Celtic. Using the material that is available from the attested Italic and Celtic languages, and the existing views on the reconstruction of Proto-Italic and Proto-Celtic (e.g. van der Staaij 1995; Schrijver 1995; Stifter 2017), I will try to reconstruct the latest phonological system from which both Celtic and Italic can be derived. A reconstruction of the phonology of Proto-Italo-Celtic will provide the framework within which morphosyntactic developments in the two branches can be investigated. By cutting up the several millennia of linguistic developments that stand between PIE and the attested languages in intermediate stages like Proto-Italic/Proto-Celtic and Proto-Italo-Celtic, seemingly complex changes and questions of relative chronology can hopefully be made more insightful.

The discussion of the Proto-Italo-Celtic verbal system (§ 7 - 9) will focus on the reconstruction of the tense-aspect-mood system. The verbal paradigms in both branches are rather innovative from an Indo-European perspective (as opposed to e.g. Greek or Sanskrit), in the categories they express as well as the formations they use. I will investigate whether and how the distribution of the relevant formations, as they must be reconstructed for Proto-Italic and Proto-Celtic, can be derived from a Proto-Italo-Celtic stage. Especially in cases of the collapse of categories (e.g. aspect) and creation of new formations (e.g. periphrastic constructions), it should be interesting to see to what extent Italic and Celtic agree in the formations they continue.

The result will be a phonological sketch and a sketch of the categories expressed on the verb in the last common ancestor of Italic and Celtic. If this ancestor proves to be only minimally distinct from the reconstructed language that we call Proto-Indo-European, this suggests that the last common ancestor to Italic and Celtic was a language identical or very similar to Proto-Indo-European itself, weakening the case for Italo-Celtic as a full-fledged branch of the IE family tree. However, if the reconstructed sections of the Proto-Italo-Celtic language system appear to be more innovative from an Indo-European perspective, this would be evidence for a longer period of common Italo-Celtic development and would thus strengthen the Italo-Celtic hypothesis.

Part I: The Italo-Celtic phonemic system

The first half of this thesis will be dedicated to the reconstruction of Proto-Italo-Celtic phonology; i.e. its phonemes and phonological or phonetic processes. The various parts of the phonological system will be treated in the following order: obstruents (i.e. stops and fricatives) – resonants – laryngeals – vowels – stress. I will refer to the three IE stop series that are traditionally reconstructed as voiceless (**t*), voiced (**d*) and voiced aspirated (**d^{h}*) as *tenues, mediae* and *mediae aspiratae* respectively, in order to avoid any presupposition about their real pronunciation at any point in time. When giving a phonetic representation of the 'glottalic' stops, I will use the symbol <ˀ> (e.g. /d̰/). As the actual phonetic realization of the PIE *mediae* is subject to debate, it is merely a graphic device to denote whatever glottalic element distinguished these stops.

2. *Obstruents*

2.1 *Proto-Italic Obstruents*

2.1.1 *Tenues and mediae*

The Italic reflexes of the inherited IE *tenues* and *mediae* series are relatively straightforward. *Tenues* are retained, with some later developments in the individual languages; e.g. O. *ehtrad* 'outside' < PIt. **ek-tra-d*, cf. Lat. *extrā* 'id.'; Lat. *penna* 'feather' < **pet-na* PIt.; Ven. 3sg.prt. *vhaχsto* 'made' < **fak-s-to*, cf. Lat. *faciō* 'to make'.[1] Similarly, the IE *mediae* are generally continued as voiced stops in all Italic languages.[2] A complicating factor for the Italic voiced stops is Lachmann's Law, which dictates that *mediae* lengthen the preceding vowel when they are devoiced before a voiceless stop, best attested in the Latin past participle; e.g. *ago* vs. *āctus* 'to drive' < **h$_2$eǵ-e/o-* (Weiss 2009, 175). Problematic is that devoicing before voiceless stops is generally considered to have been regular already in PIE, so the question is how this lengthening can be explained phonetically. Explanations include phonological restitution of the voiced stop in these cases (e.g. Jasanoff 2004), but this is difficult because the inherited *mediae aspiratae* (i.e. **d^{h}* etc.) do not participate, although they are also reflected as voiced stops in Latin; *nubō* vs. *nuptus* 'to marry' < **nub^{h}-*. I am more convinced by Kortlandt's idea that the vocalic lengthening goes back to the glottalization of the *mediae* that can be reconstructed on the basis of evidence in Germanic, Balto-Slavic, Indo-Iranian and Armenian (Kortlandt 1978a; 1978b; 1981b; 1988; 1989). This allows the

[1] For the purpose of this thesis, I use the term "Italic" to the inclusion of Venetic, like De Vaan (2008, 1). While the morphology of Venetic appears to differ significantly from the systems found in Latino-Faliscan and Sabellic, it shares several formal developments with the other Italic languages – most notably the voiceless fricative reflexes of the original *mediae aspiratae* (Meiser 2003, 35; Gvozdanović 2019, 34–37). Moreover, grouping Venetic under "Italic" rather than "Italo-Venetic" is also a matter of convenience.

[2] The change **-dr-* > *-tr-* observed in Lat. *uter* 'leather bag' < **udri-* is a specifically Latin development (De Vaan 2008, uter, triquetrus).

mediae to have become devoiced while retaining some distinctive feature that eventually lengthened the preceding vowel. The counterexamples for Lachmann's Law, in which an original *media* seems not to have lengthened the vowel (e.g. *sedeō* vs. *sessus* 'to sit'), have been explained in various ways by various authors; for an extensive overview with a different conclusion, see Jasanoff (2004), who rejects Kortlandt's proposal without giving arguments.[3] Jasanoff's return to the Neo-Grammarian solution does not work, as explained above. His extra rule that *-i-* did not participate "in keeping with the cross-linguistic tendency of high front vowels to remain short" (Jasanoff 2004, 414) is rather *ad hoc*, especially since *-ī-* occurs freely in Latin.

For the other Italic languages, it is not easy to demonstrate the existence of Lachmann's Law. The Venetic script does not distinguish length whatsoever and in Sabellic, secondary developments blur original vowel length (Lejeune 1974, 104; van der Staaij 1995, 65). A possible instance of a long vowel due to Lachmann's Law is Marruc. 2pl.pf. *leexe* 'you (pl.) have read' < **lek̑-s-e* < **leg-s-e*. Alternatively the Marruc. long *-ee-* may be the same long *-ē-* as in Lat. 1sg.pf. *lēgī* 'to read'.[4] If Lat. *sē-/se-/sō-/so-* 'away' goes back to **sed-*, as per De Vaan (2008, sē-/se-/sō-/so-), perhaps U. *seipodruhpei* 'to both sides' < **sē-kʷoterōd-kʷid* shows the change **sed-k- > *sēt-k- > *sē-k-,* but this is rather uncertain.

It is probable that the condition under which Lachmann's Law occurs, must already have existed in Proto-Italic, as there is no evidence to suggest that **-gt- > -kt-* was a recent development in Italic. In Kortlandt's scenario (2007, 150), Lachmann's Law took place in early Proto-Italic, and is linked with the Italic development of the mediae aspiratae (which will be discussed below). Although there is no certain evidence, it is in my view not unreasonable to assume Lachmann's Law for all of Italic. If it only affected Latin, this means that glottalization of the *mediae* would have been preserved up to Latin in this context, while it was lost without a trace by Faliscan, Sabellic and Venetic independently. It is a more likely scenario that vowel lengthening affected all of Italic, but that our lack of attestations outside Latin is purely due to bad luck. In all other contexts in Italic, glottalization has left no trace whatsoever, so it is safe to reconstruct plain voiced stops for late Proto-Italic, with a voiceless allophone preceding voiceless obstruents. It is very well possible that vowel lengthening became perceived as a synchronic phonological process when originally voiced stops were devoiced; e.g. PIt. */agtos/ > *[āktos] on the basis of *agō. This can however not be demonstrated, since the reflexes of mediae and mediae aspiratae were distinct in Proto-Italic (other than in Latin, see § 2.1.2). It is in any case of no influence in accepting Kortlandt's proposal,

[3] The counterexamples against absence of Lachmann's Law in roots ending in a *media aspirata* can largely be explained as analogical to the length of the stem vowel in the present; e.g. *fīdō, fīsum* 'to trust' < **bʰeidʰ-*.
[4] Meiser (2003, 73–74) treats Pael. 2pl.pf. *lexe* 'you (pl.) have read' as containing a short *-e-*, but he does not mention Marruc. *leexe*.

because a Proto-Italic association of long vowels with devoiced voiced stops can only have arisen through an earlier regular sound change.

2.1.2 *Mediae aspiratae*

The reconstruction of the Proto-Italic outcome of the IE *mediae aspiratae* is rather obfuscated by the amount and variety of their reflexes. The complexity of the situation is perhaps best illustrated by the four-way reflex of **g^{wh}* in Latin: *f-* word initially, *-gu-* after nasals, *-b-* before *-r-* and *-l-*, and *-u-* elsewhere. Only word-initially do all Italic languages agree, in having voiceless fricatives as reflexes: **d^{h}-, *b^{h}-, *g^{wh}- > f-*; **g^{h}-* (> **χ-*) > **h-* (Buck 1904, 97). Word-internally, the developments of the Italic *mediae aspiratae* cross the boundaries of the three sub-branches of Italic: Italo-Faliscan, Sabellic and Venetic. They are reflected as voiced stops word-internally in Latin (*līber* 'free'< **h$_1$loud^{h}-ero-*) and Venetic (*loudero-* 'child'), but not in Sabellic (Pael. *loufir* 'free man') and Faliscan (*loifirta* 'free woman')(De Vaan 2008, līber). The exception is **g^{h}*, which is reflected in Latin as *-h-* between vowels (e.g. *vēhō* 'to carry' < **ueǵ^{h}-*). Conversely, **g^{h}* is represented by a stop in Faliscan (3sg. *lecet* 'to lie' < **leg^{h}e-*). It is not certain whether this is the regular outcome, or analogical after other forms (De Vaan 2008, lectus). There are no certain examples for the Venetic outcome of **g^{h}* in this context.

It is certain that word-initial voiceless fricatives from original *mediae aspiratae* can be reconstructed for Proto-Italic, occurring as they do in all Italic languages. Word-internally, the reflex *-f-* in Faliscan as well as in the Sabellic languages points to an original Italic fricative outcome in this position as well, meaning that the Latin plosive reflexes of word-internal *mediae aspiratae* must be a secondary development. Historically, the debate has revolved around two proposed series of developments trying to explain the Italic reflexes of the *mediae aspiratae*, with voiceless fricative outcomes in all positions as attested in Sabellic and Faliscan, by Ascoli (1868) and Rix (1957) respectively. Ascoli assumed devoicing of **b^{h} > *p^{h}* (as in Greek), followed by fricativization > **f* in all positions, after which Latin innovated by voicing these fricatives again, eventually merging them with the outcome of the *mediae* series. Conversely, Rix preferred fricativization of **b^{h} > *β*, followed by devoicing. It has been shown by Stuart-Smith (2004, 142) however, that word-internal *-f-* in the Sabellic languages and Faliscan may in fact be read as [β], with the consequence that no development of word-internal devoicing is needed for any of the Italic languages. The double outcome of the *mediae aspiratae* as voiceless fricatives word-initially, and voiced fricatives word-internally may thus be projected back to Proto-Italic. After the common Italic period, the individual languages innovated the word-internal outcomes of the *mediae aspiratae* in different directions. Sabellic and Faliscan merged **-β̄- < *-b^{h}-* and **-đ- < *-d^{h}-* to *-f-* [β]; Latin merged its inherited voiced stops **-b- < *-b-* with its voiced fricatives **-β̄- < *-b^{h}-* by fortition

of the latter; Venetic too merged its voiced stops with its voiced fricatives, but instead by lenition of the stops (Rix 1999).

Another development that can be pushed back at least to Proto-Italic, is the outcome of the *mediae aspiratae* in clusters preceding voiceless dental obstruents **s* and **t.* In all observable instances, the *mediae aspiratae* merge with the *tenues* and appear as voiceless stops in Latin, and as voiceless fricatives in all other languages (van der Staaij 1995, 58).[5] The regular Italic outcome of **-tt-* and **-dʰt-* is probably *-ss-* already in Proto-Italic (cf. U. dat.sg. *fise* 'trust' < **bʰidʰ-to* (De Vaan 2008, fīdō)).[6] Those words pointing to *-st-* are secondary or should be explained otherwise (cf. van der Staaij 1995, 58; de Vaan 2008, aestās; but against Stuart-Smith 2004, 43). Even though it is only Latin that preserves voiceless stops in the clusters of labial/velar + *-t-* (e.g. Lat. *rēctus* 'right' vs. U. *rehte* 'id.'), this is what should be reconstructed for Proto-Italic. Although a development **-bʰt-* > **-ƀt-/-ft-* > **-pt-* is phonetically possible,[7] the fact that *tenues* and *mediae* too are fricativized in Venetic (e.g. *vhaχsto* '(s)he made' < **fak-s-to*) and Sabellic (e.g. U. *rehte* 'right' < **reg-to-*), makes it more attractive to see the fricativization of the *mediae aspiratae* in this position as part of the same process. The development *bʰ* > *p* / _*t* can thus be placed before the development *bʰ* > *f-, -ƀ-.*

Whereas we have been able to establish the voicing and manner of articulation of the Italic reflexes of the *mediae aspiratae*, their place of articulation is an issue of its own. Every Italic language has the same onset reflexes: **bʰ-, *dʰ-, *gʷʰ-* > *f-* and **gʰ* > *h-* (van der Staaij 1995, 59; Lejeune 1974, 148), allowing us to reconstruct these outcomes for Proto-Italic as well. Word-internally however, all languages preserve more distinction in the place of articulation. Everywhere, distinction between labial, dental and (labio)velar outcomes of the *mediae aspiratae* is retained when following a nasal (van der Staaij 1995, 27),[8] and in Venetic and Latin also in other word-internal contexts. Thus, word-internally Proto-Italic must have known a distinction **-ƀ-, *-đ-, *-ɡ-, *-ɡʷ-*. While it is beyond doubt that Proto-Italic also distinguished initial *f-, þ-, χ-, χʷ-* at some point in its history, this should probably not be reconstructed for the latest stage of the proto-language. Although for some languages it is clear that the merger of fricatives in certain contexts must have occurred more recently (e.g. Fal. *-f-* vs. Lat. *-d-* < Proto-Latino-Faliscan *-đ-* < *-*dʰ-*), it is unattractive to assume that the merger of **f-* and **þ-* to **f-* happened independently in all three branches (for the Sabellic reflex of **χʷ* < **gʷʰ* there is no good example). I do not agree with Van der Staaij's

[5] Also in Venetic, where <*vhaχsto*> /faxsto/ 'made' < **fak-s-to* (Rix 1999, 242).
[6] The outcome of dental clusters in Venetic is unknown, so strictly speaking this development could have occurred after Venetic split off (Lejeune 1974, 146).
[7] E.g. Štokavian *x* > *k* (Rešetar 1907; cf. also Kümmel 2007, 148).
[8] In Sabellic, some forms suggests that clusters of the shape **-mbʰ-* seem to be kept separate from **-mb-*, but the evidence is scarce. There is U. *pre-uendu* 'to turn', cf. Go. *windan* < **(H)uendʰ-* (De Vaan 2008, uend-), against U. *umen* 'ointment' cf. Lat. *unguen* 'id.', Skt. *anákti, añjánti* 'to smear' < **h₃ngʷ-*, with **-mgʷ-* > **-mb-* > *-mm-*, and gerundives like O. *úpsannam* 'doing', cf. Lat. *operandam* 'working'. But see Weiss (2009, n. 25).

hypothesis that the Proto-Italic reflexes of the *mediae aspiratae* after nasals differed from those in other word-internal positions. According to him, clusters of a nasal followed by a homorganic fricative
(**-mƀ-*) would be phonetically difficult, making it unlikely that such clusters were preserved until after the development **-mb-* > *-mm-* in Sabellic (see fn. 4). The retention of **-mbʰ-* as **-mƀ-* is only necessary if the regular outcome of **-mb-* is indeed **-mm-*, which is not wholly certain (Weiss 2009, 173). Moreover, clusters of the type *-mƀ-* can be perfectly stable, e.g. modern Greek *ενδο-* [ɛnðɔ] 'in-'. Therefore, I see no reason to add a third Proto-Italic reflex for the *mediae aspiratae*. This leaves us with the following system of (non-sibilant) fricatives for Proto-Italic:

f		χ	
ƀ	đ	g	gʷ

The distribution was: voiceless fricatives word-initially, and voiced fricatives elsewhere. Before voiceless obstruents, the voiced fricatives had voiceless stops as allophones. Although the eventual loss of **χ-* < **gʰ-* in the various Italic languages suggests a value [h], the fact that the outcome of **-kt-* in the Sabellic languages is written as <-ht-> (e.g. U. *rehte* cf. Lat. *rēctus*), makes it likely that word-initial *h-* < **gʰ-* still had a velar place of articulation at the time of the fricativization of **-k-* in this position.

The two gaps in the voiceless fricative series, viz. the dental and the labiovelar fricative, were resolved by the Italic languages independently. In Sabellic (and possibly Faliscan), the voiced dental and labiovelar fricative merged with *-ƀ-*, yielding only a labial and a velar set of fricatives (besides the sibilants; see below). In Latin and Venetic, the voiced fricatives merged with the original voiced stops, but in different ways (see above). This latter development is contrary to what Kortlandt (2007, 150–51) suggests. His suggestion that Latin and Sabellic on the one hand merged their voiceless fricatives into *f-* independently and that, on the other hand, the Latin reflexes of the *mediae aspiratae* were at no point in time stops, is problematic in several respects. On the first point, he ignores the Venetic evidence for the same merger of voiceless fricatives into *f-*; it seems highly unlikely to me that all three branches merged their series independently but in exactly the same way. The second point would be an elegant explanation for the pervasive fricativization of voiced stops in Romance as well as for the spellings of verbal prefixes like *ab-, ad-* etc. in voiceless environments with a voiced stop, even though *ab-* is reconstructed as **h₂ep-* (De Vaan 2008), which would point to a fricative pronunciation of e.g. *abstulī* as /aβstulī/. However, positing a bilabial fricative value for Latin *-b-* seems difficult in view of Sabellic or dialectal Latino-Faliscan loans into Latin with intervocalic *-f-* (e.g. *rūfus* 'red', cf. U. acc.pl.m. *rofu* 'id.'; *scrōfa* 'sow' etc.). If Latin *-b-* had still been a fricative [β], as Kortlandt assumes, there is no

reason why a word like U. *rofu* [roβu] would not have been borrowed into Latin as ***rūbus*. The fact that Sabellic voiced labial fricatives are borrowed into Latin as voiceless fricatives, shows that these were perceived as more similar to each other than to either Latin <b> or <v>. There are two possible explanations to this. One possibility is that Latin *-b-* was a real plosive /b/ after all, as opposed to Sab. and Fal. *-f-* /β/ which was thus perceived to be more similar to Latin *-f-* /f/. The other option is that Latin *-b-* was a voiced bilabial fricative /β/, but that the Sab. and Fal. *-f-* was a voiced labiodental fricative /v/. Then too the labiodental place of articulation of the borrowed *-f-* /v/ could have perceived to be closer to Latin voiceless *-f-* /f/ than to Latin voice *-b-* /β/. As for the spelling of e.g. *ab-* < **h₂ep-* before voiceless obstruents supposedly pointing to fricative [aβ-], it is in fact the variants *au-, ā-* that occur before voiced labials that point toward an original [aβ-] in this position. I don't quite understand by which mechanism **h₂ep-s-* could have become voiced and subsequently fricativized preceding a voiceless stop, as in pf.1sg. *abs-tulī* 'to carry away'. Even if **p* had become a voiceless fricative in this position (with a word like *stirps* 'stem, trunk' as counterexample), we would perhaps rather expect ***afs-tuli*. We are probably dealing with a spelling that was generalized from verbs like *ab-īre* 'to go away'. For nouns like *trabs* 'beam', we may assume a similar generalized <b> from other case forms, or simply a pronunciation [trabz].

2.1.3 *The Italic sibilant*

In Latin, IE **s* has several different outcomes. Between vowels, we observe rhotacism: *aurōra* 'dawn' < **h₂eus-ōs* (De Vaan 2008, aurōra). This is also found in Faliscan and Umbrian, but not in Oscan and Old-Latin, indicating that it was not a shared Italic process. In order to explain rhotacism in inherited **s*, an intermediary stage **-z-* must be assumed. This stage is still found in Oscan, e.g. gen.pl. *-azum* (Buck 1904, 74). Word-initially and in clusters with voiceless consonants, Latin as well as Sabellic retain a voiceless *s-* (van der Staaij 1995, 60). The presence of a voiced allophone of /s/ between vowels allows us to project this back to Proto-Italic, together with its voiceless allophone in onset and in voiceless clusters.

In other clusters, the evidence is more ambiguous. Latin exhibits a multitude of reflexes, depending on the phonetic context. In front of *-l-, -n-, -m-, -b-* and *-d-*, **-s-* is lost with compensatory lengthening (e.g. *nīdus* 'nest' < **nisdo-* (De Vaan 2008, penna)). In front of *-g-*, **-s-* is rhotacized to *-r-* (*mergō* 'to plunge' < **mesge-* (Weiss 2009, 191)). While these developments point to an original value [z] in these contexts as well, the Sabellic languages have *-s-* here, which can represent either [s] or [z] (Buck 1904, 75), making it impossible to establish whether Proto-Italic had a voiceless or voiced fricative here.[9] Venetic does not present clear evidence for the voicing of its sibilants; it

[9] In front of **b, *d* and **g*, it stands to reason that the **s* was voiced due to assimilation, but in front of liquids and nasals we cannot be certain.

only distinguishes between "lenis" *s* and "fortis" *ś*, the latter of which can in several cases be explained as a secondary voiceless affricate (Lejeune 1974, 151–57).

A peculiar development of **s* that can be reconstructed for Proto-Italic, is its merger with the reflexes of **bʰ* when preceding *-r-*: Lat. *frīgus* 'frost' < **sriHǵ-e/os*; *sobrīnus* 'second cousin' < **suesr-* (De Vaan 2008, frīgus; Weiss 2009, 163); U. *tefra* 'roasted meat' < **tesro-* < **tepsro-* (Buck 1904, 78). Original **sr* probably developed to **þr-/-đr-* first, after which the dental fricatives merged with their labial counterparts (also in Latin in this position: *cerebrum* 'brain' < **ḱerh₂-s-ro-* (De Vaan 2008, cerebrum)). Although no instances of this cluster are known for Venetic (Lejeune 1974, 155–56), relative chronology allows us to assume a development **sr* > *fr-/-ƀr-* here as well, because it must have preceded **þ-* > *f-*, attested in Ven. *vhaχsto* 'made' < **dʰeh₁-(k)-*. Weiss' (2009, 174) view on the development of **-TT-r-* > *-str-* (e.g. Lat. *rōstrum* 'snout' < **rōd-trom*) through **-ssr-* is probably impossible. There is no reason why **-ssr-* would not have undergone a similar dissimilation to ***-ffr-*, or why **-sr-* would not have received an epenthetic *-t-* (**-sr-* > ***-str-*). The cluster **-TT-r-* probably developed into **-tˢt-r-* and subsequently to **-str-*; loss of the second dental is not needed.

A final observation that can be made about the realization of **s* in the Italic languages, is its reflex in the intervocalic cluster **-rs-*. In Latin, original **-rs-* is reflected as *-rr-*; e.g. *ferre* 'to carry' < **fer-se* (Weiss 2009, 171). In Sabellic, inherited cases of **-rs-* must be distinguished from secondary **-rs-*, caused by syncope. In Oscan we find primary **-rs-* > *-r-*, with lengthening of the preceding vowel; *teer[úm* 'area' < **ters-o* (cf. Lat. *terrā* 'earth') (Buck 1904, 76). Secondary **-rs-* < **-rV̆s-* is represented as *-rr-*; e.g. dat.sg. *kerrí* 'Ceres' < **ker-es-ēi*. Neither Oscan nor Latin provides us with information about the voicing of original Proto-Italic **-rs-*. Full assimilation of **-s-* to *-r-* could have happened at any time, and in Oscan it must indeed have been two separate processes. In Umbrian, we find *-rs-* for primary **-rs-* (*farsio* 'of flour' < **farseio*), and *-rf-* for secondary **-rs-* (gen.sg. *çerfe* 'Ceres')(Buck 1904, 76; De Vaan 2008, Cerēs). Having established above that intervocalic voicing of **-s-* > **-z-* was a Proto-Italic phenomenon, intervocalic *-rf-* must come from **-rz-* < **-rV̆z-V.* This means that primary *-rs-* in Umbrian cannot have been [rz] at any point, since it would then have merged with secondary **-rz-* and become *-rf-*. Umbrian thus shows retention of **-rs-* as voiceless *-rs-*, so the voicing of this cluster in Latin and Oscan must be individual innovations (Stuart-Smith 2004, 114). For **-ls-*, there are no clear examples in Umbrian, but we should expect the same treatment as **-rs-* (Buck 1904, 76).

2.1.4 *The Proto-Italic obstruent system*

This presents an interesting contrast between the allophony of Proto-Italic **s* and that of the other fricatives treated above. While original *mediae aspiratae* were voiceless word-initially and in clusters with voiceless obstruents, they were voiced anywhere else word-internally, including

after **-r-*; e.g. Lat. *verbum* 'word' < **uer(h₁)-dʰh₁-o*, cf. Got. *waurd* 'id.' Proto-Italic **s* was equally voiceless word-initially and voiced intervocalically, but apparently voiceless also after resonants. This leaves us with the following system for the Proto-Italic fricatives:

	Labial	**Dental**	**Velar**	**Labiovelar**	**Sibilant**
#_	*f-*	-	*χ-*	*χʷ-*	*s-, fr-*
V_(R)V	*-ƀ-*	*-đ-*	*-g-*	*-gʷ-*	*-z-, -ƀr-*
VR_V	*-rƀ-*	*-rđ-* (> *-rƀ-*)	*-rg-*	*-rgʷ-*	*-rs-*

Table 1

This discrepancy between the reflexes of the IE *mediae aspiratae* and **s* has consequences for the derivation of the Italic phonemic system from PIE, as we will see later on.

If we now look at the realizations and allophony of the Proto-Italic reflexes of the IE stop series, we get the following schematic picture:[10]

PIE	***p**	***b**	***bʰ**
#_	**p-*	**b-*	**f-*
V_V	**-p-*	**-b-*	**-ƀ-*
_T	**-p-*	**(-V̄)-p-*	**-p-*

Table 2

In front of a voiceless obstruent **b* remained glottalic until after being devoiced (section),[11] but this feature had been lost with lengthening of the preceding vowel by Proto-Italic. As for this system's derivation from PIE, it is especially the *mediae aspiratae* that have proven to be a moot point. Stuart-Smith (2004, 198) tries to unite Ascoli's and Rix's scenarios by assuming a Pre-Proto-Italic split of **bʰ* into a voiceless aspirate **pʰ* word-initially and a voiced fricative **β* word-internally, on the basis of typological considerations. She needs this particular split because of the alleged unlikeliness of a change **bʰ- > *f-*, in which she uses the *mediae aspiratae*'s traditionally reconstructed phonetic value of "breathy voice". I agree with Kortlandt (2007, 150) that counter-evidence against initial **pʰ-* can be found in Lat. *formīca* 'ant', dissimilated from **morm-* (cf. OIr. *moirb* 'ant' (De Vaan 2008, formīca)), in which an original voiced fricative (as in Rix's scenario) is more likely as a dissimilatory outcome than a voiceless aspirated stop. One could however argue that the dissimilation took place before **bʰ* was devoiced, in which case it would probably still have been a phonetically suitable replacement for **m-*. Evidence against voiceless aspirates in pre-

[10] I use the labial obstruents for the sake of simplicity. The other series are *mutatis mutandis* the same, with the additional changes of **þ, *χʷ- > *f-* and **-TT- > *-ss-.*

[11] Or in any other way distinct from the reflexes of the *tenues* and *mediae aspiratae* in the same position.

PIt. has also been seen in the supposed outcomes of PIE initial **gʰl-* and **gʰr-* as Latin **gl-, gr-* (van der Staaij 1995, 57). This change must have happened before the fricativization of the *mediae aspiratae*, as Van der Staaij rightly notes, making a stage **kʰl-, *kʰr-* rather unlikely. The best example of this development is *glaber* 'smooth, bald' < **gʰlh₂dʰ-ro*, which has been compared to OHG *glat* 'smooth' < PGm. **glada-* and BSl. forms like Lith. *glodùs* 'smooth'. However, Kroonen (2013, *glada) does not derive PGm. **glada* from PIE **gʰlh₂dʰ-ro-*, but rather from **gʰl̥h₁-tó-*, which cannot work for the Latin or Balto-Slavic words. If this separation of the Germanic forms from the Italic and Balto-Slavic ones is correct, we may as well reconstruct **glh₂dʰ-ro-* rather than **gʰlh₂dʰ-ro-.* This would reduce the evidence for **gʰl-, *gʰr-* > Lat. *gl-, gr-* to the connection between Lat. *gradior* 'to step' and Got. *grid* 'step', which is problematic for several reasons (De Vaan 2008, gradior), and to the derivation of Lat. *trāgula* 'sled, dragnet' from **tragʰ-l-*, cf. *trahō* 'to pull' < **tragʰ-*, which is possibly a non-IE root (van der Staaij 1995, 57; De Vaan 2008, traho).

Lastly, an intermediate stage **pʰ* does not only become problematic but also unnecessary if we depart from an IE system as reconstructed by e.g. Kloekhorst (2016, 234), with **t* = [t], **d* = [ʔd], **dʰ* = [d]. An unconditioned change /b/ > /β/ is perhaps not trivial, but far from uncommon (Kümmel 2007, 55–58). After fricativizing its plain voiced stops and deglottalizing its glottalized voiced stops, Pre-Proto-Italic would thus have had an opposition between **p, *b* and **ƀ* throughout the word. The word-initial fricatives were subsequently devoiced. This way they would match the voicing allophony of the other fricative **s*, which had become voiced word-internally but remained voiceless word-initially. The resulting system was one where fricatives were predictably voiceless word-initially, but voiced word-internally. The only remaining difference was that **s* stayed voiceless when preceded by **-r-*, whereas the original *mediae aspiratae* remained voiced (so **-rs-* vs. **-rƀ-*). The lack of voicing of **s* after **-r-* in Italic suggests that the voiced realization of **-rƀ-* cannot have been a recent development, which is yet another piece of evidence against Ascoli's model of deriving Italic **f* from < **pʰ* < **bʰ*.[12]

2.2 *Proto-Celtic obstruents*

2.2.1 *Celtic stops*

At face value, the Celtic reflexes of the PIE system are much simpler. With the exception of **gʷ* and **gʷʰ*, the *mediae* and *mediae aspiratae* merged into a single series.[13] When preceded by a vowel, the voiced stops had voiced fricatives as allophones already in Proto-Celtic. Schrijver (2016, 497) and Stifter (2017, 1190) argue independently that the Celtic merger of *mediae* and *mediae aspiratae* may be better understood from an Italo-Celtic perspective. According to this scenario,

[12] That is, with the expectation that any sound law causing the voicing of a fricative **-f-* to **-ƀ-* after **-r-* would apply to the language's other fricative, **s*, as well.
[13] With **gʷ* > **b*; e.g. OIr. *béo*, MW *byw* 'alive' < **gʷʰ₃iuo-*; cf. Lat. *vīvus* 'id.'.

the fricativization of inherited IE *mediae aspiratae* to voiced fricatives in all positions (except after **s* and nasals[14]) was a shared Italo-Celtic development. Within the glottalic theory, this means that plain voiced stops *(mediae aspiratae*) were fricativized, which must have taken place before deglottalization of the glottalized stops (*mediae*). Whereas Italic retained the distinction between the two series, in Celtic the opposition was blurred by the later specifically Celtic post-vocalic fricativization of inherited *mediae*, so that *mediae* and *mediae aspiratae* were no longer distinguished in post-vocalic positions (including word-initially after words ending in a vowel). This system was subsequently simplified, merging *mediae* and *mediae aspiratae* in all positions, with fricative or plosive outcome dependent on the phonetic environment (Schrijver 2016, 497). I think Schrijver's scenario elegantly combines the Celtic and Italic evidence. Within Celtic, the specific order sketched by Schrijver and Stifter, in which the fricativization of *mediae aspiratae* must have happened before their merger with the *mediae*, may be able to shed more light on the Celtic merger of **g^{w}* and **b^{h}*, to the exclusion of **g^{wh}*.

It is difficult to understand why **g^{wh}*, which would have been closer in pronunciation both to **g^{w}* and to **b^{h}*, was "left behind" if the merger of **g^{w}* and **b^{h}* took place simultaneously with the process of merging the *mediae* and *mediae aspiratae*. If we adopt Schrijver's chronology, we may posit the following development for **b^{h}, g^{wh}* and *g^{w}*:

IE	***b^{h}* /b/**	***g^{wh}* /g^{w}/**	***g^{w}* /ˀg^{w}/**
PIC	**ƀ*	**g̑^{w}*	**g^{w}*
Pre-PC	**ƀ*	**g̑^{w}*	**b*
PC	**b*	**g^{w}*	**b*

Table 3

The advantage of this chronology is that we do not need a merger of a glottalized labiovelar stop with a voiced labial stop, whilst a voiced labiovelar stop remained unchanged. Rather, the merger took place in two separate stages, with **ƀ, *b* > PC **b* as natural outcome of later Proto-Celtic developments. In terms of the phonological system, this means that Pre-Proto-Celtic **g^{w}* changed to **b*, filling a structurally awkward gap in the system. It shifted from Proto-Italo-Celtic:

**p*	**t*	**k*	**k^{w}*
	**d*	**g*	****g^{w}***
**ƀ*	**đ*	**g̑*	**g̑^{w}*

Table 4

to Pre-Proto-Celtic:

[14] The Italic evidence for the development of clusters of the type **-mb^{h}-* is not conclusive, see above.

**p* (> **f*)	**t*	**k*	**kʷ*
****ƀ***	**d*	**g*	
**ƀ*	**đ*	**ǥ*	**ǥʷ*

Table 5

Note that the development of **gʷ* > **b* must have taken place before the merger of *mediae* and *mediae aspiratae*. Otherwise, **gʷ* and **gʷʰ* would have merged, precluding their separate development. One could try to posit the labialisation of **gʷ* before the loss of glottalization. However, depending on the exact nature of glottalization, we would run into various typological issues. A development **gʷ* /g̰ʷ/ > **b* /b̰/ would be less attractive because of the typological rareness of glottalized labial stops. On the other hand, if PIE **b* was implosive /ɓ/, as per Kümmel (2012, 306), the typological argument against inherited **gʷ* /gʷ/ > **b* /ɓ/ loses its strength, but then the original absence of PIE **b* /ɓ/ would be typologically aberrant.

Schrijver argues that Celtic failed to partake in the Italic devoicing and subsequent merger of three of its newly acquired word-initial fricatives because of the Celtic development **p* > **f*, that blocked the devoicing of **ƀ* > ***f-*. While this is possible, it is to my mind not necessary to explain why a language did **not** undergo a certain change, especially if the change seems to be as non-trivial as Italic **ƀ-, *đ-, *ǥʷ-* > **f-, *þ-, *χʷ-* > **f-*. As for the alleged intermediate position of Venetic between Celtic and Italic proper, as implied by Schrijver, I think not too many conclusions should be drawn from the Venetic merger of original *mediae* and *mediae aspiratae* (see above). While the development is similar to that of Celtic, fricativization of intervocalic voiced stops is extremely common and thus rather trivial (Kümmel 2007, 58–61).

2.2.2 *The Celtic sibilant*

While the Italic and Celtic outcomes of the PIE stop system may be attributed to shared developments, the same can probably not be said to the same extent for inherited **s*. We have seen that Proto-Italic **s* can be reconstructed with a voiced allophone /z/ between vowels, and two labial reflexes **f* and **ƀ* before **-r-* in word-initial and word-internal position respectively. In Celtic, the evidence speaks against original intervocalic voicing of **s*. The Middle-Welsh superlative ending *-haf* (e.g. *hynaf* < **sen-isamo-* 'oldest') devoices root-final voiced stops: *teg* 'fair' > *teccaf* 'fairest' (Stüber 2011, 1206). The change **s* > *-h-* that is needed for *teccaf* < **teghaf* (after syncope of **-i-*) points to an originally voiceless value of intervocalic **s*. For **-sr-*clusters, there is evidence for a dissimilatory development in Celtic comparable to that in Italic: word-initial **sr-* > MW **ffr-* (**sruto-* > *ffrwd*) (Schrijver 2016, 494).[15] Word-internally, the cluster is lenited in Insular

[15] The evidence for a different outcome of **s* before **r* in Irish is circumstantial, being limited to a different spelling of *-s-* in this position in Ogham script (Schrijver 2016, 494).

Celtic with compensatory lengthening of the vowel (MW f. *teir* 'three' < **tisres*), but cf. Gaul. f. *tiđres* 'three'. Schrijver assumes intervocalic **-sr-* became PC **-ðr-*, but Gaul. <đ> probably represents either an affricate /ʦ/ or a coronal fricative /θ̪θ̪/, but voiceless in any case (Eska 2017, 1166).[16] This is in line with the overall voiceless realization of **s* that can be reconstructed for Proto-Celtic. If the evidence is taken to represent a Proto-Celtic dissimilation of **-sr-* to **-tsr-/-þr-*, this may indeed be posited as a shared Italo-Celtic development, with Italic **fr-/-ƀr-* as a result of the Italic merger of **þ-* with **f-* and subsequent word-internal voicing, matching the allophony of inherited **f-/-ƀ-* < **bʰ*.

2.3 *Proto-Italo-Celtic obstruents*

2.3.1 *Italo-Celtic mediae and Lachmann's Law*

We have seen that Italic and Celtic may share several developments in their treatment of the IE *mediae aspiratae* and the cluster **-sr-*. Since the *tenues* are reflected in both branches as plain voiceless stops, these too can be reconstructed for Proto-Italo-Celtic. The *mediae* present a more complex situation. While they are reflected as plain voiced stops in both branches, Lachmann's Law in Italic must be explained. In Kortlandt's formulation, "a glottalic consonant dissolved into a sequence of a laryng[e]al and a voiceless buccal part, the former of which merged with the reflex of the PIE laryngeals" (Kortlandt 1983, 101). This posits a problem regarding the development of laryngeals in Italic and Celtic, however. If Dybo's rule (pretonic *V̄ > V̆ before resonants; e.g. PIE **wiHró-* > Lat. *vir,* OIr. *fer* 'man'; cf. Skt. *vīrá-* 'hero') was a shared Italo-Celtic development, postvocalic laryngeals must already have been lost in Proto-Italo-Celtic, given that both inherited *-V̄- and *-V̄- < *-VH- are affected by Dybo's rule (Schrijver 2016, 491).[17] If Lachmann's Law caused the glottalic element of a devoiced *media* to merge with the inherited laryngeals, this would have to predate Dybo's rule, in which case we would expect to find it in Celtic as well. The implication of this chronological issue is that the element in the *mediae* series causing vowel lengthening must have 'outlived' these laryngeal developments with its own distinct phonetic realization, after which it was lost without a trace in Celtic, and with compensatory lengthening in Italic. In what follows, I will discuss two words presumably containing word-internal devoiced *mediae:* O. *futír*, dat.sg. *fuutreí* 'daughter' and Lat. *vīgintī* 'twenty'. These words are especially relevant because they do not form part of a (verbal) paradigm in which vowel length may be analogical, as opposed to the Latin past participles that constitute the bulk of evidence for Lachmann's Law.

[16] Schrijver's views on the etymology of OIr. *téoir, cethéoir* (f.) 'four' are challenged by McCone (1996, 47), who does not mention Gaul. *tiđres,* however.
[17] There is of course the theoretical possibility that the sequence *-VH- was preserved before obstruents until after Dybo's Law, but there are no other reasons to assume this.

2.3.1.1 *Oscan* futír *'daughter'*

The attested O. dat.sg. case form *fuutreí* shows that the stem vowel was long. This must be secondary however, since inherited *-*ū*- develops regularly into -*ī*- in Oscan: *pir* 'fire' < **puh₂r*-, cf. Gr. *πῦρ* 'id.'; acc.pl. *frif* 'fruits' < **bʰruHg*-, cf. Lat. acc.pl. *frūgēs* 'id.' (Buck 1904, 41). The long -*ū*- in *futír* must go back to **fuχtr*- (De Vaan 2008, futír). As there is no doubt that it is a reflex of PIE **dʰugh₂tēr* 'daughter' (cf. Gr. *θυγάτηρ*), both the apparent absence of the laryngeal and the absence of Lachmann's Law are striking.[18] The aberrant behaviour of **-gt*- < **-gh₂t*- in this word (i.e. absence of Lachmann's Law) compared to older instances of **-gt*- (e.g. Lat. *rēctus* < *h₃reg-to*-) suggests that the loss of the laryngeal took place only after the devoicing of inherited **-gt*- (and other sequences of *media* + voiceless obstruent[19]) to **-k̂t*-, which would later form the environment for Lachmann's Law. Any of the *mediae* that was not devoiced by a directly following voiceless obstruent was deglottalized to a plain voiced stop. This happened in **dʰugh₂tēr* as well, after which loss of the laryngeal caused /g/ to be adjacent to voiceless /t/ and was subsequently devoiced after all, but in this case to a plain voiceless velar stop /k/. Hence, we arrive at the following development for the word for 'daughter' in Oscan:

PIE **dʰugh₂tr*- /duǵh₂tr-/ > */dugh₂tr-/ > **đugtr*- > PIt. **fuktr*-[20] > PSab. **fuχtr*- > O. *fuutr*-.

The details about the loss of the interconsonantal laryngeal in this word are not clear. Schrijver (1991, 105) attributes the loss to its appearance in the CHCC-cluster **-gh₂tr*- in the weak cases, which is also assumed by Zair (2012, 168) for Celtic, where we find Gaul. duxtir < PC *duxtīr next to Celtib. tuateros < *du(g)ater-? (on which, see Zair 2012, 201). Laryngeal loss in this position must have preceded the vocalization of laryngeals elsewhere, which is proposed by Schrijver (2016, 493) to be a shared Italo-Celtic development. This implies that the development of **g* /ǵ/ > **g* /g/ is also of Proto-Italo-Celtic date, but not before **gʰ* /g/ > PIC **g*. This is more or less in line with Kortlandt's (2007, 150) formulation, but in Proto-Italo-Celtic instead of early Proto-Italic. For our reconstruction of the Proto-Italo-Celtic obstruents, we can thus posit the PIC *mediae* to have been plain voiced stops (e.g. */b/), with a preglottalized voiceless stop (*/p̓/) before voiceless obstruents. This allophony was continued into the two daughter branches, after which the Celtic glottalized stops merged with all other stops into **x* preceding a **t* (OIr. *recht* 'law' < PC

[18] Loss of the laryngeal cannot be ascribed to later syncope, since that would have given ***fuktir*, cf. O. 3sg.ipv. *aktúd* 'to act' < **agetōd* (Schrijver 1991, 105).

[19] I.e. excluding the laryngeals as voiceless obstruents. The realization of laryngeals has been interpreted in many ways, but there is no evidence in the prehistory of Italic that they had any devoicing qualities. When talking about 'voiceless obstruents' here, I am referring to **t* and **s*.

[20] De Vaan (2008, futír) reconstructs **fuχtr*- for Proto-Italic, probably on the basis of the absence of Lachmann's Law. All stops are fricativized before -*t*- in Sabellic however (cf. U. *rehte* 'right' vs. Lat. *rectus* < **h₃reǵ-to*-), and I do not see how a form **dʰugʰh₂tr*- (the necessary preform for PIt. **fuχtr*-) could have developed regularly or analogically from reconstructed **dʰugh₂tr*-. See also Schrijver (1991, 105), who does assume an intermediate stage **fuktr*-.

rextu- < PIC **rek̂tu-* < PIE **h₃reǵ-tu-*), whereas they caused vowel lengthening through Lachmann's Law in Italic (Lat. *rēctus* < PIt. **rēkto-* < PIC **rek̂to-* < PIE **h₃reǵ-to-*).

Another possibility for the explanation of O. *futír, fuutreí* 'daughter' would be that it goes back to a PIE form **dʰugʰh₂tēr*, rather than **dʰugh₂tēr* (which is needed for e.g. Gr. *θυγάτηρ* 'daughter'). This would be expected to develop as: **dʰugʰh₂tr-* /dugh₂tr-/ > /đugh₂tr-/ > **đugtr-* > PIt. **fuχtr-* > O. *fuutr-*. A comparable case is Skt. *duhitā́* 'daughter' < **dʰugʰh₂tēr*, which is however an entire discussion on its own (cf. Palmér 2019, 15–18). Positing **dʰugʰh₂tr-* would remove the need to posit the deglottalization of voiced *mediae* before the loss of the laryngeal in this specific environment. However, the Oscan word cannot be used as an argument in favour of reconstructing either **dʰugʰh₂tr-* or **dʰugh₂tr-*, so I will depart from the traditional reconstruction **dʰugh₂tēr* for now and maintain the relative chronology sketched above.

2.3.1.2 *Latin* vīgintī *'twenty'*

Another word that has received the necessary attention with respect to Lachmann's Law is Lat. *vīgintī* 'twenty' < **(h₁)ui-(d)ḱmt-i(h₁)*;[21] cf. Doric Gr. *ϝίκατι*, Herodotus *ἐείκοσι*. From the ordinal number *vīcē(n)simus* 'twentieth' it is clear that the expected outcome in Latin would have been ***vīcentī* (De Vaan 2008). Possibly the -g- spread to all decades from *septuāginta* '70' and *nonāginta* '90', where the -g- would be regular after a nasal (Kortlandt 1983, 101). However, I do not see how this would have worked across a laryngeal (**-Hḱ-* < **-dḱ-* by the Kortlandt effect) that subsequently vocalized to long *-ā-*. I prefer De Vaan's (2008, quattuor, septem) solution, who assumes that the *-ā-* spread from *quadrāgintā* 'fourty' < **kʷtwr-h₁ḱmth₂*.[22] Perhaps this can be combined with Kortlandt's derivation of voiced *-g-* from **septm̥-dḱmt-*, but only if **-dḱ-* was simplified to **-ǵ-* directly without vocalization of any secondary laryngeal. It is in any case clear that the Lat. *vīcē(n)simus* 'twentieth' preserves the regular outcome of **(h₁)ui-dḱmt-* and that the *-g-* of *vīgintī* spread analogically from one of the other decades.

Kortlandt thinks the long *-ī-* in *vīgintī* is the result of Lachmann's Law. In my chronology this would be represented as: **(h₁)ui-dḱmt-ih₁* > **ui-t̂kmt-ih₁* > **ui-k̂mt-ih₁* > **wīkantī* > **vīcentī* >> **vīgintī*. While this is possible, it cannot be excluded that the long *-ī-* is analogical to *trīgintā* 'thirty' < **trih₂-(d)ḱmt-h₂*.[23] Evidence against the development **-idḱ-* > **-īk-* comes from the Latin verb *discō* 'to learn', which is reconstructed as **di-dḱ-ske/o-* (De Vaan 2008, discō). The short vowel can hardly be analogical after the perfect *didicī* < **di-doḱ-*, since the *-i-* there was analogical after the present in the first place: **di-doḱ-* << **de-dok-*. This shows that **-d-* was apparently simply lost in

[21] Simple **-i* (rather than **-ih₁*) is needed for the Greek forms.
[22] For the reflex of **-rH-*, cf. § 4.1.1.
[23] In fact, all decimal numbers contain a long vowel before the element *-gintā*, which could have added to the analogical pressure to lengthen the *-ĭ-* in **vĭgintī* < **vĭcentī*.

this position, although one could argue that a complex cluster as in **didḱsk-* might have been simplified to **diksk-* before Lachmann's Law. The other counterexample for *-Vdk-* > *-V̄k-* comes from Lat. *peccāre*, which Weiss (2009, 174) reconstructs as **ped-ko-*. De Vaan disagrees with this etymology on the basis of justified semantic issues, weakening its argumentative value (De Vaan 2008, pecco). Nevertheless, due to the many uncertainties, Lat. *vīgintī* can probably not be used as reliable evidence for the development of clusters consisting of a *media* and a voiceless obstruent.

2.3.2 *The Proto-Italo-Celtic obstruent system*

As we have seen, both Italic and Celtic point to plain voiced stops as the regular outcome of the inherited PIE *media* series. In devoiced position before a voiceless obstruent however, the Italic reflexes show that they must have had an 'extra' feature that was not lost by devoicing. I.e., voice was not the only contrasting feature of this series. This feature may have been glottalization, as argued for by Kortlandt (1989), or one of the other proposed phonation types (Kümmel 2012). If the evidence from O. *futír* 'daughter' is taken seriously, we can push back the deglottalization of the *mediae* (when not devoiced) to a Proto-Italo-Celtic stage. On the other hand, those *mediae* that occurred before a voiceless obstruent (e.g. **t* or **s*), had been devoiced in Proto-Indo-European already and retained their glottalization until after the Italo-Celtic split, yielding vowel lengthening in Latin. The fact that the sibilant outcome *-ss-* < **-d-t-* also shows Lachmann's Law (e.g. Lat. *edō* vs. *ēsus* 'to eat' < **h₁ed-to-*), suggests that it was preserved as a cluster **-tˀsˀt-* until vowel lengthening due to Lachmann's Law took place in Proto-Italic.[24] The deglottalization of the voiced *mediae*, yielding plain voiced stops, can probably be posited after the common Italo-Celtic fricativization of the inherited *mediae aspiratae*, which rendered the glottalic articulation of the *mediae* redundant. If we add the *tenues*, generally unchanged in both branches, and the development **-sr-* > **-þr-*, we arrive at the following obstruent system for Proto-Italo-Celtic:[25]

PIE	***ḱ***	***ǵ***	***ǵʰ***	***s***
PIC	**k*	**g*	**g*	**s, þ/_r*
PIC: V_T	**k*	**kˀ*	**k*	**s*

Table 6

[24] Alternatively, we would have to posit something like **eˀssus*. Although glottalization on a sibilant is of course not impossible, this would add an entirely new phoneme /ˀs:/ to the system, with a rather marginal distribution. It is thus more attractive to assume that **-tˢt-* > *-ss-* must then have taken place in Celtic and Italic independently, because it followed the individual developments of the glottal element /ˀ/ in the respective branches.

[25] For the purpose of this table, the velar series are most well-suited. This is because in the labial series PIE **b* would have been either absent or a marginal phoneme, and in the dental series additional developments in clusters occur (e.g. **-dʰ-t-* > *-ss-*).

2.3.3 *Relative chronology of PIC obstruent developments*

With respect to the Proto-Indo-European system, three obstruent developments can be posited for the Proto-Italo-Celtic stage:

1. Fricativization of *mediae aspiratae*: **g^h* /g/ > **ɣ* /ɣ/ (§ 2.1.2)
2. Deglottalization of voiced *mediae*: **g* /ǵ/ > **g* /g/ (§ 2.3.1)
3. Dissimilation of the sibilant before **r*: **sr* /sr/ > **þr* /θr/ (§ 2.2.2)

Depending on one's phonetic reconstruction of the *mediae aspiratae*, the relative chronology of developments (1) and (2) above does or does not matter. If one views the *mediae aspiratae* to be distinguished from the *mediae* by more than a lack of glottalization alone (e.g. breathy voice), then deglottalization of the *mediae* would not have merged the series, allowing (2) to have occurred before (1).[26] I am inclined to view the *mediae aspiratae* as plain voiced stops however (following Kloekhorst 2016), which requires the *mediae aspiratae* to have fricativized at a very early stage of Proto-Italo-Celtic. Deglottalization of the *mediae* must have taken place before the loss of a laryngeal in the cluster **CHCC*, as observed in O. *futír,* dat.sg. *fuutreí*, PC **duxtīr* 'daughter < PIC **đuktir* < PIE **d^{h}ugh$_2$tr-*, which must in turn have preceded its vocalization in the cluster **CHC*, as observed in Celtib. gen.sg. *tuateros* 'daughter' < PIC **đugater-* < PIE **d^{h}ugh$_2$tēr*. Other laryngeal developments are of no direct influence on the relative order of the *mediae* developments (§ 4.2). The dissimilation of **-sr-* (3) may have happened at any time during the shared stages of Italo-Celtic.

The developments listed above all took place after the common Indo-European devoicing of stops before voiceless obstruents. After the shared Italo-Celtic period, both branches went their own way with the system. Celtic simplified its three series by collapsing the *mediae* and the *mediae aspiratae*. Italic retained the inherited Italo-Celtic fricatives and eventually matched their voicing allophony to that of inherited **s*. It also retained the glottalic feature on its devoiced *mediae*, which later caused vowel lengthening due to Lachmann's Law.

[26] See Kümmel (2012, 291–306) for an overview of the possibilities.

3. *Resonants*

The resonants inherited from PIE were **m, *n, *l, *r, *j* and **w*, all of which could be in consonantal as well as in vocalic position. In consonantal position, all resonants seem to have been preserved rather well in the different branches. Two developments appear to have taken place both in Italic and Celtic. One is the change **-mw-* > **-w-* seen in OIr. *coir*, MW *kyweir* 'right' < PC **kowari-jo-* < **kom-wari-* and in Vol. *coehriu* (abl.sg.), Lat. *cūria* 'meeting place' < **kowirjo-* < **kom-wir-jo-* (Sommer and Pfister 1977, 195; McCone 1996, 47–48; Schrijver 2016, 494). The second is the rather trivial assimilation **-mj-* > **-nj-*, found in Lat. *veniō* 'to come' < **gʷm̥-i̯ō* and OIr. *duine*, MW *dyn* 'person' < **dʰǵʰom-i̯o-* (Schrijver 2016, 494). As a result, PIC retains basically the same system of (consonantal) resonants as PIE, with a slightly more restricted distribution for **m*, which could no longer precede the semivowels **w* and **j*.

3.1 *Vocalic resonants*

The Italic and Celtic outcomes of the inherited PIE vocalic resonants are much more varied than their consonantal counterparts. This section will discuss the Italo-Celtic development of inherited **m̥, *n̥, *r̥* and **l̥*. As **i* and **u* have been integrated in the vocalic system in both branches, they will be treated together with the vowels.

3.1.1 *Vocalic nasals*

In PC, inherited **m̥* and **n̥* regularly develop into **am* and **an* in all positions, after which a raising to **-æN-* before obstruents, nasals and in word-final position occurred (McCone 1996, 79). In Italic, the outcomes are slightly different in Sabellic and Latin. In Latin, all vocalic nasals vocalize to *-eN-*. In Sabellic however, *-eN-* is the outcome in non-initial syllables only. In initial syllables, the vocalization is *-aN-*; c.f. O. *tanginúd* 'opinion, decision' < **tn̥g-* vs. O. *aragetud* 'silver' < **h₂r̥ǵn̥to-*, U. acc.pl. *iuengar* 'young cow' < **h₂iu-h₁n-ko-* (van der Staaij 1995, 23). While O. *aragetud* 'silver' could perhaps be seen as a loan from Lat. *argentum*, the absence of the development *-enc-* > *-inc-* in Lat. *iuvencus/a* 'young cow' suggests that it might be a Sabellic loan, implying that **n̥* > *-en-* in U. *iuengar* is regular. Besides the quality of the vowel that arises in the inherited vocalic nasals in Italic, the conditions and circumstances in which nasals vocalize are identical in Latino-Faliscan and Sabellic. That is why Van der Staaij (1995, 23–24) reconstructs PIt. **əN* as the phonetic realization of inherited **N̥*.[27] This would not have been a phonemic vowel, but simply a phonetic realization of what was phonemically a syllabic nasal consonant. When comparing this to the Celtic situation, we may posit a PIC outcome **əN*, which developed into either *-e-* or *-a-* depending on language and various phonological conditions, similar to what Van der Staaij (1995, 24) does

[27] The only secure Venetic example of **n̥* is in *donasan* 'they gave' < **-s-n̥t*, showing that Venetic agrees neither with Latin nor with Sabellic in its vocalization of nasals (Lejeune 1974, 107). This does not contradict a reconstruction as PIt. **əN*.

for Proto-Italic. The quality of this prop vowel need not have been *schwa* necessarily. All outcomes in Italic and Celtic show either *-e-* or *-a-*, which makes a front low vowel such as [æ] a plausible alternative. Perhaps McCone's (1996, 79) proposed Proto- conditioned variation between PC **aN* and **æN* from PIE **N* is not so much the result of a raising of **aN* to **æN* in closed syllables, but rather a lowering of **æN* to **aN* in open syllables. Whatever the quality of the vowel in originally syllabic nasals, the different reflexes in the daughter languages make it clear that it was distinct from the other inherited vowels until after the PIC (and PIt.) stage. The emerging picture is that inherited **N̥* did still function as a syllabic nasal phonologically, but that the nasal element itself was phonetically not fully syllabic anymore. I will use the notation *-əN-* to indicate this.; e.g. Lat. *decem,* Gaul. *dekan-* '10' < PIC **dekəm* < PIE **dekḿ̥*.

3.1.2 *Vocalic liquids*

The outcomes of the vocalic liquids **r̥* and **l̥* are less uniform than those of the vocalic nasals. The most conspicuous difference is that Italic vocalizes them regularly to **or* and **ol*, whereas Celtic has two different conditioned outcomes: **ri/*li* before stops, **ar/*al* elsewhere (McCone 1996, 49). The fact that the place of the epenthetic vowel relative to the liquid differs between Italic and Celtic, suggests that the vocalisation of liquids (phonologically as well as phonetically) happened independently in both branches.

3.1.3 **CL̥HV*

An exception to the preservation of syllabic liquids may be found in original sequences of **CLHV*, which yield **CaLV* both in Celtic and Italic; e.g. Lat. *calēre* 'to be warm' < **klh₁-eh₁-* (Schrijver 1991, 419), MW *malaf* 'to grind' < **ml̥h₂-e/o-* (Zair 2012, 169). Schrijver (1991, 419) argues that this must have happened independently in Italic and Celtic. This is because he posits the Italic vocalisation of **CLHV* after that of **CN̥HV*, in which the vocalic nasal yields the expected outcomes (e.g. Lat. *similis* (< **semilis*), OIr. *samail* 'similar' < **sm̥h₂eli-*). The thought behind this is that Italic **CNHV* > **CeN(H)V* should predate **CLHV* > **CaL(H)V*, as it would explain why **CNHV* does not give ***CanHV*. And since **N̥* > **eN* postdates a PIC stage, so must **CLHV* > **CaLV*. However, this relative chronology hinges on the assumption that **N̥* gave Proto-Italic **eN*, which was subsequently lowered in some conditions in Sabellic. This is in my opinion not the most plausible reconstruction of the PIt. outcome of **N̥*. As discussed in § 3.1.1, I believe that we must reconstruct **əN* for Proto-Italic as well as for Proto-Italo-Celtic. This removes the argument against a common Italo-Celtic origin for the development of **CLHV* > **CaLV*. It still leaves the issue that PIE **CNHV* > PIC **CəNV* would show different vocalism than **CRHV* > **CaRV*, but I do not think that that is problematic, since a different treatment of vocalic nasals and liquids must be posited anyway.

3.2 *Proto-Italo-Celtic resonants*

It is not necessary for any of the developments of PIE **CRHV* discussed above, that the laryngeal **H* was still present at the time of vocalisation of the syllabic resonant, as the quality of the vowel cannot be shown to be conditioned by the laryngeal. It is important to keep in mind that, although PIE resonants were only vocalic when they were surrounded by other consonants (including laryngeals), this is not necessarily true for later stages of the language. For a syllabic nasal, like in Lat. *similis* < PIt. **semali-*, OIr. *samail* < PC **samali-*, both of the following orders are possible:

- PIE **sm̥h₂eli-* > **səmh₂eli-* > PIC **səmali-* > PC **samali-*/PIt. **semali-*
- PIE **sm̥h₂eli-* > **sm̥ali-* > PIC **səmali-* > PC **samali-*/PIt. **semali-*

For the development of the liquids however, the first scenario does not work, as interconsonantal liquids can be shown to have vocalised independently in Italic and Celtic. Assuming that the development of prevocalic syllabic nasals and liquids belonged to the same process, we must adopt the second scenario; this is in accordance with Weiss (2009, 104), but against Schrijver (1991, 73). As for the treatment of syllabic liquids, it seems that Proto-Italo-Celtic continued them as purely syllabic, except when they were followed by a vowel due to laryngeal loss, in which case an epenthetic *-a-* arose before the liquid. Given the reconstruction of the epenthetic vowel before PIC syllabic nasals as **ə*, one may imagine that **R̥* > **əR* was the regular development for all PIC resonants, after which the **ə* was lowered to **a* in front of liquids. Apart from the structural argument, there is however no direct evidence for this, so I will reconstruct **aL* for syllabic liquids followed by a vowel.

We now get the following system for the PIC resonants:

Inherited	***m**	***n**	***r**	***l**
Consonantal	**m*	**n*	**r*	**l*
Syllabic	**əm*	**ən*	**r̥*	**l̥*
Syllabic, prevocalic	**əm*	**ən*	**ar*	**al*

Table 7

The differences with the PIE system are phonetic rather than phonological. The main change in the phonology was that syllabic resonants could now occur in prevocalic position as well, due to the loss of laryngeals.

4. *Laryngeal developments*

The outcomes of the laryngeals are a complicated matter in any Indo-European language. For Italic and Celtic, the developments of the laryngeals have been extensively studied by Schrijver (1991) and Zair (2012). Discussing all specific environments and problematic cases goes beyond the scope of this thesis. However, for the global reconstruction of the Proto-Italo-Celtic phonological system it is relevant to see whether laryngeals should be reconstructed for Proto-Italo-Celtic at all. And if so, to what extent they continue the PIE system.

There are several laryngeal developments that have been observed to be very similar in Italic and Celtic (cf. Schrijver 1991; Zair 2012):

1. **e* > **a* next to **h₂*; **e* > **o* next to **h₃*.
2. **VH* > **V̄*
3. **CHC* > **CaC*
4. **HC-* > **C-*
5. **CHCC* > **CCC*
6. **CRHC* > **CRă̆C*
7. **CHIC* > **CĬC*
8. **HRC-* > **VRC*

4.1 *Italic and Celtic laryngeal reflexes*

Of the above-mentioned developments, the first two are unproblematic and commonly accepted to have been completed already in late-PIE. Number (3) and (4) are well attested in both Italic and Celtic – e.g. Lat. *pater*, OIr. *athir* 'father' < PIE **ph₂tēr* and Lat. *dens*, OIr. *dét* 'tooth' < **h₃dnt* – and are probably of PIC origin. The loss of a laryngeal in clusters with three other consonants or more – except in clusters **RHCR* (Zair 2012, 168) – in number (5) must have preceded number (3). Although the material is scarce, there is no good counterevidence either. If the analysis of O. *futír* (§ 2.3.1.1) is correct, this development must postdate the shared Italo-Celtic development of the *mediae* and thus cannot be of PIE origin, as suggested by Zair (2012, 168).

4.1.1 **C̥RHC and *RH̥C*

The development of inherited **CRHC* (number 6) is similar in Italic and Celtic in that it has a double outcome: **CrăC* vs. **CrāC* (Schrijver 2016, 495). In Italic, **CRăC* is more restricted than **CRāC*: Lat. *glăber* 'smooth' < **gʰlh₂dʰ-ro-* is the only good example (Schrijver 1991, 190).[28] In Celtic, the numbers are more balanced (Schrijver 1995, 188–89). The conditions under which **CRHC* yielded

[28] But note that even this etymology becomes less certain when the connection with PGm. **glada-* is rejected (§ 2.1.4).

CrăC* rather than **CrāC* are not clear, and require highly specific explanations in both Italic and Celtic (Schrijver 1991, 417; 2016, 495; Zair 2012, 84–89). Due to the problems in the individual branches, positing a shared development between Italic and Celtic is even more difficult. The similarities cannot be ignored, however. Apart from the resulting vowel length in original **CRHC*, Italic and Celtic agree in vowel quality and place of vocalisation. I therefore agree with Schrijver (1991, 418) and Zair (2012, 87) that at least a development **CRHC* > **CRaHC* may be posited for Proto-Italo-Celtic.[29] This has some interesting consequences regarding the relative chronology of the syllabicity of resonants and laryngeals. In both Celtic and Italic, word-initial sequences of **RHC-* regularly give **RaC-*; e.g. Lat. *măcer* 'thin', MW *magu* 'to feed' < **mh₂k-* (Schrijver 1991, 171–72; Matasović 2009, *mak-o-; Zair 2012, 66). The fact that the development of **H* here is identical to that in sequences of **CHC* (development 3 above) suggests that the vocalisation that should be reconstructed is **R̥HC-*. As the development of **CRHC* > **CRāC*, is different, we might posit an original vocalisation **CR̥HC* here. The development to **rā* rather than **ar(ā)* implies that the emergence of the prop vowel between the resonant and laryngeal devocalised the resonant (CR̥HC* > **CRaHC*), which must have occurred before the developments of **CLHV* discussed in § 3.1.3, for which a prevocalic syllabic resonant is needed to explain the difference in outcome between **L̥* in **CL̥HV* (> **CL̥V* > **CaLV*) and **L̥* elsewhere. For the reflexes of **CRHC* with short **ă*, various explanations have been proposed, all of which need secondary analogical developments to explain the counterexamples (Zair 2012, 86).[30] As the discussion often revolves around etymological issues in a few possible examples, I do not think that yet another discussion of the material will contribute much to the goal of this thesis. If the few apparent instances of **CRHC* > **CRăC* in Italic and Celtic can eventually be shown to have a different origin, **CRHC* > **CRāC* can be posited as a real Proto-Italo-Celtic development, but for now we must content ourselves with positing PIE **CRHC* > **CRaHC.* This must have happened before the completion of earlier **VH* > **V̄*, to allow for the **H* to disappear in certain conditions, leaving **CRăC*, and had been completed before the development of **R̥V* > **a/əRV* (§ 3.1.3). Later, the remaining sequences of **aH* were again lengthened to **ā*. As for the "*palma* rule", I prefer to explain Lat. *palma* 'palm of the hand' as coming from **plh₂em-*, rather than from **plh₂m-* (> OIr. *lám* 'hand', Gr. *παλάμη* 'palm of the hand'), since *palma* is the only good example of this rule (Schrijver 1991, 210; De Vaan 2008, palma; Höfler 2017, 15). Höfler (2017) adduces additional evidence with Lat. *parra* 'bird', *palla* 'mantel',

[29] Zair and Schrijver formulate this as **CRəHC*. Since the attested vowel quality is always [a], and the colouring properties of the laryngeals do not appear to have played any role here, there is no real reason to reconstruct anything other than **a* for PIC.

[30] I think Zair's (2012, 86–89) proposal that **CRHC* > **CRăC* when the last consonant is a plosive, but the first consonant is not, is very unattractive. As it needs the assumption that **p* already changed to **φ*, the implication is that interconsonantal laryngeals were preserved up to a very late stage in the development of Celtic as a branch. Moreover, it is very hard to understand phonetically why a laryngeal would be preserved when it was preceded by a stop and a resonant, but not when it was preceded by any other consonant and a resonant.

gallus ‘cock’, *marra* ‘mattock’ and *sam(p)sa* ‘mass of crushed olives’ from **pŕ̥H-s-eh₂* ‘the feathered one’, **pĺ̥h₂-s-eh₂* ‘the covering one’, **gĺ̥H-s-o-* ‘the caller’, **mŕ̥h₂-s-eh₂* ‘the crusher’ and **sḿ̥H-s-eh₂* ‘the scooped one(?)’ respectively. To me all of these require a few too many derivational and semantic assumptions to be reliable evidence for the *palma* rule, making it more attractive to try and explain *palma* differently.

4.1.2 **CHIC*

According to Schrijver, another shared Italo-Celtic development is **CHIC* > **CĬC* in pretonic position (Schrijver 1991, 226–49; 2016, 492). This is not commonly accepted, and its evaluation depends on one’s interpretation of Dybo’s rule, (§ 6) and etymological considerations on the examples in favour and against this development (cf. Zair 2012, 111–28). Whether the outcome of **CHIC* was **CĪC* or **CĬC* is of no consequence to the question of the reconstructible PIC phonological system.

4.1.3 **HRC-*

Finally, we should turn to the reflexes of word-initial sequences of **HRC-*. Italic and Celtic both vocalize these sequences to *VRC-*. But whereas the regular outcome in Celtic is **aRC-* (Zair 2012), there is evidence in Latin that the quality of the vowel depends on the original laryngeal. The issue is explored in depth by Schrijver (1991, 56–76). For sequences of **HNC-*, there are three strong examples in favour of the vocalisation of the syllabic nasal being influenced by the laryngeal: *ambi, amb-, am-* ‘round, about’ < **h₂nt-bʰi*; *umbilīcus* ‘navel’ < **h₃nbʰ-el-*; *unguis* ‘nail, claw’ < **h₃ngʰ-*. If we accept this, that means that in this position at least **h₂* and **h₃* must have been preserved and remained distinct until after the split between Italic and Celtic, as they appear to have been lost without a trace in Celtic. Schrijver (1991, 64) does not judge any potential examples of **h₁NC-* to be anything more than “possible”. Moreover, the reflexes of these examples do not differ from the reflexes of simple **N̥-* (e.g. Lat. *inter,* O. *anter*, Ven. *a(n)tra* ‘between’ < *h₁n̥ter-*), so there is no evidence for or against the preservation of initial **h₁-* in this position. For sequences of **h₂/₃LC-*, all reliable evidence points to a regular outcome **aLC-* in both Italic and Celtic.[31] For **h₁LC-* there is no compelling evidence in Italic. In Celtic, OIr. *·riga, ·rega* (fut.) ‘will go’ next to MIr. *eirgg* ‘go’ (impv.) < **h₁(e)rǵʰ* (cf. Gr. *ἔρχομαι* ‘come, go’) suggests that **h₁LC-* vocalized to PC **LiC-*. This is also the expected outcome of **L̥C-*, which indicates that initial **h₁-* was lost before the vocalisation of **L̥* in this position (McCone 1996, 52; but cf. Zair 2012, 37–38 on an alternative solution for this form).

[31] For Latin an exception is *ursus* ‘bear’, which should go back to **h₂rtḱos*, but whose initial *u-* is problematic on all accounts (De Vaan 2008, ursus).

For inherited **HNC-* we may posit PIC **HəNC-*, with preservation of at least **h₂* and **h₃* as distinct phonemes. In PIt., the **ə* was coloured by the preceding laryngeal to either **a* or **o*, after which the laryngeal was lost. In Celtic, the laryngeals were lost without colouring the prop vowel. For **HLC-*, a PIC outcome **aLC-* is possible. If OIr. *·riga* goes back to **h₁rǵʰ-*, loss of **h₁-* must have occurred before **HLC-* > **aLC-* (McCone 1996, 52). The Italic material does not pose a problem to this chronology.

4.2 *Proto-Italo-Celtic laryngeals*

Although Celtic and Italic seem to have done away with some of their laryngeals together, i.e. in a Proto-Italo-Celtic stage, we still need to assume their existence in two environments. One is in the reflexes of PIE **CRHC*, because the conditions for the two outcomes **CRāC* and **CRaC* are not clear. It should be noted, however, that the conditions are not even clear in the individual branches. The only argument in favour of positing a PIC laryngeal in this position is thus our limited understanding of this sequence's development in the individual branches – there is no positive evidence. The opposite is true for the other position where we must reconstruct a PIC laryngeal: word-initially before a vocalic nasal (**H̥NC-*). Although the evidence is limited to three Latin words (*amb(i)*, *umbilīcus*, *unguis*), it is difficult to explain these forms otherwise. The fact that Celtic does not show a double outcome (cf. OIr. *imbliu* 'navel' < PC **ambliyon* < **h₃n̥b-l-*) means that the colouring of the vowel happened no earlier than PIt. and that **h₂* and **h₃* must still have been distinct up until then. An alternative explanation would be to see **aN-* (as in *amb(i)*) as the only regular outcome of **H̥NC-* in Italic, just like in Celtic. This would mean that *umbilīcus* and *unguis* are to be explained otherwise. For *umbilīcus* influence from *umbō* 'boss (of a shield), protuberance' < **h₃enbʰ-ōn-* (cf. OHG *amban* 'belly') is not immediately convincing, but conceivable. I do not agree with Schrijver (1991, 62) that assuming influence from *umbō* would be "ad hoc and unmotivated". If at some moment between PIt. and the earliest attestation of Lat. *umbilīcus* a putative form **ambilīcus* existed next to *umbōn-* < **omb-n-*, it is very well possible that the initial vowel of the latter was introduced in the former; especially if *umbōn-* still had the meaning 'navel, belly' that must be reconstructed for this root anyway. *Unguis* is more difficult to explain. Because of a lack of a satisfying alternative that explains *umbilīcus* and *unguis*, it is methodologically best to stick to the PIt. development **h₂NC-, *h₃NC-* > *aN-, oN-* for now. Nevertheless, given the common assumption that vowel colouring by laryngeals was a phonetic development already completed in late stages of PIE, it would be highly remarkable if laryngeal distinctions were indeed preserved all the way up to PIt. in this single specific environment, while all other laryngeals that were not originally adjacent to a vowel had collapsed into *-a-* or disappeared already in Proto-Italo-Celtic or earlier. One may wonder whether the ability to explain two forms (or only one, if *umbilīcus* was influenced by *umbō*) outweighs the chronological issues of positing two marginal phonemes in a

single marginal phonetic environment. It is clear in any case, that the phonology that we can reconstruct for Proto-Italo-Celtic was much less riddled with laryngeals – if any at all – than its Proto-Indo-European ancestor, which is structurally a rather significant innovation. In most cases where they are not adjacent to inherited PIE **e*, they behave identically in terms of vowel quality. This suggests that the three laryngeals had fallen together into one phoneme early in the development of Proto-Italo-Celtic. This phoneme may have been a glottal stop or fricative (or something similar). I will represent it with **H*.

4.2.1 *A relative chronology of laryngeal developments*

We can now posit a relative chronology for the laryngeal (and vocalic resonant) developments discussed in the sections above:

0. **h₁e, *eh₁ > He, eH*; **h₂e, *eh₂ > *Ha, *aH*; **h₃e, *eh₃ > *Ho, *oH*
   Probably already a dialectal PIE development.
1. **h₁ > Ø / #_* (§ 4.1.3)
2. **h₁, *h₂, *h₃ > *H*
   Except possibly word-initially before a nasal (§ 4.1.3)
3. **H > Ø / C_CC*
   Cf. PC **duxtīr* 'daughter' << **dʰugh₂tr-*
4. **H > Ø / #_C[obstruent]*
   Cf. Lat. *dens*, OIr. *dét* 'tooth' < **h₃dn̥t-*. Not before resonants.
5. **H > *a / C_C, #_L*
6. **CR̥HC > CRăC* or *CRaHC*
7. **H > Ø / _V*
8. **N̥ > *əN*
9. **L̥ > *aL / _V*

Developments 3 and 4 may have happened in any order, and the same goes for 5, 6 and 8, 9 respectively. (1, 2, 3, 4) must all precede the vocalisation of **H* to **a* (5). (6) must precede (7), which feeds into (9) by producing prevocalic syllabic liquids.

5. *Italo-Celtic vowels*

5.1 *Short vowels*

The vowel systems of Proto-Italic and Proto-Celtic are similar but not identical. Both had a symmetric system of five short vowels (*i, e, a, o, u*), which we may posit for Proto-Italo-Celtic as well (van der Staaij 1995, 47–48; McCone 1996, 54). Of these, PIC **e, *o, *i* and **u* are direct continuations of the same phonemes in PIE, with the only difference that **i* and **u* were probably not considered to be conditioned allophones of **j* and **w* anymore, due to the rise of their long counterparts **ī* and **ū* (§ 5.2). PIC **a* was the outcome of a range of developments involving laryngeals and/or vocalising liquids: **h_2e* > **a*, **$\underset{\circ}{L}V$* > **arV*, **HL-* > **ar-*, **CHC* > **CaC* (§ 4).

5.1.1 **RDC* > **RaDC*

One possible source for short **-a-* in Italic and Celtic is Schrijver's (1991, 477–85) proposal that an *-a-* arises between an original resonant and a *media* followed by another consonant; e.g. Lat. *magnus* 'big' < **mgno-* and OIr. *mál* 'chief' < PC **maglo-* < **mglo-*. Examples for this development are rather scarce, which is why Zair (2012, 65) rejects it. If the evidence is taken seriously however, it is very interesting that the outcome of this sequence is identical to that of word-initial **RHC-* (§ 4.1.1). This suggests that in this environment the inherited glottalic voiced stops were "split" in PIC into a vocalic laryngeal **$\underset{\circ}{H}$* followed by a plain voiced stop. Still within PIC, vocalic **$\underset{\circ}{H}$* was regularly vocalized to **a* (§ 4.1): Lat. *magnus* < PIC **magno-* < **m$\underset{\circ}{H}$gno-* < **m$\underset{\circ}{g}$no-*. The development **R$\overset{\circ}{D}$C* > **RHDC* must evidently have happened before the unconditioned deglottalization of voiced *mediae* (§ 2.3.3; 4.2.1). A similar development is possibly also found in Albanian; cf. Alb. *madh* 'big' < **mg-* (De Vaan 2018, 1738). This is not necessarily directly related to the proposed Italo-Celtic development, though.

5.1.2 **-$\underset{\wedge}{i}$e-* > **-i-*

A rather specific change in the vowel system was proposed by Weiss (2012, 152–55), who argues that the sequence **-$\underset{\wedge}{i}$e-* may have been reduced to **-i-* already in Proto-Italo-Celtic. Evidence for this development is found in the verbal paradigms of both branches; e.g. Lat. 2sg. *capis* 'you take' < PIt. **kapisi* < **kap$\underset{\wedge}{i}$esi* and Gaul. impv. *gabi* 'take' < **gab$\underset{\wedge}{i}$e*. The acceptation of this rule depends on the dating of Vine's Law (**-e$\underset{\wedge}{i}$V-* > PIC **-i$\underset{\wedge}{i}$V-*, except when accented in a closed syllable) as Proto-Italo-Celtic, as it must have preceded **-$\underset{\wedge}{i}$e-* > **-i-* in e.g. Lat. *sōpīre* 'to cause to sleep' < **s$\underset{\wedge}{u}$ōpī-* < **suōpi$\underset{\wedge}{i}$e-* < **s$\underset{\wedge}{u}$ōp-e$\underset{\wedge}{i}$e-* (Weiss 2012, 155).[32] While this change would not have been a radical change to the Italo-Celtic vowel system, it is still an interesting shared development, which may have had an impact on the verbal system (cf. § 9.2).

[32] De Vaan (2008, sopor) expresses his doubts about the existence of such a verbal formation, but does not offer an alternative.

5.2 *Long vowels*

The PIt. and PC long vowel systems differ somewhat. Whereas Proto-Italic has a long counterpart for each of its short vowels, Proto-Celtic only has four: **ī, *ē, *ā, *ū*. However, this system can be derived internally from earlier **ī, *ē, *ā, *ō, *ū*. Original **ō* became **ū* in final syllables and merged with **ā* elsewhere. Similarly, the "early" Proto-Celtic **ē* was raised and merged with **ī*, but a subsequent preconsonantal monophthongisation of **ei* > **ē* refilled its spot in the vowel system (McCone 1996, 59–63).[33] For Proto-Italo-Celtic, we may thus reconstruct five long vowels, which are the outcomes of various PIE sequences:

PIC **ē* < PIE **ē, *eh₁*

PIC **ō* < PIE **ō, *oH, *eh₃*

PIC **ī* < PIE **iH, *Hi*[34]

PIC **ū* < PIE **uH, *Hu*

PIC **ā* < PIE **eh₂*, **CRHC* (§ 4.1.1)

5.3 *Diphthongs*

Next to plain short and long vowels, Proto-Italic and Proto-Celtic would both have had a set of diphthongs. For both branches, the reconstruction of **ai* (< **h₂ei*), **au* (< **h₂eu*) **oi* (< **oi, *h₃ei*) and **ou* (< **ou, *h₃eu*) is unproblematic. Inherited **ei* was preserved in Proto-Italic, but monophthongised to **ē* early on in Proto-Celtic (van der Staaij 1995, 47; McCone 1996, 64). The reflex of PIE **eu* is *-ou-* in all of Celtic, as well as in Sabellic and Latino-Faliscan (van der Staaij 1995, 66; McCone 1996, 64); only Venetic seems to preserve *-eu-* in forms like the anthroponym *vheug-* < **bʰeug(ʰ)-* and *teuta* 'town' (cf. O. *touta*) (Lejeune 1974, 110). However, Ven. *vheug-* has a counterpart *vhoug-*, which is attested more often (13 instances) and earlier than *vheug-* (two instances)(van der Staaij 1995, 197). Van der Staaij notes that the forms with *-eu-* appear to be absent from certain localities and suggests that *-ou-* > *-eu-* might be a later inner-Venetic development, which means that the outcome of **eu* was identical in Celtic and Italic. Against positing **eu* > **ou* as a PIC development, however, is the fact that is original **eu* has been used to explain the counterexamples to the specifically Italic Thurneysen-Havet's Law. In the formulation of Vine (2006), this law dictates that PIt. **ou* > **au* in prevocalic, unstressed position.[35] The

[33] A new long **ē* also arose as the result of compensatory lengthening in the sequence **-ens* > **-ēs*, which must have taken place after **ē* > **ī* (e.g. OIr. *anmae* 'name (gen.sg.)' < PC **anmēs* < **anmens*). For a similar change of **-ons* > **-ōs*, the evidence is less straightforward. It possibly occurred before **ō* > **ū* in final syllables, in which case the PC reflex would still be **ū* (McCone 1996, 61–63).

[34] But cf. Schrijver (2016, 492).

[35] Under the inherited IE mobile stress pattern, rather than word-initial stress reconstructed for the latest stage of Proto-Italic or the stress system attested in classical Latin.

terminus ante quem for this development is the split between Venetic and the rest of Italic, if the Ven. personal name *hostihavos* continues **gʰosti-ǵʰouó-* 'who honours guests' (Vine 2006, 235). Several apparent counterexamples to this rule can be explained if Thurneysen-Havet's Law did not apply to original **eu*, implying that **eu* > **ou* must be later and thus independent in Italic and Celtic. The forms in question are Lat. *movēre* 'to move' < **mi̯euh₁-*, *nouācula* 'razor' < **ksneu-*, *cloāca* 'sewer' < **ḱleuH-*. However, for all three of these counterexamples, Vine (2006) argues that they are likely derivations of forms with an originally accented *e*-grade. He sees *movēre* as a conflation of an originally intransitive **movĕre* < **mi̯éuh₁-* and an originally causative **mavēre* < **mi̯ouh₁-éie-* (Vine 2006, 217–21). *Novācula* and *cloāca* are both suggested to be ultimately derived from *e*-grade adjectives **ksnéu-o-* 'smooth' and **ḱleuH-o-* 'clean, clear', through verbalisation in *-āre* (Vine 2006, 214–17). If, however, the supposed *-ā*-stem verbs **nouāre* and *cloāre*[36] were derived from PIt. **(ks)nówo-* 'smooth' < **ksnéuo-* and **klówo-* 'clean, clear' < **ḱleuHo-* after Thurneysen-Havet's Law had already been completed, they cannot show us whether Thurneysen-Havet's Law did or did not operate on original **eu* in prevocalic pretonic position. If correct, **eu* > **ou* may precede Thurneysen-Havet's Law after all, in which case it can be reconstructed for Proto-Italo-Celtic.[37] Assuming that prevocalic **ou* in these derived forms (*novācula, cloāca, novitās* etc.) was not shifted automatically to **au* is no more problematic than assuming the presence of a PIE *e*-grade in unaccented syllables. The only difference is the time-depth of the derivations that must be assumed anyway.

The resulting vowel system that must be reconstructed for Proto-Italo-Celtic is now as follows:

Short	**Long**	**Diphthong**
**i*	**ī*	
**e*	**ē*	**ei*
**a*	**ā*	**ai, *au*
**o*	**ō*	**oi, *ou*
**u*	**ū*	

Table 8

[36] This form is actually attested, but of dubitable reliability (De Vaan 2008, cloaca).

[37] I do not agree with Vine that forms like Lat. *novitās* 'newness' and *renovāre* 'renew' can be used to show that original **eu* was not affected by Thurneysen-Havet's Law. Both forms can easily be later derivations from *novus* after **eu* > *ou*(cf. Beekes 2010, νέος on Gr. νεότης).

6. *Proto-Italo-Celtic stress*

Schrijver (2016, 493) suggests that the development of word-initial stress, which can be reconstructed for Proto-Celtic and Proto-Italic, might be a common development in lack of evidence suggesting otherwise. There is such evidence however, in the form of Vine's (2006) reformulated version of Thurneysen-Havet's Law (§ 5.3). If this law, which is specific to Italic, does indeed operate on conditions provided by the PIE mobile stress system, this means that Proto-Italic did at some point still have a stress system that was very similar to that of PIE. Another rule supposedly applying to Indo-European stress patterns is Dybo's rule, which dictates the shortening of long vowels in a pretonic syllable (Schrijver 2016, 490). The specifics of this rule (and indeed its very existence) are a matter of debate, however. Finally, word-initial stress is only one out of two possibilities for PC, penultimate being the more generally accepted one (Schrijver 1995, 16–22). In short, there is no clear evidence for a PIC innovation of the inherited stress system.

Part II: Tense, mood and aspect in Italo-Celtic

The second half of this thesis deals with the reconstruction of the categories tense, mood and aspect (in short: TAM) for the Italo-Celtic verbal system. This section is divided into three parts: Proto-Italic TAM, Proto-Celtic TAM, and finally Proto-Italo-Celtic TAM. For both Italic and Celtic, a short overview will be given of the extant formations in the respective branches – with the exclusion of present indicative formations. Whenever reconstructing a Proto-Italo-Celtic form, I will use the phonological reconstruction developed in the first half of this thesis.

7. *Tense, mood and aspect in Italic*

7.1 *The Italic TAM categories*

To be able to compare the Celtic verbal formations to the Italic ones, it is necessary to first get a picture of the verbal systems of both individual branches. For Italic, the three languages that are attested well enough to provide us with information about their verbal system (i.e. Oscan, Umbrian and Latin), show a variety of formations in the future tense, as well as in their subjunctive tenses. All three seem to present the same synchronic system, with an opposition between past, present and future, further specified for infective vs. perfective aspect, and with a subjunctive counterpart to every indicative non-future tense (present, perfect, imperfect, pluperfect) and a future and perfect future tense confined to the indicative mood (van der Staaij 1995, 180–82). The pluperfect and pluperfect subjunctive are in fact not attested in Sabellic; this may be due to chance. The almost one-to-one correspondence between the grammatical information expressed on the Latin and Sabellic verb respectively, is all the more striking because Latin on the one hand and the Sabellic languages on the other, exhibit different formations for several of these tenses. Unfortunately, we only have very limited information about the Venetic verb; it will not be considered here. The following is a brief overview of the formations found in the tenses of Latin and Sabellic – with the exception of the present indicative.[38]

7.1.1 *Perfect*

A characteristic feature of the Latin, and probably Italic, verbal system is the aspectual opposition between "infectum" and "perfectum". This opposition is present in virtually all tenses and moods, and is doubly expressed by both the stem and the endings; e.g. 1sg.prs. *faci-ō* vs. 1sg.pf. *fēc-ī* 'to make'. The Italic perfect is the result of a merger of the inherited PIE aorist and perfect. The endings of the Latin perfect tense (*-ī, -istī, -it* etc.) continue the PIE perfect endings, but in Sabellic these have been replaced by the PIE secondary endings. Although the syncretism between perfect

[38] For a detailed comparative discussion of the verbal formations found in the two Italic branches, see Van der Staaij (1995, 143–82).

and aorist has evidently happened in all of Italic, the various languages show a far from uniform picture of the perfect stems they deploy. This is most easily demonstrated by the plethora of perfect stem deriving suffixes: Lat. *-u-*, *-s-*, O. *-tt-*, U. *-nši-* < **-nḳi̯-*, Sab. *-f-* (van der Staaij 1995, 172). On top of that, Meiser (2003, 73) lists a handful cases where Latin and Sabellic appear to disagree in the formation of strong perfect stems; e.g. Lat. 1sg.pf. *fēcī* vs. O. 3sg.pf.subj. *fefacid*. Unlike Meiser however, I do not think that these examples are convincing evidence for the continuation of the IE aorist and perfect as separate categories into Proto-Italic, albeit identical in function. We must accept that some formations must have become productive at some point, which is also visible from the differences in perfect suffixes even within Sabellic (van der Staaij 1995, 190). I do think that the association of the perfect stem to non-present perfect tenses on the one hand, and of the present stem to non-present infect tenses on the other hand, may have been a late development (§ 7.3).

7.1.2 *Imperfect*

In Latin the imperfect tense is originally a periphrastic construction, but is synchronically formed by adding *-bā-* to the present stem; e.g. *amābam* 'I was loving'. In the third and fourth conjugations the stem vowel is lengthened to *-ē-*; e.g. *ducēbam* 'I was leading'. The only possible Sabellic example of this formation is O. 3pl.ipf. *fufans*, which was apparently built from the perfect stem *fu-* (for a discussion of this form, see § 7.2.5).

7.1.3 *Future*

Latin has two main future formations. One is the so-called *-b-*future (1sg. *-bō*, 3sg. *-bit*), that is formed from the first and second conjugations (e.g. *amābit* '(s)he will love', *vidēbit* '(s)he will see'), and in Old Latin also from the fourth conjugation (e.g. *scībit*). The origin of this suffix might be PIt. thematic **fw-e/o-*, which has been identified as a subjunctive of the verb **bʰuH-* 'to be' (Weiss 2009, 415). Like the Italic imperfects in **-ƀā-* (cf. Lat. *-bā-*, O. *-fa-*), this would originally have been a periphrastic formation. The *-b-*future is also attested in Faliscan *carefo* 'I will lack', but not in Sabellic. Although the specific verb form **fwe/o-* that was used must already have existed in Proto-Italic, it is likely that this construction's univerbation and incorporation into the verbal system was a Latino-Faliscan innovation. In the third conjugation (and the fourth in Classical Latin), the regular future formant is the suffix *-ē-* (1sg. *-am*, 3sg. *-et*; e.g. *aget* '(s)he will do', *capiet* '(s)he will take').[39] This long *-ē-* is generally assumed to be a continuation of the original IE subjunctive of thematic verbs, with levelling of the original **-ē/ō-* < **-e-e-/-o-o-* ablaut in the theme vowel to **-ē-*

[39] 1sg. *-am* has been taken over from the subjunctive formation with *-ā-* (§ 7.1.5; 7.2.4) for original *-ē(m)* (Weiss 2009, 415).

(§ 7.2.4). Besides these two productive future formations, the future of Latin *esse* 'to be' (3sg.fut. *erit*) continues the short-vowel subjunctive inherited from PIE.

The Sabellic future is formed very differently, with an athematic suffix *-s-* attached to the verbal present stem: O. *deiua-s-t* '(s)he will swear', *dide-s-t* '(s)he will give', *censa-z-et* (= /kensazent/) 'they will pass the census on'; U. *fere-s-t* '(s)he will carry', *ee-s-t* '(s)he will go' (van der Staaij 1995, 173–74; Meiser 2003, 40). The athematic appearance of this formation has been attributed by Buck (1904, 59) to syncope of **e* before *-s* and *-t*, but the only examples are in fact future forms, rendering the argument for such a development circular (cf. § 7.2.1).[40]

7.1.4 *Perfect future*

The perfect future (or future perfect) differs as well between Latin and Sabellic. In Latin, it is formed with the suffix *-er-*, followed by thematic endings: *fēcerō, fēcerit* 'I/(s)he will have done'. This *-er-* is usually taken to come from **-is-*, also found in the perfect infinitive *-isse*. Sabellic on the other hand uses the athematic suffix *-us-*, added to the perfect stem. The origins of neither Latin *-er-* < **-is-*, nor Sabellic *-us-* are clear (Buck 1904, 173; Leumann 1977, 608–10). Thus, the formation of a perfect future cannot easily be ascribed to Proto-Italic either.

7.1.5 *Present subjunctive*

The Italic languages possess three distinct subjunctive formations, characterised by *-ī-, -ē-* and *-ā-* (Leumann 1977, 574–75; van der Staaij 1995, 176–77). The *-ī-*subjunctive goes back to the IE optative in **-i(e)h₁-* and is found in the Latin and Sabellic subjunctives of the verb 'to be':

		PIt.		PIE
OLat. 1sg. *siem*,	<	1sg. **s-i̯ē-m*	<	1sg. **h₁s-ieh₁-m*
U. 3sg. *sei, si*,	<	3sg. **s-i̯ē-d*	<	3sg. **h₁s-ieh₁-t*
Lat. *sīmus*	<	1pl. **s-ī-mos*	<	1pl. **h₁s-ih₁-mos.*

Vestiges of the optative are further found in the Latin subjunctive paradigms of *velle, dāre* and *edere*, the 1sg. of which are *velim, duim* and *edim* respectively (Leumann 1977, 574). The other two subjunctive suffixes, *-ē-* and *-ā-*, have the exact same distribution in Latin as in Sabellic: *-ē-* is found as the subjunctive of the 1st conjugation while *-ā-* is found in the other conjugations:

[40] Buck himself even adduces some possible counterexamples, albeit from poorly attested dialects; e.g. Marruc. *feret* '(s)he carries', which would be expected to have become ***fert* if syncope before word-final *-t* was real.

	Latin subjunctive (2sg.)	Sabellic subjunctive
I: verbs in *-ā-*	*amēs* < **amā-ē-*	O. *deiuaid* (3sg.) < **deiu̯ā-ē-t*
II: verbs in *-ē-*	*videās*	O. *pútíad* (3sg.) < **potē-ā-t*
III: thematic verbs	*legās*	O. *deicans* (3pl.)
IV: verbs in *-i-/-ī-*	*faciās*	O. *fakiiad* (3sg.)

Table 9

Subjunctive *-ē-* has been assumed to derive either from the PIE long vowel subjunctive of the thematic verbs or from the full grade of the optative suffix **-i(e)h₁*, while the origin of *-ā-* is disputed (§ 7.2.4). It is in any case clear that the productive formation of the present subjunctive with *-ē-* and *-ā-*, whatever its origin, was already firmly established in Proto-Italic. This likely also goes for the few subjunctives in *-ī-*, implying that the opposition between subjunctive and optative had already been lost by PIt. times.

7.1.6 *Perfect subjunctive*

In Latin, the perfect subjunctive is formed by adding *-ī-* (presumably from PIE optative **-ih₁-*) to the suffix *-er-* < **-is-*, also seen in the perfect future and other derived perfect tenses (van der Staaij 1995, 177). Possibly due to regular shorting of the *-ī-* in the 3sg. and 3pl., the paradigms of the perfect subjunctive and perfect future have completely collapsed into one in Classical Latin, except in the 1sg., with pf.fut. *-erō* vs. pf.sub. *-erim* (Leumann 1977, 609–10). In Sabellic, the perfect subjunctive is formed by adding the subjunctive marker **-ē-* directly to the perfect stem; cf. O. *fuid* < **bʰu-ē-d*, *tríbarakattíns* < **-att-ē-nt*. Meiser (2003, 60) suggests that the PIt. perfect subjunctive was formed by adding **-ī-* to the perfect stem. Sabellic and Latino-Faliscan would have innovated this in different ways: the former by adopting the subjunctive marker **-ē-*, the latter by adding the element *-er-* < **-is-* characteristic of perfect tenses (cf. § 7.2.2; 7.2.3).

7.1.7 *Imperfect subjunctive*

The imperfect subjunctive is formed identically in Sabellic and Latin. Both add a suffix **-sē-* to the present stem: Lat. 1sg. *amārem* < **amā-sē-m*, O. 3sg. *fusíd* < **fu-sē-t*, Pael. 3sg.pass. *upsaseter* < **opesā-sē-ter*. Although this formation can be reconstructed for Proto-Italic without a doubt, its origins are rather uncertain. It could go back to subjunctive **-ē-* added to an **-s-*aorist (Leumann 1977, 576). Meiser (2003, 39–40) instead sees it as the subjunctive counterpart to the *-s-*future in Sabellic. Because Latin built its infinitives with the suffix **-si* > *-re* (originally the locative of a nominal *-s-*stem), the imperfect (and pluperfect) subjunctive, with **-sē-* > *-rē-* > *-re-*, synchronically looks like personal endings added to the present infinitive. This is secondary however, as Sabellic builds its infinitives with *-om*, and still has imperfect subjunctive **-sē-*.

7.1.8 *Pluperfect subjunctive*

The Latin pluperfect subjunctive was formed by adding **-sē-* to the perfect stem with the suffix **-is-*: *amāvissem, fēcissem*. Like the imperfect subjunctive, the pluperfect subjunctive forms are similar to the perfect infinitive (*amāvisse, fēcisse*). The pluperfect tense is not attested for any mood in the Sabellic languages (van der Staaij 1995, 172). While this may be due to chance, the Latin pluperfect subjunctive could easily be a relatively late development, using the perfect element **-is-*, and the past subjunctive element **-sē-* found in other tenses.[41]

7.2 *Italic TAM and its formants*

Although Latin and Sabellic appear to function with the same system – i.e. contrasting present vs. past vs. future, imperfect vs. perfect and indicative vs. subjunctive throughout – only two out of the six tenses discussed above can be confidently reconstructed for Proto-Italic. These are the present subjunctive in *-ā-/-ē-* and the imperfect subjunctive in *-sē-*. This suggests that Latino-Faliscan and Sabellic split up when still in the process of reshuffling their verbal system. The various formants used in the creation of the tenses discussed above are suspiciously similar: all of the subjunctive tenses as well as the perfect future and Sabellic future make use of either *-ē-* or *-s-* or both. Whether or not every *-s-* is the same, is discussed below.

7.2.1 *Future *-s-*

7.2.1.1 *The Latin* faxō *type*

Besides the Classical futures in *-b-* and *-ē-*, there exists a set of archaic forms in Latin that appear to be futures with *-s-* and thematic endings, e.g. *faxō* 'I will make/will have made' and *dixō* 'I will say/will have said'. They have been left out of the discussion of the future and subjunctive formations above, because they do not fit neatly into any of the functional uses described there. Mainly found in Old Latin, these forms sometimes have perfect future meanings, sometimes that of a plain future. Except for *faxō*, all forms are attested in subordinate clauses. What is interesting is that, unlike the "regular" future and future perfect formations, the *-s-*future appears to have a distinct subjunctive form (e.g. *faxim*), presumably with the IE optative suffix **-ih₁-* (Weiss 2009, 419–20). Moreover, they also have a synthetic infinitive form in *-ssere* (e.g. *impetrassere* 'to be going to get'), as opposed to the periphrastic formation of the Classical Latin future infinitive with an active future participle (e.g. *factūrus esse*). These verb forms in *-s-* are often compared to the regular Sabellic future in athematic *-s-* (§ 7.1.3). Compare the forms in the following table:

[41] Another possibility is that it was created directly from the perfect infinitive, by analogy to the imperfect subjunctive's relation to the present infinitive.

	Lat. future	Lat. *-s-* (pf.) future	Sab. future
Ind.	2sg. *faciēs*[42] < **-ē-*	1sg. *faxō* < **-se/o-*	3sg. U. *ferest*; U., O. *fust* < **-(e)s-*
Subj.		1sg. *faxim* < **-s-ih₁-*	
Inf.	*factūrus esse* (periph.)	*impetrassere* < **-(s)sesi*	

Table 10

The fact that the Latin *-s-*future has a full-fledged synthetic paradigm, even though it is clearly not a productive formation, suggests that these formations may be relatively old. Forms like Latin *faxō* and *faxim* look like the original subjunctive (in **-e/o-*) and optative (in **-ih₁-*) to the athematic *-s-* futures attested in Sabellic (e.g. Weiss 2009, 419–420). This raises the following questions:

1. If PIt. had a future in **-s-*, why did Latin replace it?
2. If the forms in **-s-* were not a future, what were they?
3. What is the formal relation between Sabellic athematic **-s-* and Latin thematic **-se/o-*?

7.2.1.2 *Marking future in Proto-Italic*

Starting with the first question: if Proto-Italic possessed an overtly marked formation with a well-defined future meaning in **-s-*, it is interesting that Latin created two entirely new future formations in *-b-* and *-ē-*. The key to this problem is perhaps to be found in the usage of *-ē-* in the future of the third and fourth conjugation. This *-ē-* is also found, in all of Italic, in the subjunctive of the first conjugation and probably also in the imperfect subjunctive in *-sē-* (§ 7.1.7). It is therefore no wonder that the Latin future in *-ē-* has been identified as a generalization of the *e-*grade of thematic long vowel subjunctives inherited from PIE (Leumann 1977, 577). If one assumes that the Sabellic situation with *-s-* in the future, *-ē-* in the subjunctive of the first conjugation, and *-ā-* in the subjunctive of the other conjugations continues the PIt. situation, the question is how subjunctive *-ē-* was extended to a conjugation it did not originally belong to, whilst also being repurposed into a future.

As this is highly unlikely, I think the presence of *-ē-* in some part of the paradigm of the third conjugation must be old – which is rather unsurprising, because *-ē-* would have arisen in thematic verbs anyway. As the present subjunctive in *-ā-* must be reconstructed for Proto-Italic, we are more or less forced to consider that *-ē-* may have been expressing future tense in the third (and fourth?) conjugations already in an even earlier stage of the language. This may have been the result of *-ā-* overtaking the subjunctive function, but not the future reference that the early PIt. subjunctive in *-ē-* could have.[43] Thus, *-ē-* remained as a future marker and as a subjunctive marker

[42] The 2sg. best represents the original vocalism in **-ē-*. Cf. 1sg. *faciam*, introduced from the subjunctive, and 3sg. *faciet*, with regular shortening of **-ē-* > *-e-*.

[43] Whether PIt. subjunctive *-ē-* continues IE optative **-ieh₁-* or IE thematic subjunctive **-e-e-* does not matter. Since the outcomes of both scenarios are identical, both could be true (cf. Meiser 2003, 55). In Proto-Italic

in the first conjugation, where subjunctive *-ā-* would not have been distinctive. Whereas the **-ē-* was now very recognizable in the third and fourth conjugations as a future marker, this would not have been the case in the first and second conjugations. In the first conjugation the **-ē-* was still being used for the subjunctive, in the second it was an inherent part of the verbal stem. In Latin this was resolves by means of a periphrastic future with **-ƀe/o-* < PIt. **fu̯e/o-* << **bʰuH-* 'to be'.[44]

This *-b-*future was occasionally extended to stems in *-ī-*, but this apparently did not take hold (Weiss 2009, 415). The various stages of this specifically Latino-Faliscan development would have looked like this (in each stage, the innovations are **bold**):

Stage 1: "Pre-Proto-Italic"

	I	**II**	**III**	**IV**
Present	**-ā-*	**-ē-*	**-(i̯)e/o-*	**-ī-*
Subjunctive	**-āē-*	**-ē-* < **-ē-ē-*?	**-(i̯)ē-*	**-īē-*
Future	**-āē-?*	**-ē-* < **-ē-ē-*?	**-(i̯)ē-*	**-īē-*

Table 11

Stage 2: the expansion of **-ā-* as a present subjunctive marker in Proto-Italic:

	I	**II**	**III**	**IV**
Present	**-ā-*	**-ē-*	**-(i̯)e/o-*	**-ī-*
Subjunctive	**-āē-*	****-ēā-***	****-(i̯)ā-***	****-īā-***
Future	**-āē-?*	**-ē-?*	**-(i̯)ē-*	**-īē-*

Table 12

Stage 3: re-specification of the future in class I and II in Latino-Faliscan:

	I	**II**	**III**	**IV**
Present	*-ā-*	*-ē-*	*-i-*	*-ī-*
Subjunctive	*-ē-* < **-āē-*	*-eā-* < **-ēā-*	*-(i)ā-*	*-iā-*
Future	***-ābi-***	***-ēbi-***	*-(i)ē-*	*-iē-*

Table 13

So the answer to our first question seems to be that Latin did not in fact replace an old future, but rather continued the future function of its inherited subjunctive. This brings us to the second question: if the forms in **-s-* were not a future, what were they? If the inherited long vowel

their syncretism would already have been complete, so it is of no influence in reconstructing the Proto-Italic tense-mood system (§ 7.2.4.1).

[44] I do not want to imply that this specific form of **bʰuH-* was created only in the recent prehistory of Latin. The periphrastic formation itself may have existed for a long time (cf. § 9.5.1) but was eventually univerbated in Latino-Faliscan after the split with Sabellic.

subjunctive in **-ē-* could have future meaning in Proto-Italic, then what is the *-s-* found in the Sabellic future and Latin forms of the type *faxō*? All of these undoubtedly have a future meaning, making a PIt. reconstruction of this morpheme as anything else than future quite awkward.[45] A clue to their original function may be found in the behaviour of the Latin forms. Their meaning appears to hover between simple future and perfect future. Moreover, they are largely confined to subordinate clauses (Weiss 2009, 419, fn. 14-15). Perhaps the apparent coexistence of **-s-* and **-ē-* in Proto-Italic as a means to convey future meaning, is a relic of an earlier expansion of the Proto-Italic verbal system to have an imperfective-perfective distinction in all tenses (§ 7.3). If early Proto-Italic had **-s-* as its only means to express futurity, the subjunctive in **-ē-* was partly repurposed into an imperfective future, leaving **-s-* as the perfective future. This is parallel to the inner-Italic creation of the imperfective past tense in **-ƀā-* (i.e. the imperfect, cf. Lat. *-bā-*) next to the inherited perfective past tense (i.e. perfectum) derived from the IE aorist and perfect (§ 7.2.5; 7.3)(van der Staaij 1995, 190). In Sabellic, the future in **-ē-* was apparently given up in favour of **-s-* early on, due to its partial syncretism with **-ē-* as a subjunctive marker; this is the same motive as for the Latin grammaticalization of the *-b*-future. The infectum-perfectum distinction was re-established by the creation of the originally periphrastic Sabellic perfect future with **-us-* (§ 7.1.4).[46] Alternatively, the distinction of the **-ē-*future and the **-s-*future could have been one of immediate future vs. more distant future, in which case the **-s-*future could be explained as an original perfective present (§ 9.1).[47]

7.2.1.3 *Athematic *-(e)s-*

We now turn to the third question: what is the formal relation between Sabellic athematic **-s-* and Latin thematic **-se/o-*? Pedersen (1921, 26) was the first to reconstruct a hysterodynamic paradigm for the Sabellic *-s-*future; cf. O. 3sg. *did-es-t* '(s)he will give' vs. O. 3pl. *censa-z-et* /kensazent/. However, it is also possible that the **-s-*suffix was secondarily added to the present stem rather than to the root, once the *-s-*future was no longer distinctively perfective. Since adding **-s-* to the thematic stem *dide-* and to the *-ā-*stem *censa-* would have yielded the same forms, the evidence for ablauting **-s/es-* becomes rather slim. Still, it seems highly unlikely that the Sabellic

[45] Calling it a 'desiderative' (cf. Weiss 2009, 420) is not very helpful. The Italic *-s-*forms do not have a desiderative meaning (e.g. Lat. *faxo* 'I will do, I will see to it' is not the same as 'I want to do'). This term is based on the formation's similarity to the Indo-Iranian desiderative formation on the one hand, and the Celtic future and subjunctive formations on the other. In my opinion the Italic evidence for the function of the forms in *-s-* should be considered in a bottom-up fashion, rather than top-down.

[46] Note that the infectum-perfectum distinction attested in the Italic languages is different from the imperfective-perfective distinction that is reconstructed for Indo-European. This means that the Sabellic future perfect *-us-* would at no point in time have had the same function as future *-s-*.

[47] For a slightly different scenario, see Meiser (2003, 39, 54). Although he does not derive the *-s-*future from a PIE desiderative, his distinction between the *-ē-*future and *-s-*future, by which "… Ersterer die Erwartung des Sprechers, Letzteres die Absicht des Subjekts in Bezug auf die Zukunft bezeichnete" ('… the former signaled the speaker's expectation, the latter the subject's intention with reference to the future'), is practically the same as a distinction between subjunctive and desiderative.

*-*s*-future would secondarily have become athematic (§ 7.1.3). This leaves us with two possible scenarios for Proto-Italic. Either it had both *-*s*- and *-*se/o*-, with Sabellic losing the latter and Latin losing the former, or the thematization of *-*s*- to *-*se/o*- was a Latin innovation. As thematization in Latin is extremely common, it is most economical to assume that Proto-Italic only had athematic *-*s*-. Forms like *faxim* can perhaps be explained as analogical to the regular perfect subjunctive in *-*(i)zīm* that would have been formed by this time.

7.2.2 *Latin *-is- and Sabellic -us-*

Besides the future, an *-*s*- is found in several functionally rather different paradigms, especially in the Latin verb. It occurs in both branches' imperfect subjunctive in *-*sē*-, the Sabellic future in *-*(e)s*-, the Sabellic perfect future in -*us*-, the Latin perfect future in -*eri*-[48] < *-*Vs-e/o*-, the Latin perfect subjunctive in -*erī*- < *-*Vs-ih*$_1$-, the Latin perfect infinitive in -*isse* < *-*is-si*, the Latin pluperfect subjunctive in -*issē*- and possibly the Latin 2sg. and 2pl. perfect endings -*istī* and -*istis*. Here the differences between Sabellic and Latin are interesting. Every single tense for which Latin has a different formation than Sabellic, as well as in the perfect infinitive in -*isse*-, is constructed in Latin by adding *-*is*- to the perfect stem (i.e. pf.fut. -*erō*, pf.subj. -*erim*, plpf. -*eram*, plpf.subj. -*issem*). It is obvious that this double marking of perfect verb forms (by means of both the stem and the suffix) must have become very productive relatively recently in the history of Latin. Because of this productivity and of the demonstrable tendency of Italic to expand its verbal system using periphrastic constructions, I believe that taking these forms as constructions containing the inherited perfect participle *-*u(o)s*- and inflected forms of *-*es*- 'to be', as Rix (1992) does, is plausible. This periphrastic formation would become the main tool for deriving various perfect tenses in Latin. A similar scenario is also possible for the Sabellic future perfect in -*us*-. For an extensive discussion on the scenarios proposed for Lat. *-*is*-, see Søborg (2020, 253–55). The difficulty that *-*us*- should have given **-*us*- rather than -*is*- before consonants can be overcome by assuming that forms like pf.inf. -*isse* were built after the development by which all word-internal short vowels in open syllables fell together in -*i*-, but before lowering to -*e*- due to rhotacism of intervocalic -*z*- < *-*s*-. So in the development *-*us*- > *-*iz*- > *-*er*-, the specifically Latin infinitive marker *-*si* was added at a stage when the perfect suffix was *-*iz*- (Pedersen 1921, 22). Once the perfect infinitive in -*isse* had been formed, the pluperfect subjunctive could be created on the basis of the similarity between the imperfect subjunctive (in -*rē*-) and the present infinitive (in -*re*).

[48] 1sg. -*erō*, e.g. *amaverō, amaveris* 'I/you will have loved'.

7.2.3 *Imperfective subjunctive *-sē-*

The vowel in the common Italic imperfect subjunctive suffix **-sē-* is most likely the same as the *-ē-* in the present subjunctive of the first conjugation and the future of the third and fourth conjugations in Latin. I generally agree with Jasanoff (1991) that **-sē-* should be seen as an internal Italic development, through the addition of subjunctive **-ē-* to original *-s*-aorists, which forms would have been simple preterits in earlier Proto-Italic. Jasanoff suggests that initially the subjunctive marker **-ē-* was added to the Proto-Italic perfect verb stem. Subsequently, the incidental similarity between forms like supposedly "prs.subj." **deik-sī-m* (cf. Lat. *dixim*, the subjunctive to the *-s*-future *dixō*, cf. § 7.2.1.1) and aor.subj. **deik-s-ē-m* allowed for **-sē-* to spread to verbs that originally did not form an *-s*-aorist. Once **-sē-* had arisen in several verbs, it could be reinterpreted as a recognisable marker for the past subjunctive. I do however think that this overstates the role of forms like *faxim* and *dixim*, which are marginally attested in Latin and completely absent from Sabellic, and which I believe may be secondary to *faxō, dixō* (§ 7.2.1.3). Rather, I believe the key to understanding the extrapolation of *-sē-* as a single suffix by the speakers of Proto-Italic lies in its addition to the present stem rather than to the verbal root. If a form like **deiksēm* (= *s*-aorist **deik-s-* + subj. **-ē-*) was originally simply a past subjunctive, without being specified for aspect, the rise of the infectum-perfectum distinction – which was perhaps triggered by the grammaticalization of periphrastic forms like the imperfect indicative in **-ƀā-* – forced **deiksēm* into either of the two aspects, in this case the infectum. Its imperfect character was then overtly established by transferring the subjunctive marker to the present stem. Since **-ē-* was already in use as a subjunctive marker in the present, *-sē-* was taken over as a whole. The generalization of **-s-* as a past tense marker is easily understood, since all other perfect marking suffixes (*-v-, -tt-, -nḳ̣-, -f-*) are restricted to either Latin or Sabellic, whereas **-s-* was likely inherited from PIE (van der Staaij 1995, 172). The Sabellic perfect subjunctive, which is formed by adding **-ē-* to the perfect stem, may be a hold-over from the earlier situation, as Jasanoff assumes. Latin later gave up this formation in favour of the presumably periphrastic construction that would give forms like *amāverim* (§ 7.2.2).

7.2.4 *Subjunctive *-ī-, *-ē- and *-ā-*

The Italic languages use three different suffixes to form the present subjunctive: *-ī-, -ē-* and *-ā-*. Of these, *-ī-* is most restricted in its distribution. Going back to the PIE optative suffix **-ih₁-/-ieh₁-*, it is found with its original ablaut in the Italic subjunctive of the verb 'to be' (OLat. 1sg. *siem* < **h₁s-ieh₁-m*, 1pl. *sīmus* < **h₁s-ih₁-mos*; U. 2/3sg. *sei* < **sḭ̄ed* < **h₁s-ieh₁-t*) (van der Staaij 1995, 177–78). A subjunctive in *-ī-* is also found in a small set of Latin verbs: *velim* '(that) I want', *edim* '(that) I eat', *duim* '(that) I give'. Finally, *-ī-* is found in the Latin perfect subjunctive in *-erī-* (§ 7.1.5). If the analysis of Latin verb forms in **-is-* as original periphrastic formations in § 7.2.2 is correct, this is

in fact the subjunctive *sī-* of the verb 'to be'. Probably already within Proto-Italic, subjunctive **-ī-* was confined to frequently used athematic verbs, and as such no longer productive.

7.2.4.1 *Subjunctive* *-ē-

The same optative suffix **-ih₁-/-ieh₁-* may also lie at the base of the Italic subjunctive in *-ē-* (Leumann 1977, 575; Weiss 2009, 418). Synchronically the *-ē-*subjunctive is restricted to the first conjugation in both Latin (1sg.subj. *amem* '(that) I love') and Sabellic (3sg.subj. *deiuaid* '(that) (s)he swears'). However, as we have seen in § 7.2.1.2, the presence of *-ē-* as a future suffix in the third and fourth conjugations indicates that *-ē-* must at some point have been present as a subjunctive in these conjugations as well. Whereas the full grade of the optative suffix **-ieh₁-* would formally yield PIt. **-ē-* after vowels (e.g. 1st conj. **-eh₂-ieh₁-* > **-āi̯ē-* > PIt. **-āē-*), it is expected to give *-iē-* after consonants (as in 1sg. subj. *siem* '(that) I be'). The other option for the origin of *-ē-* that has often been proposed is that it is the inherited IE long-vowel subjunctive of the thematic verbs, with generalization of *e*-vocalism throughout the paradigm (van der Staaij 1995, 176). We are perhaps dealing with a combination of these two scenarios, e.g. *-ē-* from originally optative **-ieh₁-* in the first conjugation and *-ē-* from originally subjunctive **-e-e-* in the thematic verbs. A trace of these different origins may be found in the shape of the 1sg (Meiser 2003, 54). In the present subjunctive of the first conjugation it is *-em*, whereas the *ē*-future of the third and fourth conjugations has as its 1sg. *-am*, which is originally the ending of the *ā*-subjunctive formed to those verbs. If the *-ē-* in the thematic conjugations goes back to an IE thematic subjunctive, its expected 1sg. form *-ō* would have been indistinguishable from the ending of the 1sg. of the indicative, prompting the adoption of the form **-ām* from the subjunctive. Any *-ē-* going back to an IE optative in **-ieh₁-* however, would be athematic, explaining the 1sg. ending *-em*. The syncretism between originally optative **-jē-* < **-i̯eh₁-* and originally subjunctive **-ē-* < **-e-e-* must have been complete in Proto-Italic. Possibly aided by the PIC development **-Ci̯e-* > **-Ci-*, the suffix **-jē-* < optative **-ieh₁-* became associated with original **-i̯e/o-* stems (i.e. the first, second and fourth conjugations), the suffix **-ē-* < PIE subjunctive **-e-e-* with original athematic and **-e/o-* stems (i.e. the third conjugation) (cf. § 9.2). This distribution led to the interpretation of **-ē-* as the only subjunctive marker, whence it could eventually be used for the creation of the PIt. imperfect subjunctive in **-sē-*. Still in Proto-Italic, the modal functions of the *-ē-*subjunctive were replaced by the *-ā-*subjunctive in all but the first conjugation. The remaining prospective function that the *-ē-*subjunctive still had, was given up in Sabellic in favour of the *s*-future but continued in Latino-Faliscan as the future to the third and fourth conjugations.

7.2.4.2 *Subjunctive *-ā-*

Of the three subjunctive markers found in Italic, *-ā-* is most elusive. It is found in the present subjunctive of every conjugation but the first. Old Latin preserves some subjunctives that were

built by adding *-ā-* to the root rather than the present stem: *attulat* < **-tel-ā-* < **telh₂-*, cf. *tollō* < **tl-n(e)h₂-* 'to lift'; *attigat* < **-tag-ā-* < **th₂g-*, cf. *tangō* < **th₂-n-g-* 'to touch'. As it is difficult to derive this suffix directly from Proto-Indo-European, various hypotheses concerning its origin have seen the light. According to Meiser (2003, 52), the *-ā-* is the expected outcome of the inherited thematic subjunctive **-ē-* to roots ending in *-a* < **-h₂*: **telh₂-* >> **telh₂-ē-ti* > **telā-ti* > *-tulat*. Another option is to suppose that the vowel length of the subjunctives to thematic verbs was introduced in the athematic verbs as well: **telh₂-e-* > **tel-a-* >> **telā-ti* > *-tulat*. This would have to have happened before the association of the subjunctive to the present stem.[49] It still does not explain the forms whose roots would not have ended in *-h₂*, like *-tigat* < **tag-ā-* < **th₂g-* (Rix et al. 2001, 616–17). In De Vaan's (2012; 2014) view, the *-ā-* of the subjunctive is to be identified with the imperfect *-ā-* found in the Latin imperfect in *-bā-* and in *eram* 'I was' etc., and with the *-ā-* found in the first present conjugation. He follows Kortlandt (1984, 184) in deriving this *-ā-* from an "atelic" suffix **-eh₂*, which appears in verbs of motion in various IE languages, such as Gr. *ἔδρᾱν* < 'I ran' < **h₁e-dreh₂-m* vs. *δραμεῖν* 'to run' << **drem-* and Gr. *ἔβην* 'I went' < **h₁e-gʷeh₂-m* vs. *βαίνω* 'I go' < **gʷem-*. Somewhere in the early history of Italic, this suffix *-ā-* would have been split into a modal use on the one hand, developing into the Italic subjunctive and imperfective (§ 7.2.5); and on the other hand – extended with **-i̯e/o-* – into the atelic verbalizing suffix **-āje-* lying at the base of the Italic first conjugation. The advantage of this scenario is that it explains all instances of *-ā-* in the Italic verbal system at once, both formally and functionally. The derivational character of **-eh₂-* would explain why some Old Latin subjunctives are formed from the verbal root rather than the present stem: e.g. *-tulat* < PIt. **talāti* < PIE **tl̥h₂-eh₂-*, *-tigat* < PIt. *tagāti* < PIE **th₂g-eh₂-*. Shifts from imperfect to modal uses are not uncommon cross-linguistically, and originally derivational **-ā-* would have been perceived as a recognizable marker of modality – especially so for verbs of the second conjugation, whose subjunctive in **-ē-* < **-ē-ē-* was not distinctive – allowing the inherited subjunctive in **-ē-* to be specialized for future meaning. This development of **-eh₂-* into a modal marker may have been aided by the analogically formed subjunctives to verbal roots ending in a laryngeal, such as Lat. *-tulat* < **telh₂-ē-ti.*

However, if Pronk (2012, 22) is right in proposing that all verbs in **-āi̯e-* originally arose as **-ie/o-* verbalizations to abstract nouns in **-(e)h₂*, this weakens the argument for **-eh₂-* as an IE verbal atelicity marker. It is in any case attractive to treat the Italic subjunctive **-ā-* as one and the same suffix as the **-ā-* found in the Italic periphrastic imperfect, and not simply as a regular allomorph of subjunctive **-ē-*. If **-ē-* and **-ā-* were mere morphophonological variants of each other, it would be unclear why **-ē-* adopted a future function, whereas **-ā-* is closer to the imperfect. Regardless

[49] Introduction of **-ē-* would formally work as well. However, this would have to have happened before the colouring of the vowels by laryngeals, which is probably too early.

of its ultimate origin, we need to assume the existence of a PIt. atelic/imperfectivizing suffix **-ā-*, that was grammaticalized as a subjunctive and as part of the imperfect at some point in the development of Italic as a branch.

7.2.5 *Periphrastic *-ƀe/o- and *-ƀā-*

That the Italic verbal system has been rigorously expanded by means of periphrastic formations, has become clear in § 7.2.2. Classical Latin still employs periphrastic constructions in its verbal paradigms, such as the future infinitive (*amāturus esse*) and the passive perfect tenses (*amātus est* etc.), and this tendency is continued by the Romance languages. Two tenses of the Latin verb that are synthetic in the Classical language, but that are generally supposed to have been periphrastic in origin, are the future tense of the first and second conjugations (§ 7.1.3) and the imperfect tense, both containing the element *-b-*. The *-b-*future (e.g. *amābō, amābit*) is found only in Faliscan (*pipafo* 'I will drink') and Latin, where it is restricted to two conjugations. This formation probably continues a periphrastic construction with thematized form of the verb 'to be', **-ƀe/o-* < PIt. **f(w)-e/o-* < PIE **bʰuH-*, which could be the original subjunctive of this verb (cf. Lat. fut. *erō* 'I will be' < subj. **h₁s-e/o-*).[50] Although this syntactic construction may have existed in Proto-Italic, its univerbation and incorporation into the verbal paradigm is clearly a Latino-Faliscan innovation.

The Latin imperfect in *-bā-* has one single possible cognate in Sabellic: O. 3pl.ipf. *fufans* 'they were'. It too looks like a form of PIt. **fu-*, enlarged with the **-ā-* found in the Latin imperfect of *esse* 'to be' (e.g. *eram* 'I was') and in the subjunctive of the second to fourth conjugations (§ 7.2.4.2). Whether or not this formation was already univerbated in Proto-Italic is difficult to establish on the basis of only one Sabellic form. Nevertheless, it must have existed as a syntactic construction, perhaps forming the first step towards the creation of the typically Italic infect-perfect distinction. The long *-ē-* in the imperfect of the third and fourth conjugations (*agēbam, audiēbam*) points to the first part having originally been in the instrumental case: *agēbam* < PIt. **agēƀām* < **agē f(w)ām* 'I was with driving', from PIE instr. **-eh₁* (Weiss 2009, 414). It is interesting to note that the formations of both the future and imperfect with **-ƀ-* are parallel to the formation of the same tenses in the Latin verb *esse* (i.e. fut. *erō* < PIt. **es-e/o-*; ipf. *eram* < PIt. **es-ā-*), which are further isolated. *Fuat* is still attested in Latin, but only as the perfect subjunctive to *esse*. Rix (1983, 101) and Meiser (2003, 42–43) prefer to explain imperfect **-ƀā-* as a reanalysis of an original PIt. pluperfect **fuƀā-* (vel sim.) << **bʰe-bʰuoh₂-ā-*, continued by O. *fufans*. The identification of **fu-* as the stem would have led to the reinterpretation of **-ƀā-* as an imperfect suffix. However, this scenario fails to explain the long vowel in *agēbam* etc. Moreover, since we have the Latino-Faliscan *-b-*future as

[50] Note that **f-* and **-ƀ-* are allophones in Proto-Italic, and that **f-* would have regularly be voiced when it ended up between vowels after the univerbation of this construction, yielding Latin *-b-* (§ 2.1.4).

evidence for the Italic creation of periphrastic tenses using forms of PIt. **fu-* < PIE **bʰuH-* 'to be', I think it is unattractive and unnecessary to assume that a reanalysis of a single form caused the complete expansion of **-ƀā-* to all conjugations. I therefore prefer to reconstruct for Proto-Italic an imperfective periphrastic formation using PIt. **fu-* 'to be' and the **-ā-* found in the Italic subjunctive and Latin imperfect of *esse* (e.g. *eram* 'I was').

7.3 *The Proto-Italic TAM system*

Having established which morphological elements must have been present at the latest reconstructible stage of Proto-Italic, we can have a look at what this tells us about the tense-aspect-mood distinctions that the PIt. verbal system must have expressed. Apart from the largely inherited present tense (= PIE present) and perfect tense (= PIE perfect and aorist), we need to reconstruct the following formations for Proto-Italic:

- A periphrastic imperfect consisting of an instrumental case + **fwā-* > **-ƀā-*
- Possibly a periphrastic future consisting of an instrumental case + **few/o-* > **-ƀe/o-*
- An imperfect subjunctive in **-sē-*
- A present subjunctive with optional future function in **-ē-*
- An imperfect/atelic suffix **-ā-* that could be used for modal purposes
- A future in **-s-*
- A perfect participle in **-us-*

It is clear that the competition between **-ā-* an **-ē-* as markers of the subjunctive mood had already been resolved in favour of **-ā-* by late Proto-Italic, with **-ē-* being restricted to the first conjugation and the future. Although in the attested Italic aspect system the distinction between infectum vs. perfectum plays a crucial role, several clues indicate that the system may have shifted from an original distinction between imperfective vs. perfective not too long before the latest stage of Proto-Italic. One clue is the fact that a pluperfect can probably not be reconstructed for Proto-Italic. Although its absence from the Sabellic corpus is by no means proof of its absence from the languages, the periphrastic formation of the Latin pluperfect in **-eram* < **-us ezām* (§ 7.2.2) suggests that it is relatively recent (i.e. not older than similar Latin formations with *-er-*, which are not shared with Sabellic). If the perfect already belonged to the present tense in Proto-Italic – as it does in Latin – that would mean that the imperfect in **-ƀā-* was the only tense with past reference. Since all traces of the original PIE imperfect formation are lacking in Italic, the creation of the **-ƀā-*imperfect is best understood if it formed an imperfective counterpart to a perfective past tense, suggesting that the Proto-Italic perfect belonged to the past tense instead. Otherwise we would have to assume that the IE imperfect was inherited in Italic and was subsequently completely replaced, even in a conservative verb like Lat. *esse* 'to be'. Another indication for an

original imperfective-perfective distinction is the coexistence of **-s-* and **-ē-* as morphemes with future reference (§ 7.2.1.2). This can be explained by assuming that one marked perfective, the other imperfective aspect. When the system later shifted to an infectum-perfectum distinction, Sabellic and Latino-Faliscan each chose either of the future suffixes and created a new perfect counterpart independently.

So, for Proto-Italic we need to assume a verbal system that distinguished tense (present, past and future) and aspect in the indicative mood, and present vs. past tense in the subjunctive mood. This would have looked more or less like this (using the 3sg. of PIt. **fakḭe/o-* 'to do' as example):

PIt. **fakḭe/o-* 'to do'	**Ind. Imperfective**	**Ind. Perfective**	**Subjunctive**
Present	**fakit(i)*		**fakiāt* (**-ē-* in 1st conj.)
Past	**fakiē-ƀāt* < **fakiē fwāt*	**fēk(e)t*	**fakizēt* (<< **fēksēt?*)
Future	**fakiēt*	**fakst(i)*	

Table 14

In an earlier stage, before the grammaticalization of the imperfect construction with **fwā-* and the subjunctive in **-ā-*, the inherited aorist/perfect would have been the only tense with past reference and **-ē-* would have been primarily a modal marker, leaving **-s-* as the only tense with future reference. The grammaticalization of past subjunctive **-sē-* can also be explained as a Proto-Italic innovation. The oldest reconstructible stage of the Proto-Italic system would look as follows:

Pre-PIt. **fakḭe/o-* 'to do'	**Indicative**	**Subjunctive**
Present	**fakit(i)*	**fakiēt*
Past	**fēk(e)t*	
Future	**fakst(i)*	

Table 15

This means that the aspectual system as inherited from PIE, with a distinction between imperfective, perfective and stative/resultative was largely lost in the prehistory of Italic, only to be rebuilt into an imperfective-perfective system, after which it was shifted to the infectum-perfectum system attested in Latin.

8. *Tense, mood and aspect in Celtic*

8.1 *The Celtic TAM categories*

Due to the scarce attestations of Continental Celtic languages like Celtiberian, Gaulish and Lepontic, we must rely heavily on Insular Celtic for reconstructing the Proto-Celtic verbal system, meaning that we are in fact reconstructing Proto-Insular-Celtic. However, unless the Continental Celtic languages provide us with direct counterevidence, there is no reason to suppose that the

Insular Celtic system was wildly different from the Proto-Celtic system. For convenience's sake I will thus use the term Proto-Celtic, whilst keeping in mind that almost all evidence comes from Insular Celtic.

8.1.1 *Preterit*

The Celtic preterit tense is the result of a merger of the inherited IE aorist and perfect formations. For Insular Celtic, three formations of this preterit can be distinguished. Most common among the strong verbs are the so-called "suffixless preterits". These largely represent inherited reduplicated perfect formations, whose endings are attached directly to the original perfect stem: OIr. 3sg. *˙cúala*, 3pl. *˙cúalatar*, MW 1/3sg. *kigleu* 'to hear' < **ku-klou-*. The other two formations are the *s*-preterit and the *t*-preterit. The *s*-preterit is the regular preterit formation for weak verbs and goes back to original *s*-aorists: OIr. 3sg. *car*, 1sg. *carus*, MW 1sg. *kereis* 'to love' < **karass-*. The geminate **-ss-* in this suffix goes back regularly to the 3sg. form of the (athematic) *s*-aorist in **-s-t*. This geminate **-ss-* was subsequently extended to the other persons of the paradigm. A similar scenario appears to apply to the *t*-preterits: OIr. 3sg. *˙bert,* 1sg. *˙biurt* 'to carry'. An original PIE 3sg. *s*-aorist of the shape **bʰēr-s-t* would have yielded PC **bīrxt* > **birt* regularly, which was then exported to the other forms of the paradigm. The *t*-preterit is thus essentially the same formation as the *-s*-preterit. In Brythonic, the *-s*-preterits have greatly expanded at the cost of the suffixless preterits and *-t*-preterits, but some remnants can still be found, such as MW reduplicated *kigleu* '(s)he heard' and MW *-t*-suffixed *kymerth* '(s)he took'. The fact that Irish and Brythonic can be shown to agree almost perfectly in originally preserving either aorist or perfect morphology in any inherited strong verb, it is safe to assume that the collapse of the inherited aorist and perfect tenses was completed by Proto-Insular-Celtic at the latest (Schumacher 2004, 59–60). There is some evidence for syncretism in Gaulish as well, but it is difficult to judge whether this represents the same development as the syncretism found in Insular Celtic; it seems in any case reasonable to assume a close association between aorist and perfect in Proto-Celtic, if not (incipient) syncretism.

8.1.2 *Imperfect*

The formation of the Celtic imperfect is somewhat of a mystery. It has its own set of endings, which are distinct both from the present endings as well as the preterit endings (Lewis and Pedersen 1989, 284). According to Kortlandt (1981c, 16–18) the imperfect endings go back to the transitive middle endings he reconstructs for Proto-Indo-European. It is clear that this tense is an inner-Celtic innovation.

8.1.3 *Subjunctive*

Synchronically, both the Goidelic and the Brythonic languages display two distinctive subjunctive formations (Schumacher 2004). Most commonly found is what is traditionally called the *-ā-*

subjunctive, which is formed by adding *-ā-* to the full grade of the root: OIr. 3sg.prs.ind. *crenaid* < **kʷri-na-* vs. 3sg.subj. *˙cria* < **kʷrei-ā-* 'to buy' (Schumacher 2004, 438). The other formation is the *-s-*subjunctive, which is exclusively formed from roots ending in an obstruent (i.e. a stop or *-s-*). It is formed by adding **-s(e/o)-* directly to the full grade of the root: OIr. 3sg.prs.ind. *˙clich* < **kʷlik-e/o-* vs. 3sg.subj. *cleiss, ˙clé* < **kʷlek-s(e/o)-* 'to jump' (Schumacher 2004, 435). In Brythonic, the *-ā-*subjunctive has become the regular subjunctive to all types of verbs, with some *-s-*subjunctives to obstruent-final roots as relics. Due to the obvious similarities of the Celtic *-ā-*subjunctive to the Italic *-ā-*subjunctive, this has been seen as a common Italo-Celtic innovation (e.g. Cowgill 1970, 141; Lewis and Pedersen 1989). However, Rix (1977, 153) has shown that the Celtic *-ā-*subjunctives and *-s-*subjunctives in fact go back to the same formation with **-s-*. In verbal roots originally ending in a resonant followed by a laryngeal (**CeRH*), the addition of subjunctive **-s-* led to the vocalization of the laryngeal (**CeRH-s(e/o)-* > **CeRas(e/o)-*). Since the original presence of the laryngeal could not be recognized in other forms of the paradigm anymore, the subjunctive formation in **-as(e/o)-* was extended to all verbal roots ending in a resonant. The original short **-ă-* was lengthened to **-ā-* by analogy to the *ā-*stem verbs. In all of Insular Celtic intervocalic **-s-* was lenited to **-h-* and eventually disappeared completely in Irish. As this scenario beautifully explains the transparent distribution of the *-ā-*subjunctive and *-s-*subjunctive by means of inner-Celtic phonological processes, any link with the Italic *-ā-*subjunctive has to be rejected.

Besides the *-(a)s-*subjunctives, the Celtic languages appear to preserve three subjunctives that were built by thematizing the aorist stem– relics of the PIE subjunctive. The first is **kleu̯e/o-* <- **kli-n-u-* 'to hear', which is only attested in Old Irish: OIr. 2sg.dep.subj. *˙cloíther.* The second is **bi̯e/o-* 'to hit', attested in Celtiberian (cf. 3pl.subj. *bionti*) and in Gaulish (cf. 3sg. *biietutu*). The interpretation of these forms is difficult given their fragmentary contexts, so whether this is really an example of an IE thematic subjunctive must remain uncertain. The last example of this type of subjunctive belongs to the verb 'to be' and is attested everywhere in Insular Celtic, as well as in Gaulish: Gaul. 3sg.subj. *buetid*, OIr. 3sg.subj. *beith, ˙bé*, MW 3sg.subj. *bei*. The Gaulish form goes back to **buwe/o-*, the Insular Celtic forms go back to **be-* << **bwe/o-* (Schumacher 2004, 48–49).

8.1.4 *Future*

The Celtic languages present us with four different future formations. The first is a formation in **-si̯e/o-*, which is only attested in one single Gaulish form: *pissíiumí* (Schumacher 2004, 58). As this concerns only a single example in a language of fragmentary attestation, its identification as a future tense is rather uncertain, and I will not discuss it any further. The second formation is the Irish *-f-*future (or *-b-*future), which is formed to weak verbs. The third and fourth future formations are the Irish *-s-*future and the *-ā-*future respectively. These relate to each other in the

same way as the *-s*-subjunctive and *-ā*-subjunctive, and can thus be collapsed into a single formation with **-(a)s-*. This leaves us with two Irish formations to discuss; the Brythonic languages do not have a future tense.

The Irish *-s*-future was originally formed by adding the suffix **-(a)s-* to the reduplicated zero-grade root: OIr. 3sg.fut. *˙céla* '(s)he will hide' < **ki-kl-ās-*, 3sg.fut. *˙gig* '(s)he will pray' < **gʷi-gʷiss* < **gʷi-gʷid-s-*. Synchronically in Old Irish however, the relation between the present and the *-s*-future can be fully opaque; cf. 3sg.prs. *˙cluinethar* vs. 3sg.fut. *˙cechladar* 'to hear' and 3sg.prs. *˙boing* vs. 3pl.fut. *˙bibsat*. The *-s*-future personal endings differs from that of the *-s*-subjunctive only in the 1sg. absolute, which is *-sa* in the future (e.g. *gigsea* 'I will pray') as opposed to *-su* in the subjunctive (e.g. *tiasu* '(that) I go') (Lewis and Pedersen 1989, 284, 289), which Kortlandt (1984, 180) sees as a relic of the secondary endings that would originally have been present in this paradigm as well. The shape of these futures (**Ci-CC-s-*) is very reminiscent of Indo-Iranian desideratives like Skt. *dídr̥kṣati* '(s)he wants to see', especially if one reconstructs thematic endings for the Celtic *-s*-future. Irish and Sanskrit even agree in the insertion of a non-etymological laryngeal after roots in a resonant; cf. Skt. *cíkīrṣati* '(s)he wants to do' < **kʷi-kʷr-H-se/o-*. However, the meaning of the Irish forms is that of a future, not of a desiderative; this point will be addressed in § 8.2.2

The other Irish future formation, the *f*-future, was originally formed to weak verbs, but became very productive in Middle Irish, e.g. OIr. *léicfea* 'I will leave', *rannfa* 'I will share'. Due to the obvious similarities to the Latin *-b*-future (§ 7.1.3), it has been interpreted as a periphrastic formation with a form of PIE **bʰuH-* 'to be' (e.g. Kortlandt 1982; Lewis and Pedersen 1989, 292). Others, like Thurneysen (1946, 398) and McCone (1991, 176–82) think this is phonetically impossible due to the devoicing character of the future *-f-*, and prefer original **-sw-* instead. However, if Jasanoff (2017) is right in deriving the *-f*-future from **-ī-fāθ* < **-ī-β'hāθ*, from **-ī-β'ihāθ* with the kind of irregular shortening that is often found in originally periphrastic constructions, this formation can be derived from **bisă̆se/o-*, the supposed future of 'to be', added to an original instrumental case in **-ī* < **-ē* < **-eh₁*. The form **bisă̆se/o-* also underlies MW fut. *biawt* and OIr. fut. *˙bia* of the verb 'to be' and may be analysed as an original *s*-subjunctive to **bu̯e/o-* < **bʰuH-* 'to be', secondarily enlarged by the recognizable "*a*-future/subjunctive" suffix in *-ă̆se/o-*: **bisă̆se/o-* << **bis-* << **bu̯e-s-*. This scenario is attractive because it explains the attested forms phonetically without having to assume an element **-sw-* of obscure meaning, while connecting it to actually attested future forms of the verb 'to be' in Old Irish (*˙bia*) and Middle Welsh (*biawt*). The combination of an instrumental form of the verb followed by a form of the copula **bʰuH-* makes comparison to the Latin periphrastic imperfect and future more attractive again (§ 9.5).

8.2 *Celtic TAM and its formants*

8.2.1 *Subjunctive *-s-*

While it is clear that the *-s*-subjunctive must be reconstructed for Proto-Celtic, a remaining point of discussion concerning the formation of the Celtic subjunctive, is whether the **-s*-suffix was originally thematic or athematic. The reason for this is that the OIr. 3sg. ending of the *-s*-subjunctive seems to be athematic (e.g. 3sg.subj. *˙gé* < **gʷed-s-t*), while all the other endings must be thematic (e.g. 1sg.subj. *˙gess* < **gʷed-sū*). In favour of a thematic origin is McCone (1991, 55–83), whose stance is based on the idea that an athematic form like PIE **h₃reǵ-s-t(i)* > PC **rex-s-t* should have given ***˙recht* instead of attested *˙ré*. In his view the athematic appearance of the 3sg.subj. ending is due to influence from the paradigm of the *-s*-preterit, which exhibits the same distribution of apparently athematic and thematic **-s-* (e.g. OIr. 3sg.prt. *˙car* < **kara-s-t* vs. 1sg.prt. *˙carus* < **kara-sū* 'to love'). Against this is Kortlandt (1984; 1997), who argues for the reconstruction of secondary endings for the PC subjunctive, whereas primary endings need to be reconstructed for the *-s*-preterit; cf. 1sg.subj. *˙gess* 'I pray' < **gʷed-s-om* vs. 1sg.prt. *˙léicius* < **linkʷī-s-ū.* His main objection against explaining the athematic 3rd person of the *-s*-subjunctive as influence from the *-s*-preterit, is that the *-s*-preterit itself underwent influence from the primary thematic endings, while the subjunctive apparently resisted this. This makes it improbable that the *-s*-preterit would have exerted influence on the *-s*-subjunctive, and Kortlandt prefers to follow Pedersen (1921, 26) in reconstructing athematic **-es/s-*, and compares it to the East-Baltic and Sabellic *s*-futures (§ 7.1.3)(Kortlandt 1984, 181). The following overview shows the conflicting views. McCone and Kortlandt agree that the preterit was secondarily thematized, but disagree about the derivation of the future.

	OIr.		**McCone (1991)**	**Kortlandt (1984)**
1sg.subj. 'to pray'	*˙gess*	<	**gwed-sū*	**gwed-s-om* << **gwed-s-m*
3sg.subj. 'to pray'	*˙gé*	<	**gwed-s-t* << **gwed-s-eti*	**gwed-s-t*
1sg.prt. 'to love'	*˙carus*	<	**kara-s-ū* << **kara-s-m*	**kara-s-ū* << **kara-s-m*
3sg.prt. 'to love'	*˙car*	<	**kara-s-t*	**kara-s-t*

Table 16

The debate thus hinges on the value one attaches to either of the arguments, but I am inclined to agree with Kortlandt, because secondary thematization is much more common that secondary de-thematization.[51] We thus depart from a PC subjunctive formation with full grade in the root, and an athematic *-s*-suffix.

[51] This problem is similar to that of the Italic *-s*-future (§ 7.1.3).

8.2.2 *Future reduplication and *-s-*

The reduplicated future that is attested in Irish is usually derived from a supposed PIE desiderative formation of the shape **Ci-CC-(H)-s-* (e.g. Lewis and Pedersen 1989, 292; McCone 1991, 163; Schumacher 2004, 57). This formation is attested in Avestan and Sanskrit; e.g. Skt. *dídr̥kṣati* '(s)he wants to see'. One issue that arises is that the Irish future is not a desiderative; it is a future. Moreover, the close similarities between the Celtic future and subjunctive formations should not be overlooked. Since the reduplicated future is only attested in Irish – the only Brythonic evidence being forms like MW 3sg.prs.subj. *bo* '(that) (s)he be', which Schumacher (2004, 241) explains as a de-reduplicated continuation of fut. **bi-b(w)-āhe/o-* – it would be attractive to be able to explain as a Goidelic formation, with the subjunctive **-s-* added to reduplicated present stems. However, there is no clear source for reduplication of the type **CeC- >> *Ci-CC-*. There is only one *i*-reduplicating present that can confidently be reconstructed for Proto-Celtic[52]: **si-st-a/o-*, which can hardly be enough to cause large-scale productivity of such a formation – not to mention the fact that **si-sta/o-* itself does not have an attested reduplicated future (Schumacher 2004, 571). This pushes the origin of the Irish reduplicated future back at least to Proto-Celtic.

An elegant solution that bypasses the reconstruction of a "desiderative" meaning and that addresses the relation between the reduplicated future and *-s-*subjunctive is proposed by Willi (2018, 443–45), who proposes the Indo-Iranian desiderative and Celtic future to be extensions of an original **-se/o-*suffix (presumably originally the subjunctive of the *s*-aorist) with future reference to reduplicated present stems. The older, un-reduplicated type would be continued by the Celtic *-s-*subjunctive, the Greek sigmatic future, and the Sabellic *-s-*future. It is not unlikely that the addition of this **-s(e/o)-*suffix to reduplicated present stems was a possibility already in the proto-language, continued only by Irish and Indo-Iranian. The original nuance that this formation conveyed with respect to the un-reduplicated **-s(e/o)-*forms is very difficult to retrieve on the basis of these two languages alone. However, the existence of non-reduplicated *-s-*futures in Old-Irish like 3sg.conj. *˙ré* '(s)he will rise' < **reg-s-*, 3sg.conj. *˙ré* '(s)he will run' < **ret-s-*, 3sg.abs. *seiss* '(s)he will sit' < **sed-s-* etc. (Schumacher 2004, 530, 538, 560), suggests that the *-s-*subjunctive and *-s-*future were still very much associated in the development of Celtic as a branch, which speaks against the reduplicated *-s-*forms as a fully crystallized and isolated formation inherited from PIE.[53]

[52] Celtib. *điđonti* could also be a reduplicated present, but this is not wholly clear. **φib-e/o-* 'to drink' was synchronically not reduplicated anymore already by early Proto-Celtic (Schumacher 2004, 47).
[53] For all non-reduplicated *-s-*futures in Celtic, Schumacher reconstructs an **-i-*grade in the root, which was secondarily adapted to **-e-*; e.g. *˙ré* < **ress-* << **rig-se/o-* (Schumacher 2004, 530). I believe this is

As mentioned earlier, the grammaticalization of **CeC-s(e/o)-* as subjunctive and of **Ci-CC-s(e/o)-* as future must have happened when Celtic still possessed reduplicated presents, which is probably very early in its development.[54] Whether the subjunctive suffix was in fact thematic **-se/o-* or athematic ablauting **-(e)s-* is of no direct consequence to this scenario, as neither the aorist subjunctive origin of thematic **-se/o-* proposed by Willi, nor the aorist injunctive origin of athematic **-(e)s-* proposed by Kortlandt would have been recognized anymore by the time it was added to reduplicated present stems. We can in any case assume that for Proto-Celtic, both the reduplicated future and the *s*-subjunctives were in place in their attested functions. This allows us to draw up a sketch of the Proto-Celtic tense-aspect-mood system.

8.2.3 *Periphrastic *-bisăse/o-*

If we accept Jasanoff's (2017) proposal to derive the Irish *f*-future from **bisăse/o-*, which can be reconstructed on the basis of MW *biawt* and OIr. *˙bia* as the Proto-Celtic future of 'to be', the question arises whether this periphrastic construction is an internal Irish development or if it should be reconstructed for Proto-Celtic as a whole. The ending **-ī* that must be reconstructed for the construction (e.g. *scairfea* 'I will separate' < PC **skarī-bisăse/o-* (Jasanoff 2017, 9)) is most easily explained as deriving from the PIE instrumental ending **-eh₁*. However, in Old-Irish the original instrumental ending is not otherwise retained in the nominal case system. The fact that the origin of the periphrastic formation that led to the *f*-future must lie before the loss of the instrumental in **-eh₁* as a distinct case ending points to a more ancient, probably Proto-Celtic, origin. It is possible that in Proto-Celtic this periphrastic construction with **bi-* 'to be' was used for derived verbs, which would not have been able to form the reduplicated *-s*-future of the primary verbs. This can be compared to the grammaticalization of the Latin *b*-future in the first and second conjugations (e.g. *amābam* 'I will love', *vidēbam* 'I will see'), where the "older" future in *-ē-* would cause homonymy with the present subjunctive and present indicative respectively (§ 7.2.1.2).

8.3 *The Proto-Celtic TAM system*

It is clear that the tense, aspect and mood categories expressed on the Celtic verb are rather different from those that are traditionally reconstructed for PIE. For Celtic we must reconstruct three tenses (past, present and future). If tense was a category of the Proto-Indo-European verb at all, it was only distinctive in the imperfective aspect (i.e. present vs. imperfect). In Celtic, the imperfect tense has left no trace, while the other two PIE aspects (the perfective aorist and the

unwarranted. The un-reduplicated futures are identical to the *-s*-subjunctives of the same verbs (e.g. 3sg. subj. *˙ré* < **reg-s-*), making it unnecessary to reconstruct two different Proto-Celtic forms.

[54] Perhaps the loss of reduplicated presents in Celtic was aided by the association of *i*-reduplication to the future.

stative/resultative perfect) merged to form the Celtic past tense (i.e. preterit), essentially eliminating aspect as a verbal category. The synchronic coexistence of two different sets of endings in the preterit (i.e. the secondary endings in original aorists vs. the perfect endings in original perfects) cannot be used as an argument for the preservation of the aorist and perfect as distinct categories. To a speaker this allomorphy would not have been different from the synchronic allomorphy between s- and a-subjunctives, which derive from the same formation. A new aspectual distinction was later recreated with the creation of the Celtic imperfect, whose endings are of obscure origin but may somehow be related to the middle paradigm (Kortlandt 1981c, 18–21). The imperfect subjunctive of Irish and Brythonic, as well as the Irish conditional and the Brythonic pluperfect are more recent creations by adding the imperfect endings to the subjunctive, future and preterit stems respectively (Lewis and Pedersen 1989, 289, 292, 299). Lastly, whereas the Indo-European verb may have expressed as many as five different moods (indicative, subjunctive, optative, injunctive and imperative), Proto-Celtic only had three: indicative, subjunctive and imperative. Depending on whether one prefers a thematic or an athematic reconstruction of the *s*-subjunctive, this mood continues either the PIE subjunctive or the PIE injunctive mood. The Proto-Celtic TAM system now looks as follows (using the 3sg. of PC **kel -e/o-* 'to hide' and **keng-e/o-* 'to stride' as examples):

	Indicative	**Subjunctive**
Present	**keleti*	**kelast*
	**kengeti*	**kengst*
Past	**kīlst* (>> **kilt-*)[55]	
	**kekonge*[56]	
Future	**kiklast*	
	**kikangst*	

Table 17

It is clear that this Proto-Celtic state of affairs is rather different from the traditionally reconstructed PIE verb, due to the elimination of aspect as a category, the loss of two moods and the creation of a future.

[55] A *t*-preterit from an original *s*-aorist.
[56] A reduplicated preterit from an original perfect.

9. *Tense, mood and aspect in Proto-Italo-Celtic*

When it comes to the tense-aspect-mood systems that we have reconstructed for Proto-Celtic and Proto-Italic respectively, it is easily noticed that both are rather similar in the categories that they express, and in the distinctions made in those categories. This is most obvious in the indicative mood. Both Proto-Italic and Proto-Celtic have eliminated the inherited imperfect formation without a trace and merged the inherited aorist and perfect into a single past tense. Both branches also created a future tense with the use of the suffix **-s-*, although the reduplicated future in Irish remains to be explained. Beside the indicative and imperative mood (the latter of which is not discussed here) both branches have a subjunctive as the only other mood, as opposed to the PIE five-mood system. In both branches the subjunctive obtained a past tense on the model of the indicative, but for Celtic as well as Italic these can be shown to be relatively recent creations. Despite this systemic similarity of the subjunctive mood, Italic and Celtic respectively employ different formations for the subjunctive. Italic uses the suffixes **-ē-* and **-ā-*, while Celtic uses **-s-*. In what follows I will discuss how the different Italic and Celtic formations may be derived from a common Proto-Italo-Celtic system.

9.1 *Subjunctive/future *-s-*

Both in Italic and in Celtic, instances of morphemes of the shape **-s-* are found in several rather diverging functions. In Italic it is found in the perfect (in original *-s*-aorists), in the subjunctive imperfect and the *-s*-future.[57] In Celtic, an **-s-* is found in the preterit (in original *-s*-aorists), in the subjunctive and in the future. Beside inherited *-s*-aorists, the closest match in form and function is between the Celtic *-s*-subjunctive and the Italic *-s*-future, which are both athematic. These formations can be united by positing a PIC modal formation in **-s-* added to the full grade root, which could have future reference. One could call it a subjunctive, but it is important to note that the functions of this formation would have been closer to that of the Greek subjunctive, which has various semantic functions relating to the speaker's expectations, than to those of the respective Italic and Celtic subjunctives, which are to a large extent syntactically governed. Probably already within Proto-Italo-Celtic this suffix could be added freely to present stems. In Celtic, the addition of subjunctive **-s-* to reduplicated present stems was grammaticalized as a recognizable future formation, causing *i*-reduplication to spread to the future of all primary verbs and disfavouring the use of *i*-reduplication in the present tense (§ 8.2.2). As futurity was now expressed in a new marked form, **-s-* added to full grade roots was restricted to purely subjunctive use. In Italic however, the future use of (un-reduplicated) **-s-* gained more prominence, eventually developing into the Sabellic *-s*-future. The modal origin of this future is perhaps continued by the inherent

[57] The **-s-* in the Latin perfect future, subjunctive perfect, indicative and subjunctive pluperfect and the perfect infinitive is probably the result of a more recent Latino-Faliscan innovation (§ 7.2.2).

modal use of Latin futures of the *faxō*-type. The introduction of **-a-* < **-H-* in all subjunctives to roots ending in a resonant (i.e. the origin of the Celtic *a*-subjunctive) must be a Celtic development, as can be seen from Umbrian *ferest* < PIC **ƀer-s-t/*ƀer-es-t*.[58]

The origin of this **-s-*subjunctive probably goes back to Proto-Indo-European and may be compared to the Greek sigmatic future, the Baltic *s*-future, the Tocharian *s*-subjunctive and the Indo-Iranian desiderative. With Willi (2018, 444–45) I believe these formations can be derived from some use of the original *s*-aorist. However, whereas Willi assumes an original subjunctive of the *s*-aorist in **-se/o-*, I think Kortlandt (1984, 181) is right in deriving these formations from the injunctive of an *s*-aorist in **-s-*. It is likely that the future reference of this formation was already present in Proto-Indo-European, judging by its common occurrence across the family. Future use of perfective verb forms is also found in modern Slavic. With this in mind, I think the term "aorist injunctive" may be misleading, as it would synchronically have been a present aorist/perfective present (which would automatically have future reference). The absence of the *hic et nunc* particle **-i* that must be assumed on the basis of the secondary endings of the Celtic subjunctive follows logically from the non-present use of these verb forms.

9.2 *Subjunctive *-ē-/*-ā-*

The **-ē-* and **-ā-* of the Italic subjunctive paradigms are not found in Celtic. There is as of yet no consensus on the origin of **-ā-*, which must have replaced **-ē-* in the subjunctive of the second, third and fourth conjugations (§ 7.2.4). Regardless of whether the **-ā-* goes back to **-ē-* subjunctives to roots ending in **-h₂* (cf. Meiser 2003, 52) or to an atelic **-eh₂-*suffix (cf. Kortlandt 1984, 184), or to a combination or to neither of these scenarios, the spread of **-ā-* as a subjunctive marker must be seen as an Italic innovation. This still leaves us with subjunctive **-ē-*, which would have had a wider use before being outcompeted by **-ā-*. As mentioned in § 7.2.4.1, the Italic **-ē-* represents a merger between PIE optative **-ieh₁-* and subjunctive **-e-e-*, which may have been completed in PIC times already. If we accept the reduction of **-i̯e-* > **-i-* as a PIC development (§ 5.1.1), this would have led to original **-i̯e/o-* verbs having a present indicative in 3sg. **-iti*, next to a subjunctive in **-(i)jēt* < **-i̯e-e-* which was identical to the outcome of optative **-i̯eh₁-*. The result was that **-ē-* vs. **-jē-* could become distributed according to the formation of verbs' present stems. We thus need to reconstruct **-(j)ē-* next to **-s-* as a modal suffix for Proto-Italo-Celtic. What the exact difference between these two moods was exactly, is difficult to retrieve. Perhaps **-s-* and **-(j)ē-* filled the reconstructed functions of the PIE subjunctive and optative respectively, which would make sense regarding the future tendency of the former and the supposed optative origin of the latter. However, as non-indicative moods are prone to functional shifts, the distinction

[58] Reconstructing either PIC **ƀerst* or **ƀerest* depends on whether one reconstructs hysterodynamic ablaut for the **-s-*suffix (§ 7.2.1.3).

might also have been altogether different. In order to refrain from making any premature assumptions about their functions, I will simply refer to **-s-* as subjunctive I and to **-(j)ē-* as subjunctive II. We must thus reconstruct two non-indicative moods for Proto-Italo-Celtic (besides the imperative), whereas both Italic and Celtic only have one.

9.3 *Aspect*

In both Celtic and Italic, the attested imperfect formations are relatively recent constructions (§ 7.1.2; 8.1.2), without the slightest trace of the reconstructed PIE imperfect.[59] If we reconstruct this absence of the PIE imperfect for Proto-Italo-Celtic as well, this has interesting implications for the PIC tense-aspect system. After the loss of the imperfect, the aorist and perfect would have been the only verb forms with past reference. This would have thoroughly disrupted the inherited aspect system, as the inherently imperfective present tense no longer had an imperfective counterpart in the past. The creation of the Italic imperfect subjunctive **-sē-* from the original aorist **-s-* suggests that the aorist took over the function of "simple past", suggesting that it lost its typical perfective identity. The final blow to the aspect system inherited from PIE was the functional merger of the aorist and perfect into a single past tense. This has evidently happened in the history of both Italic and Celtic. The question is whether this should be considered a shared PIC development or two convergent but independent innovations by the respective branches.

9.3.1 *Syncretism of inherited aorist and perfect*

If we assume the syncretism between the inherited IE aorist and perfect to have been complete by Proto-Celtic and Proto-Italic respectively (§ 7.1.1; 8.1.1), a comparison of the inherited strong perfects/preterits between both branches should allow us to see whether this syncretism may in fact be posited for Proto-Italo-Celtic. If Italic and Celtic agree in continuing either the inherited aorist or the perfect formation in every single one of their shared strong verbs, there is no reason to posit aorist-perfect syncretism as independent developments in the two branches. However, even if we find one or two good counterexamples, where one branch continues the IE perfect and the other the IE aorist, that would constitute solid evidence against PIC perfect-aorist syncretism as a completed development. Due to innovations in both branches, the number of shared verbs for which the original perfect/preterit stem can be determined is rather small. When consulting the standard works on Celtic and Italic verbal morphology by Schumacher (2004) and Meiser (2003) respectively, we find a good amount of agreement between Italic perfect and Celtic preterit formations. Shared perfect formations are:

[59] That is, in the active voice. The Celtic imperfect appears to be formed with secondary mediopassive endings, which could be an archaism (Schmidt 1974).

- Gall. *δεδε*, Lep. *tetu* 'to give'; Lat. 1sg.pf. *dedī* 'to give' (Meiser 2003, 182; Matasović 2009, *dā-)
- OIr. 3sg.prt. *dedaig* 'to press, form'; Fal. 3sg.pf. *fifiked,* O. 3sg.pf.fut. *fifikus* 'to form, fashion' (Meiser 2003, 154; Schumacher 2004, 277)
- OIr. 3sg.prt. **áid* 'to eat';[60] Lat. 1sg.pf. *ēdī* 'to eat' (Meiser 2003, 207; Schumacher 2004, 377)
- OIr. 3sg.prt. *cachain* 'to sing'; Lat. 1sg.pf. *cecinī* 'to sing' (Meiser 2003, 194; Schumacher 2004, 388)
- OIr. 3sg.prt. *˙ménair* 'to remember'; Lat. 1sg.pf. *meminī* 'to remember' (Meiser 2003; Schumacher 2004, 473)
- OIr. 3sg.prt. *˙ír* 'to grant'; Lat. 1sg.pf. *peperī* 'to give birth to' (Meiser 2003, 185; Schumacher 2004, 508)
- OIr. 3sg.prt. *˙arcair* 'to ask'; Lat. *poposcī* 'to ask' (Meiser 2003, 187; Schumacher 2004, 511)
- OIr. 3sg.prt. *sescaind* 'to jump'; Lat. 1sg.pf. *-scendī* 'to ascend' (Meiser 2003, 211; Schumacher 2004, 574)
- OIr. 3sg.prt. *˙siasair* 'to stand' and **˙tadae* 'to stand'; Lat. 1sg.pf. *stetī* 'to stand' (Meiser 2003, 189; Schumacher 2004, 571, 624)
- OIr. 3sg.prt. **tethainn* 'to cut';[60] Lat. 1sg.pf. *totondī* 'to shear' (Meiser 2003, 150; Schumacher 2004, 614)
- OIr. 3sg.prt. *˙túail* 'to take away'; Lat. 1sg.pf. *tetulī* 'to carry' (Meiser 2003, 192; Schumacher 2004, 641)

Shared aorist formations are:

- OIr. 3sg.prt. *milt* 'to grind'; Lat. 1sg.pf. *moluī* 'to grind' (Meiser 2003, 124; Schumacher 2004, 471)
- OIr. 3sg. *˙recht* 'to rise'; Lat. 1sg.pf. *rēxī* 'to rule' (Meiser 2003, 111; Schumacher 2004, 531)

One Latin perfect could theoretically go back to either an aorist or a de-reduplicated perfect, where Celtic has an original perfect formation:

- OIr. 3sg.prt. *fích* 'to fight'; Lat. 1sg.pf. *vīcī* 'to conquer' (Meiser 2003, 206; Schumacher 2004, 684)

There are four cases where Celtic and Italic (represented by Latin) appear to continue different formations:

[60] This form is not directly attested, but can be inferred on the basis of the rest of the paradigm.

- MW 3sg.prt. *duc* 'to lead' < **dūk* << pf. **du-douk-* vs. 1sg.pf. Lat. *dūxī* 'to lead' < aor. **douk-s-* < **deuk-s-* (Meiser 2003, 111; Schumacher 2004, 286–87)
- OIr. 3sg.prt. *˙ét* 'to take' < **īmt* << aor. **ēm-s-* vs. Lat. 1sg.pf. *ēmī* 'to take' < pf. **h_1e-h_1m-*, but O. 3pl.pf. *emmens*, 3sg.pf.fut. *pertemust* (Meiser 2003, 199; Schumacher 2004, 290–91)
- OIr. 3sg.prt. **mailg* << pf. **me-molg-* 'to milk' vs. Lat. 1sg.pf. *mulsī* 'to milk << aor. **melg-s-* ? (Meiser 2003, 140, 245; Schumacher 2004, 486–87)
- OIr. 3sg.prt. *génair* < **ge-gnā-* << pf. **ge-gnh$_1$-* 'to be born' vs. Lat. 1sg.pf. *genuī* 'to bring forth' << aor. **genh$_1$-* (Meiser 2003, 228–29; Schumacher 2004, 327).

Latin *dūxī* could perhaps be a secondary *-s-*perfect from the Latin present stem *dūc-*. The perfect marker *-s-* was fairly productive still within Latin (Meiser 2003, 252). Similarly, PC **īm-* could have been transferred to the *-s-*preterits (later to become the *t*-preterits). It is not clear how to judge the Oscan forms *emmens* and *pertemust*. Both must contain a short *-e-*; however, the origin of the *-mm-* is unclear. If it is somehow a reflex of **ēm-*, the form *pert-em-ust* may be compared to U. 3pl.pf.fut. *procanurent*, where the root seems to be secondarily de-reduplicated (cf. Lat. pf. *cecinī* < **ke-kan-*), perhaps due to the presence of a preverb (Rix et al. 2001, 343). On the other hand, if *emm-* is to be analyzed as an alternative spelling for simple *em-*, that would point to an original root aorist **em-*. In that case the Latin long vowel perfect *ēmī* could be an innovation; cf. Lat. 1sg.pf. *fēcī* vs. O. 3sg.pf.subj. *fefacid* and Lat.1sg.pf. *ēgī*, which cannot be the regular IE perfect to 1sg.prs. *agō* < **h_2eǵ-*. Lat. *mulsī*, perfect to *mulgeō*, may be based on an original present **mulgō* < **$h_2$melg-e/o-*, from which iterative *mulgeō* < **h_2mḷg-eie-* was also built. Finally, Lat. *genuī* 'to bring forth, to beget' is difficult to explain from anything else than a root aorist **gen-*, which seems to be unreconcilable with OIr. *génair*. The Old Irish present of this verb is *˙gainedar* < **gan-i̯e/o-*, as opposed to Lat. *gignō*. If we further observe that both verbs differ in meaning (OIr. 'to be born', Lat. 'to bring forth'), we may be dealing with two distinct verbs built from the same root:

	'to be born'	**'to bring forth'**
Present	**gn̥-je/o-*	**gi-gn-e/o-*
Preterit	**ge-gnā-*	**gen-*

Table 18

Of the four cases discussed above, three could theoretically be explained by assuming the creation of a secondary *-s-*preterit/perfect, whereas the fourth one may not be an actual counterexample to Proto-Italo-Celtic aorist-perfect syncretism at all. If this syncretism must indeed be posited for the common ancestor of Italic and Celtic, that would make for a rather spectacular shared innovation. However, this is only a very brief overview of the relevant material, and more in-depth research on the etymological background of all possible examples and counterexamples needs to be conducted in order to get a clearer picture. For the moment, I shall refrain from drawing any

definitive conclusions about the complete merger of perfect and aorist in Proto-Italo-Celtic. Nevertheless, the large amount of overlap between Celtic and Italic in the continuation of either aorist or perfect formations, suggests that there was at least some preference for either of the past tenses for any given verb. This would not be unexpected, as the syncretism of these two formations must have been preceded by a period of time during which aspectual distinctions became blurred.

9.4 *The Proto-Italo-Celtic finite verb*

We can now try to reconstruct the Proto-Italo-Celtic finite verbal paradigm. For primary verbs, this would have looked more or less like this, using **reg-e/o-* 'to stretch, direct' < **h₃reǵ-* (cf. Lat. *regō* 'to rule', OIr. *˙raig* 'to rise') and **kan-* 'to sing' (cf. Lat. *canō* 'to sing', OIr. *˙cain* 'id.') as examples:

	Indicative	**Subjunctive I**	**Subjunctive II**
Present	**regeti*	**reg(e)st*	**regēt*
	**kaneti*	**kan(e)st*	**kanēt*
Past: aorist	**rēk̓st*		
Past: perfect	**kekane*		

Table 19

It is possible that verbs still formed both an aorist and a perfect, but at least for these two verbs, there is no positive evidence for that. Both subjunctive formations were unspecified for time. However, it is possible that already in Proto-Italo-Celtic a subjunctive I could freely be formed from a reduplicated present stem, in which case the forms **rirg(e)st* and **kikan(e)st* might have to be added.

9.5 *Periphrastic constructions and the copula*

9.5.1 *Periphrastic constructions with *ƀw- < *bʰuH-*

A last feature of the respective verbal systems of Italic and Celtic that may be compared, is the use of periphrastic constructions in its verbal system. In early Celtic this tendency seems to be less pronounced than in Italic, but one formation can probably be reconstructed for Proto-Celtic: the so-called *f*-future (e.g. OIr. *léicfea* 'I will leave'). This future formation, which seems to have originated in weak verbs and hiatus verbs (McCone 1991, 176), was derived by Jasanoff (2017) from a periphrastic construction of the type **skarī-bisă̆se/o-*. This construction would consist of the verbal stem with an ending **-ī*, probably from the PIE instrumental case in **-eh₁*, followed by the future of the verb 'to be'. This is of course strikingly similar to the periphrastic imperfect and future in Latin. The long *-ē-* found in the imperfect of the thematic verbs (e.g. *faciēbam* 'I was

making') most likely goes back to the inherited instrumental *-*ē* < PIE *-*eh₁* as well.[61] On top of the formal similarities, both branches also agree in the distribution of their periphrastic future. In Irish, it is mainly found in weak (i.e. derived) verbs. The same can be said about Latin, where the first and second conjugations (which take a *b*-future) contain the bulk of derived verbal stems (Weiss 2009, 400–404). We may thus tentatively reconstruct a Proto-Italo-Celtic practice of creating periphrastic tenses using the instrumental case of the nominalized verbal stem, followed by a form of PIC **ƀwe/o-* 'to be'. Similar constructions can readily be found; e.g. Du. *ik ben aan het eten*, litt. 'I am at eating'. Even closer is Sp./It. *estoy comiendo*/*sto mangiando* 'I am eating', from the ablative case of the Latin gerund in *-ndō* (so litt. 'I am with eating').

9.5.2 *Proto-Italo-Celtic reflexes of *bʰuH- 'to be'*

The apparently shared use of PIE **bʰuH-* in periphrastic formations in Italic and Celtic raises the question to what extent these two branches agree in the forms of this verb. As is usual for frequently used verbs like copulas, the paradigms of **bʰuH-* in both languages are irregular. Besides the Latin future and imperfect formations with *-b-*, the Italic continuants of **bʰuH-* are synchronically largely restricted to the perfective counterpart of defective PIt. **es-* 'to be'. We may reconstruct:

- **f(w)ā-*, attested in the Italic *-bā-*imperfect and apparently in OLat. 3sg.prs.subj. *fuāt*.
- **f(w)e/o-*, attested in the Latin *-b-*future.
- **fus-,* attested in O., U. 3sg.fut. *fust*.

The Italic form **fwā-* is possibly of secondary origin. The other two forms, however, can directly be compared to the Proto-Celtic subjunctive **be-* and future **bis-ăse/o-* << **bis-* << **bus-* respectively (Schumacher 2004, 241; Jasanoff 2017). For Proto-Italo-Celtic, we may thus reconstruct a subjunctive I **ƀus-* < PIE **bʰh₂u-s-*, and subjunctive II **ƀ(w)e/o-* < PIE **bʰh₂u-e/o-*. Due to the absence of the present of this verb in Italic, and the general disagreement about the derivation of the preterit in Celtic, it is difficult to reconstruct the entire paradigm for Proto-Italo-Celtic. If the Celtic preterit forms are to be derived from PIE aor. **bʰeh₂u-* however, as proposed by Kortlandt (1986, 90–92)[62], one might attempt to derive Lat. ipf. *-bā-* from this as well. However *fuāt* would still have to be secondary.

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[61] As the *b*-future in Latin is confined to the first and second conjugation, whose stems already end in a long vowel (*-ā-* and *-ē-* respectively), there is no direct evidence for this formation containing an original instrumental case in **-ē*. However, since the formation is very similar to the imperfect in *-bā-*, it is probably safe to assume that it was built in the same way. Incidental forms like third conjugation *dīcēbō* 'I will say' (instead of regular *dīcam*) were likely modelled after ipf. *dīcēbam* 'I was saying' etc. (Weiss 2009, 415 fn. 17).

[62] In a later paper, Kortlandt (2000) comes back on this reconstruction and prefers **bʰeh₃u-* instead on the basis of Armenian evidence. If this is correct, Italic **fwā-* cannot be related to the Celtic preterit of this verb after all.

As for the original use of this type of periphrastic formation, its distribution is centred on derived verbs in both Italic and Celtic. The reason for this might be that derived verbs in Proto-Italo-Celtic were unable to form certain forms of the verbal paradigm – in this case most likely subjunctive I. In both Italic and Celtic this distribution was continued into their respective future formations. In the development of Italic however, Sabellic eventually extended the creation of futures with *-s-* (originally subjunctive I) to derived verbs as well. In Latin, this formation was ousted by the original *-ē-*subjunctive in the third and fourth conjugations. In the first and second conjugations however, the *-ē-* would not have been distinctive enough, explaining the univerbation of the *-b-* future (§ 7.2.1.2).

10. *Conclusion*

In my thesis, I have set out to reconstruct two sections of the language that was the last common ancestor of Italic and Celtic in a bottom-up fashion: the phonemic system, and the tense-aspect-mood system. With the premise that there must have been a common ancestor to these languages, the question was whether this Proto-Italo-Celtic language was in fact the same as or very similar to Proto-Indo-European, or whether it is structurally more innovative. If the reconstruction of Proto-Italo-Celtic would have been near-indistinguishable from the traditional reconstructions of Proto-Indo-European, that would show that Italic and Celtic are probably not more closely related to each other than to other Indo-European languages. If Proto-Italo-Celtic would prove not to be largely identical to Proto-Indo-European however, which I believe must be concluded, this is evidence for Italic and Celtic being more closely related to each other and belonging to their own Italo-Celtic branch.

Significant innovations in the phonological system of Italo-Celtic are:

- Fricativization of the *mediae aspiratae* (§ 2.3.3)
- Deglottalization of the *mediae*, except in devoiced position (§ 2.3.1; 2.3.3)
- Merger and large-scale loss of the laryngeals (§ 4.2)
- Expansion of the vowel system from two to five vowels (§ 5)
- Dissimilation of **sr* to **þr* (§ 2.2.2)

Significant innovations in the verbal system of Italo-Celtic are:

- Syncretism between subjunctive and optative (§ 9.2)
- Loss of the imperfect, destroying the PIE perfective-imperfective aspect opposition (§ 9.3)
- Grammaticalization of the "*s*-aorist injunctive" as a separate mood with optional future reference (§ 9.1)

- The creation of periphrastic verbal forms by means of an instrumental and a form of PIC **ƀ(w)-* < PIE **bʰuH-* 'to be' (§ 9.5)
- Possibly incipient syncretism between aorist and perfect (§ 9.3.1)

These innovations suggest otherwise than Cowgill's (1970, 114) view of Proto-Italo-Celtic as a "phonologically essentially unchanged" language with a "short period of common development" When we combine the findings summarized above with the innovations in the verbal personal endings (Kortlandt 1981a; 2007), the secondary creation of non-present stems in **-e-* from **-e̯i̯e-* presents (e.g. **mon-e̯i̯e-* >> **mone-to-*)(Weiss 2012, 156), the superlative in **-isn̥mo-*[63], the genitive singular in **-ī* (Cowgill 1970), the various lexical isoglosses (Porzig 1954, 98–106; Weiss 2012), and perhaps Dybo's rule (Schrijver 2016), the evidence for a Proto-Italo-Celtic stage with a considerable duration steadily increases. The idea of a Proto-Italo-Celtic speech community that lasted for a significant period of time has potentially interesting implications for our understanding of the migrations of the Celtic and Italic peoples and the Indo-Europeanization of Europe. Other avenues of exploration into Proto-Italo-Celtic are the reconstructible shared lexicon and nominal and pronominal inflections. For the Italo-Celtic verb specifically, more research on the possible syncretism between the IE perfect and aorist on the one hand, and to the specifics of verbal endings (athematic vs. thematic, primary vs. secondary etc.) on the other, are likely to yield interesting results.

[63] **-isəmo-* in the notation of PIC adopted in § 3.1.1.

Appendix A: Reconstructed obstruent systems

The following is a schematic overview of the reconstructed Proto-Italic, Proto-Celtic and Proto-Italo-Celtic obstruent systems respectively, as they may have functioned synchronically based on the discussion above.

Proto-Italic

	Labial	**Dental**	**Velar**	**Labiovelar**
Voiceless stops	*p*	*t*	*k*	*kʷ*
		-ss- < /tt/		
Voiced stops	*b*	*d*	*g*	*-gʷ-*
	-V̄pt-	*-V̄ss-* < /dt/	*-V̄kt-*	*-V̄kʷt-*
Fricatives	*f-*		*χ-/h-*	
	-ƀ-	*-đ-*	*-ǥ-*	*-ǥʷ-*
	-pt-	*-ss-* < /đt/	*-kt-*	*-kʷt-*
Sibilant		*s-*[64]		
		-z-		
		-rs-		

Proto-Celtic

	Labial	**Dental**	**Velar**	**Labiovelar**
Voiceless stops	*f* < **p*	*t*	*k*	*kʷ*
	-xt-[65]	*-ss-* < /tt/	*-xt-*	*-xt-*
Voiced stops	*b*	*d*	*g*	*-gʷ-*
	ƀ/V_	*đ*/V_	*ǥ*/V_	*ǥʷ*/V_
	-xt-	*-ss-*	*-xt-*	*-xt-*
Sibilant		*s-*		
		(-)þr-		

[64] Note that **sr-* > **þr-* > **fr-* was probably complete already by the time of Proto-Italic.
[65] All Celtic stops collapse into *-*x-* before *-*t-* and *-*s-* (Matasović 2009).

Proto-Italo-Celtic

	Labial	**Dental**	**Velar**	**Labiovelar**
Voiceless stops	*p*	*t*	*k*	*k*^{w}
		-t^{s}*t-*		
Voiced stops	*b*	*d*	*g*	*-g*^{w}*-*
	-p̊t-	*-t̊*^{s}*t-*	*-k̊t-*	*-k̊*^{w}*t-*
Fricatives	*ƀ*	*đ*	*g̵*	*g̵*^{w}
	-pt-	*-t*^{s}*t-*	*-kt-*	*-k*^{w}*t-*
Sibilant		*s-*		
		(-)þr-		

Appendix B: The Proto-Italo-Celtic phoneme system

The following is an overview of the different phonemes that must be reconstructed for Proto-Italo-Celtic. Details about allophonic variation can be found in the notes, and in the relevant sections of the main text.

Proto-Italo-Celtic consonants:

	Labial	**Dental**	**Velar**	**Labiovelar**	**Glottal**[3]
Stops[1]	**p*	**t, *d*	**k, *g*	**kʷ, *gʷ*	**H*
Fricatives	**ƀ*	**đ, *s*	**ǥ*	**ǥʷ*	
Nasals[2]	**m*	**n*			
Liquids		**r, *l*			
Approximants	**w*	**j*			

Proto-Italo-Celtic vowels:

Short	**Long**	**Diphthong**
**i*	**ī*	
**e*	**ē*	**ei*
**a*	**ā*	**ai, *au*
**o*	**ō*	**oi, *ou*
**u*	**ū*	

1. Voiced stops have a glottalic voiceless allophone when followed by a voiceless obstruent; e.g. /gt/ > [k̰t] (§ 2.3.2).
2. Vocalic nasals are phonetically realized with a prop vowel; e.g. /n̥/ > [ən] (§ 3.1.1).
3. If the laryngeals persisted until Proto-Italo-Celtic, they had merged into one phoneme (§ 4). The nature of this phoneme is difficult to establish, but it could have been a glottal stop or fricative, or something similar.

Appendix C: Relative chronology of Italo-Celtic sound changes

The following is an overview of the relative chronology that must be assumed for the discussed shared Italo-Celtic developments. Fourteen of these changes can be ordered relative to each other in eight stages. For the five remaining changes at the bottom of this page, a relative chronology with respect to the other changes cannot be established.

Ordered changes:

1. **HV* > **V* (with colouring)
2. **VH* > **V̄* (with colouring)
3. Fricativization of *mediae aspiratae*: **gʰ* /g/ > **g̑* /ɣ/ (§ 2.3)
4. **RD̊C* > **RHDC* (§ 5.1.1)
5. Deglottalization of voiced *mediae*: **g* /g̊/ > **g* /g/ (§ 2.3)
6. Loss of laryngeals
    - **CHCC* > **CCC* (§ 2.3)
    - **HC-* > **C-* (except before **-RC-*) (§ 4.1.3)
7. Vocalization of laryngeals
    - **H̥* > **a* (§ 4.1)
    - **CRHC* > **CRāC* (§ 4.1.1)
8. Vocalization of vocalic resonants
    - **N̥* > **əN* (§ 3.1.1)
    - **L̥V* > **aLV* (§ 3.1.2)

Changes for which the order does not matter:

- **p…kʷ* > **kʷ…kʷ*
- **mw* > **w*
- **mj* > **nj*
- Vine's Law and reduction of **e* after **i̯* (§ 5.1.2)
    1. **ei̯e* > **ii̯e*
    2. **i̯e* > **i*
- Dissimilation of the sibilant before **r*: **sr* /sr/ > **þr* /θr/ (§ 2.2.2)

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