Umbrian ⟨rs⟩ and ⟨rf⟩

A synchronic and diachronic puzzle

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Abstract

This paper examines two different outcomes of reconstructed **rs* sequences in Umbrian. While the sequence **rs* which goes back to Proto-Sabellic is continued as ⟨rs⟩, secondary **rs* that developed from **rVs* by syncope or from **rtt* by assibilation and degemination is written as ⟨rf⟩. A synchronic and diachronic analysis of these different outcomes is provided. It is argued that the key conditioning factor for the different outcomes is not whether **rs* was diachronically original, but whether **s* in **rs* formed a simple onset.

Keywords

Italic – Sabellic – Umbrian – sound change – allophone – auditory enhancement – consonant cluster – syncope – devoicing

1 Introduction

Since the nineteenth century (see, e.g., von Planta 1892: 486 ff.) scholars have acknowledged that the reconstructed sequence **rs* has two different outcomes in Umbrian. The alleged distribution of the two outcomes is as follows. A sequence **rs* which goes back to Proto-Sabellic is continued as ⟨rs⟩ (e.g., PSab. **/farsijo-/* > Umb. *farsio* ‘[name of an offering cake]’), while secondary **rs* that developed from **rVs* by syncope or from **rtt* by assibilation and degemination is written as ⟨rf⟩ (e.g., PSab. **/parasa:-/* > Umb. *parfa* ‘[name of a bird]’).¹

¹ “⟨⟩” indicates orthography of a form. Following convention, bold type indicates that the form

However, the mechanism which gave rise to these different outcomes has not received a satisfactory explanation even after more than 100 years. This problem is taken up in the present paper, the goal of which is to provide a synchronic and diachronic analysis of these different outcomes. It is argued that the key conditioning factor for the different outcomes is not whether **rs* was diachronically original, but whether **s* in **rs* formed a simple onset.

This paper is organized as follows. In section 2, I outline the data and show that Umbrian has two different outcomes for reconstructed **rs* sequences. In section 3, I review two previous scholarly accounts (Meiser 1986 and Poultney 1959) and after reviewing their accounts, I will point out that both analyses have shortcomings and remain unsatisfactory. In section 4, I propose that **rVs* and **rtt* sequences both developed to **r[s]* in the prehistory of Umbrian and that a coronal sequence **r[s]* acquired a labial place of articulation only when **s* formed a simple onset. Section 5 summarizes and concludes the paper.

2 Two different outcomes of **rs* in Umbrian

In this section I outline the data on which my subsequent analysis is based. In this full survey of the relevant data, I show that a reconstructed **rs* cluster has two different outcomes in Umbrian and that this pattern differs from the patterns seen in Oscan and Latin.²

In Umbrian several words are written with ⟨rs⟩ (or ⟨s⟩) in the native alphabet or ⟨rs⟩ (or ⟨s⟩) in the Latin alphabet (1).³ The Comparative Method enables us

was written in the native alphabet of Oscan, Umbrian or South Picene, and italics indicate that the Latin alphabet was used. “>” and “>>” indicate a diachronic sound change and an analogical change respectively. “→” represents a synchronic input-output mapping. I follow the readings by Rix (2002) unless stated otherwise. Following Wallace (2007), I assume the following phonemes in Umbrian: /p, t, k, b, d, g, f, s, ð, ʃ, (h), m, n, l, r, j, w, i, e, ε, a, u, o, ɔ/. I use /r/ as a cover-symbol to represent some rhotic consonant (see footnote 2).

- 2 The exact phonetic realization of the rhotic in Umbrian and in its prehistory is difficult to pinpoint. While opinions seem to converge as to the phonetic value of ⟨r⟩ in Classical Latin (a trill [r]; see Allen 1978: 31–32, followed by Weiss 2020: 69), the phonetic reality of ⟨r⟩ in Sabellic is not well understood. In Umbrian ⟨r⟩ and ⟨r⟩ are often omitted both in the native and Latin alphabets (e.g., *fasiu* ‘[an offering cake]’ < **farsijo-* and *pescler* ‘prayer’ < **perskeklo-*; see 1f & 1d), which seems to indicate that it was a tap [ɾ] or an approximant (such as [ɹ] and [ɻ]) which was weakly articulated or dropped in coda position. In this paper I remain agnostic about the precise phonetic realization of the rhotic in Umbrian and in its prehistoric stages (for further discussion of this problem, see Stuart-Smith 2004: 217).
- 3 Not all of the ⟨rs⟩ and ⟨rs⟩ sequences go back to an original **-rs-*: reconstructed **-VdV-* and **-VIV_[+front]-* sequences are continued as ⟨(ř)⟩ and ⟨rs⟩ (e.g., **kalētōd* > Umb. *kařetu* [1b 33],

to reconstruct Proto-Sabellic **rs* for many of these words. Some of these items show inherited **-rs-* (without morpheme boundary, e.g. 1f), while others show **-r-s-* (with morpheme boundary, e.g. 1h).

(1) Umbrian ⟨rs⟩, ⟨s⟩, ⟨rs⟩, ⟨s⟩ < Proto-Sabellic **rs*⁴

- a. Umb. **çersnatur furent** (Va 22) [FUT.PFV.PASS.3PL] ‘to dine’
 < PSab. **kersnā-to-* (cf. Lat. *cēna* ‘dinner’, Umb. *śesna* [Vb 9, 13, 15, 18] [ACC.SG] ‘id.’, Osc. *kersnu* [Cm 14/Cumae 8] [NOM.SG], *kerssnaís* [Cp 31/Capua 22] [ABL.PL] ‘meal’ < **kersnā-* (< **kert-s-(m)nā-*), *kerssñasi-ais* [Cp 29/Capua 26], *kersnā[s]ias* [Cp 34/Capua 24] [F.NOM.PL] ‘of a meal, meal-like’)
- b. Umb. **persnimu** (Ib 7, 21, IV 8, 10), **persniḥmu** (IIa 27, 29, 30 [2×], 31, 36 [2×], 37, 38, 39, IV 11, 23, 29), **persñiḥmu** (IIa 42), **pers(n)ihmu** (IV 25), *persnimu* (VIa 55, 59, VIb 2, 4, 6, 9, 20, 25, 37, 41, 44, 46, VIIa 4, 7, 25

kařitu [III 21], *carsitu* [VIa 17, VIIa 43] [FUT.IMP.3SG] ‘to call’). Also, **-VdVs-* is continued as ⟨řs⟩, ⟨rs⟩, or ⟨rs⟩ when the vowel preceding **s* undergoes syncope (e.g., **medēs* > Umb. *meřs* [Ib 18 (2×)], *mers* [Vib 31, 55 (2×)] [NOM.SG] ‘law, custom’ and **medēsufōs* > Umb. *mersus* [III 6] [ABL.PL] ‘id.’; Weiss 2010: 84, 99 n. 4). Umb. *mersuva* (III 11, 28) [ACC.PL] ‘customary’ is not likely to preserve an original **-rs-* but seems to have been secondarily restored from **mederwo-* (< **medeswo-*; cf. Lat. *Minerva* < **meneswā*) after the base **medes-* (cf. Umb. *meřs*, *mers* ‘law, custom’; see Weiss 2010: 99 n. 4). According to Meiser (1986: 184 n. 2), Umb. *tesvam* (Ib 13), *desua* (Vib 51, 52), *dersua* (VIa 1, 2 [2×], 4 [2×], 15 [2×], 17 [2×]) [F.ACC.SG], and *dersua* (VIa 1) [F.ABL.SG] ‘right’ (?) go back to **deks-wo-* and their *-rs-* spelling (or pronunciation) is secondary from its antonym (**medēsto-* >) *merstā-* ‘left’ (?) (e.g., *mersta* [VIa 3] [F.ACC.SG]).

- 4 In the Iguvine Tables 35 word-tokens are written with ⟨rs⟩ and 263 word-tokens are written with ⟨řs⟩. The former consists of 11 stem-types and the latter 52 stem-types. Umb. **pesuntru** (Ia 27), **pesuntrum** (Ia 30), **pesutru** (IIa 8), **persutru** (IIb 13), **persuntru** (IV 17, 19), **pesondro** (Vib 24, 37 [2×], 39, 40) [ACC.SG], **persuntre** (IV 21) [DAT.SG], **persondru** (Vib 31, 35), **persontru** (Vib 28) [ABL.SG], **pesondrisco** (Vib 40) ‘(a type of offering)’ (?) [ABL.PL], **venpersuntra** (IIa 30), **vepesutra** (IIa 15) [ACC.SG], **vepesutra** (IIb 18) [ABL.SG], and **vempesuntres** (IV 7) ‘(a type of offering)’ (?) [ABL.PL] appear to contain a prefix **per-* and a base beginning with **s-*, but the exact etymologies are not clear (see the recent suggestion by Weiss 2010: 397). According to LIV² (2001: 476), **perstu** (IIa 32) **pestu** (IIb 19) [FUT.IMP.3SG], *peperscust* (Vib 5), and *peperscus* (VIIa 8) [FUT.PFV.3SG] continue the PIE root *perk-* ‘an-, auffüllen’. But the exact meaning of these words is not well understood (Weiss 2010: 362 n. 10). The etymologies of Umb. *carsome* (VIa 13, 14) ‘(name of a building?)’ [ACC.SG], *smursime* (VIa 13) ‘(place name?)’ [ACC.SG], *uasirsłome* (VIa 12) ‘(place name?)’ [ACC.SG], and *sarsite* (Vib 11) ‘in public (?)’ [ADV?] are not clear and they cannot be used as data. Umb. *pars est* (VIIb 2) ‘it is fitting, it is prescribed’ seems to continue a Proto-Sabellic *r*-stem nominative singular recharacterized by **s-*. While this recharacterized *r*-stem nominative singular **-r-s#* generally became *r#* in Umbrian (see Rix 1986, who analyzes it to be a ‘sharp’ *r* as it was written constantly), it was kept in this word due to the following enclitic *est* (*pars est* is written without a word-divider; see footnote 40 for further discussion of this phrase). I thank an anonymous reviewer for clarifying the prehistory of this word.

- [2×], 34, 42, 44, 54), *persnihimu* (VIb 17, VIIa 9, 39, 45) [FUT.IMP.3SG], *persnimumo* (VIb 57), *persnihimumo* (VIIa 47) [FUT.IMP.3PL] *persnis fust* (VIb 39) [FUT.PFV.3SG] ‘to pray’
 < **persk-ni-* (denominative from *persk-ni-* ‘prayer’)? (transponat)
- c. Umb. *puste* (Ia 25) [LOC.SG] ‘post (of a city-gate)’
 < **prsti-* (cf. Lat. *postis* ‘doorpost’ < **pr-sth₂i-*; see Weiss 2010: 155)
- d. Umb. *persklum* (Ia 1), *persklumař* (III 21) [ACC.SG], *perscler* (VIa 27, 28, 37, 38), *pescler* (VIa 47, 48, VIb 30 [2×]) [GEN.SG], *persklu* (III 12), *persclu* (VIb 36, VIIa 20, 24, 34), *pesclu* (VIb 15, VIIa 8) [ABL.SG] ‘sacri-ficial rite’
 < **perske-klo-* (transponat; Schirmer 1998: 236, followed by Weiss 2010: 136)
- e. Umb. *turskum* (Ib 17), *tuscom* (VIb 58, VIIa 47) [N.ACC.SG], *tuscer* (VIb 54, 59, VIIa 12, 48) [N.GEN.SG], *tursce* (VIIa 22) [N.DAT.SG] ‘Etruscan’
 < **tursko-* (transponat; cf. Lat. *tusculus*, Hes. *τурсηνός* etc.)
- f. Umb. *fasiu* (IIa 12), *farsio* (VIb 2), *fasio* (VIb 44) [ACC.PL] ‘(an offering cake made from a kind of grain)’
 < PSab. **farsyo-* (<) < **fars-iyō-*⁵ (cf. Lat. *fār*, *farris* ‘corn, grain’ < **fars-* < **b^hars-*; see Untermann 2000: 266)⁶
- g. Umb. *çersiaru* (IIa 16) [GEN.PL] ‘(name of a month)’
 < PSab. **kersyā-* (<) < **ker-s-iyā-* (transponat; see Burroni 2017)
- h. Umb. *andersistu* (VIa 6) [IMP.3SG], *andersesust* (VIa 7) [FUT.PFV.3SG] ‘to sit in the way’
 < PSab. **nter-sīde/o-* (imperfective stem; cf. Lat. *sīdere* ‘to sit down’);
 PSab. **nter-sēd-* + **-us-* (perfective stem; cf. Lat. *sēdī* ‘I sat down’)

5 It seems widely accepted that the adjectival suffix *-*iyō/ā-* (phonologically or analogically) changed to *-*yo/ā-* before Proto-Sabellic, which affected the quality of a preceding consonant in Oscan (sometimes marked by a geminate spelling; e.g., **mamertyā-* > (>)) **mamertyā-* > Osc. *mamerttiais* [Cp 30/Capua 25] ‘of [theonym]’) and blocked rhotacism in Umbrian (**plēnāsiyo-* > (>)) **plēnāsiyo-* > Umb. *plenasier* ‘ides’; Weiss 2010: 52). See Buck (1928: 66–67); Meiser (1986: 63); Untermann (2000: 565–566); Weiss (2010: 35); Zair (2014: 118 n. 13); and Nishimura (2016: 201).

6 An original **rs* appears to have assimilated to **rr* in *farariur* (Um 8/Mevania 2) [M.NOM.PL] ‘of grain’. But this word cannot be the *lautgesetzlich* outcome of (**fars-āsiyo-* > (>)) PSab. **fars-āsiyo-* since *-*āsiyo-* should not have undergone rhotacism in Pre-Umbrian (see footnote 5). This word forms a title together with its preceding *cvestur* [M.NOM.PL] ‘(title)’, and it seems that the entire noun phrase *cvestur farariur* was influenced by Latin (cf. Lat. *farrārius* ‘of grain’).

- i. Umb. **turse** (IV 19), **tuse** (Ib 31, 43), *turse* (VIIa 41, 53) [DAT.SG], *tursar* (VIIa 46) [GEN.SG], *tursa* (VIb 58, 61, VIIa 47, 49) [VOC.SG] ‘(theonym)’ < PSab. **tṛsā-* (transponat; LIV² 2001: 651)
- j. Umb. **tuseṭu** (Ib 40), *tursitu* (VIb 60, VIIa 49) [FUT.IMP.3SG], **tusetutu** (Ib 41), *tursituto* (VIIa 51) [FUT.IMP.3PL], *tursiandu* (VIb 2) [PRS.SUBJ. PASS.3PL] ‘to scare’ < PSab. **tṛsē-* < **tṛs-eye-* (Nussbaum 1999: 412–413 n. 87; cf. Lat. *terreō* ‘to terrorize’)

At the same time, however, several Umbrian forms which have ⟨rf⟩ in the native alphabet and ⟨rf⟩ in the Latin alphabet also point to a reconstructed sequence **rs* (2 and 3). The common view is that whether the **rs* is original or not is the key conditioning factor (see, e.g., Burrioni 2017): a reconstructed **rs* sequence which is continued as ⟨rf⟩ or ⟨rf⟩ in Umbrian goes back to either an **rVs* sequence where a vowel once intervened between **r* and *s* (2), or an alveolar-stop cluster **-rt-t-* which subsequently underwent assibilation and degemination to **rs* (3).

(2) Umbrian ⟨rf⟩, ⟨rf⟩ < Proto-Sabellic **rVs*⁷

- a. Umb. **ḡerfe** (Ib 28, 31), *serfer* (VIb 61 [2×], VIIa 16, 23), *śerfer* (VIb 57, 58, VIIa 6, 9, 10, 11, 13, 15, 18, 19, 20, 21, 22, 24, 25, 27, 29 [2×], 33 [2×], 34, 35, 36, 41) [GEN.SG], **ḡerfe** (Ib 24), *śerfe* (VIIa 3) [DAT.SG], *serfe* (VIb 57, 61) [VOC.SG] ‘(theonym)’ < **kereso-* or **keraso-* (transponat; cf. Osc. **kerri** ‘id.’ < **kerVśēy*)
- b. Umb. **ḡerfie** (Ib 28, 31), *śerfie* (VIIa 6, 8, 24, 41) [F.DAT.SG], *śerfiar* (VIIa 20, 23, 33, 36) [F.GEN.SG], **ḡe[r]fi** (Ib 4–5), *śerfi* (VIb 45) [M.DAT.SG], *śerfia* (VIb 57, 58, 61, VIIa 10, 11, 13, 15, 18, 19, 21, 25, 27, 28, 29, 32, 33, 34,

7 In the Iguvine Tables, 8 word-tokens are written with ⟨rf⟩ and 88 word-tokens are written with ⟨rf⟩. The former consists of 5 stem-types and the latter 9 stem-types. The meaning and etymology of Umb. **furfat** (Ib 1), *furfant* (VIb 43) [IMP.F.ACT.3PL] and *efurfatu* (VIb 17, VIIa 38) [FUT.IMP.3SG] are uncertain (e.g., Buck 1928: ‘to purify’ (?), Poultney 1959: ‘place on a platter’ (?), and Meiser 1986: 101, 116: ‘to shear’ (?) with “< **b^hṛd^hā-ye/o-*”). Umb. **urfeta** (Ib 23) [ACC.SG] ‘(sacrificial object?)’ seems to continue **-b^h* (**h₃orb^h* ‘turn’ > PSab. **or[β]etā-* or PSab. **or[β]itā-*, see Weiss 2010; 2006: 266 n. 71). On Umb. *uerfale* (VIa 8) [N.NOM/ACC.SG?] ‘(name of a place where an *arsfertur* stays during the auspices) (?)’ see Rix (2009), who rejects the connection with (**werd^ho-* >) Lat. *verbum* ‘word’ and reconstructs (**wert-tu-* ‘turning’ >) **werfiu-* + **-āl-* instead. Differently, Driessen (2001) connects this word with Lat. *urbs* ‘city’ and derives them from the root **werb^h* ‘to enclose’ (cf. Hitt. *warpa-* ‘enclosure’, TA *warp* ‘id.’). Outside of the Iguvine Tables, we find **skerfs** in one of the Paelo-Umbrian inscriptions (Um 2/Forum Novum 2) but its interpretation remains uncertain (Untermann 2000: 685; cf. Rix 1996).

- 35), *serfia*{*r*} (VIIa 22), *serfia* (VIb 61, VIIa 16) [F.VOC.SG] ‘of (theonym), (epithet)’
 < PSab. **kerVsyā-* (<) < **keres-iyā-* or **keras-iyā-* (cf. Pael. *cerria* ‘id.’ < < PSab. **kerVsyā-*;⁸ see Untermann 2000: 390; Stuart-Smith 2004: 121)⁹
- c. Umb. **parfam** (Ib 13), *parfa* (VIa 2, 4, 15, 17) [F.ACC.SG], *parfa* (VIa 1) [F.ABL.SG] ‘(name of a bird)’
 < PSab. **parasā-* (cf. Lat. *parra* ‘a bird of ill omen’ < **parasā-* < **(s)přh_xseh₂-*; see Höfler 2017: 248–249)
- (3) Umbrian ⟨*rf*⟩ < Proto-Sabellic **rtt*
 Umb. *trahuorfi* (VIIa 25) [ADV] ‘in crosswise fashion’
 < **-worsē* < PSab. **-w(o)rssē(d)* < **-wrt-to-* (cf. Lat. *trans-verse* ‘id.’ < **-worssē* < **-wrt-to-*; see Weiss 2020: 104)

These developments in Umbrian are different from those found in the other major Sabellic language Oscan. In Oscan, primary **rs* and the secondary **rs* which developed from syncope undergo total assimilation and are spelled as ⟨*r*⟩ or ⟨*rr*⟩ in the native Oscan alphabet (4 and 5). In contrast, secondary **rs* that developed by assibilation and degemination is continued as ⟨*ρσ*⟩ in the Greek alphabet as in (6).¹⁰

- (4) Proto-Sabellic **rs* > Oscan ⟨*r*⟩
 PSab. **tersom* > **terrōm* > **tērōm* > Osc. **teer[úm]** (Cm 1/Abella 1), **terúm** (Cm 1/Abella 1) [NOM.SG] ‘area’ (cf. Lat. *terra* ‘land’ < **tersā-*; Untermann 2000: 736; Stuart-Smith 2004: 98)

- 8 According to Weiss (2017: 373 n. 11), *cerr-* in Pael. *cerria* was imported from its base noun as the suffix **-yo/ā-* (<) < **-īyo/ā-* (see footnote 5) usually blocks syncope of its preceding syllable.
- 9 Unexpectedly, Paelignian, which is a North Oscan dialect, attests *cerfum* (Pg 9/Corfinium 6) [GEN.PL] ‘(theonym)’ in the Herentas inscription, which shows the same treatment of **rVs/* as Umbrian. Based on this form, Weiss (2017) proposed that Pael. *cerfum* and Umb. *çerfe*, *çerfie* etc. (2a & 2b) ultimately go back to PIE **k_{er}dʰo-* ‘god of (military?) troop’ (cf. Ved. *śardha-* ‘troop, force’). But it cannot be excluded that Pael. *cerfum* is a borrowing from a neighborhood language (i.e. Pael. *cerria* < PSab. **kerVsyā-*); see Untermann 2000: 390; Stuart-Smith 2004: 121).
- 10 Osc. **usurs** (Cp 37/Capua 34) [ACC.PL] contains a ⟨*rs*⟩ sequence. It seems possible that the second ⟨*s*⟩ in **usurs** represented [-ss] (< **-f* + **-s*) as a consonant-stem accusative plural is often marked by ⟨-ss⟩ in the native Oscan alphabet (e.g., **aginss** [Cm 13/Cumae 9] ‘matter, business’). On the prehistory of the accusative plural inflectional endings in Sabellic, see Rix (1986) and Fortson (2014).

- (5) Proto-Sabellic **rVs* > Oscan ⟨rr⟩
 (Transponat) **keresē-* or **kerasē-* > Osc. **keri** (Cp 37/Capua 34), **kerri** [kərre:] (Sa 1/Teruentum 34 [2×]) [DAT.SG] '(theonym)' (cf. Lat. *Cerēs*, *Cereris*).
- (6) Proto-Sabellic **rtt* > Oscan ⟨ρσ⟩
 PSab. **wert-tor-* > Osc. *ῥερσορεῖ* (Lu 25/Vibo 2) [DAT.SG] '(epithet of Jupiter)' (cf. Lat. *versus*)

Latin patterns with Oscan in that an original **rs* and **rs* that developed from **rVs* by syncope assimilate to *rr* (7 and 8) while an **rs* that developed from **rtt* by assibilation of the alveolar-stop cluster surfaces as *rs* (9).

- (7) **-rs-* > Latin *-rr-*
 a. **fer-se* > Lat. *ferre* 'to bear' (Weiss 2020: 187; cf. Tabula Veliterna *ferom* [VM 2/Velitrae 1] [INF] 'id.')
- b. **tersā-* > Lat. *terra* 'land' (cf. Osc. *teras* [Cp 37/Capua 34] 'id.' [GEN.SG?]; Untermann 2000: 745)
- c. **krse/o-* > Lat. *currō* 'to run'¹¹
- (8) **-rVs-* > Latin *-rr-*
**(s)pṛh_xseh₂-* > **parasā-* > Lat. *parra* '(a bird of ill omen)' (Höfler 2017: 248–249)
- (9) **-rtt-* > Latin *-rs-*
**wrt-to-* **[-fst-]* > **worsso-* > Lat. *versus* 'turned' (Weiss 2020: 187)

The developments of **rs* in Umbrian, Latin and Oscan are summarized in Table 1. Even though Oscan and Umbrian are genetically grouped together as Sabellic, they do not pattern together. It is especially puzzling that in Umbrian original **rs* is continued as ⟨rs⟩ and ⟨rs⟩ (1) while secondary **rs* did not remain as such (2 and 3).

11 The exact environment which gives **f* > *ur* in Latin is not clear (see, e.g., Weiss 2020: 104). Zair (2017) proposes that *ur* is the regular outcome of **f* in Umbrian and argues that the Latin words which contain this reflex have two sources: (1) **#worC-* > **#urC* (e.g., **worwo-* > Lat. *uruum* 'plough'), and (2) borrowings from neighboring language(s) including Umbrian.

TABLE 1 Summary of the development of *rs in Umbrian, Oscan and Latin

	Umbrian	Oscan	Latin
Original *rs	<div>⟨rs⟩, ⟨s⟩, ⟨rs⟩, ⟨s⟩</div> <div>PSab. *farsyo- > Umb. fasiu, farsio, fasio [ACC.PL] ‘(an offering cake)’</div>	<div>⟨r⟩</div> <div>PSab. *terso- > Osc. teer[úm, terúm [NOM.SG] ‘area’</div>	<div>⟨rr⟩</div> <div>*tersā- > Lat. terra ‘(dry) land’</div>
Secondary *rs developed by syncope	<div>⟨rf⟩, ⟨rf⟩</div> <div>PSab. *parasa- > Umb. parfam, parfa [ACC.SG] ‘(name of a bird)’</div>	<div>⟨rr⟩</div> <div>PSab. *keresē- or *kerasē- > Osc. kerri [DAT.SG] ‘(theonym)’</div>	<div>⟨rr⟩</div> <div>*parasā- > Lat. parra ‘a bird of ill omen’</div>
Secondary *rs developed by assibilation and degemination	<div>⟨rf⟩</div> <div>PSab. *-w(o)rt-tē > Umb. trahuorfi [ADV] ‘in crosswise fashion’</div>	<div>⟨ρσ⟩</div> <div>PSab. *wert-tor- > Osc. ϑερσορει [DAT.SG] ‘(epithet of Jupiter)’</div>	<div>⟨rs⟩</div> <div>*wrt-to- > Lat. versus ‘turned’</div>

In this section I have outlined the data and showed that a reconstructed sequence *rs displays two different outcomes in Umbrian. This pattern does not agree with Oscan nor Latin, where the original *rs underwent total assimilation to *r(r). In the next section I will review previous analyses of these different outcomes.

3 Previous scholarship

In this section I will review two previous treatments of the problem: Meiser (1986) and Poultney (1959). The former explained the different outcomes in Umbrian based on two different sound changes, while the latter tried to motivate the different outcomes based on the different quality of a sibilant. I will argue that each of these analyses has shortcomings and remains unsatisfactory.

One way to account for the data is to assume that two different changes happened in the prehistory of Umbrian: one is responsible for *rVs > Umb. ⟨rf⟩ and the other for *rtt > Umb. ⟨rf⟩. This is essentially the approach of Meiser

TABLE 2 Meiser’s (1986) analysis

		<i>*far[s]yō(s)</i>	<i>*parasā(m)</i>	<i>*-w(o)rt-tē</i>
Stage 1	Voicing, assibilation	–	<i>*para[z]ā(m)</i>	<i>*-worssē</i>
Stage 2	Syncope	–	<i>*par_[z]ā(m)</i>	–
Stage 3	<i>*r[z] > *rf</i> (i.e., <i>*r[β]</i>)	–	<i>*par[β]ā(m)</i>	–
	<i>*rss > *rf</i>	–	–	<i>*-worfē</i>
Attested		fasiu <i>farsio, fasio</i>	parfam <i>parfa</i>	<i>trahuorfi</i>

(1986: 172, 174), who describes the changes which occurred in the prehistory of Umbrian as follows:

- (10) Meiser (1986: 172, 174)
- a. “Hinter *r* wird *z* aus ursprünglich intervokalischem *s* zu *f*.” (Meiser 1986: 174)
 - b. “Eine alte Gruppe *-rs-* bleibt im Umbr. bewahrt, *-rss-* ergibt *-rf-*.” (Meiser 1986: 172)

Since his account is descriptive and concise, his analysis cannot be recovered in detail. Meiser (1986: 38) also assumes that an intervocalic **s* was voiced to **[z]* already in Proto-Italic (e.g., **parasā-* > PIt. **para[z]ā-* > Umb. *parfa*, Lat. *parra*) and thus dissociates **rVsV* (> **rV[z]V*) > Umb. *<rf>* from **rss* > Umb. *<rf>*.¹² According to him, the original **rs* did not change because its structural description simply did not meet either of the changes. His analysis can be summarized in Table 2.

Although this analysis explains the different outcomes in Umbrian, it suffers from the following two shortcomings. Firstly, Meiser’s analysis is not backed up by phonetic motivation: I am not aware of any plausible phonetic motivation which would lead **r[z]* > *<rf>* and **rss* > *<rf>* but would keep **r[s]* from under-

12 But he is not explicit as to whether the intervocalic voicing of **s* was synchronically operative in Proto-Sabellic. Since Meiser (1986: 103) states that Proto-Sabellic had phonemes **β, z, γ* in addition to **f, s, x*/, it is not clear whether PSab. **para[z]ā-* was a product of synchronic intervocalic voicing from **/parasā-/,* or a faithful realization of **/paraza-/.* He also acknowledges that **β, z, γ* and **f, s, x* were in complementary distribution in Proto-Sabellic: the former set is found only between voiced segments. In my analysis, **[z]* is an allophone of the phoneme **s/* (iii in section 4).

going these changes. Phonological processes or sound changes usually affect natural classes of sounds. Assuming that Meiser is correct in positing /s/, /z/, and /ss/ (or rather /s:/) for the relevant stage of Umbrian, then /z/ and /s:/, which are the sounds affected to become /f/, cannot form a natural class to the exclusion of /s/. Either /s/ and /z/ alone could be [-LONG], or /s/ and /s:/ alone [-VOICE], but not /z/ and /s:/ without /s/.

Secondly, Meiser's view needs to posit two different diachronic changes which resulted in the same surface outcomes in the prehistory of Umbrian: $*r[z] > \langle rf \rangle$ and $*rss > \langle rf \rangle$, but he is not explicit about the relationship between these two changes. If they can be unified in some way, such an opportunity should not be missed. But this is not possible under his account, because without the sound change of $*rss > \langle rf \rangle$ (via $*r[f:]?$), the sequence $*[-rss-]$ would have been degeminated to $*[-rs-]$ at a certain prehistoric stage of Umbrian. Latin, Oscan and Umbrian all disprefer superheavy (or trimoraic) syllables. It is well-known that $*ss$ was degeminated to $*s$ after a consonant in Latin (e.g., $*pat-tos > \text{Lat. } passus$ 'suffered' vs. $*wrt-tos > *worsos > \text{Lat. } versus$ 'turned'; Weiss 2020: 189).¹³ This dispreference for geminate $*ss$ after a consonant is also found in Umbrian. For example, Umb. *spafu* (Va 20) 'thrown, scattered (?)' points to $*spānso-$, which was degeminated from ($*spand-to- > *spānsso-$ (see Meiser 1986: 164 and Dupraz 2016). This is exactly the same pattern as $*[-Cs\$s-] > *[-C_\$s-]$.¹⁴ That Umbrian did not tolerate [rss] synchronically is also indirectly backed up by Oscan and Latin, in which /rt-t/ is synchronically mapped to [rs] as shown by (/wert-to- / →) Lat. *versus* [wersus] 'turned' and (/wert-tu:r- / →) Osc. *φερορεϊ* [wersu:rej] '(epithet of Jupiter)' (see Zair 2016: 198).¹⁵ In view of these synchronic derivations, it is likely that without the change of $*rss > \text{Umb. } \langle rf \rangle$, ($*-rtt- > *-rss-$ would have been simplified to $*-rs-$ in a prehistoric stage of Umbrian. Therefore, Meiser's analysis has to assume that the change

13 The Latin propensity to avoid trimoraic syllables is also found in other cases (see Yates 2015 for Osthoff's Law in Latin). It is worth noting that word-final -ss# is found both in Old Latin and in Oscan; e.g., $*milet-s$ 'soldier' > OLat. *miles* [mi:less] (scans as two longs, e.g., Pl. *Aul.* 528) > Cl. Lat. *miles* [mi:les] (see Weiss 2020: 185) and Osc. *ekass* [F.ACC.PL] 'this' vs. Osc. *ekas* [F.NOM.PL] 'id.'. This can be explained by positing extrametricality of word-final consonants (see Yates 2015). In this case, the final-segment extrametricality of Old Latin changed to final-syllable extrametricality in Classical Latin (see Mester 1994).

14 "\$" indicates a syllable boundary.

15 For synchronic productivity of the morpheme $*/-tu:r-/$, see, e.g., Osc. *kensstur* which is borrowed from Lat. *cēnsor*. The gemination of ⟨s⟩ in Osc. *kerssnais* (Cp 31/Capua 22) [ABL.PL] 'dinner, meal' appears to represent [-rss-], but this spelling might have been employed to mark a syllable boundary (see Buck 1955: 75f. on this practice in Greek inscriptions).

that affected **rss* must have initiated before the degemination of postconsonantal **ss*. But if so, there is no way to unify this change with **rVsV* (> **rV[z]V* > **rʷ[z]V*) > Umb. ⟨*rf*⟩. In contrast, if we could posit a change which gave rise to Umb. ⟨*rf*⟩ after degemination of **r[ss]* > **r[s]*, we would have a chance to connect it with **rVsV* > Umb. ⟨*rf*⟩ since both targets would contain a singleton alveolar sibilant. But this option is not available to Meiser, because according to him the original **rs* “bleibt in Umbr. bewahrt”: degeminated **rss* would merge with original **rs*.¹⁶

To summarize, Meiser’s analysis leaves us in need of explanation as to why original **rs* escaped the change. Moreover, his analysis posits two separate changes that produced the same outcome because the change of **rss* > ⟨*rf*⟩ must have occurred before degemination.

Poultney’s (1959: 76–78) approach is more attractive as a starting point in that the degemination of **rss* to **rs* is taken into account. According to him, syncope (**rVs* > **rs*) and assibilation as well as degemination (**rtt* > **rss* > **rs*) were complete before the change of **rs* > **rf* happened. **s* in the original **rs* sequences escaped this change because the quality of their sibilant was different from that in the secondary **rs* sequences.

The fact that original medial *rs* did not become *rf* may be explained on the supposition that the *s* became voiced (*-rs-* > *-rz-*) before the development of secondary *-rs-* had been completed, while in this latter *-rs-* (< *-rss-* < *-rtt-*) the *s* must have remained unvoiced until the conversion to *f* occurred.

POULTNEY 1959: 77

According to his analysis, original **rs* had become voiced before secondary **rs* developed and therefore only the secondary **rs* acquired a labial place of articulation, resulting in the spelling of ⟨*rf*⟩ and ⟨*rf*⟩ in Umbrian. His argument can be summarized in table 3.

Although his account appears to explain the different outcomes of **rs* in Umbrian, it needs an important revision. It is not likely that **s* in a **rVsV* sequence was kept voiceless throughout the history of Umbrian. It is commonly assumed that intervocalic **/s/* was realized as **[z]* at least in Proto-Sabellic, and

16 One might hypothesize that **rss* had developed into a qualitatively different sibilant than [s] before degemination occurred (i.e., **r[s:]* > **r[ʃ:]* > [degemination] **r[ʃ]* *vel sim.*). Nevertheless, such an account would not solve the problem because the newly developed sibilant would not form a natural class with [z] to the exclusion of [s].

TABLE 3 Poultney’s (1959) analysis

		<i>*farsyō(s)</i>	<i>*parasā(m)</i>	<i>*-wort-tē</i>
Stage 1	Voicing, assibilation	<i>*far[z]yō(s)</i>	–	<i>*-worssē</i>
Stage 2	Syncope, degemination	–	<i>*par_sā(m)</i>	<i>*-worsē</i>
Stage 3	<i>*rs > *rf</i>	–	<i>*parfā(m)</i>	<i>*-worfē</i>
Attested		fasiu <i>farsio, fasio</i>	parfam <i>parfa</i>	<i>trahuorfi</i>

perhaps already in Proto-Italic.¹⁷ We see that an intervocalic *s* is often spelled with ⟨*z*⟩ in the Latin alphabet in Oscan and that it underwent rhotacism in the prehistory of Umbrian (e.g., **esom* > Osc. *ezum* [Lu 1/Bantia 1], Umb. **eru** [Va 26, 29], *erom* [VIb 2] [INF] ‘to be’). Based on these examples, one can assume that when Oscan and Umbrian formed a unitary language, intervocalic **s/* was synchronically voiced to **[z]*. In contrast, no clear evidence is found which shows that intervocalic **s* was kept voiceless in Proto-Sabellic. But if intervocalic **s/* was synchronically voiced to **[z]* in Proto-Sabellic, how should one explain **rV[z]V > *r[s]V* which is needed for Poultney’s analysis? If the medial-syllable syncope that occurred after Proto-Sabellic (see Meiser 1986) produced **r[z]V*, it would be identical to the Proto-Sabellic **/rs/* which was realized as **r[z]* according to Poultney (e.g., **tor[z]ētō(d) > tursitu*).

To summarize, Poultney’s approach, which assumed that **s* in the original **rs* sequence was phonetically different from that in the secondary **rs*, can accommodate the degemination of **ss* to **s* after a consonant, but it needs to be revised to take into account the intervocalic voicing of **s*. What is needed therefore is an analysis which takes into account degemination of **[ss]* after a consonant and intervocalic voicing of **s/*, and which provides a motivation as to why the examples in (1) escaped the change of sibilant to labial. In the next section I propose an analysis which takes these considerations into account.

17 See, e.g., Leumann (1977: 29); Meiser (1986: 38); and Stuart-Smith (2004: 52). For a different view, see Weiss (2020: 90 n. 8) and Fortson (2017: 839).

4 Analysis

As observed in the previous section, the analysis developed here needs to take into account the degemination of *ss to *s after a consonant and the intervocalic voicing of */-s-/ to *[-z-] (cf. PSab. **para*[z]ā-), and to provide a motivation as to why the examples in (1) were unaffected by the change to *rf. I begin by making the following two assumptions:

(11) Assumptions

- a. Heteromorphemic */rt-t/ sequences were realized synchronically in Proto-Italic as *r[s\$], which was degeminated to *r[\$s] in Pre-Umbrian.
- b. Proto-Italic and Proto-Sabellic did not have a phoneme */z/. *[z] was an allophone of */s/ and appeared between two vowels and word-medially before [+VOICE, +CONSONANTAL].¹⁸

As summarized above in table 1, the outcome of /-rt-t-/ clusters in Latin and Oscan was -rs- and ⟨ρσ⟩ respectively, and it did not undergo total assimilation to rr. This seems to indicate that degemination of *r[ss] to *r[s] occurred after total assimilation of *rs to *rr (counterfeeding from a diachronic point of view).¹⁹ Since no trace of total assimilation of word-medial *rs to *rr is found anywhere in Umbrian, I think that this total assimilation happened separately in the prehistory of Latin and Oscan.²⁰ As the degemination postdates the total assimilation, it should also be a change that happened in the prehistory of Latin and Oscan separately. Therefore, I argue that (*/-rt-t-/ →) *r[s\$], which

18 [+VOICE] and [+CONSONANTAL] pick out voiced obstruents, nasals, and liquids. It seems that Proto-Italic */s/ was also voiced to *[z] before w, as Etruscan *menervas* (Ve 3.10; 6th c. BCE) ‘(theonym)’ indicates that *-sw- had changed to *-rw- before Latin rhotacism took place. Meiser (2017: 745) thinks that *-sw- > *-rw- is a Proto-Italic sound change (cf. Weiss 2020: 175 n. 15). At the same time, however, no clear example is found which suggests that */-sw-/ was voiced to *[-z]w- in Proto-Sabellic. *-sy- develops to *-yy- in Latin (e.g., PIE **esyō* [cf. Ved. *asyá*] >> **esyō-s* > Lat. *eius* ‘of him/her/it’). Leumann (1977: 126) states that “Vermutlich lat. -i- auch aus idg. -sy- über -zy-” but there is no evidence for the intermediate stage *-zy-. It is known that *s in *-Vsy- did not undergo rhotacism in Pre-Umbrian (**plēnāsiyo-* >(>) **plēnāsyō-* > Umb. *plenasier* ‘ides’; Weiss 2010: 52), which seems to suggest that *s was voiceless in this position in Pre-Umbrian (see also above, footnote 5).

19 Forms such as Lat. *caesus* ‘struck’ show that the degemination of *[-ss-] after a consonant (at least a glide) postdates rhotacism (**kayd-to-* > **kaysso-* > Lat. *caesus*, not **caerus*).

20 A word-final *rs (including secondarily characterized r-stem nominative singulars in *-r-s; Rix 1986) is continued as ⟨r⟩ in Umbrian (e.g., **fars* > Umb. *far* [Vb 10, 15]; cf. Lat. *fār*, *farris*).

TABLE 4 Development of *rs clusters in Oscan

	*terso-	*wert-tor-
Proto-Italic	—	*werssor-
Proto-Sabellic	—	—
total assimilation	*terro-	—
degemination (/C___)	—	*wersor-
Attested	Osc. teer[úm, terúm	Osc. φερσορεi

I earlier assumed for the unitary stage of Latin, Oscan and Umbrian (i.e., Proto-Italic), was preserved as such in the unitary stage of Oscan and Umbrian (i.e., Proto-Sabellic) and underwent degemination in the prehistory of Oscan after the total assimilation of *rs to *rr took place. Total assimilation and degemination are thus not innovations inherited from Proto-Italic, but parallel changes which took place separately in Pre-Oscan and Pre-Latin.

As for (iii), that *s before *n was not written with ⟨σ⟩ but with ⟨ζ⟩ in Osc. αἰζ-νῖω [aęzne(j)ɔ] (Lu 5/Potentia 1) [N.ACC.PL] ‘of bronze’ (12b) shows that /s/ was synchronically voiced to [z] when it was followed by [n] in Oscan (Zair 2016: 105–110). That ⟨ζ⟩ in this inscription represents [z] is backed up by (*isidom or *isidōm >) Osc. εἰζῖδομ (Lu 5/Potentia 1) [M.NOM.SG] ‘the same (person)’, which shows that intervocalic *s is written with ⟨ζ⟩. This fact and that an etymological *-sr- did not develop to *pr- but -br- in Latin (12c) can be given a unified account if one assumes that *s/ was voiced to *[z] before n and r at the unitary Proto-Italic stage. Probably *s/ was voiced before *m and *l also, but there is no clear evidence for those environments.²¹ A word-medial *s before *l, *n and *m is deleted with compensatory lengthening of a preceding vowel in a (pre)historic stage of Latin. But this cannot be used as evidence for voicing assimilation of *s to *[z] as deletion does not necessarily entail an intermediate stage *[z]. At any rate, based on (12b & 12c) I assume that *-sr-, *-sl-, *-sn- and

21 *-sm- patterns with *-sn- and *-sl- in Latin (e.g., *prīsmo- > Lat. *prīmus* ‘first’). But *postVmo- > Osc. *posmom* ‘finally’ in Lu 1/Bantia 1 is not spelled with ⟨z⟩ but ⟨s⟩ (13b), which seems to indicate that when /t/ was synchronically deleted in /VstmV/, the outcome was not V[z]mV but V[s]mV in Oscan. In Lu 1/Bantia 1, 26 tokens are found which have the ⟨z⟩ spelling, either word-initially (e.g., *zicolom* [ACC.SG] ‘day’) or intervocalically (e.g., *egmazum* [GEN.PL] ‘thing’). One might claim that ⟨z⟩ is confined to these positions and that ⟨s⟩ in *posmom* is just orthographic and it actually represents [z]. But such a claim seems unfalsifiable.

*-sm- were synchronically voiced to *-[z]r-, *-[z]l-, *-[z]n- and *-[z]m- respectively in Proto-Italic (even though there is no evidence for *-[z]l- and *-[z]m-), and that *[z] eventually became [+LABIAL] and [-DISTRIBUTED] (i.e., [ðʷ]) before *r (13c), while it was deleted before *n, *m and *l with compensatory lengthening of a preceding vowel (13a, b, & d).

(12) Evidence for *s → *[z] before a nasal and a liquid

- a. *-sm-: no evidence
- b. *-sn-: <ζ> spelling in Oscan
 - E.g., *aye[z]neyo- > Osc. αἰζνῖω [aɛzne(j)ɔ] (Lu 5/Potentia 1) [N.ACC.PL] ‘of bronze’, Umb. **ahesnes** (III 18, 19 [2×]) [ABL.PL] ‘id.’ (cf. *ayesno- > Lat. *aēnus* ‘id.’)
- c. *-sr-: develops to -br-, not to *pr- in Latin
 - E.g., *kerh₂-s-ro- > Lat. *cerebrum* ‘brain’ (**cereprum*)
- d. *-sl-: no evidence

(13) Assumed development of *s before a nasal or liquid in Latin

- a. *-sm-: regressive voicing assimilation, deletion with compensatory lengthening
 - E.g., *prismo- > *prī[z]mo- > Lat. *prīmus* ‘first’ (cf. Pael. *prismu* [Pg 9/Corfinium 6] ‘[praenomen]’)²²

22 While *s before *m is deleted in (**m₂gh₂-ismmo-* [Nishimura 2017] > **mag-ismmo-* > **magisomo-* > **mayisomo-* > Osc. *mainas* (Lu 1/Bantia 1 [2×]) [F.GEN.SG] ‘greatest’, (**new-ismmo-* [Cowgill 1970] > **nowisomo-* > Umb. **nuvime** (IIa 26) [ADV] ‘finally’, and (**wala-ismmo-* > **walaysomo-* > Pre-Sam. *φολαισυμοσ* (Ps 20/Blanda 1) ‘best’ (?), SPC. **uelaimes** (CH 1/Anxanum 1) [GEN.SG] ‘(praenomen)’, Osc. *ualaeom* (Lu 1/Bantia 1) [N.ACC.SG] ‘best’, **valaimas** (Cp 37/Capua 34 [3×]), **valaima{i}s** (Cp 37/Capua 34), **valaim(a)s** (Cp 37/Capua 34) [F.GEN.SG] ‘(praenomen)’ (Nishimura 2012), it is kept in (**esmey* > Umb. *esme* (Vlb 55) [LOC.SG] ‘this’, (**esmey* + **-en* >) SPC. **esmín** (AP 1/Asculum Picenum 1, MC 2/Vrbs Saluia 2), **e|smín** (MC 1/Vrbs Saluia 1), **esmen** (CH 1/Anxanum 1 [2×]; TE 1/Asculum Picenum 3) [LOC.SG] ‘id.’, (**esmey* + **-en* + **-ke* >) SPC. **esmík** (RI 1/Cures 2) [LOC.SG] ‘id.’, (**esmōy* >) Umb. *esmei* (VIa 5, 18) [DAT.SG] ‘id.’, (**esmōy* + **-ke* >) Umb. **esmik** (Ia 28, 31) [DAT.SG] ‘id.’, (**esmai* + **-en* + **-ke* [Dupraz 2011: 56 n. 104] >) SPC. **esmak** (RI 1/Cures 2) [F.LOC.SG] ‘id.’, (**k^wosmōy* + **ĩ* [Weiss 1998] >) SPC. **pusmúi** (TE 5/Interamnia Praeturriorum 1, TE 7/Interamnia Praeturriorum 3), **pusme** (IIa 41) [DAT.SG] ‘who’, and (**prismā-* >) Pael. *prismu* (Pg 9/Corfinium 6) [NOM.SG] ‘(praenomen)’. Weiss (2017: 381) proposed that intervocalic (*s >) *[z] was more “reduced” than preconsontal *[z]: “Perhaps the z in this environment was shorter or more approximant-like. At some point there was a phonetic difference between *z in intervocalic position and *z in preconsontal position” (emphasis his). It might be the case that all *s before *m were deleted in Proto-Sabellic, but forms such as Umb. *esme*

- b. *-sn-: regressive voicing assimilation, deletion with compensatory lengthening
 - E.g., **kersnā* > **ke*[z]*nā* > Lat. *cēna* ‘dinner’ (cf. Osc. *kersnu* [Cm 14/Cumae 8] [NOM.SG] ‘meal’)
- c. *-sr-: see (12c)
 - E.g., **kerh₂-s-ro-* > **ker*[z]*ro-* > **ker*[ð^w]*ro-* > Lat. *cerebrum* ‘brain’
- d. *-sl-: regressive voicing assimilation, deletion with compensatory lengthening
 - E.g., **wesli-* > **wi*[z]*lis* > Lat. *vīlis* ‘cheap’ (Weiss 2020: 179)

What about */s/ after a liquid or a nasal in Proto-Italic and Proto-Sabellic? Stuart-Smith (2004: 52) states that “[p]rimary clusters of *-rs- and *-ls- become /-rr-/ and /-ll-/ respectively [...]. All the reflexes suggest that *-s- was voiced in this context” in Pre-Latin.²³ The same view is also found in Leumann (1977: 180, 210): “Intervokal. *rs ls* entwickelten sich über *rz lz* zu *rr ll*”. Meiser (2017) favors “[v]oicing of *s to z in intervocalic position or adjacent to liquids” in Proto-Italic. However, the total assimilation of *-Rs- > *-RR- cannot be used as evidence for *-R[z]- because *-Rs- > *-RR- does *not* necessarily entail an intermediate stage where two segments were partially assimilated in terms of [VOICE].²⁴ It is conceivable that -Rs- assimilates to -RR- without an intermediate step -R[z]-. While I can find evidence for total assimilation (15), no clear evidence is found for a reconstructed intermediate stage *-R[z]-.

analogically recovered or retained */s/ (Vine 1993: 116–122; Nishimura 2005: 169–170; and Dupraz 2011: 59).

23 In view of Umb. *tursitu*, Stuart-Smith (2004: 114–115) proposes that *s which is adjacent to a liquid remained voiceless in Proto-Italic and Proto-Sabellic, and that Oscan and Latin separately acquired a voicing assimilation rule.

24 It is true that [z] is closer to *r than [s] in terms of the feature [VOICE]. However, the change of *rs > *rr is essentially a total perseverative assimilation, which involves extension of the articulatory gesture of r to the following segment accompanied by the complete loss of the articulatory gesture of [s]. There is no reason to assume that the articulatory gesture of opening the glottis (to produce a voiceless consonant) must be lost first in the development of a total perseverative assimilation.

(14) Development of *-s- after a liquid or a nasal: no indication of *[z]

	Latin	Sabellic
a. *-rs-	See (7)	See (4)
b. *-ls-	Total assimilation (15a)	No clear examples
c. *-ns-	Loss of *n (16a)	Spelled with <ns> in Oscan (16b)
d. *-ms-	Excrescence of [p] (17a)	Excrescence of [p] in South Oscan; regressive place assimilation and excrescence of [t] in Umbrian (17b)

(15) Development of *ls in Latin and Sabellic: no indication of *[z].

- a. Latin: total assimilation
 - E.g., *wel-se > Lat. velle ‘to want’ (Weiss 2020: 187)
- b. Sabellic: no clear examples

No clear evidence is found for an intermediate stage *-N[z]- either. In contrast, <s> in Osc. censazet ‘to carry out a census’ [FUT.ACT.3PL] shows that /s/ after /n/ had a different phonetic quality from intervocalic /s/ (→ [z], written with <z>).²⁵ The excrescence of p seen in Latin also points to the voiceless quality of s (*sumb[z]i).

(16) Development of *ns in Latin and Sabellic: no indication of *[z].

- a. Latin: loss of *n
 - E.g., CIL I² 8 COSOL = Cl. Lat. cōsul ‘(title)’
- b. Sabellic: spelled with <ns> (instead of <nz>) in Oscan
 - E.g., (*kensāsent >) Osc. censazet (Lu 1/Bantia 1) [FUT.ACT.3PL] ‘to carry out a census’

(17) Development of *ms in Latin and Sabellic: no indication of *[z].

- a. Latin: excrescence of [p]
 - E.g., /sūm-s-/ → Lat. sūmpsī; cf. Lat. sūmō ‘I take up’
- b. Sabellic: excrescence of [p] in South Oscan; regressive place assimilation and excrescence of [t] in Umbrian

25 That <z> in Lu 1/Bantia 1 was confined to word-initial position and between two vowels and that <s> in Osc. censazet actually represents [z] cannot be ruled out (see footnote 21). But they cannot be used as evidence for supporting the intermediate stage *-N[z]-.

- E.g., **numVsyom* > Osc. $\nu\mu\psi\iota\mu$ (Lu 43/Teuranus Ager 1) [ACC.SG] ‘(praenomen)’ (Zair 2016: 132, 210 f.; cf. Nishimura 2018: 281)²⁶
- E.g., **omso-* or **omVso-* (with syncope) > Umb. *uze*, *onse* [ontʃe:] (I1b 27, 28, VIb 50) [LOC.SG] ‘shoulder’ (cf. Lat. *umerus* ‘id.’; Höfler 2018)

In this context, it is worth pointing out that in Latin the developments of **-sr-* and **-rs-* are not parallel to those of **-d^hr-* and **-rd^h-*. In contrast to the latter, where **-d^h-* develops to (**[ð]* > **[ðʷ]* >) *-b-* both before and after **r*, **-s-* has the labial outcome only when it precedes **r* (18). If **s* became voiced to **[z]* both before and after **r*, it would be mysterious why (**s* >) **[z]* merged with (**d^h* >) **[ð]* only when it preceded **r*.²⁷

- (18) Developments of **-sr-* and **-rs-* in Latin are not parallel to those of **-d^hr-* and **-rd^h-*
- a. **-sr-* > *-br-* **kérh₂sro-* > Lat. *cerebrum* ‘brain’
 - b. **-rs-* > *-rr-* see (7)
 - c. **-d^hr-* > *-br-* **g^hlad^hro-* > Lat. *glaber* ‘smooth, hairless’ (Weiss 2020: 169)
 - d. **-rd^h-* > *-rb-* **w(e)rd^ho-* > Lat. *verbum* ‘word’ (Weiss 2020: 84)

It is then at least equally possible to think that **-rs-* totally assimilated to *-rr-* separately in the prehistory of Latin and Oscan without passing through the intermediate step **-r[z]-*.

To summarize, there is no positive evidence for an intermediate stage **R[z]* and **N[z]* in the prehistory of Latin, Oscan and Umbrian as total assimilation of **rs* and **ls* to **rr* and **ll* does not necessarily involve the intermediate step **r[z]* and **l[z]*. It is actually attractive to assume that **Rs* and **Ns* kept the voiceless quality of **[s]* in Latin and Oscan (16b, 17 and 18).²⁸ **s* in **rs* also seems to be kept voiceless throughout the prehistory of Umbrian (hence **/farsjo:(s)/* → **far[s]yō(s)* (> Umb. *fasiu*, *farsio*)).²⁹

26 Rix (2002: 130) erroneously transcribes this form as $\langle \nu\mu\pi\sigma\iota\mu \rangle$ (cf. Crawford et al. 2011: 1478).

27 That **[z]* and **[ð]* were phonetically similar to each other can be observed from the prehistory of the Latin passive infinitive morpheme *-rier*. According to Meiser (2003: 57) and Fortson (2012), the passive infinitive morpheme (**-d^hiýē(r)* >) **-ðiýē(r)* changed to **-ziýē(r)* (> *-rier*) under the influence of the active infinitive morpheme **-zi* (> *-re*)).

28 I assume that **/rs/* followed by [+VOICE, +CONSONANTAL] was realized as **r[z]* (e.g., **ker[z]nā* > **ke[z]nā* > Lat. *cēna*).

29 One might argue that Pre-Umbrian introduced the voicing assimilation rule and **/farsjo:(s)/* became voiced to **far[z]yō(s)* in Pre-Umbrian. I will discuss this issue in

Based on (11) I reconstruct an intermediate stage $*/rt-t/ \rightarrow *r[s\$s]$ and $*/rVsV/ \rightarrow *rV[z]V$. I also showed in section 2 that the descendants of $*rV[z]V$ and $*r[s\$s]$ ($> *r[s]$) eventually patterned together in the prehistory of Umbrian. While intervocalic voicing must have produced $*rV[z]V$ with a voiced sibilant, it is beyond doubt that when the degemination of $*[ss]$ after $*r$ took place the resulting singleton sibilant was voiceless. How can they pattern together in a prehistoric stage? As an answer to this question, I propose that when medial-syllable syncope which occurred after Proto-Sabellic (Meiser 1986) targeted the vowel before the voiced sibilant in $*rV[z]V$ -, the outcome produced was $*r[s]V$ - with a voiceless fricative. In other words, there was variation between $*rV[z]V$ - and $*r[s]V$ -, the latter of which subsequently ousted the former. Importantly, there was no variant $*r[z]V$ - in the competition.

Even though “devoicing” of $*[z]$ after r might sound unusual from the perspective of rule-based phonology, it is actually plausible when $*[z]$ is an allophone of $*/s/$. This can be easily modeled in constraint-based frameworks of phonology such as (classical) Optimality Theory (Prince & Smolensky 1993; McCarthy & Prince 1995). This change is essentially a demotion of the faithfulness constraint (MAX-V) which forces an input vowel to have a corresponding output vowel. The relevant constraints are as follows.

(19) Relevant constraints

a. Faithfulness constraints

- MAX-V: An input vowel must have a corresponding vowel in the output.
- IDENT-VOICE: Do not change the feature [VOICE] in the output.

b. Markedness constraints

- $*VsV$: Assign a violation for each $[VsV]$ sequence in the output.
- $*WEAKV$: Assign a violation for each vowel in a syncope context.³⁰

In stage 1 $*VsV$ and MAX-V are both undominated. For the input $*/parasā-/$, for example, this grammar produces $*para[z]ā$ - with intervocalic voicing.

footnote 32.

30 This is a set of constraints which trigger syncope in relevant contexts. I use this cover term for the sake of expository simplicity. On medial syllable syncope in Sabellic, see Meiser (1986: 130–134) and Nishimura (2012).

(20) Stage 1: intervocalic voicing of */s/

*/parasā:-/	*VsV	MAX-V	IDENT-VOICE	*WEAKV
a. *para[s]ā-	*!			*
b. *para[z]ā-			*	*
c. *par_[s]ā-		*!		
d. *par_[z]ā-		*!	*	

But in the course of time MAX-V was demoted for some speakers and as a result, stage 2 emerged in which for the input */parasā-/ the speakers produced *par[s]ā- with syncope and, importantly, with faithful realization of */s/.³¹

(21) Stage 2: Syncope, faithful realization of */s/

*/parasā:-/	*VsV	IDENT-VOICE	*WEAKV	MAX-V
a. *para[s]ā-	*!		*	
b. *para[z]ā-		*!	*
c. *par_[s]ā-				*
d. *par_[z]ā-		*!		*

It is worth pointing out that for the input */parasā-/ candidate d (*par_[z]ā-) is harmonically bounded by candidate c (*par_[s]ā-) as the constraints which candidate c violates are a proper subset of those which candidate d violates. In the framework of classical Optimality Theory, harmonically bounded candidates can never win, which speaks against the idea that there was a variation among speakers between candidate b (*para[z]ā-) and candidate d (*par[z]ā-), or candidate c (*par[s]ā-) and candidate d (*par[z]ā-).

A parallel development can be observed in the prehistory of Latin *maximus* ‘greatest’, which goes back to *magisṃmo- (Cowgill 1970: 125). As it seems that word-medial *s triggered devoicing of *g to *k, Weiss (2020: 90 n. 8) sug-

31 I assume that for surface *para[z]ā-, underlying */s/ was still recoverable for speakers and therefore they did not store */parasā:-/ as an input when Stage 2 emerged. Under what conditions a segment that formerly derived from a phonological alternation becomes a faithful realization is an interesting question, but to answer it is beyond the scope of this paper and must be left as a topic for future research.

gests that when syncope took place in the prehistory of Latin, intervocalic *s was still voiceless and that the voicing of intervocalic *s happened after syncope (hence **magšomo-* > **ma*[ks]omo-). But it is also possible that when syncope deleted a vowel before *[z] in **magi*[z]omo-, */s/ surfaced faithfully as **ma*[ks]omo- (> Lat. *maximus*). That is, one could think that /magisomo-/ was realized as **magi*[z]omo- due to *VsV but when *WEAKV enforced vowel deletion, /s/ surfaces faithfully as [s], causing devoicing of the preceding /g/, due to a markedness constraint penalizing adjacent obstruents with different values for [VOICE]. This is also a competition between a form with intervocalic voicing and a form with syncope and faithful realization of /s/. Although *[z] after *g might appear to be devoiced diachronically, what actually happened was syncope and faithful realization of */s/.

Another parallel example of the emergence of a faithful mapping can be found in (Pre-)Faroese, in which syncope bled intervocalic spirantization (Kiparsky 1971).

(22) Stage 1 (intervocalic spirantization)

- a. */heredin-r/ → **here*[ð]in-*n* 'heathen' [NOM.SG]
- b. */heredin-ir/ → **here*[ð]in-*ir* 'id.' [NOM.PL]

(23) Stage 2 (syncope, faithful realization of *[d])

- a. */heredin-r/ → **here*[ð]in-*n*
 - b. */heredin-ir/ → **here*[d]_n-*ir*
- (> Faroese *hereðin*, *herednir*)

When syncope deleted a vowel after */d/, the underlying phoneme */d/ was realized faithfully as *[d]. Again this is the same pattern: what we see is a competition between a form to which a synchronic phonological rule is applied and a form in which deletion destroyed the environment for the synchronic rule and the underlying phoneme was realized faithfully.

So far, I have argued that (*-rt-t- >) *-rss- underwent degemination to *-rs- after Proto-Sabellic broke up, that a voiceless sibilant surfaced as such when the environment of intervocalic voicing was eliminated by syncope, and that *R[s] remained voiceless throughout the history of Latin and Oscan, and possibly Umbrian.³² If this analysis is on the right track, one could reconstruct a synchronic stage that accompanied the following input-output mappings:

32 One might argue that Pre-Umbrian invented a progressive voicing assimilation rule (*R[s] → *R[z]) after Proto-Sabellic and an original */rs/ underwent the rule to *r[z]. This alternative view would explain why the original *rs did not undergo auditory enhancement—one

(24) Reconstructed synchronic mappings (post-Proto-Sabellic)

- a. */fars-yo:(s)/ → **far*[s]yō(s) (> Umb. **fasiu**, *farsio*, *fasio*)
- b. */paras-a:(m)/ → **par*[s]ā(m) (> Umb. **parfam**, *parfa*)
- c. */-wort-te:/ → *-*wor*[s]ē (> Umb. *trahuorfi*)

In this case, whether a sibilant is voiced or not is no longer crucial as all of them were realized as *r*[s]. But only (24b) and (24c) are continued as ⟨*rf*⟩ in Umbrian. Why is this?

Since the target sounds are all the same (*r*[s]), one should be inclined to seek the reason not in the target sounds but in the environment. The change of **r*[s] to **r*[θ^w] (> ⟨*rf*⟩, ⟨*rf*⟩) is a process called auditory enhancement, “where a new articulatory feature is introduced with the effect of enhancing the auditory distinctness of a contrast” (Garrett & Johnson 2013: 80). In this case, two adjacent sounds became more distinct by adding additional cues [+LABIAL] and [+DISTRIBUTED]. The typical environment where a sound is made more distinct is onset position (see, e.g., Smith 2005: 140–143). In this context, one could notice that **r*[s] was immediately followed by a vowel in the examples in (24b) and (24c). In other words, in those examples **s* formed a simple onset, a position privileged for enhancement. In contrast, **r*[s] is followed by a consonant in (24a) and most of the examples in (1).³³

In view of this distribution, I propose that in a certain prehistoric stage of Umbrian auditory enhancement of **s* to **[θ^w]* took place when **s* preceded by **r* formed a simple onset.

(25) Proposal

- a. Synchronically: */s/ → **[θ^w]* / *r*\$ __ V
- b. Diachronically: **s* > **[θ^w]* / *r*\$ __ V

could just hypothesize that auditory enhancement only targeted *voiceless* sibilants and an original **rs* was realized as **r*[z] by that time. This view is essentially in line with Poultney (1959). As I argued that **r*V[z]V would develop to **r*[s]V, this view would need a synchronically opaque derivation where the progressive voicing assimilation rule is counterfed by syncope. It is indeed conceivable that a synchronic phonological rule (e.g., progressive voicing assimilation of **s* after a liquid) starts as a postlexical rule which applies whenever its environment is met, but is subsequently counterfed diachronically by other synchronic rules (e.g., syncope), and as the result applies only to a subset of its targets/environments (see Roberts 2012 on rhotacism in Latin.) However, I am not still convinced by the idea that a different quality of [VOICE] is responsible for the two different outcomes in Umbrian since word-internal *voiced* fricatives **[ð]* develop to ⟨*f*⟩ in Sabellic. It would remain a mystery why the *voiced* quality of the sibilant kept **r*[z] from undergoing a change while *voiced* interdental fricative **[ð]* developed to ⟨*f*⟩.

33 I will examine each of the examples in (1) immediately below.

In other words, only the simple onset *s preceded by *r underwent auditory enhancement.³⁴ That this rule did not apply to a complex onset is not surprising: it is well-known that in a complex onset the duration of each segment is shorter than its counterpart in a simple onset (Browman & Goldstein 1992). Hence a segment which is a part of a complex onset is less likely to be enhanced compared to the same segment in a sole onset. That this change did not occur in a coda cluster *rs\$ is not surprising either since sounds are usually neutralized instead of enhanced in coda position.

I will now look at each of the examples in (1), (2) and (3) to see how my proposal accounts for the data. Forms such as Umb. *çersnatur* (1a) and Umb. *persnihimu* etc. (1b) escaped this change. This is not because their *rs sequences are original nor because their *s were voiced before *n, but because *sn (or *[z]n more precisely) in *-rsn- formed a complex onset or, less likely, because there was a syllable boundary between *rs and *n. The same explanation applies to Umb. *puste* (1c), and *persklum* etc. (1d) and *turskum* etc. (1e). In these forms, *s was followed by a consonant and did not form a simple onset to which the rule (25) could apply.

In Umb. *fasiu* etc. ‘(an offering cake)’ (1f) and Umb. *çersiaru* (IIa 16) [GEN.PL] ‘(name of a month)’ (1g), the suffix *-iyo/ā- changed to *-yo/ā- in Pre-Proto-Sabellic.³⁵ Therefore, Pre-Proto-Sabellic *fars-iyo- and *kers-iyā- (transponat; see Burroni 2017) must have changed to Proto-Sabellic *farsyo- and *kersyā- respectively and thus must have escaped the change *r\$[s]V > *r\$[θ^w]V in the prehistory of Umbrian. But Umb. *çerfie*, *serfie* etc. ‘of (theonym)’ (2b) also contain the suffix *-iyo- ((>) > *-yo-), so this form should have escaped the change also. I analyze them to be secondary after their synchronic base (*keraso- or *kreso- >) *kerso- (> Umb. *çerfe* etc. [see 2a]) ‘(theonym)’ which acquired a labial place of articulation as expected.³⁶

Umb. *andersistu* (VIa 6) [IMP.3SG] and *andersesust* (VIa 7) [FUT.PFV.3SG] ‘to sit in the way’ (1h) appear to continue *r[s] which was followed by a vowel. For these forms, it is not difficult to think that although they had the environment

34 An anonymous reviewer points out that *s also changes to f after *n word-finally (i.e., *-ns > Umb. f). But this change is different from the auditory enhancement that I discuss in the following two points. First, the former change is restricted to word-final position, and what seems to have happened is not enhancement but debuccalization of an alveolar sibilant (i.e., *[Vns#] > *[Vh#] *vel sim.*). Secondly, the former change is commonly dated to Proto-Sabellic (see, e.g., Rix 1986) while the change that I discuss is a post-Proto-Sabellic one.

35 See footnote 5.

36 See footnote 8.

of this rule, *s was recovered or retained from their corresponding unprefix stems (**sīde/o-* and **sēd-us-* respectively).

Finally, Umb. **turse**, *turse* etc. (ii) '(theonym)' contain ⟨rs⟩ and ⟨rs⟩ even though they had the environment of this rule. Likewise, Umb. **tuseṭu**, *tursitu* etc. (ij) 'to terrify' do not seem to have undergone the change either. I propose that they did not undergo (25) because they did not have a simple coda before a sibilant when (25) took place. According to LIV² (2001: 650 f.), followed by Kölligan (2008: 62), Umbrian **tuseṭu** could continue the *o*-grade causative PIE **tros-éye-* with the change of **tros-* > **t_ṛrs-* > **ters-* (cf. **trityo-* > **t_ṛtyo-* > Umb. **terti** [IIa 28] 'third', Lat. *tertius* 'id.') followed by an analogical change to **tors-* under the influence of the Umbrian theonym **turse**. However, this is a costly explanation since one has to posit that the vocalism of a verb has been influenced by a specific theonym. Furthermore, it is not entirely certain if the change of **trit-* > *tert-* also applied to the sequence of **tros-*. Nussbaum (1999: 412 f. n. 87) proposes that **tros-* did develop to **terr-* (> Lat. *terreō*) by this sound change, but he also acknowledges that "it is obviously hard to rule out the possibility that *terrēre* has adopted the root vocalism of *terror* (on the imprecise model of *horror*: *horrēre*?)" (see Ernout & Meillet 2001: 688; and Walde & Hofmann 1938: 674). Weiss (2020: 134) limits the target vowel to **i* and dissociates this change from syncope of a short vowel after *r* in an open syllable (e.g., **agrō-lo-* > Lat. *agellus* 'a little field'). Actually, LIV² (2001: 651) is careful in that it does not exclude that Umb. **tuseṭu** goes back to an innovative zero-grade causative ("es könnte auch eine Kausativneubildung mit R(z) vom Typ lat. *ciēre* vorliegen"), following Nussbaum (1999: 412 f. n. 87), who takes Umb. **tuseṭu** to reflect an ultimate zero-grade **t_ṛs-* "in order to avoid the necessity of assuming an unmotivated instance of schwebeablaut" (cf. **tros-eye-* > Ved. *prā trāsaya* 'terrify!' [AVŚ 5.21.4]).³⁷ If their analyses are on the right track, Umb. **tuseṭu**, *tursitu* etc. continue **ṛ* unlike the other examples in (1). I think this difference is the key to the non-application of auditory enhancement. That is, Umb. **tuseṭu**, *tursitu* etc. (ij) escaped the change because when auditory enhancement took place the initial syllable of (**t_ṛs-eye-* >) **t_ṛsē-* did not possess a simple coda **r* but retained **ṛ* in the nucleus (i.e., Pre-Umb. *[t_ṛ\$sē:-]).³⁸ That Pre-Umbrian

37 Lat. *sorbeō* 'suck in, drink' likewise points to a zero-grade *-eye-*formation (cf. **srob^héye-* > Gk. *ρόφειν* 'gulp down'; see Ernout & Meillet 2001: 636; and Walde & Hofmann 1938: 561 f.).

38 Again, I use "[r]" as a cover symbol for some rhotic consonant (see footnotes 1 & 2). Identifying the precise mechanism by which a syllabic sonorant kept a following sibilant from undergoing (25) requires further typological study. I speculate that auditory enhancement is absent in the sequence **ṛ*\$sV- because the articulatory gestures of the nucleus *ṛ* showed

retained **r* after Proto-Sabellic (at least in the first syllable) has been proposed independently by Zair (2017), according to whom the regular Umbrian outcome of **r* is not *or* but *ur* (e.g., **pr-* > Umb. *pur-* in *purdouitu* [VIa 56] [FUT.IMP.3SG] ‘offer’ vs. **porkeh₂-* > Umb. *porca* [VIIa 6] [ACC.PL] ‘sow’).³⁹ That the development of syllabic liquids in initial syllables was a late phenomenon is indirectly supported by the well-known fact that the Sabellic outcome of initial **ŋ* (> *an*; e.g., **d^hngwā-* > Osc. *fangvam* [Cm 13/Cumae 9] [ACC.SG] ‘tongue’) is different from that of Latin (> *en*; e.g., **m_ŋ-ti-* > **menti-* > Lat. *mēns* ‘mind’; Weiss 2020: 103–104), which suggests that the development of syllabic nasals in initial syllables is a post-Proto-Italic innovation. This account would also nicely explain the contrast between Umb. *tuseṭu* and Umb. *trauorfi*, the latter of which underwent the change because it contained **r* in a non-initial syllable. The theonym Umb. *turse*, *turse* etc. (ii) is also likely to continue the old zero-grade as LIV² (2001: 651) describes: “< **t_{rs}-eh₂-* ‘Zittern’ oder ‘Abschreckung’, mit uridg. *r* sonans”.

In *çerfe* (2a) and *parfam* (2c), **[s]* was followed by a vowel, and therefore they underwent (25) as expected. The phonological rule (25) also applied to *trahuorfi* (3), which continues the zero-grade of the root **w_{rt}-* ‘to turn’. This is because **r* in non-initial syllables had developed to *or* (or *ur* if Zair 2017 is correct) by the time that auditory enhancement started. *çerfie* (2b) also seems to have undergone (25) even though it was followed by **yo*, but I think this is analogical to its synchronic derivational base *çerfe* etc. as argued above.

To summarize, whether a reconstructed **rs* sequence is original or not is not crucial for the two different outcomes in Umbrian. The key factor is rather whether **s* formed a simple onset preceded by a coda *r* or not. I have argued for a single phonological rule (auditory enhancement): **/s/* → **[θ^w]* / *r\$*__V in a certain prehistoric stage of Umbrian which gave rise to the diachronic change **-r\$_sV-* > **-r\$[θ^w]V-* in Pre-Umbrian.⁴⁰ This account is more attractive

less overlap with the following sibilant than did those of the coda *r*, resulting in two sufficiently distinct segments.

- 39 Zair (2017) argues that **r* developed to *ur* in Umbrian irrespective of its position in a word (cf. footnote 11). But evidence for **r* > Umb. *ur* in a non-initial syllable is meagre. His examples (Umb. *couortus* [VIIa 39] [FUT.PFV.3SG] ‘return’, Umb. *couortuso* [VIb 64] [FUT.PFV.PASS.3SG] ‘id.’, and Umb. *trahuorfi* (3)) all seem to point to the zero-grade stem **-w_{rt}-* with the development of **r-* > **-or-*. According to him, the *(uo)* spelling found in these forms is employed to avoid a sequence ⟨V_iV_i⟩ in spelling (cf. Clackson 2011: 246) or these forms underwent dissimilation of **-wu-* > **-wo-* (Zair 2017: 278). But it seems more straightforward to me to think that **r* in non-initial syllables developed to *or* in Umbrian.
- 40 An anonymous reviewer points out that Umb. *pars est* ‘it is fitting, it is prescribed’ is a potential counterexample to this analysis as the *rs* sequence is kept unchanged (cf. foot-

TABLE 5 Summary of the proposed analysis

Form	Environment of (25)?	Underwent (25)?	Comment
(1a) çersnatur	No	No	As expected
(1b) persnimu	No	No	As expected
(1c) puste	No	No	As expected
(1d) persklum	No	No	As expected
(1e) turskum	No	No	As expected
(1f) fasiu	No (followed by *yo)	No	As expected
(1g) çersiaru	No (followed by *yo)	No	As expected
(1h) andersistu	Yes	No	Analogical from unprefixing stems
(1i) turse	No (*[ʔʔsā-])	No	did not have a simple coda
(1j) tuseṭu	No (*[ʔʔsē-])	No	did not have a simple coda
(2a) çerfe	Yes	Yes	As expected
(2b) çerfie	No (followed by *yo)	Yes	Analogical from (2a)
(2c) parfam	Yes	Yes	As expected
(3) trahuorfi	Yes (*[ʔ...\$wor\$sē-])	Yes	As expected

than prior attempts to explain the attested data in the following six points: 1) It is consistent with the shared opinion according to which intervocalic voicing of */-s-/ (→ *[ʔ-z-]) started as early as in Proto-Italic; 2) It is also consistent with the Italic languages’ tendency to avoid superheavy syllables (thus */rt-t/→*rss > *r[s]); 3) The intermediate stage in which there was variation between *rV[z]V and *r[s]V is paralleled both within and outside of the Italic branch; 4) That auditory enhancement targeted a simple onset segment and did not target a complex onset nor a coda is phonetically well motivated; 5) Whether a sibilant was voiceless or voiced was not relevant for the acquisition of the labial place of

note 8). Umb. *pars est* seems to suggest that the Pre-Umbrian auditory enhancement operated as a stem- or word-level phonological rule and did not operate across a clitic boundary. Underapplication of a synchronic phonological rule over a clitic boundary is not uncommon. For example, in European Portuguese mid front vowels undergo centralization to [e] before a palatal consonant or high front vowel in the next syllable (e.g., *telha* [ʔtɛ.ɬɐ] ‘tile’, *veículo* [vɛ.ʔi.ku.lu] ‘vehicle’). Interestingly, this centralization does not take place across a clitic boundary (e.g., *dê=lhe* [ʔdɛ.ɬi] ‘give to him/her’, not *[ʔdɛ.ɬi]) (Bermúdez-Otero & Luís 2009, citing Vigário 2003: 78–82 and Mateus & d’Andrade 2000: 19).

articulation in Pre-Umbrian, and therefore one does not have to motivate how different [VOICE] qualities contributed to the change; 6) This account posits only one sound change ($*-r\$sV- > *-r\$[\theta^w]V-$) instead of two different changes which gave rise to the same sequence.

5 Conclusion

In this paper I developed a synchronic and diachronic analysis of the two different outcomes of reconstructed $*rs$ sequences in Umbrian. I reviewed two previous accounts which failed to capture the Italic languages' dispreference for superheavy syllables or the intervocalic voicing of $*/-s-/$. Having pointed out their drawbacks, I argued that $*s$ in an original $*rs$ was kept voiceless as $*rs$ in Pre-Umbrian, that $*rV[z]V$ and $*rtt$ both diachronically developed to $*rs$, and that auditory enhancement of $*rs$ to $*r[\theta^w]$ happened only when $*s$ formed a simple onset. I also showed that apparent counterexamples can all be given an alternative account. This view not only takes into account the drawbacks of the previous accounts, but also derives the attested pattern from just a single sound change, and furthermore gives a plausible phonetic motivation as to why it targeted some forms but not others. Therefore, the key to the different outcomes in Umbrian is not whether a reconstructed $*rs$ sequence was original or not, but whether $*s$ in $*rs$ formed a simple onset or not.

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Glossary

3	third person	INF	infinitive
ABL	ablative	LOC	locative
ACC	accusative	M	masculine
ACT	active	N	neuter
ADV	adverb	NOM	nominative
DAT	dative	PASS	passive
F	feminine	PFV	perfective
FUT	future	PL	plural
GEN	genitive	PRS	present
IMP	imperative	SG	singular
IMPF	imperfect	SUBJ	subjunctive
		VOC	vocative

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