

Vocalization of Spirants in Sindarin and Noldorin

[Originally authored by Paul Strack in 2019 and presented at *Omentielva Toltea*.]

Abstract: It is well known that voiced and voiceless spirants frequently developed into vowels in both Sindarin and Noldorin to produce various diphthongs. This paper examines the conditions under which these vocalizations took place and how the resulting diphthongs developed. It does so by analyzing Tolkien's statements describing spirantal developments in these languages and comparing them to the known etymologies of words from his other writings. In this paper I propose two major theses:

- 1) That spirantal vocalizations took place in two “waves”: an early (Old Sindarin/Old Noldorin) wave where the resulting diphthongs shared the same phonetic development as ancient diphthongs, and a second wave where the diphthongal developments could be distinct from ancient developments.
- 2) That spirantal vocalizations had distinct developments in Sindarin and Noldorin, with Sindarin sound changes depending largely on the quality of the consonant but Noldorin sound changes depending on the quality of the preceding vowel.

This first thesis was originally proposed by David Salo (GS, 2004) though there are some refinements I propose for his original theories as needed to address distinctions in Sindarin vs. Noldorin developments. For completeness, this paper also summarizes Roman Rausch's analysis of similar Gnomish and Early Noldorin phonetic developments in the 1910s and 1920s, from his two papers: *Historical Phonology of Goldogrin* (HPG, 2007) and *Historical Phonologies of Ilkorin, Telerin and Noldorin around 1923* (HPITN, 2008).

Previous Research

The notion that Sindarin spirants could vocalize to form diphthongs is an old one in Tolkien linguistic studies. It appears as far back as Jim Allen's *An Introduction to Elvish* published in 1978, in articles written by Jim Allen, Chris Gilson and Bill Welden, based on the comparison of Q. *tehta* vs. S. *taith* “letter” (ItE, 1978, p. 127, 134). Roman Rausch examined this question (among others) for Tolkien's earliest conceptions of the language from the 1910s and 1920s in his papers: *Historical Phonology of Goldogrin* (HPG, 2007) and *Historical Phonologies of Ilkorin, Telerin and Noldorin around 1923* (HPITN, 2008). To provide a complete picture of the conceptual development of these vocalizations, I will cite Rausch's research on the earliest iterations of the language at the appropriate places in this paper.

To the best of my knowledge, the only recent attempt to examine the vocalization of spirants for the Noldorin and Sindarin conceptual stages of the language (1930s to 1960s) appears in David Salo's *A Gateway to Sindarin* (GS, 2005). There are many details of Salo's research with which I agree. In particular, Salo noted that these vocalizations took place in two waves: an early wave where the resulting diphthongs shared the same development as primitive diphthongs (GS/§4.24 - §4.26) and a later wave where the diphthongal developments from vocalized spirant could follow a different path (GS/§4.82, §4.87, §4.89, §4.90, §4.91).

Unfortunately, I find some details of Salo's research to be flawed, for two reasons. First, in his analysis Salo conflates the Noldorin and Sindarin conceptual stages, but as I intend to demonstrate, Tolkien's conception of the vocalization process for spirants was not the same in both time periods. Second, there has been a great deal of additional material published in the years since Salo did his original research, including some explicit descriptions by Tolkien of the vocalization process for the Noldorin (PE22/39-40). Salo's analysis of the process most closely aligns with the Noldorin phonetic developments. I will cite his conclusions and compare them to mine as part of the discussion of Noldorin developments.

Notations Used

For the most part I use Tolkien's own notation for spirants rather than IPA notation, to make it easier to compare my analysis to Tolkien's own writing. In particular, I represent spirantal sounds with the following glyphs:

- voiced velar spirant [ɣ]: ȝ, Tolkien's preferred rendition of "yogh", commonly represented by Unicode U+0292 (normally representing "Ezh").
- voiceless velar spirant [x]: χ, Greek "chi".
- voiced dental spirant [ð]: ð, Old English "edh", but sometimes *đ* "d with stroke" or the digraph *dh*.
- voiceless dental spirant [θ]: þ, Old English "thorn", but sometimes the digraph *th*.
- voiced bilabial spirant [β]: ð̥, "b with stroke".
- voiceless bilabial spirant [ɸ]: p̥, "p with stroke".

Where I use IPA notation, mostly for individual phonemes, I put it in brackets [] as above. Furthermore, when quoting Tolkien, I sometimes clean up his punctuation for clarity. In particular, where Tolkien uses brackets [] as a parenthetical marking, I replace them with parentheses (), to make it easier to distinguish Tolkien's own words from editorial additions. These I consistently put in brackets [], both my own and those of other editors.

Extrapolated forms not appearing in Tolkien's writing I mark with an asterisk *, but primitive forms that explicitly appear in Tolkien's writings (which Tolkien himself frequently marked with an asterisk) I mark with a six-point star: ⚡.

Bilabial vs. labio-dental spirants: It is unclear what the exact character of labial spirants were at the time of vocalizations, whether they were bilabial [β], [ɸ] or labio-dental [v], [f]. I suspect it is

mostly the former, and this paper discusses the sound changes as if this was the case, but bear in mind that the actual evidence of this is inconclusive.

Sindarin and Noldorin Diphthongal Developments

Before we can examine the vocalization of spirants, we must first discuss the phonetic development of diphthongs. This is because the vocalized spirants usually produced a diphthong, which then underwent various later sound changes. These diphthongal developments sometimes obscured the spirantal developments, and we cannot understand the latter without discussing the former.

Primitive Diphthongs: For Sindarin, the best available description of diphthongal developments appears in notes associated with *Eldarin Hands, Fingers & Numerals* from the late 1960s, where Tolkien gave a chart of the phonetic developments of primitive diphthongs in Quenya, Telerin and Sindarin (VT48/7). I reproduce the Sindarin portion of this chart below:

CE.	<i>ei, ai, oi, ui</i> <i>ou, au, eu, iu</i>	[S.]	<i>ē > ī, ae, ui, ui</i> <i>ō > ū, aw, iu, iu > ŷ</i>
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For Noldorin, the most complete description of diphthongal developments appears in the *Comparative Tables* of phonetic developments from the mid 1930s, where Tolkien gave a chart with the developments of long vowels and diphthongs in all the Elvish languages (PE19/25). I reproduce the Noldorin and Old Noldorin diphthongal portion of this chart below:

Val.	<i>ei</i>	<i>ai</i>	<i>oi</i>	<i>ui</i>	<i>ou</i>	<i>au</i>	<i>eu</i>	<i>iu</i>
ON.	<i>oi, ui</i>	<i>ē > ei</i>	<i>oi, ui</i>	<i>ui</i>	<i>ū</i>	<i>ō > ou</i>	<i>ou > ū</i>	<i>ū (ī)</i>
N.	<i>ui</i>	<i>ae</i>	<i>ui</i>	<i>ui</i>	<i>ū</i>	<i>au</i>	<i>ū</i>	<i>ū (ī)</i>

In the 1930s, Tolkien conceived of the Elvish languages as being derived from the Valarin tongue (PE19/18), and so he labeled Primitive Quendian as “Val.” in this chart. Unfortunately, the Noldorin entries in this chart do not entirely align with the diphthongal developments presented in *The Etymologies*.

For examples, there is evidence of *ei > ui* in a set of deleted entries in first layer of *The Etymologies*, but later entries show *ei > ī* as in Sindarin:

- [deleted] √GEY > N. *guir* “eternity” (Ety/GEY).
- [deleted] √EY > N. *uir* “eternity” (Ety/EY).
- [deleted] *Eigolosse > N. *Uiloss* “ever-snow” (Ety/EY).
- *neinē > N. *nîn* “tear” (Ety/NEI).
- *wejrē > N. *Gwîr* “Weaver” (Ety/WEY).

- *ezdē > Ezde > Eide > ON. Īde > N. Īdh “rest” (Ety/EZDĒ).

Similarly, the clearest examples of primitive *ou* in *The Etymologies* seem to show *ou* > *au*:

- √NOWO > N. *naw* “idea”, N. *nauth* “thought” (Ety/NOWO).
- √TOW > N. *taw* “of wool, woollen” (Ety/TOW).

Note that there is a deleted marginal entry for a root √ŃGOW (*ngōw*), but it shows a completely aberrant development *ngōw* > [ON.] *ñgoe* > [N.] *nô* (VT46/4) rather than the development described in the *Comparative Tables*. It seems likely that *ei* > *ui* and *ou* > *ū* in the *Comparative Tables* are holdovers of Early Noldorin developments from the 1920s, where these changes were the norm, as noted by Roman Rausch (HPITN/§4.2.4).

Roman Rausch examined the development of diphthongs in the Gnomish of the 1910s (HPG/§1.2) and Early Noldorin of the 1920s (HPITN/§4.2.4). There was considerable variation at these early conceptual stages, but I summarize the more common results in the chart below, along with the common Noldorin and Sindarin developments:

Primitive Diphthongs	<i>ei</i>	<i>ai</i>	<i>oi</i>	<i>ui</i>	<i>ou</i>	<i>au</i>	<i>eu</i>	<i>iu</i>
Gnomish (1910s)	<i>ai, ē</i>	<i>ai, ē</i>	<i>ui</i>	<i>ui</i>	<i>ō</i>	<i>au</i>	<i>io, iw</i>	<i>io, iw</i>
Early Noldorin (1920s)	<i>ui</i>	<i>ai</i>	<i>ui*</i>	<i>ui</i>	<i>ū</i>	<i>au</i>	<i>ū</i>	<i>i</i>
Noldorin (1930s)	<i>ī</i>	<i>ae</i>	<i>ui</i>	<i>ui</i>	<i>au</i>	<i>au</i>	<i>ū</i>	<i>ū</i>
Sindarin (1950s-60s)	<i>ī</i>	<i>ae</i>	<i>ui</i>	<i>ui</i>	<i>ū</i>	<i>au</i>	<i>iu > ŷ</i>	<i>ŷ</i>

* Rausch noted that in Early Noldorin *oiw* > *aiw* (HPITN/§4.2.4), but this alternate phonetic development is not relevant for spirantal vocalizations.

Later Diphthongs: In both Sindarin and Noldorin, late diphthongs produced by various means did not always have the same phonetic development as primitive diphthongs. Tolkien mentioned these later diphthongal developments in several places:

“Q Orome gives S Araw, from Oromē. > Oromñ > Orow (so finally) > Araw. ow new > aw, but old ow- > ū [PE17/99, from notes associated with of Galadriel’s Song from the 1st edition of *The Lord of the Rings*: NGS, PE17/61].

“ [ěi] e or affected a + epenthetic *ɪ* ... later became either [e] or becoming long was identified with [ēi] ... [ēi] e + *ɜ*, *χ* or affected a + *ɜ*, *χ*; the same + *i* in contraction. Later length[ening] of *ěi* [PE22/39, from notes on the Noldorin use of the *Feanorian Alphabet* written in the late 1930s; compare with primitive *ei* > *ī* above].

Of these, the late diphthong *ei* is most relevant to this discussion spirantal vocalization. As noted above, primitive *ei* became *ī* in both Sindarin and Noldorin, but the later diphthong *ei* often survived, sometimes reducing to *e* in Noldorin if short and unstressed and generally becoming *ai* in Sindarin final syllables, as discussed by Roman Rausch in his article *On the Diphthongs ei, ai in Noldorin and Sindarin* (DEANS, 2008). For example:

- **eryā* > *eir* > S. *air* “lonely” (PE17/28).
- **pheryā* > *feir* > S. *fair* “quick, ready, prompt” (PE17/181).
- √NÁWAK > *neweig* > N. *neweg*, plural of *nawag* “dwarf” (Ety/NÁWAK).
- **kalaryā* > N. *celeir* “brilliant” (Ety/KAL).

In this set of examples, the diphthong *ei* is the result of other vocalic changes such as *a*-affection and *i*-epenthesis (the same phenomenon that produced Sindarin/Noldorin plurals), but a similar set of phonetic developments apply to diphthongs produced by spirantal vocalizations as we will see below.

Likewise, in Sindarin the later diphthongs *oi* (including *ōi* > *oi*) became *oe* in Sindarin as opposed to primitive *oi* > *ui*. Finding examples that don’t involve vocalized spirants is a challenge, but there are at least a few:

- **gāyā* [> **gōia*] > S. *goe* “terror, great fear” (PM/363).
- **thānī-* [> **thōni* > **thoin*] > S. *thoen*, plural of *thaun* “pine-tree” (PE17/81; deleted forms).

Although the second example was deleted, compare it to S. *noeg* plural of *naug* “dwarf” (UT/100) which probably had a similar phonetic development.

Here is a summary of late diphthongal developments which differ from those of primitive diphthongs:

Late Diphthongs	<i>ou</i>	<i>oi</i>	<i>ei</i>
Noldorin (1930s)	<i>au</i> *	<i>ui</i> *	<i>ei</i>
Sindarin (1950s-60s)	<i>au</i>	<i>oe</i>	<i>ei</i> (<i>ai</i> in final syllables)

In Noldorin, items marked with a “*” are actually the same developments as those of primitive diphthongs. In the case of Noldorin, only the development of later diphthong *ei* is different from its ancient equivalent. In Sindarin, however, later diphthongs *ou*, *oi*, *ei* all have distinct developments from ancient diphthongs.

First Wave Vocalizations in Old Sindarin/Noldorin

The velar spirant ȝ [ɣ] was part of the phonetic inventory of the Common Eldarin, and disappeared at an early stage with various vocalic effects. However, these sound changes predate Sindarin/Noldorin and thus are not part of the discussion at hand. The first genuine Sindarin/Noldorin spirantal vocalizations were the result of combinations of voiced stops.

Sindarin Combinations of Voiced Stops: Tolkien explicitly described the Sindarin phonetic developments for combinations of voiced stops in the *Outline of Phonology* [OP2] from the early 1950s. Focusing on the parts pertaining to Sindarin:

“The groups *bd*, *gd*, *d + d* survived only in a few old formations with the suffixal addition of *-d*, already obsolete in C. Eldarin; and one or two old words derived from the kalta-forms of extended KALAT-bases or stems with consonantal sequences *x-g-d* or *x-b-d* ... *d + d* could only occur by suffixion (the medials of KALAT-stems were never identical to the final consonant). As was the case with *t+t* in C. Eldarin, *d+d* > *dʷd* > *zd* ... In Sindarin on the other hand [vs. Quenya developments] *zd* > *d* with lengthening of preceding vowel so early that these newer long vowels followed the same development as the original long vowels (*ā* > *ō/au*; *ē, ī* > *ī*; *ō, ū* > *ū*). The intervocalic *d* then > *ḏ* (*dh*) as usual. *bd* > *ɸd* > *ɸḏ* and *gd* > *ȝd* > *ȝḏ* > *ȝḏ*: the diphthongs so formed also followed the development of original diphthongs (*aɪ* > *ae*; *iɪ* > *ī*; *eɪ* > *ī*; *oɪ*, *uɪ* > *ui*) [PE19/90-91].

This quote only describes the sound changes of voiced stops before dental stop *d*; see below for other combinations. Although Tolkien does not explicitly say when these vocalizations took place, it seems likely they occurred in the “Old Sindarin” stage of the language’s development because of the mirroring of ancient diphthongal developments. There are also explicit statements on Tolkien’s part indicating the corresponding Noldorin changes took in Old Noldorin (see below).

As this quote indicates, *g* became the spirant ȝ [ɣ] before other voiced stops. Tolkien is not explicit in his description of the spirantalization of *b*, but likely *bd* > **b̥d* [βd] > *ɸd* > *ɸḏ* analogous to the phonetic development of ȝ. These changes were early enough that the resulting diphthongs followed the same developments as primitive diphthongs. Of these, *ei* > *ī* was fairly early in Sindarin’s phonetic history, since any diphthong *ei* that developed later had distinct phonetic developments, as discussed in the previous section. This places these “first wave” spirantal vocalizations fairly early.

Although not strictly speaking a spirant, it’s also worth mentioning the phonetic development of the voiced sibilant *z* before *d*. This voiced sibilant could arise in the Common Eldarin period (a) from the suffixal combination of *d + d*, as noted above, or (b) from the voicing of *s* before voiced stops (PE18/82). As described above, this *z* vanished with lengthening of the preceding vowel, also at a stage early enough that the resulting long vowels followed the same developments as primitive

long vowels, for example: $\bar{e} > \bar{i}$.

The only obvious Sindarin examples of these sound changes appear on the same page as this quote (PE19/91). With some intermediate changes added to clarify the likely phonetic developments, they are:

- $*khabdā$ [$> *χaudā$] $>$ S. *haudh* “funeral mound”.
- $*negdē$ [$> *neydē > *neidē > *nīde$] $>$ S. *nīdh* “juice”.
- $*snagdē$ [$> *snaydē > *hnaiðe > *hnaeð$] $>$ S. *naeð* “wound”.

There are also examples of the development of $d+d$ or $sd > zd$ that demonstrate its phonetic development (disappearance with vowel lengthening), both on this page and elsewhere in the same document:

- $*reddā > rezdā$ [$> *rēdā$] $>$ S. *rīdh* “sown field” (PE19/91).
- $*ezdē$ [$> *ēdē > *īdē$] $>$ S. *īdh* “peace, tranquility” (PE19/91).
- $*mizdē$ [$> *mīdē$] $>$ S. *mīdh* “dew” (PE19/101).

These all match the phonetic developments described above for zd .

Noldorin Combinations of Voiced Stops: There are some analogous sound changes for Noldorin in the 1930s, but the details of the phonetic developments seem to be different:

- $*labdā >$ N. *laudh* “gluttonous eating” (PE19/45).
- $*libda >$ N. *glúð* “soap” (Ety/LIB²).
- $*negdē >$ N. *nīdh* “honeycomb” (VT45/38).
- $*khagda >$ N. *hauð* “mound, grave, tomb” (Ety/KHAG).

The vocalization of b seems to mirror the (Old) Sindarin sound changes described above: $bd > *ḃd > ṽd$. Recall from the previous section that the ancient diphthong $iu > \bar{u}$ in the Noldorin conceptual stage (vs. $\bar{y}$ for Sindarin), so that the second example probably developed as: $*libda$ [$> *(g)liuda$] $>$ N. *glúð*. The third example might mirror the (Old) Sindarin developments with $ei > \bar{i}$, but the fourth example is problematic: there is no obvious way that $ai > au$. I think it is likelier that the early vocalization of $ɜ$ [$χ$] in (Old) Noldorin resulted in vowel lengthening, with phonetic developments as follows:

- **$agd > \bar{a}d$:** $khagdā$ [$> *khādā > *χōda$] $>$ *hauð*; where later $\bar{a} > \bar{o} > au$
- **$egd > \bar{e}d$:** $negdē$ [$> *nēdē > *nīdē$] $>$ *nīdh*; where later $\bar{e} > \bar{i}$

Likewise, the Old Noldorin vocalizations of z also seem to differ from (Old) Sindarin:

- $*ezdē >$ *Eide* $>$ ON. *īde* $>$ N. *īdh* “rest” (Ety/EZDĒ).
- $*mizdē >$ N. *mīdh* “dew” (Ety/MIZD).
- $*mazgā >$ ON. *maiga* $>$ N. *moe* “soft, pliant” (Ety/MASAG).

Rather than disappearing with vowel lengthening as in (Old) Sindarin, it seems $zd, zg > ṽd, ṽg$, not unlike the (Old) Sindarin early vocalizations of $ɜ$. Tolkien in fact explicitly described these changes

in his notes on the Old Noldorin use of the *Feanorian Alphabet* from the late 1930s:

“ The sound [z] only occurred in *zd*, *zg* and rare *zb*. For each of these ON used a single letter @ S and W. The phonetic changes that overtook these groups do not therefore normally find expression in ON. The exilic development suggests that @ W S became during ON [ɹd, ɹb, ɹg] but these letters continued in use [PE22/26 with the revisions described in note #78].

This quote, and the examples above, establishes the timing of these changes as occurring in Old Noldorin. There are no attested examples of *zb* > ɹb in *The Etymologies* which is not surprising given its supposed rarity. Based on these examples and notes, it seems the (Old) Sindarin and Old Noldorin vocalizations of ʒ and z are (almost) reversed:

Primitive Elvish	<i>bd</i>	<i>d+d</i>	<i>gd</i>
Spirantalized	<i>bd</i>	<i>zd</i>	<i>ʒd</i>
Vocalized (Old Noldorin)	ɹd	ɹd*	ʋd
Vocalized (Old Sindarin)	ɹd	ʋd	ɹd

* Likewise *zg* > ɹg in Old Noldorin, but *zb* > ɹb.

David Salo also noted these phonetic developments, but his work was based only on the Noldorin examples, since the Sindarin information from OP1 was not yet available. His theories align with mine for the vocalization of *bd* (GS/§4.24) and *zd* (GS/§4.27), but for the vocalization of *gd* he proposed that it became ɹd after front vowels like e (GS/§4.26) and ɹd after back vowels like a (GS/§4.25). His theory is consistent with the two examples we have (*khagdā* > *hauð* and *negdē* > *nīdh*) since ancient *ei* > *ī*. However, I prefer my theory because later Noldorin vocalizations of ʒ show *i* after *a* instead of *u* (see below). Without more examples, however, there is no way to know for sure which theory is correct.

Other combinations of voiced stops: There are some notes appearing in the *Outline of Phonology* [OP2] from the early 1950s that discusses the vocalization of voiced spirants after z. These notes hint at what the phonetic developments might be for other combinations of stops:

“ In Sindarin *zd* > ʻd, ʻd but *zg*, *zb* > ʻž, ʻžb > ʻā, ʻāu, as in *nadha* “fetter” [< **nazg*-], *maða* “mud” [< **mazgō/ũ*], *buðu* “large fly” [< **buzbō*]. [PE19/101; the primitive forms appear earlier on the same page with Quenya derivations.]

In this quote, the phonetic development of *zd* is exactly as described above, but the phonetic developments for *zg*, *zb* were distinct: the sound z became ʻž and the following stop becoming spirantal: ʻž, ʻžb. The likely phonetic developments for the examples given above are:

- **nazg*- [> **nađž(a)*] > S. *nadha*.
- **mazgō/ũ* [> **mađž(o)*] > S. *maða*.

- **buzbō* [> **buđb(o)*] > S. *buđu*.

This likewise hints that *dg*, *db* might have become *đz*, *đb*, though these primitive combinations would be very rare (if not impossible). In these examples, the intermediate phonetic developments were a pair of voiced spirants, but it seems likely that the vocalizations of post-consonantal *z/b* did not occur until later, after final vowel losses. The vocalization of *z*, in particular, mirrors similar late vocalizations where post-consonantal *z* became final. These post-consonantal vocalizations of voiced spirants will be covered in another section of this paper.

Note that the 1930s quotes discussed in the previous sub-section (with *zd*, *zg*, *zb* > *ɹd*, *ɹg*, *ɹb*) had an early version that read as follows, with the original unrevised material in braces {}:

“The sound [z] only occurred in *zd*, *zg* and rare *zb*. For each of these ON used a single letter @ S and W. The phonetic changes that overtook these groups do not therefore normally find expression in ON. {The exilic development (to *đw*, *đɹ*) suggests that W S became during ON [đb, đg], but these letters continued to be used. *zd*, however, became *d*, with lengthening of preceding vowel, and in consequence in late ON 2 was often substituted for @} [PE22/26, before the editing described in note #78].

This deleted version of the quote mirrors the Sindarin developments described above: *zb*, *zg* > *đg*, *đb* > *đi*, *đw* (> *đu*). It seems that Tolkien was considering these Sindarin developments as far back as the 1930s, though at this conceptual stage he rejected them; the replacement rules (*zd*, *zb*, *zg* > *ɹd*, *ɹb*, *ɹg*) match most of the examples in *The Etymologies*. There are, however, some deleted examples from the root *MÁSAG* that reflect Sindarin-style post-consonantal vocalizations:

- √*MÁSAG* [> **mađzas*] > N. *mađias* “softness, pliancy” (VT45/32).
- √*MÁSAG* > *madgh* [*mađz*] > N. *mada* “soft, pliant, yielding” (VT45/32; the expected form would be **mađa*).

Summary of Old Sindarin/Old Noldorin vocalizations: Here is an expanded table of probable spirantalizations and vocalizations in Old Sindarin and Old Noldorin:

Primitive Elvish	<i>bd</i>	<i>d+d</i>	<i>gd</i>	<i>zb</i>	<i>zg</i>
Spirantalized	<i>ḃd</i>	<i>zd</i>	<i>zd</i>	varies	varies
Vocalized (Old Noldorin)	<i>ɹd</i>	<i>ɹd</i>	<i>ɹd</i>	<i>ɹb</i>	<i>ɹg</i>
Vocalized (Old Sindarin)	<i>ɹd</i>	<i>ɹd</i>	<i>ɹd</i>	<i>đb†</i>	<i>đz†</i>

Based on these phonetic developments, I think it very likely that pairs of voiced stops generally became pairs of voiced spirants in both Sindarin and Noldorin, as was also the case for pairs of voiceless stops which ultimately developed into voiceless spirants (PE19/86; PE22/28). Pre-consonantal *b/z* vocalized in Old Sindarin and Old Noldorin as shown above, but post-consonantal

þ/ȝ survived for a time in Sindarin, only to vocalize later (those marked with a “†” in the chart).

Based on the Sindarin phonetic developments, it seems the first of a pair of voiced stops spirantalized a bit earlier than the second, so that pre-consonantal vocalizations took priority. This would only be relevant for *bg*, *gb* (perhaps > OS. *ȝȝ*, *ȝþ*, ON. *ȝȝ*, *Vþ*), and these combinations must have been extremely rare, assuming they could occur at all.

Second Wave Vocalizations in Sindarin/Noldorin

The second wave of spirantal vocalizations occurred later, probably after Old Sindarin/Old Noldorin. A key indicator of the comparative lateness of these sound changes is again the development of the diphthong *ei*, which did not become *ī* as it did with earlier vocalizations. In this later stage, both voiced and voiceless spirants vocalized. In both Sindarin and Noldorin the later vocalizations of *ȝ* and *χ* occurred in the same contexts, but the ultimate results of these vocalizations differed in the 1930s versus the 1950s and 60s, as I will demonstrate below.

Sindarin vocalizations of ȝ [χ]: Tolkien described this sound change for Sindarin in notes associated with Elvish numerals from the late 1960s:

“ In Sindarin voiceless stops (i.e. *p*, *t*, *k*) before nasals became voiced > *b*, *d*, *g*, and then together with the original voiced stops in this position became nasals before homorganic nasals (*tn*, *dn* > *nn*; *pm*, *bm* > *mm*), but before other nasals became spirants as generally medially (*pn*, *bn* > *vn*; *tm*, *dm* > *ðm*, later *ðv*, *ðw*; *kn*, *gn* > *gn* > *in*; *km*, *gm* > *gm* > *im* > *iv*, *iw*) [VT42/26].

Unlike the Old Sindarin vocalizations before voiced stops, *v* did not vocalize before nasals, but *gn*, *gm* > (probably) *ȝn, ȝm > *ȝn*, *ȝm*. Somewhat later, *ȝm* > *ȝv* and later still (if final) > *ȝw*. Although not discussed in this quote, there are attested Sindarin examples that showing similar vocalizations before liquids *r*, *l*. Here is a list of obvious Sindarin examples, with likely intermediate changes added for clarity:

- √MAGA [> *maglā > *mail(a)] > S. *mael* (PE17/162).
- *wagme [> *gwaim(e)] > S. *gwaew* (PE17/034).
- √MAG [> *magrā > *mair(a)] > S. *maer* (PE17/172).
- *tagra [> *tair(a)] > S. *taer* (PE17/186).
- *okma [> *oim(a)] > S. *oew* (PE17/170).
- *logna [> *loin(a)] > S. *loen* (VT42/10).
- *ugrā > *ogra* [> *oir(a)] > S. *oer* (PE22/160).
- *keglē [> *keil(e)] > S. *cail* (UT/282).

In all these examples, the vocalization of *ɜ* was obscured by later diphthongal developments: *ai* > *ae*; *oi* > *oe*; *ei* > *ai*, the last of these in final syllables only. The first of these diphthongal developments also applied to the ancient diphthong *ai*, but the two other diphthongal changes are distinct from ancient developments, where *oi* > *ui* and *ei* > *ī* instead. Thus there is a strong evidence that the second wave of vocalizations took place well after the first. This helps establish the timing of diphthongal developments as well, in particular showing that *ai* > *ae* took place later than other phonetic developments of ancient diphthongs.

As noted above, it seems that any *b* > *ḃ* > *v* (or *m* > *ṁ* > *v*) produced by later spirantalizations did not vocalized before nasals and liquids in either Sindarin or Noldorin. Examples where such *v* + nasal and *v* + liquid combinations survive include:

- S. *levnui* “fifth” (VT42/25-26)
- N. *lhevnar* “week” (Ety/LEP; VT45/27)
- N. *cevn* “earthen” (Ety/KEM)
- S. *avras* “precipice” (PE17/23)
- N. *ovras* “crowd, heap” (Ety/UB)
- N. *glavrol* “babbling” (Ety/GLAM).

Sindarin vocalizations of *χ* [x]: Unlike *ɜ*, no explicit description of the vocalization of *χ* has been published for the Sindarin period, but there are numerous examples of it:

- **maztā* > *maxtā* > S. *maetha-* “to handle, wield” (VT47/6).
- √*PAKAT* [> **paχpā*] > S. *paeth* “speech” (PE17/126).
- **ek-tā* [> **eχpā*] > S. *eitha-* “to prick” (WJ/365).
- √*NEK* [> **nexpano*] > S. *neithan* “one deprived” (PE17/167).
- √*RUKU* [> **gruχpa*] > S. *gruitha-* “to terrify” (WJ/415).
- **nuktā* [> **nuxpa*] > S. *nuitha-* “to stunt” (WJ/413).

Once we account for *ai* > *ae*, it seems the vocalizations of *χ* were exactly parallel of those of *ɜ*, with *χp* > *ḡp*. All the published Sindarin vocalizations of *χ* occur before *p*, but there may have been other conditions where this voiceless spirant vocalized; see the Noldorin discussion below.

There is one extremely irregular example of the Sindarin vocalization of *χ*:

- √*RIK* > S. *raitha* “strive” vs. Q. *rihta* (PE17/167).

This example was first written *reitha*, then Tolkien revised it to *raitha*, and finally Tolkien wrote an *e* above it, possibly indicating the restoration of *reitha*. Furthermore, there are a number of inflected forms appearing immediately after it that all show *rith-*, including *rithant* (past) and *rithanen* (1st-sg past?). The form *rith-* (or **ríth-*) would be expected if *χ* vocalized to *ḡ*; *reitha* might be explained by *a*-affection in the uninflected form of *i* > *e*; *raitha* might be explained by a (very abnormal) change of *ei* > *ai* in a non-final syllable. This entire note was hastily written. Since Tolkien considered having *iχpa* become variously *īpa*, *eīpa* or *aīpa* in the span of a single example, it seems he was rather uncertain of the appropriate result.

Sindarin vocalizations of *p* [ϕ]: We only have one published example of the vocalizations of *p* in Sindarin, but its phonetic development seems distinct from the vocalizations of *χ*:

- √LEP [> *leptā > *lep̥pa] > S. *leutha*- “to pick (up/out)” vs. Q. *lepta*- (VT47/10).

It is dangerous to extrapolate patterns from a single example, but it seems that *pp* > *ɥp* versus *χp* > *ɹp*. This would parallel the Old Sindarin vocalizations of *b* vs. *z*: *bd* > *ɥd* versus *zd* > *ɹd*.

One possible objection to this theory is that *eu* is not listed among the Sindarin diphthongs in *The Lord of the Rings* Appendix E. However, perhaps Tolkien omitted it because it was not a natural development of any primitive diphthongs, and was fairly rare. The word *leutha*- is not the only place the diphthong *eu* appears in Sindarin: it can also be seen in *têw* or *tew* “letter” (PE17/43-44). Other late *u*-diphthongs would have straightforward phonetic developments: *ou* > *au*, *iu* > *ȳ*, and *au* surviving unchanged.

Noldorin vocalizations of *z* [χ]: Tolkien described the Noldorin vocalizations of *z* and *χ* in notes on the usage of the *Feanorian Alphabet* from the 1930s (PE22/39-40). They resemble the Sindarin pattern, but there are some differences:

- “The long diphthongs — ON diphthongs, diphthongization of ON *ō*, or new diphthongs from short vowel + vowel (in contractions or in contact with vocalized *z*, *χ*), or from long vowels + epenthetic *ɹ* ...
- [ōu] ON *au*, *ō* or *ō* + *z*, *χ*. archaic h. later > [au] q.v. ...
 - [āē] older *ai*, as above; or *ǣ* + *z*, *χ*.]l later G[ondolic]]p — usually]p (beside]l)...
 - [ēi] *e* + *z*, *χ* or affected *a* + *z*, *χ*; ... l`B l~B later G[ondolic] lÖ — usually lÖ (beside l~B)...
 - [ui] ON *ui*; affect[ed] *o*, *u* + *z*, *χ*`B .~B later G[ondolic] .Ö — usually .Ö (beside .~B)...

Based on this quote it seems that the Noldorin vocalizations of *z* are:

- *o**z* > *ou* > *au*
- *a**z* > *ai* > *ae*
- *e**z* > *ei*
- *u**z* > *ui*

Tolkien did not explicitly describe the conditions under which *z* vocalized, but based on examples in *The Etymologies*, they are the same as in Sindarin: before nasals and liquids. Here is a representative sample:

- ***a**z* > *ai*:** **magrā* [> **ma**z**ra* > **maira*] > N. *maer* “useful” (Ety/MA3|MAG).
- ***e**z* > *ei*:** √REG [> **regne* > **re**z**ne* > *reine*] > *rhein* > N. *rhain* “border” (Ety/REG).
- ***i**z* > *ī*:** √RIG [> **rigna* > **ri**z**na* > *rīna*] > N. *rhîn* “crowned” vs. Q. *rína* (Ety/RIG).

- **o₃ > ou:** √DO₃/DÔ > *dogme* > *dongme* > ON. *doume* > N. *daw* “night-time, gloom” (Ety/DO₃).

As with Sindarin, the Noldorin vocalizations of *z* are partly obscured by diphthongal developments like *ai* > *ae* and *ou* > *au*.

The last example indicates the phonetics development of *g* and *z* before nasals was more complex than it was in Sindarin, in that it seems first *z* > *g* and then *g* became a velar nasal *ng* (*ñ* or [ŋ]). It is unclear whether this velar nasal *ñ* vocalized directly or first developed to *z*, but since *Feanorian Alphabet* quote above only mentions *z*, I suspect first *ñ* > *z*. Thus it seems that in Noldorin:

- *o₃n* > *ogn* > *oñn* > *o₃n* > *oun*

Compare this to the much simpler Sindarin development of *ogn* > *o₃n* > *oin*. This Noldorin-style nasalization of voiced stops before nasals is explicitly discussed by Tolkien elsewhere in the same *Feanorian Alphabet* document, which describes the first half of this process (up to the nasalization of *g* to *ñ*) in Old Noldorin (PE22/26):

“The PQ combinations *n₃m*, *n₃n* (from *n₃*, *z* + *m*, *n*) appear to have given *gm*, *gn*, falling together with *gm*, *gn* from PQ *k*, *g* + *m*, *n*. Hence ON standard spelling *xy* x6. Later here *x g* became [ŋ], as *bm*, *bn* > *mm*, *mn*, *dm*, *dn* > *nm*, *nn*; but ON having no special sign for [ŋ] retained the *gm*, *gn* spelling. The nasality is indicated by the occasional spelling by *b6* = *ngm*, *ngn* [in other words: *z₃m*, *z₃n* > *ñm*, *ñn* > *gm*, *gn* > *ñm*, *ñn*].

Despite the sound changes described in Tolkien’s *Feanorian Alphabet* document, there are no clear examples of *u₃* > *ui* in *The Etymologies*. Instead, we consistently see *u₃* > *ū*:

- **lugni* > N. *lhûn* “blue” (Ety/LUG²).
- **ku₃nā* > N. *cûn* “bowed, bow-shaped, bent” (Ety/KU₃).
- **suglu* > N. *sûl* “goblet” (Ety/SUK).

There are similar vacillations in the vocalizations of *χ*, where the rules state *uχ* > *ui* but most of the examples show *uχ* > *ū* (see below). It may be that Tolkien changed his mind about the development of this combination. If so, it seems that in Noldorin *z* vocalized to *ɹ* after front vowels *i*, *e*, *a*, but to *ɹ* after back vowels *o*, *u*. This is the theory proposed by David Salo (GS/§4.87, §4.91), except that he intermingled it with Sindarin developments and said that sometimes *o₃* > *oi* > *oe* (GS/§4.91).

Noldorin vocalizations of *χ* [x]: The first quote above from the *Feanorian Alphabet* describing the vocalization of *z* also state that *χ* vocalized with the same results (PE22/39-40):

- *aχ* > *ai* > *ae*
- *eχ* > *ei*
- *oχ* > *ou* > *au*
- *uχ* > *ui*

This is (mostly) consistent with examples in *The Etymologies*:

- **aχ > ai:** *taksē [> *taχsa > *taisa] > N. *taes* “nail” (Ety/TAK).
- **aχ > ai:** *yakta [> *yaχpe > *yaipe] > N. *iaeth* “neck” (Ety/YAK).
- **eχ > ei:** *b'rekta [> *breχpa > *breipa] > N. *breitho* “break out suddenly” (Ety/BERÉK).
- **iχ > ī:** *k'rikta [> *kriχpa > *krīpa] > N. *critho* “reap” (Ety/KIRIK).
- **oχ > ou:** √LOKH [> *loχsa > *lousa] > N. *lhaws* [laus] “hair” (Ety/LOKH).
- **oχ > ou:** *oktā [> *oχpa > *oupa] > N. *auth* “war” (Ety/KOT).
- **uχ > ui:** √YUK [> *yukte > *yuχpe] > N. *iuith* “use” (Ety/YUK).

However, as with *u*₃, most of the examples in the *Etymologies* actually show *uχ > ū*:

- √SUK [> *suktu > *suχpo] > N. *sûth* “draught” (Ety/SUK).
- √LUK [> *lukte > *luχpe] > N. *lhûth* “spell, charm” (Ety/LUK).
- √LUK > N. *lhûtha-* “to enchant” vs. Q. *luhta-* (Ety/LUK).

As noted above, perhaps Tolkien changed his mind on *uχ > ui* versus *uχ > ū*, or perhaps he decided that *uχ > ui* was conditional, only occurring after a “y”-sound [j] as in *iuith*. In any case, it seems the vocalizations of χ mirrored those of *z*: vocalizing to *ɪ* after front vowels *i, e, a*, but to *ʊ* after back vowels *o, u*. Also note that the examples N. *taes* and N. *lhaws* indicate the vocalizations took place before *s* as well as *p*. This is the theory proposed by David Salo (GS/§4.90, §4.91), except that he intermingled it with Sindarin developments and said that generally *uχ > ui* (GS/§4.89, GS/§4.91).

Noldorin vocalizations of *p* [ϕ]: There are a smaller number of Noldorin examples for the vocalization of *p*. These examples are not numerous enough to precisely establish a pattern, but the few clear examples seem to match the vocalizations of *z* and *χ*: *p > ɪ* after front vowels *i, e, a*, but *> ʊ* after back vowels *o, u*. Here is a complete list of examples with probable intermediate changes added:

- √AP [> *apsa > *ap̥sa > *aisa] > N. *aes* “cooked food, meat” (Ety/AP).
- √LAP [> *lapsa > *lap̥sa > *laisa] > N. *lhaes* “babe” (Ety/LAP).
- *tupsē [> *tupsa > *tup̥sa > *topsa > *tousa] > N. *taus* “thatch” (Ety/TUP).

The last example *taus* is exceptionally obscure unless you recognize that final *-se* become *-sa* in Noldorin, as seen in **khyelesē* > *khelesa* > ON. *kheleha* “glass” (Ety/KHYEL(ES)) and **peltakse* > ON. *pelthaksa* “pivot” (Ety/PEL). Thus *a*-affection likely plays a role in the phonetic development of this word. It seems the base vowel *u* was lowered to *o* before the vocalization *p*, and the resulting diphthong *ou* developed to *au* as usual.

David Salo proposed that *p* merged with *χ* before vocalizations: *ps > χs* (GS/§4.82), and thus *p* and *χ* shared the same phonetic development. There is nothing to say that this didn't happen, but also nothing to say that it did. I omit this sound change from my model simply because there is no direct evidence for it, but the sound change is certainly plausible. Roman Rausch suggests a similar possible sound change in Early Noldorin (see below for details). Salo did not address **leptā-* > S. *leutha-* (VT47/10) since that example was published after he did his research.

Salo did not acknowledge the possible role of *a*-affection in the phonetic development of N. *taus*, instead proposing an irregular and sporadic sound change of *uχs/uχp* > *oχs/oχp*, both for this word and the word N. *sautha-* (GS/§4.89):

- **tupsē* [> **tupse* > **tuχse* > **toχse* > **touse*] > N. *taus* “thatch” (Ety/TUP).
- *√SUK* [> **suχpa* > **soχpa* > **soupa*] > N. *sautha-* “to drain” (Ety/SUK).

Salo only specified the transitions **tuχse* > **toχse* and **suχpa* > **soχpa*; I added the others to show the full phonetic history in his model. I think both these words are better explained by *a*-affection. However, since *a*-affection does not normally occur in *a*-stem verbs (being inhibited by various pronominal suffixes), I likewise must assume an irregular case of *a*-affection in the phonetic history of N. *sautha-*. At least there are other examples of this occurring, however: see the discussion of S. *raitha* above.

Summary of second wave Sindarin/Noldorin vocalizations: Based on the evidence above, it seems that the vocalization of pre-consonantal spirants in Sindarin depends on the character of the spirant: *ʒ, χ* > *ɹ* but *p* > *ɹ*. In Noldorin, however, it seems the vocalizations depend on the character of the preceding vowel: spirants > *ɹ* after *i, e, a* but > *ɹ* after *o, u*. Here is a table of probable vocalizations in Sindarin and Noldorin based on the discussion above:

Preceding Vowels	<i>i, e, a</i>	<i>o, u</i>	<i>i, e, a</i>	<i>o, u</i>	<i>i, e, a</i>	<i>o, u</i>
Spirants	<i>ʒ + r, l, m, n</i>	<i>ʒ + r, l, m, n</i>	<i>χ + p, s</i>	<i>χ + p, s</i>	<i>p + p, s</i>	<i>p + p, s</i>
Vocalized (Noldorin)	<i>ɹ + r, l, m, n</i>	<i>ɹ + r, l, m, n</i>	<i>ɹ + p, s</i>	<i>ɹ + p, s</i>	<i>ɹ + p, s</i>	<i>ɹ + p, s</i>
Vocalized (Sindarin)	<i>ɹ + r, l, m, n</i>	<i>ɹ + r, l, m, n</i>	<i>ɹ + p</i>	<i>ɹ + p</i>	<i>ɹ + p</i>	<i>ɹ + p</i>

In both Sindarin and Noldorin, the vocalizations of both *ʒ* and *χ* are well attested, with examples of every vowel/spirant combination. Examples of *χ*-vocalization before *s* are rarer and appear only in Noldorin. Most likely this is because the primary source of [xs] in Noldorin was primitive [ks], but it seems that [ks] > [xx] > [x] in Sindarin, for example: S. *ach* “neck” < *aks[ē]* < *√AKAS* (PE17/92); this fact was pointed out to me by Bertrand Bellet at Omentielva Toldea in August 2019. The Sindarin vocalizations of *p* > *ɹ* are based on a single example, **leptā-* > S. *leutha-*, making that pattern of vocalization especially tentative. Noldorin *p*-vocalizations are a bit more numerous (3 examples) and match *χ*-vocalizations in all cases, once you account for the role of *a*-affection in **tupsē* > N. *taus*.

Tolkien explicitly described the Sindarin vocalization of *ʒ* before nasals (VT42/26), and his description matches the patterns in the table. Tolkien also explicitly described the Noldorin vocalization of *ʒ* and *χ* in his notes on the *Feanorian Alphabet* (PE22/39-40). His stated rules match most of the attested examples in *The Etymologies*, except that he stated that *uʒ, uχ* > *ui* whereas almost all the examples show *uʒ, uχ* > *ū*. The examples in *The Etymologies* were likely written before Tolkien’s notes on the *Feanorian Alphabet*, so perhaps this represents a preliminary shift towards the Sindarin pattern of universal vocalization to *ʒ, χ* > *ɹ*.

There are a couple of Noldorin examples that don't fit the patterns described above: N. *iuith* and *iuitha-* from $\sqrt{YUK}$ and *sautha-* from $\sqrt{SUK}$. I think the former is a conditioned change of $u\chi > ui$ after a "y"-sound [j], but it could instead represent some conceptual vacillation on Tolkien's part. I think the latter is an example aberrant *a*-affection in an *a*-stem verb, and that its phonetic development therefore mirrored N. *taus*, but Salo proposed an alternate theory of irregular development for both these words (GS/§4.89) as discussed above.

Post-Consonantal Vocalizations

Post-consonantal vocalizations occurred for voiced spirants z and $\tilde{b}$ (or more likely v). These vocalizations differ from the pre-consonantal vocalizations, and the exact sound changes depended on whether the spirant was medial or had become final after vowel losses.

Medial post-consonantal vocalizations: There are no published examples of medial post-consonantal vocalizations of z in Sindarin. The Noldorin examples generally show $z > i$. Since Sindarin (and presumably also Noldorin) had falling rather than rising diphthongs (*The Lord of the Rings* Appendix E), presumably the resulting *i* was syllabic and did not form a diphthong with the following vowel:

- ON. *Dirghel* > N. *Diriel* (Ety/DER).
- $\ast stalgond\tilde{o}$ [$> \ast thalzon(d)$] > N. *thalion* "hero, dauntless man" (Ety/STÁLAG).
- $\sqrt{TÁRAG}$ [$> \ast tarzass(e)$] > N. *tarias* "stiffness, toughness, difficulty" (Ety/TÁRAG).
- $\sqrt{MÁSAG}$ [$> \ast mazgasse > \ast ma\tilde{d}zass(e)$] > N. *mađias* "softness, pliancy" (VT45/32).

The last example was deleted, since it shows a sound change of $zg > \tilde{d}z$ that Tolkien was unsure of during the Noldorin period of the 1930s. He ultimately adopted this sound change for Sindarin in the 1960s: see the section on First Wave Vocalizations in Old Sindarin/Noldorin above. In terms of the development of $z > i$, however, it is consistent with the other examples, and it indicates that this sound change could occur after voiced consonants other than the liquids *l*, *r*.

There are a few cases where $z > i$ did not occur:

- $\ast ulgund\tilde{o} > ulund > \text{N. } ulun$ "monster" (Ety/ÚLUG).
- N. *thelyn* plural of N. *thalion* "hero, dauntless man" (Ety/STÁLAG).
- *del + gos/goth* > EN. [Exhilic Noldorin] *delos/deloth* "abhorrence, detestation, loathing" (Ety/DYEL).

The first two examples indicate that before high vowels like *u*, *y* (and probably also *i*) the z simply vanished instead of becoming *i*. Salo also noted that $z > i$ did not occur in N. *delos* (GS/§4.152), but without suggesting any explanation for this exception. My best guess is that it was a late compound coined (or reformed) after the sound change $z > i$.

The change of $z > i$ is the pattern David Salo proposed for medial post-consonantal vocalizations (GS/§4.152). He did not acknowledge any special development after high vowels except to note that probably *iy > y* (GS/§4.153), which more or less produces the same result.

Final post-consonantal vocalizations: In cases where the spirant became final, the vocalizations were different. Tolkien discussed the Sindarin developments in notes from the *Outline of Phonology* [OP2] from the early 1950s:

“ In Sindarin *zd* > *´d*, *đ* but *zg*, *zb* > *đz*, *đb* > *đa*, *đu*, as in *nadha* “fetter” [< **nazg-*], *mađa* “mud” [< **mazgō/ũ*], *buđu* “large fly” [< **buzbō*]. [PE19/101; the primitive forms appear earlier on the same page with Quenya derivations.]

The sound change *-z* > *-a* is well attested in both Sindarin and Noldorin, and there are examples of this change after liquids *l*, *r* as well as after *đ*. In addition to the examples above we have:

- **phelgā* [> **felz(a)*] > S. *fela* “mine, tunnel” (PE17/118).
- ON. *phelga* [> **felz(a)*] > N. *fela* “cave” (Ety/PHÉLEG).
- ON. *sthalga* [> **thalz(a)*] > N. *thala* “stalwart, steady, firm” (Ety/STÁLAG).
- ON. *targa* > *targh* > N. *tara* “tough” (Ety/TÁRAG; PE22/034).
- √MÁSAG > *madhgh* [*mađz*] > N. *mada* “soft, pliant, yielding” (VT45/32; the expected form would be **mađa*).

The last example was a deleted in *The Etymologies* for the reasons outlined for *mađias* above, but it otherwise fits the pattern.

Post-consonantal vocalizations of *đ*/*v*: The only example we have for a post-consonantal vocalization of *b* > *đ* is **buzbō* [> **buđb(o)*] > S. *buđu* “large fly” given above for Sindarin, where Tolkien states *đb* > *đu*. There are, however, similar vocalizations of *v* from primitive *m* in some rough etymological notes discussing Quenya and Sindarin words for “throne” from the late 1960s (PE22/148). These notes describe many possible developments, but the ones relevant to this discussion are:

“ *khadmā*. *ḡanmā* > *ḡanwā* > *hanwā*. [Q.] *tarhanwa* “throne”, high seat.
ara. ... [S.] *arahađm*. *arahađw*, *archaf*. *chađw*. *hađw*.
... [S.] *hađma*. *hađwa*, to seat. *hađwad*. *arahađwad*.

These notes are somewhat difficult to parse, but it seems that the primitive form of “seat” was *khadmā*. Its Quenya derivative was *hanwa* and its Sindarin derivative was:

- *khadmā* [> **chađv(a)*] > *chađw* > *hađw* [probably pronounced *hađu*].

Note that one of the above forms, *archaf*, shows an inconsistent set of phonetic developments, and elsewhere on the same page Tolkien wrote “*dm* > *v*. *gm* > *ḡw*. *dagma*, *dau(v)*.” It seems Tolkien was considering alternate developments whereby *dm*, *gm* > *v*, *uw*, which explains the alternate form *archaf*. An unrelated note from the late 1960s appearing along with the *Shibboleth of Fëanor* indicates that this alternate development might be North Sindarin:

“ In the North Sindarin dialect, however, in final position only, CE *tw*, *dw*, *thw*, *nw* > *dw*, *ðw*, *þw* > *b*, *v*, *f*, *m* (VT41/8).

Thus it appears the normal development of *dm* was *dm* > *ðv* > *ðw*, an obvious parallel of *ðb* > *ðu* above. The verb form *haðwa*- “to seat” indicates this development occurred medially as well. This same development was described on VT42/26: “*dm* > *ðm*, later *ðv*, *ðw*”. I think the most likely set of developments are *zb*, *db* > *ðb* > *ðv*, which blends with *dm* > *ðv*, all of which later becomes *ðw*. This combination survives medially, but becomes *-ðu* finally.

Unlike *z*, it seems *ð* was not vocalized after the liquids but instead survived to become [v], denoted by “f” when final in Tolkien’s orthography. For example:

- *√GALAB* > S. *alf* “flower” (PE17/153, a deleted form).
- **golbā* > N. *golf* “branch” (Ety/GÓLOB).

There are no obvious examples of *-rf* [-rv] derived from primitive *rb*, but there are plenty of examples of *-rf* derived from primitive *rm*, so it seems likely this spirantal combination survived as well. There are plenty of examples of *rv*, *lv* medially as well.

Developments in plurals: The phonetic development of final *-z* is a bit different in case of plural forms. The plural of N. *fela* “cave” is *fili* (Ety/PHÉLEG), probably from primitive **phelgi*. Bertrand Bellet discussed the phonetic history of Sindarin plurals in his *Vowel Affection in Sindarin and Noldorin* (VASN), where he proposed that when final *i* vanished in plural forms it palatalized final consonants which then cause vowel-breaking and *i*-epenthesis in plural forms:

- **adani* > **edeni* > **edenʲ* > **edein* > *edain* plural of *adan* “man”.

If a similar phenomenon applied to final *-z*, it seems likely that the palatalized *-zʲ* > *-i*:

- **phelgi* > **filzʲ* > **filzʲ* > *fili*.

Salo proposed an alternate theory, with *-z* > *-a* after low vowels like *a*, *e* (GS/§4.155) but *-z* > *-i* after high vowels like *i*, based on the example **phelgi* > **filz* > *fili* (GS/§4.156). Salo’s model of *i*-epenthesis (GS/§4.99) did not incorporate Bellet’s proposed mechanism of palatalized final consonants, so Salo may not have considered the possibility of *-zʲ* > *-i*. I consider Salo’s alternate theory for the development of final *-z* unlikely given the quote above where Tolkien explicitly stated *zg* > *ðz* > *ða* as a general rule (PE19/101), but in fairness to Salo this quote was published after he did his research.

It’s not clear what would have happened in the case of *-ðbi*, *-ðvi* > *-ðwi* after consonants in plural forms, but given the example of ON. *orkui* > *yrchy* (Ety/ÓROK, VT46/7) and *malui* > *mely* (Ety/SMAL), my guess is *-ðwi* > *-ðwʲ* > *-ðy*. If so, the plural of S. *budhu* “large fly” would be **bydhy*, but this is purely speculative.

Summary of post-consonantal vocalizations: Summarizing the above phonetic developments in a single table:

Spirants	<i>r, l, ð + ʒ</i>	<i>r, l, ð + ʒ</i>	final <i>r, l, ð + ʒ</i>	final <i>r, l, ð + ʒ</i>	<i>ðb</i>
Following Vowels	<i>e, a, o</i>	<i>i, y, u</i>	<i>a, e, o, u</i>	<i>i</i>	-
Vocalized (Noldorin)	<i>ri, li, ði</i>	<i>r, l, ð</i>	<i>-ra, -la, -ða</i>	<i>-ri, -li, -ði</i>	<i>*ðw</i>
Vocalized (Sindarin)	<i>*ri, li, ði</i>	<i>*r, l, ð</i>	<i>-ra, -la, -ða</i>	<i>*-ri, -li, -ði</i>	<i>ðw</i>

Developments marked with a “*” are not attested at that conceptual stage of the language. The medial vocalizations are only attested for Noldorin, and the vocalizations of *b/v* are attested only in Sindarin. The vocalization of final *-ʒi* is based on a single Noldorin example (plural form *fili*). It seems *ðb, ðv > ðw* medially, based on the developments of *dm* in *haðwa-* “to seat”, but *> ðu* only when final. However, *b/v* did not vocalize after liquids *r, l* either medially or finally, remaining *v* instead which was written “f” finally in Tolkien’s orthography.

Gnomish and Early Noldorin Development

Roman Rausch explored the vocalization of spirants (among other topics) in Gnomish and Early Noldorin from the 1910s and 1920s, in his two papers: *Historical Phonology of Goldogrin* (HPG, 2007) and *Historical Phonologies of Ilkorin, Telerin and Noldorin around 1923* (HPITN, 2008). I have little to add to his analysis. For completeness, I reiterate the results of his research here along with some representative examples. In this section ^EN. is used to designate the Early Noldorin of the 1920s to distinguish it from the Noldorin (N.) of the 1930s. Likewise ^EQ. is used to denote Early Qenya from the 1910s and 1920s.

Combinations of voiced stops and sibilants: Rausch did not explore combinations of voiced stops because there are no clear examples to work from. Likewise there are no clear examples *zb, zd, zg* in Gnomish or Early Noldorin, but there is one example of a sibilant vocalization before a consonant in Early Noldorin, as noted by Rausch (HPITN/§4.1.3):

- **kasla > ^EN. caul* “helmet” (PE13/140).

It seems likely that this *s* voiced to *z* before *l* and then vocalized, but the exact process isn’t clear. Rausch pointed out that both *asl > aul* and *asl > āl > aul* are possibilities. Without further examples to draw on, I hesitate to make any conclusions.

Vocalizations of ʒ: Rausch proposed that *ʒ > ɹ* before *n, l, ð* in both Gnomish (HPG/§2.6) and Early Noldorin (HPITN/§4.1.3). Some obvious Gnomish examples are:

- *sek'đana [> *seχđana > *sezđana] > G. *saidhon* “noon” (GL/66).
- *foχo [> *fozna] > G. *fuin* “secret, dark” (GL/36).
- *megđana > G. *maidhon* “midday” [deleted entry] (GL/56).
- *Baž- > G. *bain* “clad” (GL/21).
- *Baž- > G. *bail* “sheath” (GL/21).

Some of these vocalizations are obscured by *ei* > *ai* and *oi* > *ui*. The first couple of examples are predicated on the assumption that *χ* became voiced *ʒ* before other voiced consonants, but this seems to be a reasonable assumption. The last two examples are a bit dubious, since the quote mark above *ž* likely indicates that the primitive forms actually contained voiced palatal or palatalized spirants [j] instead of velar [χ]; the analogous root in the Kenya Lexicon for *Baž-* seems to be VAYÁ “enfold, wind about” (QL/100), and Tolkien often used the symbol *Ÿ* in this document to indicate “y”-sounds that originated from palatal spirants.

There are also a number of Early Noldorin examples that show *aʒ*, *eʒ* > *ai*, with *eʒ* presumably passing through *ei* before becoming *ai*:

- *dagnā > ^{EN}. *dain*¹ “high, noble” (PE13/141, 161).
- *dāgniya > ^{EN}. *dain*² “height, summit” (PE13/141, 161).
- *dagla > ^{EN}. *dail* “axe (blade)” (PE13/141; PE14/66).
- *tegna [> *tein] > ^{EN}. *tain* “straight” (PE13/153, 165).

Once we account for the obscuring changes whereby *ei* > *ai* and *oi* > *ui*, all these Gnomish and Early Noldorin examples are consistent with Rausch’s theories.

Vocalizations of *χ*: Rausch likewise proposed that *χ* > *ɹ* before *p*, *s* in both Gnomish (HPG/§2.6) and Early Noldorin (HPITN/§4.1.3). Some obvious Gnomish examples are:

- *kahta > G. *caith* “cause, reason, motive” (GL/24) vs. ^{EQ}. *ká* “deed, act, fact” < √KAHA (QL/43).
- *ektī [> *eith] > G. *aith(i)* “sword” vs. ^{EQ}. *ekte* (GL/18).
- *ektī [> *eithl] > G. *aithl* “spring” (GL/18) vs. ^{EQ}. *ektele* “fountain” (QL/35).
- *lex-sa [> *leis] > G. *lais* “green sward, glade” vs. ^{EQ}. *lé* “sword, glade” (GL/53).
- *foχo [> *foχtha- > *foitha-] > G. *fuitha-* “to hide” (GL/36).
- *foχo [> *foχsa > *fois] > G. *fuis* “hoard” (GL/36).

One of the challenges of examining vocalizations in Gnomish is that in the 1910s both *k* and *χ* were part of the phonetic inventory of Primitive Elvish, and these could have distinct phonetic developments. In particular, it seems primitive *χ* vocalized consistently, but primitive *k* only vocalized in final clusters; *kt* > *cth* could survive medially:

- G. *tecta-* “to write” (GL/69) vs. ^{EQ}. *tekta-* < √TEKE (QL/90).
- G. *mecta-* “to aim at” (GL/57) vs. ^{EQ}. *mekte-* < √MEKE (QL/60).
- G. *ecta* “sword” (GL/31) vs. ^{EQ}. *ekte* < √EKE (GL/18); compare to G. *aith(i)* above.

It is unclear whether *c* [k] remained a stop in *cth* or if the cluster fully spirantalized to (as *χp*). However, *cth* could vocalize medially in triconsonantal clusters, as noted by Rausch (HPG/§2.6):

- G. *pactha*- “utter, speak, talk” vs. G. *paithri* “speech”, G. *paithron* “orator” (GL/63).

Medial survivals of *cth* do not occur in Early Noldorin of the 1920s. The some obvious Early Noldorin examples of $\chi > \text{ɹ}$ are:

- **kṛkta* [$> *kra\chi ta$] $> \text{EN. } craith$ “circle” (PE13/140).
- **surjakta* $> \text{EN. } huiriaith$ “gale” (PE13/163).
- **ekta* $> \text{EN. } aith$ “thorn” (PE13/136).
- **g’lamektá* or **k’lamektā* $> \text{EN. } glavaith$ “blaze” (PE13/144, 162).
- **loktu* $> \text{EN. } luith$ “magic, spell” (PE13/149).
- **siktā* [$> *se\chi ta$] $> heith > \text{EN. } haith$ “moist” (PE13/147, 163).

In the last example, the sound changes are obscured by *a*-affection, a new feature of Early Noldorin. Other vocalizations are obscured by *ei > ai* and *oi > ui*. These diphthongal changes seem to be less universal in the Early Noldorin period, however. For example, we see $\text{EN. } eitheb$ “thorny” vs. $\text{EN. } aith$ “thorn” (PE13/136, 158) and $\text{EN. } eithlos$ “fountain” vs. $\text{EN. } aithl$ “spring, fount” (PE13/158), which seems to indicate that *ei > ai* mostly in final syllables in the 1920s (as was the case in Sindarin in the 1950s and 60s). Similarly, there are a fair number of examples where *oi* remains unchanged, as noted by Rausch (HPITN/§4.1.3):

- $\text{EN. } oith$ “feud” vs. $\text{EQ. } ohta$ “war” (PE13/151, 164), likely from primitive **oktā*; compare with later **oktā* $> \text{N. } auth$ (Ety/KOT).
- $\text{EN. } hoith$ “coitus” vs. $\text{EQ. } pukta$ or *puhta* (PE13/147, 163), likely from primitive **puktā*; here *a*-affection plays a role.
- $\text{EN. } oif$ “terror, phantom” vs. $\text{EQ. } oswe$, both from **okswē* (PE13/151, 164).

Since both *ui* and *oi* seem to derive from *oχ* in Early Noldorin, it’s not clear if there was a consistent phonetic rule here, or if Tolkien was gradually abandoning *oi > ui* in Early Noldorin as a step in the direction of the Sindarin sound change whereby the late-stage diphthongs *oi* became *oe*. Note that primitive diphthong *oi > ui* in Early Noldorin as noted by Rausch (HPITN/§4.2.4), so this could be an example of distinct early/late diphthongal developments in the 1920s.

Vocalizations of *p*, *b*: As with χ , one of the challenges of examining vocalizations of labial spirants *p*, *b* in Gnomish is that they coexisted with stops *p*, *b* in the phonetic inventory of Primitive Elvish in the 1910s. It seems that like χ , primitive *p* consistently vocalized both medially and finally. On the other hand, while *p*, *b*, *b̥* vocalized in final clusters, medial *pth* survived and *b*, *b̥* $> v$ in medial clusters. It is likely that *b̥* $> p$ before voiceless consonants and *p* $> b̥$ before voiced consonants, so there was some intermixing in these phonetic developments. As described by Roman Rausch (HPG/§2.7), in cases where these labials did vocalize, the results were consistently *p*, *b̥* $> u$ in Gnomish. A representative sample:

- $\sqrt{naf}$ - [*nap*]: [**napsə* $>$] G. *naus* “keen-witted”, [**napta*- $>$] G. *nautha*- “to hint at” vs. G. *nafa* “suspicion, inkling”, *nafra*- “to nose about” (GL/59).
- $\sqrt{sap}$: [**sapthə* $>$] G. *sauth* “hole, tunnel” vs. G. *saptha*- “to dig” (GL/67); compare also $\text{EQ. } sat$ (*sapt*-) “hole” from the root $\sqrt{SAPA}$ (QL/82).
- $\sqrt{mab}$: [**mab̥sə* $>$] G. *maus* “pleasure” vs. G. *mav*- “to like”, G. *mavri* “appetite” (GL/57).

- $\sqrt{kava}$ - [*kaḃa*]: [**kaḃko* >] G. *caug* “hunchback” and [**kaḃmæ* >] G. *caum* “knob” vs. G. *cavra*- “to stoop” (GL/25).

As noted by Roman Rausch in his later paper discussing Early Noldorin (HPITN/§4.1.3), the few examples of the vocalization of *p* appearing in the word lists of the 1920s seem to show *p* > *ɹ*:

- **kapse* > ^{EN}. *cais* “leap” (PE13/140).
- ^{EN}. *maith* “ravishment; seizure” vs. ^{EQ}. *mapta* (PE13/163).

Rausch suggested that perhaps first *ps*, *pt* > *ks*, *kt* in Early Noldorin, analogous to Salo’s suggestion that *ps* > *χs* (GS/§4.82). In any case, it seems that in the 1920s both *χ*, *p* > *ɹ*. However, the following pair of (unglossed) examples from a table of Early Noldorin diphthongs show a different set of developments (PE15/64):

- **lopse* > ^{EN}. *laus*
- **lepse* > ^{EN}. *leus*

These two examples were not discussed in Rausch’s paper. If we account for the sound change *ou* > *au*, these two examples indicate the vocalization of *p* > *ɹ*, as was the case in Gnomish. These two examples may represent lingering Gnomish ideas, a bridge between the Gnomish pattern of the 1910s (where the vocalizations of *p* were distinct from those of *χ*) and the Noldorin pattern of the 1930s (where the vocalizations of *p* and *χ* were the same).

Post-consonantal developments: As discussed by Roman Rausch (HPG/§2.6; HPITN/§4.1.3), there are a few examples of medial post-consonantal vocalizations of *ɜ* in Gnomish and Early Noldorin of the 1910s and 1920s which follow the same patterns as the Noldorin of the 1930s, namely *ɜ* > *ɹ*:

- G. *Losiar* variant form of *Losgar* = *lôs* + *gar* (GL/54).
- G. *nosied* “kinsman” = *nos* + *ged*, which was revised from earlier *nosged* (GL/38).
- ^{EN}. *thalion* “warrior, hero” < ^E**stalgond*- (PE13/153), an etymology that reappeared in the 1930s.

As shown by the alternate unvocalized forms *Losgar* and *nosged*, it seems Tolkien wasn’t entirely committed to this sound change at the earliest conceptual stages.

There don’t seem to be any clear examples final vocalizations of *ɜ* in Gnomish, but the Early Noldorin phonetic developments resemble later Noldorin/Sindarin: *-ɜ* > *-a*, as noted by Rausch (HPITN/§4.1.4):

- ^E**balga* > ^{EN}. *bala* “hump”, plural *bely* (PE13/138).
- ^E**gr:go* [gṛgo] > *garg* > ^{EN}. *gara* “throat”, plural *gery* (PE13/144).
- ^E**stalga* > ^{EN}. *thala* “valiant; hardy, bold”, plural *thely* (PE13/153).

The plural forms in these examples seem to show that *-ɜi* > *-y* rather than to *-i*, as seen in the Noldorin plural *fili* of N. *fela* from the 1930s.

Summary of Gnomish/Early Noldorin vocalizations: The following table summarizes the vocalizations discussed in this section:

Spirants	ʒ + ð, l, n	χ + þ, s	ɸ + ɸ, s	s, l + ʒ	final l, r + ʒ	final l, r + ʒi
Vocalized (Gnomish)	ɹ + ð, l, n	ɹ + þ, s	ʉ + ɸ, s	si, li	?	?
Vocalized (Early Noldorin)	ɹ + ð, l, n	ɹ + þ, s	ɹ + ɸ, s	si, li	-la, -ra	-ly, -ry

General Conclusions

At all conceptual stages, the consonants ʒ, χ and ɸ of various origins became vowels before other consonants, generally becoming ɹ or ʉ and forming diphthongs with preceding vowels, but occasionally vanishing with compensatory lengthening of the preceding vowel. The voiced bilabial spirant ɸ likewise vocalized sometimes to ʉ, but often remained as labio-dental v.

In Gnomish of the 1910s, these pre-consonantal vocalizations depended on the character of the lost consonant: ʒ, χ > ɹ and ɸ > ʉ, but in Early Noldorin wordlists of the 1920s ɸ > ɹ as well. In the Noldorin of phonetic developments of the 1930s, the vocalizations depending on the character of the preceding vowel: ʒ, χ, ɸ > ɹ after the front vowels a, e, i but > ʉ after the back vowels o, u. In Sindarin of the 1950s-60s it seems the Gnomish paradigm was restored, with ʒ, χ > ɹ and ɸ > ʉ, but the phonetic development of ɸ at this conceptual stage is based only on a single example (leutha-).

In both Noldorin of the 1930s and Sindarin of the 1950s-60s, there were two waves of vocalizations. The first wave was in Old Sindarin/Old Noldorin where ʒ and ɸ (and z) vocalized before voiced stops. The timing of this early wave can be detected by the development of the diphthong ei, which had the same development as primitive diphthong ei > ī in the first wave, as opposed to its later development in the second wave where it either survived or (in Sindarin) became ai in final syllables.

The voiced velar spirant ʒ also vocalized after consonants, becoming ɹ medially at all conceptual stages, except that it merely vanished before high vowels u, y (and probably also i): the only clear examples before high vowels are from the Noldorin of the 1930s. When becoming final after other vowel losses, -ʒ instead became -a at all conceptual stages, except in plural forms where -ʒ > -y (in Early Noldorin) or -i (in Noldorin). We also see ðþ, ðv > ðw > (if final) ðu, but the only clear examples of this are in Sindarin.

A summary of the developments at all conceptual stages are given below:

Old Sindarin/Old Noldorin Vocalizations					
Primitive Elvish	bd	d+d	gd	zb	zg

Spirantalized	<i>ḃd</i>	<i>zd</i>	<i>zd</i>	varies	varies
Vocalized (Old Noldorin)	<i>ṽd</i>	<i>ṽd</i>	<i>ṽd</i>	<i>ṽb</i>	<i>ṽg</i>
Vocalized (Old Sindarin)	<i>ṽd</i>	<i>ṽd</i>	<i>ṽd</i>	<i>ḃb†</i>	<i>ḃg†</i>

The examples marked with a “†” vocalized later (see Post-consonantal Vocalizations below). There is not information to determine the analogous vocalizations in Gnomish and Early Noldorin (if any).

Later Pre-consonantal Vocalizations						
Preceding Vowels	<i>i, e, a</i>	<i>o, u</i>	<i>i, e, a</i>	<i>o, u</i>	<i>i, e, a</i>	<i>o, u</i>
Spirants	<i>z + ḃ, r, l, m, n</i>	<i>z + ḃ, r, l, m, n</i>	<i>χ + ḃ, s</i>	<i>χ + ḃ, s</i>	<i>p + ḃ, s</i>	<i>p + ḃ, s</i>
Vocalized (Gnomish)	<i>ṽ + ḃ, r, l, m, n</i>	<i>ṽ + ḃ, r, l, m, n</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>
Vocalized (Early Noldorin)	<i>ṽ + ḃ, r, l, m, n</i>	<i>ṽ + ḃ, r, l, m, n</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>
Vocalized (Noldorin)	<i>ṽ + ḃ, r, l, m, n</i>	<i>ṽ + ḃ, r, l, m, n</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>
Vocalized (Sindarin)	<i>ṽ + ḃ, r, l, m, n</i>	<i>ṽ + ḃ, r, l, m, n</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>	<i>ṽ + ḃ, s</i>

Not all combinations are attested for every conceptual stage of the languages, but the table above illustrates general trends.

Post-consonantal Vocalizations					
Spirants	<i>r, l, ḃ + z</i>	<i>r, l, ḃ + z</i>	final <i>r, l, ḃ + z</i>	final <i>r, l, ḃ + z</i>	<i>ḃb, ḃv</i>
Following Vowels	<i>e, a, o</i>	<i>i, y, u</i>	<i>a, e, o, u</i>	<i>i</i>	-
Vocalized (Gnomish)	<i>si</i>	?	?	?	?
Vocalized (Early Noldorin)	<i>li</i>	?	<i>-ra, -la</i>	<i>-ry, -ly</i>	?
Vocalized (Noldorin)	<i>ri, li, ḃi</i>	<i>r, l, ḃ</i>	<i>-ra, -la, -ḃa</i>	<i>-ri, -li</i>	?
Vocalized (Sindarin)	?	?	<i>-ra, -la, -ḃa</i>	?	<i>ḃw > ḃu</i> [if final]

Medial post-consonantal vocalization of *sg > si* is seen only in Gnomish, and only sporadically.

In the case of final post-consonantal vocalizations, the “following vowel” was an earlier vowel that disappeared as part of the normal process of final vowel loss. Phonetic developments with lost final *-i* differ, perhaps due to a palatalization of the preceding consonant: *-zʲ* > *-y* (Early Noldorin) or *-i* (Noldorin).

Note that some of the proposed phonetic developments above are based on a very small number of examples. As with any analysis of Tolkien’s languages, the conclusions of this paper must be considered preliminary pending the publication of further material. One of the complaints I’ve made about David Salo’s analysis of these phonetic developments is that he oversimplified things by treating the Noldorin of the 1930s and the Sindarin of the 1950s and 60s as parts of a single conceptual paradigm, and some of his conclusions are incorrect as a result. However, this paper likewise simplifies its analysis by treating the 1930s and 1950s/60s as only two distinct paradigms. There are probably conceptual shifts within those time periods that are not obvious based only on currently published information. Just as some of Salo’s conclusions remain relevant but others are now dubious, it is likely that future publications will necessitate further refinements of the theories presented here.

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