

British Celtic intervocalic *s

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Intervocalic *s normally leaves no direct traces in the Insular Celtic languages, making it difficult to determine its precise development. At the same time, however, because a number of morphological categories once contained *s between vowels (e.g. s-stem nouns, the superlative, the subjunctive, the 2sg verb ending), it is critical to understand its phonological history so that we can better understand the development of both lexical items with intervocalic *s and morphological categories that contained the sequence. The Insular Celtic languages present a challenge because *s is lost between vowels. Though the development is relatively clear in Old Irish, it remains less so in the Brittonic languages. This paper therefore focusses on the situation in Brittonic, hoping to shed some light on *s in those languages. The data come primarily from Welsh, since of the Brittonic languages it most clearly shows the various reflexes. Data from Cornish and Breton are used, however, as appropriate.

Intervocalic *s and *i̯

In many positions in Proto-British, *s merged with *i̯, and as a result we must focus on the development of both sounds in Celtic. In general, intervocalic *s was maintained from Indo-European into Proto-Celtic and further into Insular Celtic. As a result, it came unchanged into Proto-British. The same cannot be said for Proto-Celtic intervocalic *i̯, which was lost very early except when between a preceding front vowel and a following back vowel. Where *i̯ was lost, the vowels contracted to a long vowel identical in color to the first vowel, as is illustrated in the following examples.

* This paper is a heavily revised chapter of my University of Chicago dissertation. For valuable help on various versions of the paper I would like to thank several people: my advisors Jay Jasanoff, Bill Darden, and Victor Freidman; my University of Vienna colleagues David Stifter and Stefan Schumacher; the audience at Societas Celtica Nordica 10; Iwan Wmffre, who discussed some of the Welsh data with me; and, for several valuable insights and discussion, Anders Jørgensen.

The sequence $*-e_{\dot{i}}e-$, commonly found in the Indo-European *i*-stem nominative plurals and the denominatives / causatives (e.g. L *monet* “he warns, lit. he causes to come to mind” < $*mon-e_{\dot{i}}e-ti$), is standardly assumed (see McCone 1994: 117) to yield Proto-Celtic $*\bar{i}$ as a result of contraction ($*e_{\dot{i}}e > *\bar{e}$) and Common Celtic raising ($*\bar{e} > *\bar{i}$).¹ The Old Irish nominative plural ending of *i*-stems is *-i*, which continues Pre-Irish $*-\bar{i}s$ (e.g. *flaithi* “lords” < Insular Celtic $*\bar{u}lat\bar{i}s < *\bar{u}late_{\dot{i}}es$). Gaulish appears to support the *i*-stem nominative plural in $*-\bar{i}s$ as well, since in that language we find, written in Greek script, the ethnonym *NITIO-BPOΓEIC* “qui est dans son pays propre,” from $*-mroge_{\dot{i}}es$ (cf. OIr *mruig*, W *bro* “land”) (RIG I, G-275). The most straightforward explanation of the form is that *-eis* represents [īs] according to later Greek pronunciation habits, in which case *-BPOΓEIC* [brogī̄s] supports a Celtic change $*-e_{\dot{i}}es > *-\bar{i}s$ (see McCone 1996: 7).

The denominative / causatives also show $*-e_{\dot{i}}e- > *-\bar{i}-$. While Old Irish causatives are compatible with $*-e_{\dot{i}}e- > *-\bar{i}-$, as seen in *roithid*, *·roithi* “sets in motion” < $*ro\bar{i}ti < *rote_{\dot{i}}eti$ next to *rethid*, *·reith* “runs” < $*reteti$, the Brittonic languages actually require an immediate preform $*\bar{i}$. As Green (1997: 130) has shown for MW *cyll*, MC *kyl*, and MB *quell* “loses,” these forms can only come from a preform $*kosl\bar{i}t$, showing final *i*-affection.² There are a small number of other forms in the Brittonic languages that show the same development, some with Old Irish cognates: MW *cyll*, OIr *·coilli* “damages;” W *hyllt* “splits,” OIr *·scoilti* “id;”³ and, with secondary (Insular?) Celtic zero-grade for *o*-grade, MW *trenghit* / *threingk* “perishes,” OIr *·tréici* “abandons.”⁴ Celtiberian *uerzoniti* and Gaulish *soniti* are likely, though not provable, Continental Celtic examples of a causative $*sonh_2-e_{\dot{i}}e-ti$. Taken together,

¹ On the other hand, Schrijver (1995: 393-394; hereafter simply “Schrijver”) argues that $*-e_{\dot{i}}e-$ remained everywhere in Celtic. However, this view is unreconcilable with the evidence in the daughter languages (see especially the British Celtic denominatives).

² Green does note that a preform $*kosl\bar{i}et$ would also give the British forms, but he rightly points out (130) that “there is no evidence that $*i\bar{e}$ [$< *e_{\dot{i}}e$ AMG] ever contracted to $*i\bar{e}$ ”.

³ As Anders Jørgensen points out to me, however, the initial consonants of *hyllt* and *·scoilti* do not correspond exactly. I cannot explain the difference.

⁴ For an alternate view of W *trenghit* / *threingk*, OIr *·tréici*, see McCone (1998: 470).

this evidence very strongly suggests that the Inner Celtic outcome of the denominative / causative $*-eje-$ was $*\bar{i}$. Thus, $*\bar{i}$ in the sequence $*e\bar{i}e$ must have been lost very early in Proto-Celtic.

Other weak verbs in Old Irish also show the loss of $*\bar{i}$. Old Irish \bar{a} -verbs continue $j\bar{e}/o$ -presents built to nouns in $*-eh_2$. Thus, a putative IE $*m\bar{r}ueh_2$ (OIr *marb* “dead”) was made into a verb by attaching $*-je/o-$ to it. The resulting Proto-Celtic $*maru\bar{a}je/o-$, after the loss of $*\bar{i}$, became simply the stem $*maru\bar{a}-$ seen in Old Irish *marbaid*, *·marba* “kills” < $*maru\bar{a}ti$. Similar is the case of OIr *ruidid*, *·ruidi* “reddens” < Proto-Celtic $*rud\bar{i}ti$ < $*rud\bar{i}eti$ < PIE $*h_1rudh-eh_1-je-ti$ (see Jasanoff 2002-3: 147).

Though intervocalic $*\bar{i}$ frequently disappeared in Proto-Celtic, it was not universally lost. As mentioned above, it was retained between a preceding front vowel and a following back vowel, as illustrated by the following examples: MW *raeadr* “torrent,” OIr *riathar* “id” < Proto-Celtic $*reiatro-$, MW *trydydd* “third” < PC $*trit\bar{i}o-$ (cf. Skt *tr̥t̥iya-*), and MW abstracts in *-edd*, OIr *-e* < IE $*-i\bar{i}\bar{a}$ (cf. Gk *sophiā* “wisdom”). As the last two examples show, $*\bar{i}$ sometimes developed to $*\bar{o}$ in British Celtic when following an accented front vowel. Since the accent in Proto-British was universally penultimate, the *dd* only appears word-finally in the attested languages (following the loss of final syllables).⁵ In addition to the environment given above, there may be one more place where $*\bar{i}$ was not lost: following the first vowel of the word. Examples like OIr *sceid* (disyllabic) “vomits” < $*skei\bar{e}ti$ suggest that the $*\bar{i}$ was not lost after the first vowel, since OIr $*sci(i)d$ < $*sk\bar{i}ti$ would have been expected.

At this point we have completed our preliminary overview of intervocalic $*s$ and $*\bar{i}$ in Proto-Celtic. We have seen that $*s$ was generally kept while $*\bar{i}$ was frequently lost. With these facts in mind, we may mention a particularly vexing morphological grouping in Brittonic that the present study hopes to shed some light on: the problem represented by the Welsh plurals in *-Vdd*. The plural endings in question (given in their MW forms) are *-edd*, *-ydd*, and *-oedd*. The ending *-edd* is

⁵ Any exceptions are due to analogy, e.g. *byddaf* “I am wont to be”, modelled after *bydd* “he is wont to be.”

associated with \bar{i} -stem nouns and is generally assumed to continue the Indo-European $i\bar{h}_2$ -stem proterokinetic nom pl $*(i)\bar{i}é\bar{h}_2es$. Indo-European $*(i)\bar{i}é\bar{h}_2es$ gave British Celtic $*-i\bar{i}\bar{a}s$ and then $*-e\bar{i}\bar{a}s$ via \bar{a} -umlaut (lowering) and finally $-edd$ via the hardening of $*\bar{i}$ to $*\bar{d}$ mentioned above. That $-edd$ continues $*(i)\bar{i}é\bar{h}_2es$ is relatively clear. Both $-ydd$ and $-oedd$, however, have a much more opaque history. Jackson (1953: 350; hereafter simply “Jackson”) and Pedersen (1913: 95-6) claim that $-oedd$ continues both $*-esa$, the s -stem neuter plural, and $*-e\bar{i}es$, the i -stem nominative plural, while $-ydd$ continues $*-i\bar{i}om$, the genitive plural of i -stems. Their view of $-ydd$ is certainly incorrect, since it would be remarkable if the gen pl contributed a plural marker. Nowhere else does an oblique plural surface in British Celtic. Further, we have seen above that $*-e\bar{i}e-$ gave $*\bar{i}$ already in Proto-Celtic, meaning that the i -stem nom pl $*-e\bar{i}es$ could not directly have given MW $-oedd$. Morris Jones (1913: 99, 202), on the other hand, holds that $-ydd$ continues $*-e\bar{i}es$ and $-oedd$ $*-esa$. This idea, too, cannot be correct. This paper therefore aims to determine the proper reflex of intervocalic $*s$ in the hopes of being able to provide a more satisfactory explanation of the Welsh plurals and other sequences with $*s$.

Previous Accounts of $*s$

The two most thorough treatments of the problem of intervocalic $*s$ in the Brittonic languages are Jackson (347-362, 513-525) and Schrijver (383-399). Because the data are rather complicated, the two proposals will be discussed here in some detail. Below in Table 1 are the primary data relevant to the development of $*s$. Cases of both $*s$ and $*\bar{i}$ are given together, since the reflexes fall together. The data are divided into four groups, based roughly on the Welsh outcome. The first group (1) contains words in which pretonic $*s$ and $*\bar{i}$ have combined with a preceding vowel to give a diphthong; the second group (2) contains words in which the vowel before pretonic $*s$ and $*\bar{i}$ became MW i ; the third group (3) contains $*s$ and $*\bar{i}$ following a tonic vowel; and the final group (4) has $*s$ following a u -diphthong.

Attested Forms	Early Proto-British Forms
(1) MW <i>mwyalch</i> “blackbird”	< * <i>mesal-ko</i> ⁶
MW <i>gaeaf</i> “winter”	< * <i>g̃iamo-</i>
MW <i>raeadr</i> “torrent”	< * <i>reiatro-</i>
MW <i>haearn</i> “iron”	< * <i>h̃iarno-</i> < * <i>h̃iarno-</i> ← * <i>iharno-</i> < * <i>isarno-</i>
(2) MW <i>dieu</i> “days”	< * <i>dĩĩoues</i>
MW <i>miaren</i> “berry”	< * <i>mĩĩareno-</i>
MW <i>chwiorydd</i> “sisters”	< * <i>s̃uesor</i> + - <i>ĩio-</i>
OW <i>guiannuin</i> “spring” (=MW * <i>gwiannwyn</i>)	< * <i>uesantēno-</i>
(3) MW <i>dydd</i> “day”	< * <i>dĩĩou-</i>
MW <i>gwiw</i> “fit”	< * <i>uesu</i> ⁷
MW <i>gwaew</i> “spear”	< * <i>uo-gaisu</i> ⁸
MW <i>mynydd</i> “mountain”	< * <i>monĩio-</i>
MW <i>chwaer</i> “sister”	< * <i>s̃uesūr</i>
OW <i>nouid</i> , ModW <i>newydd</i> “new”	< * <i>nouĩio-</i>

⁶ The equation with L *merula* < **mesal-* is correct, though a preform **misal-* would work as well for both languages, since Latin lowers **i* to **e* before **r* arising from **s* (cf. *serō* “I sow” < **sisō* < **si-sh₁-ō* and *cineris*, gen sg of *cinis* “ash” < **cinises*). Meiser (1998: 67-8) argues that the lowering only occurred in interior syllables (presumably on the strength of L *pirum* next to Gk *ápion* “pear”), but see Parker (1988) for the argument that the lowering also occurred in initial syllables. Nothing here depends critically on one of these positions being correct.

⁷ The short vowel here is a critical difference between Schrijver’s and Jackson’s derivations. The Indo-European developments of **h₁uesu* have been treated by Nussbaum (1998: 149-151), while Schrijver (1995: 386-7) has dealt specifically with the Welsh form. If we adopt, as Jackson does, **h₁uēs_u-* as the preform of MW *gwiw* and OIr *fíu*, the stem **h₁uesu* would have preserved three different ablaut grades, **h₁uēs_u*, **h₁ues_u*, and **h₁uos_u*, all of which appear in Celtic. The *o*-grade is unambiguously attested in OIr *fó* “good” as well as Palaic *wašū* “good things” and Luvian *wāšu* “well, good (noun and adj).” The *e*-grade is attested in Celtic by OIr *feb* “excellence” < **h₁ues_u-eh₂* and likely in Skt *vasu-*, since on *o*-grade would probably become **vāsu* by Brugmann’s Law. Finally, the *ē*-grade is supposedly attested in OIr *fíu* “worthy” and Welsh *gwiw* “id” (though the Irish is ambiguous between the *e*- and *ē*-grades). The question is how to connect the different ablaut grades. A paradigmatic connection is unlikely under our current understanding of nominal inflection: *ē*-grade and *o*-grade should not appear in the same paradigm. Only a derivational account is then possible. Widmer (2004: 188ff.) has offered one derivational account for the lengthened grade in Welsh and Irish, relying on an Indo-European-level derivational chain. It is not clear to me that the data support Widmer’s proposed derivational scheme. Even if they do, however, we are still left with the case that Celtic preserves three separate ablaut grades of the same root, a rather unusual, although not impossible, situation. The above-mentioned difficulties with the lengthened-grade vowel lead Schrijver to posit **uesu-* as the preform for MW *gwiw*, and his preform is adopted here.

⁸ See Schrijver (384 note 3) for reconstructing an Insular Celtic *u*-stem.

	MW <i>tei</i> “houses”	< * <i>tegesa</i>
	MW <i>doe</i> “yesterday” (= OCo <i>doy</i> “id.”)	< *(g) <i>des</i>
(4)	MW <i>tawaf</i> “I am silent”	< * <i>tausV-</i>
	MW <i>rhew</i> “frost”	< * <i>preuso-</i>

Table 1: Data for *s

Jackson (517-20, 694) argues that original (Indo-European) intervocalic *s was lost in the 1st century CE via *h (seen in the metathesis of *h in *haearn*) and that the resulting hiatus was filled by *i̇. The only principled exception to *i̇ as hiatus filler that Jackson notes is after the *u*-diphthongs, in which case the diphthong became a simple vowel plus *u̇ (see Jackson: 312-4, 514-5).⁹ The word **tausV-* is an example of this latter case with the diphthong **au̇*, which normally monophthongized to **ɔ̇*, giving MW *au* word-finally and MW *o* otherwise. In the case of *tawaf* “I am silent,” however, the *s was lost before the monophthongization of **au̇* to **ɔ̇*, and the *u̇ was treated simply as an intervocalic consonant, not as part of a diphthong, thus *tawaf* < **tauaui* < **tausai* (see also below).

Given the merger of *s and *i̇ in nearly all environments, the problem reduces to one of determining the outcome of British Celtic intervocalic *i̇. Jackson proposes that *i̇ hardened to [ð] via an intermediate stage *j (presumably the voiced palatal fricative [j]) after accented front vowels, as seen in *mynydd* < **moniio-* and *dydd* < **diiious*, though he notes that the development was far from exceptionless. The lack of -dd in words continuing an old intervocalic *s in his examples would have to be due to chance, part of the larger problem of the inconsistent hardening of *i̇ to [ð] across the Brittonic languages.

Following unstressed syllables, the outcome of *i̇ varied according to vowel and distance from the stressed syllable. Thus, according to Jackson, **-eiá-* and **-iiá-* merged as **-iiá-* > **-əiá-* > *-aea-* (*-wya-* after labials), as seen above in Table 1 (1):

⁹ According to Jackson (618 note 2), the *w* in *gwíw* < **u̇esu-* also arose under the influence of the **u*, this time following the *s. He suggested the same for *gwaew* < **uo-gaisu-*, although he viewed the word as an *o*-stem.

MW *gaeaf* < **giiámo-*, *raeadr* < **reiátro-*, and *mwyalch* < **mesálko-*. When **i* preceded a pretonic **a* or tonic **o*, *-*ei-* and *-*ii-* again merged as *-*ii-* and further developed to *-*ī-* (written as MW *i*), seen in the examples in (2): MW *dieu* < **diióues*, *chwiorydd* < **süesor-iio-*, and OW *guiannuin* < **üesanténo-*.¹⁰ Jackson cites no examples of intervocalic **s* and **i* after non-front vowels.¹¹

Though Jackson's proposal for intervocalic **s* remained the standard explanation for many years, Schrijver has recently reexamined the evidence, pointing out a number of problems with Jackson's account. An important way in which Schrijver's account differs from Jackson's is that Schrijver denies that **s* was lost early. The later loss of **s* allows him to claim that intervocalic **s* and **i* occasionally developed distinct reflexes in British Celtic. Further, he argues for different preforms of several of Jackson's examples, and he adduces new evidence not considered by Jackson.

Schrijver (383) claims that forms with provection provide evidence against the early loss of **s*. In some morphological categories and in compound nouns, the presence of **s* caused the devoicing of preceding consonants when the two came in contact due to syncope. It is this devoicing, called provection, that serves as Schrijver's principle evidence that **s* became **h* internally and did not disappear until syncope.¹² Examples are MW *haccraf* "holiest" [hakrav] < **hagr'hav* < **sakrisamos* (cf. MW *hagr* "holy" [hagr]), MW *kyntaf* "first" (not **kynnaf*) < **kintisamos*, and MW *gwlyppaf* [gwłəpav] "wettest" (cf. MW *gwlyb* [gwłib] "wet") < **ulikuisamos*.

¹⁰ Jackson (361) explains MW *gwaeanhwyn* as a cross of OW *guiannuin* (= MW **gwianhwyn*) < **üesanténo-* with a unattested simplex **gwaeant* < **üesánto-*.

¹¹ Jackson's derivation of OW *moi*, MW *moe* "greater" (358) from **māios* (= **meh₂-ios*) is probably incorrect. Better is from **mais* < **meh₂-is* (see Jasanoff 1991: 179; Schrijver 2007). Hamp (1979: 217) suggests that MW *heid* NW *haidd* "barley" be derived from **sasijo-*, though he admits that the Welsh could also continue **sasjo-*, seen in Skt *sasyám* "id." Schrijver is similarly uncertain (318-9), though he favors the preform **sesjo-*. In the end, given the uncertainty of the preform, this cannot be added as an example of a non-front vowel before intervocalic **s*. For *gwaesaf* "guarantee" < **uo-sistamu-* (cf. OIr *fóessam*), the **s* has likely been analogically restored (see below).

¹² The same devoicing phenomenon is found in Old Irish, as seen in the standard example *ríched* "kingdom" from **rīgo-sedom* "king-seat," though see Stifter (2004) for an alternative explanation of the voiceless *-ch-* that does not rely on provection.

Schrijver argues that the above words indicate that **h* was preserved at least until the mid- to late sixth century, when syncope is thought to have occurred,¹³ and that **h* could not have been lost early enough to fall together with **i* everywhere. Therefore, **h* (< **s*) sometimes had different reflexes from **i*.

Schrijver draws three primary conclusions about the development of **s* and the vowels around it. First, he assumes that the hiatus left by the loss of **s* was filled by **u* when the **s* was followed by **u*. For *gwiw*, the second *w* clearly continues the **u* of **uesu-*. For *gwaew*, argued by Schrijver to be a *u*-stem in Insular Celtic (384 note 3), a preform **uo-gaisu-* gives *gwaew* directly (**ai* > **ē* > **oe* and then **oe* > *ae* after *w*). The second claim Schrijver makes about **s* is that examples like *gwiw* < **uesu-*, *tei* < **tegī* < **tegesa*, *chwiorydd* < **suesor-iī*, and OW *guiannuin* < **uesanteino-* all show raising of **e* to **i* before a back vowel. Finally, he claims that the same forms plus *doe* < **des* show that front vowels were lengthened before **s*. Schrijver (398) creates a relative chronology of the loss of **s* with the following stages:¹⁴

- (1) **s* > **h* / V__
- (2) **e* > **i* / __*h* if followed by a back vowel;
- (3) front vowels lengthen before **h*
- (4) sub-phonemic glides develop before final syll., **u* before **u* and **i* before **i*
- (5) final syllables reduced to schwa (phonemicizes the glides in (4))
- (6) apocope
- (7) syncope
- (8) general loss of intervocalic **-h-*

Table 2: Schrijver's Chronology for **s*

We should note that Schrijver assumes that the following vowel was the sole determiner of what glide developed from **h* (see step (4) in Table 2). Thus, he claims that if **a* followed, there was no glide, since **a* is neither front nor back.

¹³ Sims-Williams (1990: 248) argues that Jackson's absolute dates for several key sound changes, including syncope, may be as much as 50 years too late, but 50 years makes little difference here, especially since Jackson's relative chronology of sound changes still holds.

¹⁴ Schrijver combines steps (2) and (3) and steps (4) and (5) in his chronology, but the presentation given here does not change his proposal in any way.

Additionally, Schrijver assumes that pretonic $*\underset{\sim}{i}$ developed as posited by Jackson, and $*\underset{\sim}{i}$ gave $*\underset{\sim}{\delta}$ after a penultimate (i.e. accented) vowel.

Schrijver argues that the sound changes in Table 2 account both for the data presented above, as well as for a number of morphological categories. It will be helpful to show some sample derivations in order to evaluate his proposal more clearly. These derivations are presented below in Table 3, but some explanatory remarks are necessary. Important for Schrijver's analysis is his claim that some *s*-stem neuter plurals were remodelled before apocope from the inherited $*-esa$ to $*-es\bar{i}$ via the replacement of the neuter nom / acc plural $*a$ with the thematic nominative plural $*\bar{i}$. He gives a parallel from the *n*-stems (395), in which plurals like those seen in OW *anu*, pl *enwein* "name" (< Proto-British $*an\underset{\sim}{u}an$, pl $*an\underset{\sim}{u}an\bar{i}$) and *cam*, pl OW *cemmein* "step" (< Proto-British $*kamman$, pl $*kamman\bar{i}$) have replaced inherited plurals $*an\underset{\sim}{u}ana$ < $*anmana$ (cf. OIr *anman* "names") and $*kammana$ < $*kangmana$ (cf. OIr *c\acute{e}immen* "steps"). In the case of the *s*-stems, the importance of the replacement can be seen in the derivation of plural *tiroedd*, which for him would be regular from $*\bar{i}\bar{r}es\bar{i}$ "lands," which he argues replaced the inherited $*\bar{i}\bar{r}esa$.¹⁵ Thus, Schrijver sees the plural $*tegesa$ as a rare archaism that was not remodeled. See Table 3 for sample derivations (taken from Schrijver: 399).

---Insert Table 3 approximately here---

Through the sound changes outlined in Table 2 and illustrated in Table 3, Schrijver accounts for the data in Table 1 as well as the *-oedd* plural ending. Furthermore,

¹⁵ As noted above, Schrijver argues (395-396) that the replacement of $*-a$ by $*-\bar{i}$ must have occurred before the loss of final syllables. He claims that after the apocope there would be no functional reason for replacing an already marked pl $*camman$ (sg *cam*) with *cemmein*. This argument is not convincing. Welsh double-marks plurals quite frequently, and applying the productive plural morpheme [+umlaut] to already existing plurals should not be considered unusual in any way (cf. *car* "friend" pl *carant* and *cereint*). The same phenomenon can be found in German, in which the plural marker [+umlaut] is applied to already-marked plurals, e.g. *Baum* "tree" pl *B\ddot{a}ume* (but MHG pl *Baume*). It is, of course, still possible that the replacement of $*-a$ by $*-\bar{i}$ in neuters did occur (and was pre-apocope), but the *n*-stem data do not require a pre-apocope date. Only the *s*-stem data, if Schrijver's analysis is adopted, would then require the early date for analogical replacement.

though we have not seen evidence of it above, Schrijver also argues that the *-ydd* plural is the regular continuant of the *i*-stem nominative plural **-e_ies*. For him, **-e_ies* gives **-i_ies* and then develops to **-i_oes* and **-i_o = -ydd*.

Analysis of Schrijver's account

Schrijver's account represents a significant advance over Jackson's from 40 years earlier, but it is not without problems. Although it is not central to his account, as a point of departure we may examine his explanation of the *-ydd* plural ending, which he takes from the *i*-stem plural ending **-e_ies*. We have seen above that intervocalic **i* was in frequently lost already in Proto-Celtic, and the Proto-Celtic outcome of the sequence **-e_ie-* was **i*, thus making Schrijver's account of *-ydd* < Proto-British **-i_ies* < Common Celtic (and PIE) **-e_ies* impossible. Furthermore, a search of Welsh words with *i*-stem etymological counterparts suggests that the *-oedd* plural, rather than the *-ydd* plural, is proper to the *i*-stems. Etyma that are likely *i*-stems are given below in table 4, along with the dates of the plural attestations before the 15th century (as given in the GPC).

<i>iaith</i> "language" pl <i>ieithoed</i> (13c)	no OIr etymon
<i>gre</i> "stud" pl <i>greoed</i> (1346)	= OIr <i>graig</i> "horse"
<i>mor</i> "sea" pl <i>moroet</i> , <i>myr</i> (13c)	= OIr <i>muir</i> "id."
<i>gwlad</i> "land" pl <i>gladoet</i> (1200), <i>gwladoed</i> (13c)	= OIr <i>flaith</i> "lord"
<i>gwledi</i> (13c), <i>gwledydd</i> (14c)	
<i>bro</i> "region" pl <i>brooet</i> (12-13c), <i>broyd</i> (14c)	= OIr <i>mruig</i> "land"
<i>gwawd</i> "praise song" pl <i>gwawdeu</i> (14c)	= OIr <i>fáith</i> "prophet"
<i>budd</i> "spoils" pl <i>budyeu</i> (14c)	= OIr <i>búaid</i> "victory"
[<i>drum</i> "ridge" pl <i>drumain</i> (12c), <i>drumiau</i> (14c)	= OIr <i>druimm</i> "back"]
[<i>cnaw</i> "bone" pl <i>knouein</i> (12c)	= OIr <i>cnáim</i> "id."]

Table 4: Etymological *i*-stem plural formations

Significant additional philological work can obviously still be done on the list, but the results are already suggestive. It appears that the *-oedd* plural, however it should be explained formally, has some sort of affinity for the *i*-stems. In half of the above (admittedly small) list, *-oedd* is the only or the oldest plural ending attested. The other

examples without an *-oedd* plural do not represent counterevidence. The *u*-stem ending, found in *gwawdeu* and *buddyeu*, is the most common in Middle Welsh and could be extended to other nouns at any time. MW *drum* is not an exact cognate of Irish *druimm*, and *cnaw* may rather be an *n*-stem (see Stüber 1998: 72). The most probable interpretation of these results is the following: the affinity of etymological *i*-stems with the *-oedd* plural suggests that in some way, the *-oedd* plural continues the old *i*-stem plural ending or a modification of it. The specifics of how this might be are explored below. A further point is that explaining the *-ydd* plural as a continuant of the Indo-European ending **-eies* is impossible. The equation does not work phonologically, and the connection of *i*-stems with a plural ending *-ydd* is negligible.

There are, however, more important areas in which Schrijver's explanation appears to run into trouble. For instance, there is inconsistency with the treatment of **h* arising from **s*. Schrijver argues quite firmly that **h* was retained until after syncope, where it caused devoicing of neighboring consonants. However, **ð* arising from **h* via **i̇* (seen in Table 3 in the derivation **tiresī > tiroedd*), is not devoiced by the **h* which, according to his arguments, should still be present. It appears from his use of parentheses around **h* that he intends for **h* to disappear after a subphonemic **i̇* or **u̇* has developed around it. My good-faith interpretation of his presentation is that the **h* disappears earlier when not intervocalic (i.e. perhaps as early as step (4) in the chronology in Table 2). The **h* would then not cause devoicing of the **ð* because it was lost in that position.

This objection does not really get to the heart of the matter, however. The main issue confronting Schrijver's account is that several data points suggest that **s* was lost quite early, i.e. that it did not remain as **h* until syncope. A critical paradigm is MW *tawaf* "I am silent", 3sg *teu* and MB *tauaff*, 3sg *teu* "id" (see Schumacher 2004: 621-2; hereafter "Schumacher"). Since the verbal root is **taus-*, an early loss of **s* would lead to a verbal root **tau-*, while a late loss of **s* (after the

monophthongization of **au* to **ɔ̄*) would give a root **tɔ̄s-*.¹⁶ A retention of **s* as **h* until after syncope, as argued by Schrijver, is difficult to maintain, since a late British root **tɔ̄h-* cannot easily generate the Welsh forms. We may note that the phonologically regular paradigm from late British **tɔ̄h-* would most likely be 1sg MW **toaf*, 3sg **taw*, which would first require levelling of **toaf* to *tawaf* and then some sort of analogy to yield *teu* from **taw*. The paradigm of *dyfot* “come” offers an interesting parallel, since the attested paradigm there is 1sg *doaf* / *deuaf*, 3sg *daw* < **dāge/o-* (Schumacher 190). While other interpretations are possible, it seems that the expected paradigm would have been 1sg *deuaf*, 3sg *daw* (cf. Schrijver 329) and that 1sg *doaf* was created as a regularized 1sg from *daw*. The point of the comparison is that a verb **taus-*, should **s* be retained, would have led to MW 1sg **toaf*, 3sg **taw*, similar to 1sg *doaf*, 3sg *daw*, and that the analogical creation of 1sg *tawaf*, 3sg *teu* seems extremely unlikely.¹⁷ Even if a plausible analogy can be found for the Welsh, however, the Breton forms still require explaining, and they argue even more forcefully for an immediate pre-form **tau-*. In the end, it appears that the late Proto-British form of the verb must have been **tau-*, which requires early loss of **s*.

Further data that suggest an earlier loss of intervocalic **s* are OW *timuil* (MW *tywyll*) “darkness” (MB *teffoal* and OIr *temel*) < **temHes-elo-*,¹⁸ as well as several forms of the verb “to be”. Schriver’s derivation of the *-oedd* plural from **-esī* shows that under his analysis, the expected long vowel from a lengthened **e* is **ē*, which gives *oe*. This **ē* causes a number of problems. From an Insular Celtic **temeselo-* Schrijver’s rules would give a Late Brittonic **timēhelo-*, which, with the Welsh

¹⁶ Jackson is incorrect when he argues (306) that **au* gave **ɔ̄* in the first century CE, but it is clear that the monophthongization took place before syncope (i.e. before **h* would disappear under Schrijver’s account).

¹⁷ It must be noted that assuming the early loss of **s* in **taus-*, as Jackson does (313, 369), still requires some analogy to yield the attested 1sg *tawaf*, 3sg *teu*, but the analogy is straightforward. That is, if Schumacher is correct that the verb transferred to *i*-inflection in late Proto-British (621-2), **tau-* would give 1sg **teuif* (see Schrijver 270-1 on the phonology), 3sg *teu*, and the regular replacement of *-if* by *-af* (with concomitant de-umlaut) would give 1sg *tawaf*, 3sg *teu*. The same replacement will generate the Breton forms.

¹⁸ The Welsh actually continues a **-io-*-stem but the agreement of Irish and Breton makes it likely that the **-io-*-formant is a late Welsh addition (see Schumacher 142-3).

replacement of the simple thematic by a $\check{i}e/o$ -thematic, would most likely give MW **tyoell vel sim.*, not *tywyll*. The long vowel $*\bar{e}$ will also not give the correct outcome for several forms of the verb “to be,” namely the 2nd sg *wy[t]* and 3sg conjunct *-wy*, derived from **esesi* + 2nd person pronoun **t* and **-eset*, respectively (see Schumacher 304). These two forms of the verb “to be” should, under Schrijver’s analysis, be **oet* and **oe*.

There is, of course, a simple alternative, namely, that the sequence **esi* (as in the pl *-oedd* < **-esī*) gave **ēhi* while **ese* (as in 3sg *-wy* < **eset*) gave $*\bar{e}$ via contraction. If the contraction of **ese* occurred early enough (before the rise of $*\bar{e}$ from the monophthongization of **ai*), then the resulting long vowel would have merged with $*\bar{e}$ and become *wy* (OW *ui*). The problem with this explanation is that in order for the contraction to take place, one must posit that **s* was lost intervocally at least some of the time, directly in contradiction to the overall argument of Schrijver. Arguing instead that **ehe* gave $*\bar{e}he$ while **ehi* gave $*\bar{e}hi$ (at stage 3 in Table 2) is also difficult, since one would have to claim that the lengthening of **e* before a high vowel created a lower vowel, $*\bar{e}$, than the lengthening before a mid-vowel, which gave $*\bar{e}$.

These problems again suggest that an early loss of intervocalic **s* is needed. Standing in the way of such an argument, however, is the evidence of provection (Schrijver 383), in which devoicing must result from an **h* present until after syncope. As it happens, however, the evidence of provection need not require that intervocalic **s* gave **h* and that this **h* was retained until after syncope. Jasanoff (1994: 205-6), taking the traditional position advocated by Jackson for the early loss of internal **s*,¹⁹ argues that in all the cases where provection is found, it is from an analogically restored **s*. This restoration is possible because all of the places where provection is found (the subjunctive, equative, superlative, and compounds) had some

¹⁹ Jackson actually argues (521) that internal **h* was preserved into the sixth century in those positions where it caused provection but otherwise lost by the late first century. He gives no reason for the discrepancy in dates. Jasanoff gives the explanation necessary to account for the difference.

forms in which the **s* was not intervocalic and was therefore preserved. For example, the superlatives mentioned by Schrijver are properly to be taken as having **s* reintroduced after the type **treksamos* “strongest” (MW *trechaf*), where the **s* was not intervocalic and thus not lost via the rule changing intervocalic **s* to **h*.²⁰ It is this secondary **s* (**s*₂ in Jasanoff’s terminology) that yielded the **h* still present at the time of syncope.²¹ A good parallel to this development in Welsh is the *s*-aorist in Greek, in which forms like *éluse* “he loosened” have had the sigma reintroduced from forms like *égrapse* “he wrote.”

It is certainly true that the proposed analogy is less economical than simply assuming the retention of **h* until after syncope. As has already been observed, however, the assumption of a retained **h* presents many problems. Therefore, the relative merits of the two proposals must be weighed against each other. At the very least, it can be admitted that the argument for retaining **h* until syncope is not certain.

An interim summary of the analysis of Schrijver’s account is in order. Although not central to his claims, it has been shown that the derivation of the plural ending *-ydd* from the *i*-stem nom pl **-ejes* is incorrect. More importantly, it has been argued that the necessarily late retention of intervocalic **h* (< **s*) need not be true. Certain facts (1sg *tawaf*, OW *timuil*, 2sg *wyt*, 3sg *-wy*) even indicate that the intervocalic **h* was lost rather early. A couple further facts can be mentioned here that present additional difficulties for Schrijver’s account.

First, there is the 2nd sg verb ending *-ydd* < **-esi*. Schrijver’s derivation of pl *-oedd* < **-esī* requires the same outcome for **-esi* (**-esī* vs. **-esi* should not make any difference), but **-oedd* < **-ēhi* < **-esi* is not the ending of the 2nd sg verb. One might argue that the 3rd singular could have exerted influence over the second singular.

Under such an argument, one could imagine the following steps:

²⁰ As David Stifter and Stefan Schumacher have pointed out to me, the change of **ks* (phonetically [xs]) to **x* was quite early (Jackson 536ff.). Obviously, if it preceded the change of **s* to **h*, the analogy proposed by Jasanoff would be impossible, but the relative chronology is indeterminate, meaning that the analogy is still possible.

²¹ The case of compounds like *dyffrynt* “valley” < **dubro-sento-* “water-path” is essentially the same, although in this instance the simplex *hynt* provided the necessary analogical model.

	2nd sg	3rd sg
Insular Celtic	*-esi	*-eti
Lengthening	*-ēhi	*-edi
<i>i</i> -affection ²²	*-ēhi	*-idi
analogy	*-ihi > -ydd [ið]	*-idi > -yt [id]

Table 5: Possible analogical explanation for 2sg -ydd under Schrijver’s analysis

The problem with this analogy is that if we follow Schrijver’s analysis, *-ihi would have been anomalous in Pre-Welsh: it would be the only example of a short vowel before *h. Even if we grant that the *ē were replaced by *i, an automatic phonetic lengthening of *ih to *īh might have been expected. As a point of interest, *-īhi with *ī would have agreed with the 1st sg *-īμi (MW -if), strengthening the position of both endings in the paradigm. That neither -oedd (the expected outcome from Schrijver’s account) nor -idd (the likely analogical outcome) is found as the 2nd sg verb ending is thus surprising.

The above account, however, assumes that the derivation of -oedd from a reformed *s*-stem nominative plural *-esī is sound. In fact, it is not. There does not appear to be a solid connection of *s*-stems with -oedd plurals, despite the claims by many scholars over the years (Morris Jones 1913: 99, 202; Pedersen 1913: 95-6; Jackson 350; Schrijver 394-6). To show this, all Welsh nouns with etymological connections to *s*-stems were collected (using the same procedure as above in Table 4 for the *i*-stem nouns; the same caveats apply).

<i>tir</i> “land” pl <i>tiret</i> (12c), <i>tiryoad</i> (14c)	= OIr <i>tír</i> “id.”
<i>nef</i> “sky” pl <i>nym</i> (13c), <i>nefau</i> (14c); <i>nefoet</i> (c 1300), <i>nefoed</i> (14c)	= OIr <i>nem</i> “heaven”
<i>ma</i> “field” pl <i>mei</i> / <i>mey</i> (13c), <i>maeu</i> (14c)	= OIr <i>mag</i> “id.”
<i>glyn</i> “glen” pl <i>glennyeu</i> (13c), <i>glynnoed</i> (c 1330)	= OIr <i>glenn</i> “valley”
<i>din</i> “fort” no old plural	= OIr <i>dún</i> “id.”
<i>ty</i> “house” pl <i>tei</i> (12c), OW -te	= OIr <i>tech</i> “id.”
<i>lled</i> “width” no old plural	= OIr <i>leth</i> “side”
<i>glin</i> “knee” pl <i>glinyeu</i> (13 & 14c)	= OIr <i>glún</i> “id.”
<i>llyn</i> “pool” pl <i>linnouein</i> (10-11c), <i>llinnev</i> (12-13c), <i>llynnyeu</i> (c 1250)	= OIr <i>linn</i> “id.”
[<i>mis</i> “month” pl <i>missoed</i> (1346)]	= OIr <i>mí</i> “id.” ²³

²² See Schrijver (265-8) following Hamp (1974-6: 33) for the final *i*-affection of *e by short *i.

²³ *mis*, pl *missoed* is bracketed because, although it is an *s*-stem with an -oedd plural, it is a masculine and does not belong with the other forms. The Old Irish makes it clear that the original Insular Celtic

Table 6: Etymological *s*-stems and their older plural attestations

There is no obvious connection of *s*-stems with the *-oedd* plural. It is possible that more detailed philological sifting of the forms will reveal a connection that is not now obvious, but it appears that deriving a plural ending (*-oedd* or otherwise) from an *s*-stem plural ending is simply not justified. More about the *s*-stems will be said below, but for now that should suffice.

The preceding section has presented the data relating to intervocalic **s*, as well as Jackson's and Schrijver's accounts of its development. Because the data are very complicated, a lengthy critique of Schrijver's account was given, both as a review of the data and as a necessary preliminary to a new account. It is to such an account that we now turn.

A New Analysis

It was argued above that a number of lexical items (*tywyll*, *wyt*, *-wy*, *tawaf*) require an early loss of **s*, while no morphological category with provection requires that **s* be retained until syncope. In light of these observations, a new explanation for the development of intervocalic **s* is called for. It is proposed here, following Jackson in many respects, that Brittonic **s* very early gave **h*, which was subsequently lost, leaving a hiatus. Like vowels contracted, but otherwise a **i̇* was inserted,²⁴ except adjacent to **u*, in which case **u̇* was inserted. Since the cases of like vowels contracting and of **u̇* being inserted are relatively infrequent, these can conveniently be dealt with first, before turning to the very complicated case of intervocalic **i̇*.

forms were nom sg **mīs*, gen sg **mīsos*, nom pl **mīses*; therefore the nom pl could not easily have given a Welsh plural *-oedd* except secondarily.

²⁴ Since by chance all cases of intervocalic **s* follow a front vowel, the use of **i̇* to break up the hiatus is phonetically quite natural. The only cases where **s* does not follow a front vowel are the British subjunctive and future, which have **s* after **a*, and *gwaesaf* "guarantee" < **uo-sistamu-*. In each of these cases, however, the **s* is retained analogically. See Jasanoff (1997) for an account of both subjunctive and future, though note Schumacher's alternative account of the subjunctive (48-57) and his rejection of the future as a Brittonic category (1995). See below for an account of *gwaesaf*.

The cases of vowel contraction have all been mentioned above: **teumeselo-*, **eset*, **esesi* > **teuēlo-*, **ēt*, **ēī* > OW *timuil* (MW *tywyll*) “darkness”, 3sg conjunct *-wy* / *-yw* “is”, and 2sg *wy[t]* “are”. Several cases where **u* was inserted have also been mentioned above. The argument is exactly as Schrijver posited (384): **uesu-*, **uo-gaisu-*, **tausīt* > **ueuu-*, **uogaiuu-*, **tauīt* > **gwew* “fit”, *gwaew* “spear”, *teu* “is silent”. The vocalism of *gwiw* “fit” for **gwew* will be discussed further below, but that **u* served as hiatus filler in each case above is clear. In addition to those words just mentioned, the words MW *lleu* “lice” (sg. *lleuen*) and MW *breu* “brittle, fragile” also show insertion of **u* after the loss of **s*.²⁵ The words have not been mentioned until now because the evidence they present is conflicting and not necessarily strong; however, the words are worth at least a quick mention, since at the very least they appear to confirm the insertion of **u* in place of a lost **s*.

Schrijver himself discusses *lleu* and *breu* in his treatment of **eu/ou*, and **uu*. Since the *u*-diphthongs present another difficult problem within British Celtic, a full discussion lies outside the bounds of this paper. The relevant portions of Schrijver’s findings (325ff.) are given here: Proto-Celtic **eu/ou* and **uu* fell together (probably as **ou* and possibly as early as Common Celtic; see McCone 1996: 55), giving MW *-eu*, B *-aou*; “new” **uu* (arising within British Celtic) yielded MW *-eu*, B *-ev*.

Schrijver (341) derives MW *breu*, B *brev* “broken” from **bruuo-* < Proto-British **bruso-*, an adjective derived from the Indo-European root **bhreus-* “break”. The Breton shows that the reflex is from “new” **uu*, a sequence arising from the loss of **s*. On the other hand, *lleu*, B *laou* “lice” shows the reflex of “old” **uu*. Cowgill (1985: 24) has argued that *lleu*, *laou* come from **luu-es* < Proto-British **lūs-es* (from the PIE root **lūs-*; cf. Gmc **lūs-* and TochB *luwo*, pl *lwāsa*). His derivation would, however, seem to require a “new” **uu*. Therefore, **bruso-* and **lūs-es* cannot both be correct as Proto-British preforms of *breu* / *brev* and *lleu* / *laou*. One must be wrong.

²⁵ I leave aside MW *clywet* “to hear, feel, taste, smell”, since it could theoretically come from either **klusī-* or **kluuī-* (Schumacher 413ff. argues for the former). In the end, both would give the same result.

In the end, it may be impossible to decide which derivation is more plausible, but the easiest way to resolve the contradiction would be to argue that taboo deformation affected “louse” at some point before Proto-British²⁶ and that *breu* simply developed normally. Other solutions are possible, though more involved. The derivation of *breu* / *brev* does not pose any difficulty for either a late or early loss of *s, i.e. it is compatible either with Schrijver’s proposal or the one offered here.

**i̇ after Pretonic Vowels*

Having discussed cases of vowel contraction across *s and of the insertion of *u̇ for lost *s, it is time to turn to a thorough examination of the outcome of intervocalic *i̇ in British Celtic, since that is the most frequent result from a lost intervocalic *s. The development depends on the placement of the accent relative to the *i̇, as well as the preceding and following vowels. Since the data are more plentiful, and the results less contentious, for *i̇ after pretonic vowels, it is easiest to start there. Both *e and *i fall together as *i before pretonic *i̇. These facts are illustrated below in Table 7 before accented *a and in Table 8 before *o and unaccented *a (note that examples are not available for all possible combinations of *i / *e and *s / *i̇). The derivations are those given by Jackson (358ff).²⁷

Proto-British	*es, *e _{i̇} > *i̇	*i̇ > * <u>ai̇</u> / __á	Middle Welsh
*g _{i̇} i̇ámo-	> -----	> *g _{i̇} ai̇ámo-	> gaeaf “winter”

²⁶ See Griepentrog (1995: 257-63) for a more detailed discussion of the exact development of “louse”.

²⁷ One further example probably relevant for the present discussion is found in W *migwrn*, B *migourn* “knuckle, ankle; cartilage”. If the word is derived from **mūso-korno-* “muscle(-like)-bone” (Ernault 1901), it would seem to show that *s (or *h) was maintained long enough for *ū > *ū̇ to have occurred. After the loss of *h, it seems that **mūo-gorno-* eventually gave **mīo-gorno-*, which would yield a late Proto-British **migurn*. The exact developments are impossible to trace, since this example is unique. Possibly **mūo-gorno-* gave **mū̇o-gorno-* (or **mū̇o-gorno-*) and then **mīo-gorno-*, which would give **migurn*; or possibly **mūo-gorno-* gave **mū̇o-gorno-* and then **mīo-gorno-*, whence **migurn*. In the latter case, it should be noted that the short vowel *ū̇ would have been unique in British. That it developed in parallel to *ū̇ is of course possible. Although there is little certainty as to the exact development, it is not hard to imagine that Late Proto-British **migurn* could have resulted from **mūso-korno-* if *s were lost some time after *ū̇ > *ū̇. I would like to thank Anders Jørgensen for bringing this example to my attention.

* <i>reiádro-</i>	>	* <i>riiádro-</i>	>	* <i>rəiiádro-</i>	>	<i>raeadr</i> “torrent”
* <i>mesálxo-</i>	>	* <i>miiálxo-</i>	>	* <i>məiiálxo-</i>	>	<i>mwyalch</i> “blackbird”

Table 7: **s* and **i* before accented **a*

Proto-British		* <i>es</i> , * <i>ei</i> > * <i>ii</i>		* <i>ii</i> > * <i>əii</i> / __ <i>á</i>		Middle Welsh
* <i>diióues</i>	>	-----	>	-----	>	<i>dieu</i> “days”
* <i>suesor-iī</i>	>	* <i>huiioriī</i>	>	-----	>	<i>chwiorydd</i> “sisters”
* <i>uesantēno-</i>	>	* <i>uiiantēno-</i>	>	-----	>	OW <i>guiannuin</i> “spring”

Table 8: **s* and **i* before **o* and unaccented **a*

A few comments on the phonetic interpretation of these sound changes is in order. The first is the double **i̇* that appears after the lowering of **i* to **ə*. This reflects the likely pronunciation of *haearn* and *mwyalch* as [hɑi̇jɑrn] and [mwi̇jɑlx]. The **i̇* forms part of the diphthong and at the same time serves as a glide into the next syllable, i.e. the **i̇* is ambisyllabic.²⁸ This concept will prove useful later.

Further to the phonetics of the developments: in all cases, pretonic **e* was raised to **i* before **i̇* of any source (from **i̇* or **s*). Before accented **a*, **i* was lowered (here given as **ə*) and the resultant **əi̇* developed to the diphthong *ae* [aɪ̇], seen in *gaeaf* and *raeadr*. A neighboring labial, however rounded the **ə*, so that the resultant diphthong was *wy* [uɪ̇], seen in *mwyalch*. When not before accented **a*, **i* remained **i*. The normal reflex of **i* in Welsh is *y* [ə] (in unaccented syllables). The graphic *i* [i] represents rather the reflex of historical **i̇*. It seems unlikely that pretonic **i* was lengthened to **i̇* before **i̇* plus back vowel. More probable is that **i* before **i̇* remained high and tense; that is, it remained [i] and did not become [i̇] (> [ə] in

²⁸ Ambisyllabicity is well-known in theoretical linguistics, although an exact interpretation is difficult to pin down. For an overview of the literature on the subject, see “Ambisyllabicity in the language of the Rigveda” at www.brettkessler.com. As a note on how the idea can be useful, one can look at the *metron*-rule of Indo-European. PIE **med-tro-* (Greek *métron* “a measure”) did not give **metstro-* (via **mettro-*) but rather became **metro-*. An explanation for this development may be that the two dentals in **mettro-* were reanalyzed as ambisyllabic (i.e. a single dental realized phonetically in both syllables), yielding **metro-*. This account seems preferable to that found in Mayrhofer (1986: 111-12), who argues that **met.tro-* was resyllabified as **mett.ro-*.

unaccented syllables). Thus, when phonemic vowel length was lost, $*i$ before $*\tilde{i}$ merged with old $*\bar{i}$ rather than with old $*i$.

It may now be appropriate to discuss the one word in British Celtic that shows a reflex of $*s$ after a non-front vowel: the verbal noun *gwaesaf* “guarantee” < $*\tilde{u}o$ -*sistamu*- (cf. OIr *fóessam*). The word could be expected to provide us with valuable insight into the regular treatment of $*s$, but, unfortunately, it is quite likely that *gwaesaf* is not phonologically regular. It most likely adopted the $*s_2$ (proposed by Jasanoff, see above) of compounds, based on the uncompounded $*sista$ -, which is not attested in British Celtic but is found in Old Irish *sessam* < $*sistamu$ -. In other words, while $*h$ normally would disappear early, a secondary $*h$ could have been introduced from the (subsequently lost) simplex, giving $*\tilde{u}o$ -*hissamu*-. Following apocope and syncope, after which secondary $*h$ disappeared, the result was $*\tilde{u}o$ -*issamu* (< $*\tilde{u}o$ -*hissamu*). At that time, Pre-Welsh did not have a diphthong [oi], but since $*\bar{e}$ developed to [oi] at some point after syncope, the $*oi$ of $*\tilde{u}o$ -*issamu* fell together with the reflex of $*\bar{e}$, yielding $*gwoesaf$, which became MW *gwaesaf* via unrounding after *w*. Since the diphthong *ae* in *gwaesaf* need not be phonologically regular from $*osi$, the word cannot give reliable information on $*s$ before unstressed vowels.

$*\tilde{i}$ after Tonic Vowels

The rules proposed above, largely following Jackson’s proposal, account for all of the cases of $*s$ and $*\tilde{i}$ following a pretonic vowel. We have yet to examine $*s$ and $*\tilde{i}$ after accented vowels. The evidence is extremely limited and very difficult. The first claim to be advanced here is that $*-\acute{e}\tilde{i}$ - (from both $*-\acute{e}\tilde{i}$ - and $*-\acute{e}s$ -) did not fall together with $*-\acute{i}\tilde{i}$ - (from $*-\acute{i}\tilde{i}$ - and $*-\acute{i}s$ -), as claimed by Jackson and Schrijver, who both argue that $*-\acute{e}\tilde{i}$ - in accented syllables gave $*-\acute{i}\tilde{i}$ -.²⁹ Schrijver’s evidence comes from the *i*-stem plural. He argues (393-4) that PIE nom pl $*-eies$ gave Proto-British $*-\acute{i}\tilde{i}es$ and thence

²⁹ Jackson (348) does indeed state that “a case can be made out for the retention of *e* [before \tilde{i}] when it was accented,” but he never makes out the case, instead accepting that $*\acute{e}\tilde{i}$ and $*\acute{i}\tilde{i}$ merged as $*\acute{i}\tilde{i}$.

the plural ending *-ydd*. As has been shown above, **-eies* gave **-īs* in Proto-Celtic, rendering Schrijver's explanation impossible. The evidence of MW *efydd* "bronze" (OIr *umae*) and *defnydd* "building material" (OIr *damnae*) is, as Schrijver admits (287), inconclusive. Deriving the words from substantivized adjectives formed with a relatively uncommon Indo-European **-eio-* suffix that forms matter adjectives is possible, but equally possible is that they continue **-iio-*, in which case the nouns represent substantivized adjectives formed with the very common suffix of appurtenance **-iio-* (cf. Gk *pátrios*, L *patrius* "of or belonging to one's father"). The latter suffix seems the likelier, meaning that *efydd* and *defnydd* do not provide evidence for **-ei-* > **-ii-* in accented syllables.

Another possible source of evidence relevant to the question of whether **-ei-* gave **-ii-* in accented syllables comes from a moribund category of verbal nouns in Welsh that is best taken as having an Early Proto-Celtic structure **C(R)eio-*. This formation is found in the verbal nouns of old nasal-present verbs with a preverb. The general pattern is that strong verbs with a preverb had simple *e*-grade thematic verbal nouns, at least in archaic formations.³⁰ For the nasal-infix verbs, the result is Early Proto-Celtic **C(R)eio-*, as seen in Welsh *gofwy* "visit" and OIr *fubae* "attack" < **upo-beiHo-*. There are several more examples showing an identical formation. For the verbal nouns of this shape, Schumacher (2000: 175) accepts that the laryngeal in PIE **-beiHo-* was lost, having made position (Schrijver 289-90), and that the Proto-Celtic form was **uo-beio-*. He argues that the form with **ii* was maintained unchanged all the way into Pre-Welsh, undergoing apocope and giving *gofwy*. If this is so, it would suggest that **-ei-* did not yield **-ii-* in accented syllables, although it must be noted that the environment would more properly be **-eii-*, which *could* make a crucial difference. Schrijver (289-91), however, proposes that Proto-Celtic **ei* monophthongized to **ē* before the second **i* in **uo-beio-*, just as it would before any other consonant. In Proto-Welsh **uo-bēio-* simply underwent apocope and

³⁰ For the most thorough and recent treatment, see Schumacher (2000: 172-5, 225-6), who builds on earlier work, especially that of Ford and Hamp (1974-6: 153-4) and Hamp (1976: 9-12; 1987:113-5).

diphthongization of long vowels, yielding *gofwy*. If Schrijver’s account is correct, forms like *gofwy* have no direct bearing on **-éi-*. Although Schrijver’s account seems more likely to me, neither his nor Schumacher’s account can be definitively ruled out. In any case, it must be said that the forms in Proto-Celtic **-eii-* do not provide certain evidence of the development of **-éi-* in Proto-British.

The upshot of the previous discussion is that there is no evidence at all that **-éi-* yielded **-íi-* in Proto-British. Thus, it is possible that **-éi-* and **-íi-* remained distinct in Proto-British. The next question in such a case is to determine their reflexes. It is argued here that **-íi-* simply gave *-ydd*, as is generally assumed, while **-éi-* gave *-oedd*.

The latter claim, though having been made before (Jasanoff 1994: 205), is not well-known. The phonetics would be as follows: intervocalic **i* became ambisyllabic (see above for definition and exemplification) after **e*, yielding **eii*, and after apocope **ei* fell together with **ē* (from PIE **ai*), which had developed a yod off-glide during the course of the sixth century, giving **ēⁱ* and finally *oe* [oⁱ]. The development of the yod off-glide is the mechanism that allowed the old long low-mid front vowel **ē* to merge with **-éi-*. Note that this same sequence of events is assumed by Schumacher in his derivation of the *gofwy*-type (2000: 175).

Other than the class of words like **moníio-*, there are very few forms showing the development of **-íi-* and **-éi-*:

**-ési* (2nd sg) > **-éñi* > **-éñj̥* > **-íj̥* (umlaut) > **-íj* > **-íð* > *-ydd*
**moníio-* “mountain” > **moníjo-* > **moníj* > **məníð* > *mynydd*
**duβíiā* “blackness” > **duβíjā* > **duβéjā* > **düβéj* > **düβéð* > *duedd*
**esVt* (3sg impf “to be”) > **éñVt* > **éñj̥Vt* > **éñj̥Vt* > **éñj* > *oedd*
**suésor* (levelled from acc sg, nom pl) > **huéíor* > **huéñj̥or* > **huéñj̥* > *chwaer*

Table 9: **s* and **j* after accented vowels

Similar to the derivation above is Jasanoff's (1994: 205) proposal for *chwaer*, which he believes to be regular from Insular Celtic nom sg **suésūr* (cf. OIr *siur*). However, it appears more likely that the regular development of **suesūr* would have been **suesūr* > **hueiūr* > **huiiūr* (via *i*-affection) > **chwir* [xwir]. Therefore, it seems that the **o* from other cases (like the acc sg, cf. OIr acc sg *siair* < **suesorem*, or nom pl, cf. MW pl *chwiorydd* < **suesor-*) must have been generalized to the nominative singular, giving **suésor*. The above derivation of *oedd* is similarly supported by Jasanoff (*ibid.*), who follows the traditional equation of W *oedd* with L *erat* < **esāt*, propounded originally by Lewis and Pedersen (1937: 322). The only other morphologically plausible preform that has been suggested is **esī-* (Schrijver 1999: 270-1). A preform **esī-* would not give *oedd*, but rather *-ydd*, (compare the 2nd sg verb ending *-ydd* < **-esi*). Therefore we can reject the derivation of *oedd* from **esī-*.

A few points on the relative chronology in Table 9 need to be made more explicit. It is assumed that **i̥* was not ambisyllabic after **i*, but it was after other vowels. This assumption is phonetically plausible. Because **i̥* is a palatal approximate, i.e. a consonantal **i*, it is not surprising that any **i̥* in the same syllable as a preceding **i* would be acoustically difficult to detect. Thus, **i̥* could not be ambisyllabic after **i*. This rule parallels the one in pretonic syllables, where it was suggested that **i̥* became ambisyllabic before **ə* (seen in the derivation of *mwyalch* and *haearn*) but remained as **i̥* before **i* (seen in the derivation of *miaren*).

The **i̥* then further developed either as an off glide (when in syllable auslaut) or to *-dd* [ð] (elsewhere). The stages of the hardening of **i̥* to **ð* are probably the following: **i̥* (palatal approximate) > **j* (palatal fricative; = Jackson's **j*) > **ð* (dental fricative). Placing these developments in a chronology yields the following relative chronology (adapted from Jackson 694ff.):

Proto-British Form	<i>*-ési</i>	<i>*moni̥o-</i>	<i>*duβi̥iā</i>	<i>*esVt</i>
<i>*s</i> > <i>*i̥</i>	<i>*-éi̥i̥</i>	-----	-----	<i>*éi̥Vt</i>
Ambisyllabic <i>*i̥</i>	<i>*-éi̥i̥i̥</i>	-----	-----	<i>*-éi̥i̥Vt</i>
<i>*i̥</i> > <i>*j</i>	<i>*-éi̥j̥</i>	<i>*moníjo-</i>	<i>*duβíjā</i>	<i>*-éi̥j̥Vt</i>

* \bar{a} -affection	-----	-----	* <i>duβéjā</i>	-----
Final <i>i</i> -affection	* $\tilde{ij}\tilde{i}$ > * $\tilde{ij}\tilde{i}$	-----	-----	-----
Apocope	* \tilde{ij}	* <i>moníj</i>	* <i>düβéj</i>	* $\tilde{éj}$
MW forms	<i>-ydd</i>	<i>mynydd</i>	<i>uedd</i>	<i>oedd</i>

Table 10: full chronology for tonic syllables

Note that the development * $\tilde{ij}\tilde{i}$ > * $\tilde{ij}\tilde{i}$ > *-ydd* assumes that after final *i*-affection, the * \tilde{i} was phonetically “absorbed” by the preceding * \tilde{i} (i.e. it was acoustically difficult to detect and thus lost). The phonetic developments are much the same as those argued above for about how a preceding * \tilde{i} blocked the ambisyllabic * \tilde{i} from forming in forms like **moníjo-*.

Welsh Plurals in -Vdd

The foregoing argument for the development of **s* and * \tilde{i} in tonic syllables has largely avoided discussion of the morphology of the *-Vdd* plurals of nouns. Since there are frequently several plausible-seeming explanations available for each ending, they cannot serve as positive proof for any explanation. At this point, however, we have established rules for the development of **s* and * \tilde{i} in tonic syllables. We are therefore in a position to examine those plural endings to see whether they are compatible with the analysis proposed here. The endings in question are *-oedd*, *-ydd*, and *-edd*, and the likely sources for the endings are the Indo-European *i*-stems, \bar{i} -stems, and *s*-stems.

The \bar{i} -stems are relatively unproblematic and will therefore serve as a good place to start this part of the investigation. Though it makes no sense synchronically to speak of stem classes in Welsh, it is still useful to look at the outcomes of historical stem-classes, since most of the plural endings are the regular development of the nominative plural of a Brittonic stem-class. The etymological \bar{i} -stems have strong ties to the MW plural ending *-edd*. The following Welsh nouns, all of which have Old Irish \bar{i} -stem cognates, have an *-edd* plural: *ynys* “island” (OIr *inis*), *rhiein* “girl” (OIr

rígain “queen”), *celain* “body” (OIr *colainn* “flesh”), and *blwyddyn* “year” (OIr *bliadain*). The only MW word with an Old Irish \bar{i} -stem cognate that does not show an old *-edd* plural is *breint* “privilege” pl *breinheu* (c. 1300) (OIr PN *Brigit*). The facts suggest that *-edd* plurals belong to \bar{i} -stem nouns and that *-edd* continues the old \bar{i} -stem plural.

The Indo-European nom pl ending of \bar{i} -stems was $*\text{-}\acute{i}é\acute{h}_2\text{-es}$, which developed to Proto-Celtic $*\text{-}\acute{i}\acute{i}\bar{a}s$. Old Irish *-i* (as in *bliadnai* “years”), however, cannot continue $*\text{-}\acute{i}\acute{i}\bar{a}s$, as this would have given **-e*. Most likely, the Old Irish nominative plural $*\text{-}\acute{i}\acute{i}\bar{a}s$ was remodeled to $*\text{-}\bar{i}s$ after the \bar{a} -stems. The analogy would have been: acc pl $*\text{-}\bar{a}s$ (< $*\text{-}eh_2\text{-s}$) : nom pl $*\text{-}\bar{a}s$ (< $*\text{-}eh_2\text{-es}$) :: acc pl $*\text{-}\bar{i}s$ (< $*\text{-}ih_2\text{-s}$) : X, where X = nom pl $*\text{-}\bar{i}s$. The same analogy operated in Sanskrit, where the nom and acc pl of the \bar{a} - and \bar{i} -stems are $\bar{a}s$ and $\bar{i}s$, respectively. This remodeled nom pl $*\text{-}\bar{i}s$ yielded the Old Irish ending *-i*. The remodeling, however, was strictly Pre-Old Irish and not Insular Celtic, since the Middle Welsh ending *-edd* does not continue the $*\text{-}\bar{i}s$ seen in Irish, but rather Proto-Celtic $*\text{-}\acute{i}\acute{i}\bar{a}s$. As seen already by Lewis and Pedersen (1937: 170), $*\text{-}\acute{i}\acute{i}\bar{a}s$ gave $*\text{-}\acute{\epsilon}\acute{i}\bar{a}s$ after \bar{a} -affection lowered $*i$ to $*e$, and $*\text{-}\acute{\epsilon}\acute{i}\bar{a}s$ subsequently yielded *-edd*.

The derivation is quite straightforward. Most of the necessary chronology was laid out above in Table 10. The only real uncertainty lies in exactly when the $*j$ (< $*\acute{i}$) developed to $*\acute{\delta}$. All three daughter languages show forms with $*\acute{\delta}$, but since Welsh has a few examples with $*\acute{\delta}$ where Southwest British has nothing (cf. MW *oedd* “he was” but MB *oa*, MC *o*), it is likely that the development of $*j$ to $*\acute{\delta}$ was post-Common British. Little will hinge on the exact development, but the chronology is plausible. The upshot of this discussion of $*\acute{\delta}$ is that we may posit the following development for the *-edd* plural in Middle Welsh:

Proto-British	$*\text{-}\acute{i}\acute{i}\bar{a}s$
Post-tonic $*\acute{i} > *j$	$*\text{-}\acute{\epsilon}j\bar{a}s$
\bar{a} -affection	$*\text{-}\acute{\epsilon}j\bar{a}s$
Final syllable loss	$*\text{-}\acute{\epsilon}j$

*j > *ð

-edd

Table 11: The development of the *ī*-stem plural ending into Middle Welsh

Having discussed the etymological *ī*-stems and the *-edd* plural, we may move on to the *i*-stems. As noted above (see under Table 4), there is a connection between etymological Indo-European *i*-stems and *-oedd* plurals in Welsh. The question is whether the Indo-European ending can be reconciled to the Welsh. The Indo-European proterokinetic nominative plural *i*-stem ending was **-e_ies*, seen in Skt. *-ayas* and Greek *-ees*. This **-e_ies* developed to Proto-Celtic **-ī_s*, seen in Old Irish *flaithi* < **ulātīs* < **ulate_ies* and probably Gaulish *-BPOFEIC* [brogīs] < **mrogīs* < **mroge_ies*. An inherited British Celtic ending **-ī_s* could not have given *-oedd* and thus cannot explain the association of *-oedd* with the *i*-stems. If, however, we assume that the *i*-stem plural ending was remodeled, an explanation becomes available.

The *u*-stems and the *i*-stems were originally quite parallel morphologically. At the Indo-European level, this is quite obvious (Table 12 left side). Even when the parallelism was distorted by sound change, the connection between the two groups was not lost on speakers. In Insular Celtic, the situation of the *i*-stems and *u*-stems would have been as indicated below right:

	Indo-European		Insular Celtic	
	<i>i</i> -stems	<i>u</i> -stems	<i>i</i> -stems	<i>u</i> -stems
nom sg	*-i _s	*-u _s	*-i _s	*-u _s
acc sg	*-i _m	*-u _m	*-i _n	*-u _n
gen sg	*-e _i s	*-e _u s	*-ē _s	*-ou _s
dat sg	*-e _i e _i	*-e _u e _i	*-ē (?)	*-ou _e (?)
nom pl	*-e _i es	*-e _u es	*-ī _s	*-ou _e s
acc pl	*-i _{ns}	*-u _{ns}	*-i _{ns}	*-u _{ns}
gen pl	*-(i) _i om	*-(u) _u om	*-(i) _i om	*-(u) _u om
dat pl	*-i _b his	*-u _b his	*-i _b is	*-u _b is

Table 12: Endings of PIE and Insular Celtic *u*- and *i*-stems

Both branches of Insular Celtic altered the above picture, but in different ways. The Irish retained the inherited nom pl but remodeled the *i*-stem gen sg $*-\bar{e}s$ to $*-ois$ on the model of the *u*-stem gen sg $*-ous$ (see Jasanoff 1991: 183, Thurneysen 1946: 192). It appears that Brittonic speakers also modeled the *i*-stem after the *u*-stem, although in British the nom pl was the remodeled form. The four-part analogy is nom sg $*-us$: nom pl $*-oues$:: nom sg $*-is$: X, where X = nom pl $*-eies$.³¹ We have seen above in *chwaer* and *oedd* that $*-\acute{e}i-$ yields *-oe(dd)* in Welsh, so that $*-\acute{e}ies > -oedd$ would be entirely expected in the remodeled *i*-stems. This analogy allows us to explain the correlation noted above of etymological *i*-stems and the *-oedd* plural.

One potential problem with this explanation is why \bar{a} -affection of $*-i\bar{i}\bar{a}s$ to $*-\acute{e}i\bar{a}s$ did not cause $*-\acute{e}i\bar{a}s$ to merge with $*-\acute{e}ies < *-\acute{e}ies$. The answer lies in the relative chronology of sound changes. As noted earlier, the development from $*i$ to $*\delta$ probably involved an intermediate stage $*j$. If the development $*i > *j$ preceded \bar{a} -affection (as argued by Jackson 694-5), there is no problem, as is shown in the following table:

Proto-British	$*-i\bar{i}\bar{a}s$	$*-\acute{e}ies$
Ambisyllabic $*\acute{i}$	-----	$*-\acute{e}\acute{i}\bar{e}s$
Post-tonic $*\acute{i} > *j$	$*-\acute{i}j\bar{a}s$	$*-\acute{e}\acute{i}j\bar{e}s$
\bar{a} -affection	$*-\acute{e}j\bar{a}s$	-----
Apocope	$*-\acute{e}j$	$*-\acute{e}\acute{i}j$
Other	<i>-edd</i>	<i>-oedd</i>

Table 13: The \bar{i} -stem and *i*-stem nom pl endings in Middle Welsh

This sequence of sound changes is phonetically plausible and allows us to derive the attested forms.

³¹ The analogy could also be completed by $*-oies$, which would most likely also give *-oedd* (Schrijver 290-1). No independent evidence can confirm the development, but old $*oi$ had already monophthongized to $*\bar{u}$ by this point, meaning that new $*oi$ would have fallen together with $*\bar{e}$ as *oe* (as argued above for *gwaesaf*).

We may now move on to the *s*-stems, which are sometimes claimed to have etymological connections to the plural ending *-oedd*. The normal plural of the neuter *s*-stems in Indo-European was **-esa*, and this ending was retained into Insular Celtic. Old Irish nom/acc pl *-e* (e.g. *tige* “houses” < Insular Celtic **tegesa*) continues the Indo-European and Insular Celtic ending directly. In Brittonic, the development is more controversial. Given what we know about **s* after accented front vowels in Welsh, it should yield **i̇* and eventually **ð*. Parallel to *oedd* “he was” < **esVt*, we would expect **-esa* also to have given *-oedd*: **-esa* > **-eha* > **-ėja* > **-ėja* > **-ėj* > *-oedd*. Indeed, exactly that claim is advocated here, although, as we shall see, evidence is essentially non-existent.

As was shown above (see Table 6), the etymological *s*-stems are a small but diverse class in Welsh, showing little agreement with respect to a plural ending. Additional philological work might reveal a subtle pattern, but that possibility seems unlikely. An explanation for the diversity of plural endings is that they are probably tied to the fate of the neuter gender: as the neuter was given up, the *s*-stems (themselves nearly all neuter) were simply reassigned to various other stem classes based on factors no longer recoverable.

It should be emphasized that the connection of etymological *s*-stems to the *-oedd* plural is weak to the point of being illusory. While *tiryoad* (14c), *glynnoed* (c 1330), and *nefoet* (c 1300) are found, this is the sum total of the connection, and each word has an older plural formation other than *-oedd* (though *nefau* and *glennyeu*, being *u*-stem endings, are not good counter-evidence). Of these words, *nefoet* (= *nefoedd*) is the most likely to continue something old, since it is found as a *plurale tantum* in the meaning “heaven(s)”. The old plural **nemesa* may simply have been cut off from its paradigm and was retained as a separate word.

That said, *nefoedd* would be the only decent evidence linking the *-oedd* plural to *s*-stems. Welsh *lle* “place” is often cited as a good example of an *s*-stem with a plural *-oedd*, since it has both a neuter *s*-stem cognate in Greek (*lèkhos*, pl *lèkhea* “bed”) and an old plural in *-oedd* (13th century). The Old Irish cognate, however, is

lige “bed,” a neuter *io*-stem, which suggests a Proto-Irish **legiom*. As it turns out, the Welsh also confirms **legiom*, not **legos*, as a preform. A Proto-Welsh **legos* should give **lly*, just as **tegos* gave *ty* “house” (cf. OIr *s*-stem *tech*), via the raising rule **eg* > **ig* before **o*.³² Given OIr *lige* and the fact that *lle* cannot continue **lego-*, the most logical preform for *lle* is **legiom*. Thus, *lle*, pl *leoedd* does not continue an *s*-stem and a traditional support for a correlation between *s*-stems and *-oedd* plurals is removed.

In the end, we are left with a bit of a paradox. Phonological arguments support deriving *-oedd* from **-esa*, and the isolated plural *nefoedd* supports the conclusion, but there is no other evidence. It is hard to say exactly why the distinctive ending *-oedd* was not better preserved in this class. The probable explanation has, however, been given above: since almost all *s*-stems were neuters and the neuter was lost as a category in Brittonic, when the old neuters were assigned feminine and masculine genders, it is likely that the original plural marker got lost in the reassignment. Only *nefoedd*, an isolated *plurale tantum*, somehow retained the original ending.

It should also be kept in mind that even if **-esa* did not give *-oedd*, given the diversity of plural endings found with the etymological *s*-stems, no explanation can account for more than one or two words. The category is so dispersed that we really can only draw conclusions about the regular ending based on what we independently know about the development of **-esa*, and that is that **-esa* gave MW *-oedd*.

It might be argued that *ma* “field” pl *mei* and *ty* “house” pl *tei*, both attested fairly early, would counter the claim that **-esa* gave *-oedd*. Indeed, Schrijver (391) assumes the antiquity and regularity of these forms in his derivation of them from **-esa*. However, as we have seen, such a derivation is phonologically impossible. Therefore, we must reexamine the forms. For *ty*, pl *tei*, it appears, given the unusual final accent in compounds in northern Welsh (e.g. sg *béudy* but pl *beudái*), that the plural was originally disyllabic **te-i*, which was then contracted to *tei*. The question of how to derive the ending *-i* remains.

³² Hamp (1954-6: 277-8) argues essentially this position, but the rule as stated incorporates Schrijver’s refinements (69-71).

By simply projecting the ending back mechanically, one can see that an ending of the form $*-\bar{i}sV(C)$ would yield $*-i$,³³ and it may be possible to generate such an ending. The Proto-British *i*-stem plural, as argued above, was $*-\bar{i}s$. It has been argued that this ending was renewed to $*-e\bar{i}es$ on analogy to the *u*-stems. If, on occasion, however, the ending were instead renewed by attaching nom pl ending $*-\bar{a}s$ of the \bar{a} -stems to the inherited $*-\bar{i}s$, it would yield a form that would give $*-i$. This renewal would most likely occur with feminines, and as it happens, a large number of plurals in *-i* (though not all) are feminine. It should be noted that neither *tei* nor *mai* is feminine, but there are non-feminine words that take the *-i* plural ending. At the time that the neuter as a class was dissolving and the old *s*-stems were adopting other endings, it is possible that the ending $*-\bar{i}s\bar{a}s$ (later $*-\bar{i}\bar{a}h$) could have replaced the inherited ending $*-esa$ (later $*-e\bar{i}a$), at least for a couple words. The result of the replacement would be $*teg\bar{i}s\bar{a}s$, which would regularly give $*te-i$ and thence *tei* (see Schrijver 134-41 for the phonology).³⁴ That this sequence of events actually took place cannot be proven, but it at least provides a means of explaining the forms *tei* and *mai*, which cannot come from $*-esa$.³⁵

We must now briefly discuss the Welsh *-ydd* plural, which is the third MW plural ending in *-Vdd*. As should be clear from the preceding discussion, Schrijver's contention (393-394) that the *i*-stem $*-e\bar{i}es$ gave $*-\bar{i}\bar{i}es$ and thence *-ydd* is not possible. Schumacher (apud Schulze-Thulin 2001: 66) prefers to take *-ydd* as a relic of the $v\bar{r}k\bar{i}$ -inflection, that is PIE $*-ih_2-es$ > Proto-Celtic $*-\bar{i}\bar{i}es$ > MW *-ydd*. The derivation is phonologically flawless, though no exact word equations back up the contention.

³³ The lack of *-dd* appears to be normal after long vowels and old diphthongs, with the exception of *pridd* "clay" < Proto-British $*pr\bar{i}ots$.

³⁴ Stefan Schumacher noted in a discussion with me that $*-\bar{i}s\bar{a}s$ could give *-i*. I do not, however, wish to make him responsible my argument here.

³⁵ This entire explanation is necessary because I assume that the unusual end-accent in modern compounds is a true reflex of an old disyllable. If, on the other hand, the disyllabic reading is secondary, a very straightforward explanation becomes available. That is, $*tegos$ (nom sg of the *s*-stem) was reinterpreted as an *o*-stem masculine, whose nom pl would have been $*teg\bar{i}$. The phonology then remains roughly the same, except that $*teg\bar{i}$ would give monosyllabic *tei*. However, the Northern Welsh forms like *beudái* would then require an explanation (which I cannot supply).

It should be remembered that there are a number of **-iio-* stems in Insular Celtic, and these would be expected to make a plural **-iī̄*, which would give *-ydd*. It is true that the singular **-iios*, pl **-iī̄* would give homophonous *-ydd* for both singular and plural, which leads Schrijver (393-4) to reject the possibility that **-iio-* nouns could have sparked a productive category. I do not find as unlikely as he does the possibility that **-iio-* is a source for plural *-ydd*. A more marked category, the plural, could be expected to keep *-ydd*, while the singular might lose it, especially when *-ydd* would be supported in the role of plural ending by the other plurals in *-Vdd*: *-oedd* and *-edd*. The abstracts in *-ydd* like *efydd* < **omiiō-*, of course, had no plural and thus would have kept the expected *-ydd* in the singular. In the end, neither the view that the *vrkī-* inflection or the **-iio-* nouns is the source of *-ydd* is particularly strong, and I do not wish to stake much on the claim, but both are more likely than **-eies* as the source of *-ydd*.

Problematic Forms and the British Comparatives in -och, -ach

Though the account of **s* given here can explain most forms, there are a couple problematic data that must be mentioned. The first of these is MW *gwiw* “good”. As mentioned above (see Table 1), the most likely Indo-European preform for this word and its OIr cognate *flu* “good” is **uesu-*, and it is this form which must somehow give Welsh *gwiw*.³⁶ It is a descriptive fact that for Celtic *u-* stems, the nominative plural comes from **-oues* < PIE **-eues*: OIr *-e* (e.g. *mogae* “slaves”), MW *-eu* < OW *-ou*

³⁶ Hamp (1983-4: 129), though not totally explicit, argues that all *u-* stem adjectives were remade in British Celtic to *wo-* stems, and he cites Pedersen’s (1913: 116-7) evidence: *gwlyb* “wet” < **ulikuo-* (cf. OIr *fliuch* < **uliku-*) and *tew* “thick” < **teguo-* (cf. OIr *tiug* < **tegu-*). If this claim were true, we might expect MW *gwiw* to have developed from **uesuo-* < **uesu-*. Given MW *rhew* “frost” < **prehuo-* < **preuso-* (see Hamp 1973) and MW *blew* “hair” < **mlesuā*, however, we see that a **uesuo-* would have produced **gwew*, pl **gwyw*, with no chance of explaining *gwiw*. As it turns out, universal thematization of *u-* stem adjectives in Brittonic is unlikely. The words *ehang* “wide” < **eks-angu* (cf. OIr *ing* “narrowness” < **angu-*) and *cyfyng* “narrow” = OIr *cumung* < **kom-angu-* (or **kom-ongu-*; see Hamp 1974: 163-4 for the latter vocalism) were not remade to *wo-* stems, because if they had been, they would have become **ehaf* and **cyfyf* (for the phonology see Hamp 1975 and Sims-Williams 1981). Instead, the two words simply remained *u-* stems, much like **uesu-* must have done.

(e.g. *cadeu* “battles”), Gaulish *-oues* (e.g. *Lugoues* “followers of Lugus”). The nominative plural of Proto-Celtic **uesu-* would have been **uesoues*. By the rules posited above for pretonic **es*, **uesoues* would have given OW **gwiou*. Next to a singular **gwew*, analogical leveling would have been likely. It is proposed here that contamination between the singular and the plural forms induced the root vocalism of the (subsequently lost) plural to be taken over by the singular, thus yielding the attested MW *gwiw*.³⁷ It is in this way that the vocalism of W *gwiw* can be explained from an *e*-grade preform **uesu-*.

A second form that would not seem to fall out from the rules given here is MW *doe* “yesterday” (OC *doy*, MB *dech* “id.”). The British Celtic forms continue late Insular Celtic **des* (< Proto-Celtic **(g)des*, cf. Gr *khthés*). Schumacher (249) has plausibly argued that **h* was sometimes lost according to external sandhi rules and that a stressed open vowel in a monosyllable was then lengthened. The short vowel and final *ch* of Breton *dech* would then be due to a different sandhi treatment in which the **h* was instead strengthened to **x*, which would close the syllable and block lengthening.³⁸ The same developments can explain a parallel case: the 2sg subjunctive MW *bych*, MC *by*, ENB *bi* < Proto-British **bih*. Schumacher (249) traces these forms to a late Proto-British **bih*,³⁹ with the Welsh showing a short-vowel reflex but Cornish and Breton showing a long-vowel reflex. It is important to note that these developments do not provide evidence against the general treatment of intervocalic **s* argued for here, since the **s* is not intervocalic in monosyllables and thus must have had a different development.

³⁷ A possible parallel for the adoption by the singular of the plural vocalism is Breton *ni* “cousin” pl *nied* < **niotī* ⇐ **niotes* < **neiotes* < **nepotes* (see Schrijver 386 note 1). The regular vocalism is seen in MW *nei* < **nepōts*.

³⁸ Alternatively, one might argue that **h* was not lost in a stressed monosyllable, but rather was retained, sometimes causing lengthening of the preceding vowel and sometimes strengthening to **x*. The exact conditions for the sandhi difference are naturally no longer recoverable, but it is reasonable to expect the lengthening to be as a result of compensatory lengthening, which is most likely in closed syllables (i.e. when the following word is consonant-initial). That would imply that **x* developed before vowels (and maybe also before resonants).

³⁹ As Schumacher argues, the form must be analogical: absolute **bihi*, conjunct **beh* was leveled to **bihi*, **bih*, and the absolute form was subsequently lost.

At the same time, the development of $*s > *h > *x$ in monosyllables is important because of a similar-seeming development in the British comparatives $*-och$ and $*-ach$. Schrijver (2007: 315) has argued convincingly that the original ending was $*-och$, the a -vocalism having been influenced by the superlative $*-ha\mu < *isamos$. He also argues that the most attractive explanation of $*-och$ is from the Indo-European comparative suffix $*-i\bar{o}s$, acc sg $*-i\bar{o}sam$. The problem is that while $*s$ can give $*x$ in British, the only examples showing the development are monosyllables, i.e. where the $*s$ is after a stressed vowel. There are no examples, outside of the comparative, where a word-internal $*s$ gives $*x$. Schrijver's basic premise, however, is morphologically quite attractive, and it is worth seeing whether it can be maintained.

The key is the very close connection enjoyed by the system of comparison in (Insular) Celtic. The system in Early Proto-British would have looked as follows:

positive	$*X-os / -is / -us / etc.$
comparative nom sg	$*X-i\bar{u}s$, acc sg $*X-i\bar{o}san$
equative nom sg	$*X-is-etos$
superlative nom sg	$*X-is-a\mu os$

Table 14: Early Proto-British adjectives

Normally, the intervocalic $*s$ in all the above forms would be expected to give $*h$ and $*i$ quite early. As argued above, however, the superlative type $*treksamos / *nessamos$ induced the analogical retention of the $*s$, which was still $*h$ at the time of syncope. If this analogy is admitted, the derivation proposed by Schrijver for the comparative can hold. After $*s > *h > \emptyset$ and the analogical retention of $*s (> *h)$ in the superlative and equative (Jasanoff 1994: 205-6), the system of comparison would appear as follows:

positive	$*X-oh / -ih / -uh$
comparative nom sg	$*X-i\bar{h}$, acc sg $*X-i\bar{o}uan$
equative nom sg	$*X-ih-edoh$
superlative nom sg	$*X-ih-a\mu oh$

Table 15: Proto-British adjectives

At this point the intervocalic **h* (from restored **s*) can be analogically extended to the comparative, giving acc sg **X-iohan* and then **X-ohan* (see Schrijver 2007: 316 on the loss of **i*). This restored **h*, unlike all other analogically restored examples, followed a stressed syllable. It could then have fallen together with the only other **h* following a stressed vowel, i.e. the one in stressed monosyllables like **bih* and **deh*. If, as argued above, the development of **h* to **x* was prevocalic, **-ohan* would have developed to **-oxan* and then **-ox = -och* and Schrijver’s explanation of the British Celtic comparative can be maintained.

Conclusions

We may now take stock of the arguments made in this paper. Intervocalic **s* remained into Proto-British but gave **h* and then disappeared very early. Evidence pointing to the early change of **s* to **h* and subsequent loss is found in *tawaf* “I am silent” and *tywyll* “darkness”. Evidence that **h* from **s* was not lost early can be explained analogically. At the point that **h* was being lost, glides developed. Next to **u*, the glide was **u* (**uesu- > *uehu- > *ueuu- > *gwew ⇒ gwiw*), but otherwise **i* developed (**-esi > *-ei > *-eii > *ii > -ydd*). The development of **ese > *ehe > *ē*, as seen in **temeselo- > *temēlo-* (> OW *timuil*), is simple contraction of like vowels across the weakening **h*. After the development of the glides, **ei* and **ii* merged in unaccented syllables as **ii* and underwent the various changes that **ii* underwent, depending on the following vowel and exact place of the accent (see Table 16). In contrast, in accented syllables (see Table 17) **ei* and **ii* did not merge. Rather they developed divergent reflexes: **ei* yielded *-oedd* (*gwladoedd* “lands” < **ulateies* ⇐ **ulatis*, and possibly *nefoedd* “heaven(s)” < **nemeia* < **nemesa*), while **ii* yielded *-ydd* or *-edd*, depending on the following vowel (*efydd* “bronze” < **omiio-* vs. *rianedd*

“girls” < **rīganiīās*). Cases where **s* gave **x* are limited to monosyllables (i.e. non-intervocalic position) and analogical categories.

Significant points for the historical phonology and morphology of British Celtic are the following: Jackson’s argument for the early loss of **s* is supported, contra Schrijver; accented *-*éi-* (from *-*es-* and from secondary *-*eĭ-*) did not become *-*īi-*; -*oedd* is the regular (though seldom found) outcome of the *s*-stem nom/acc plural and of the analogically remodeled and much more frequent *i*-stem nom pl; the -*och* / -*ach* comparatives can be explained via analogy.

---Insert Tables 16 and 17 here---

Abbreviations

GPC = *Geiriadur Prifysgol Cymru : a dictionary of the Welsh language*. 1950-2002.

Cardiff: University of Wales Press.

RIG = *Recueil des inscriptions gauloises*. 1985-2002. By Pierre-Yves Lambert. Paris:

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