

Mind Your P's and Q's: Revisiting the Insular Celtic hypothesis through working towards an original phonetic reconstruction of Insular Celtic

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0.0 Abstract:

Mac, mac, mac, mab, mab, mab- all mean 'son', inis, innis, hinjey, enez, ynys, enys - all mean 'island.' Anyone can see the similarities within these two **cognate sets**¹ from orthographic similarity alone. This is because **Irish, Scottish, Manx, Breton, Welsh, and Cornish**² are related. As the six remaining Celtic languages, they unsurprisingly share similarities in their phonetics, phonology, semantics, morphology, and syntax. However, the exact relationship between these languages and their predecessors has long been disputed in Celtic linguistics. Even today, the battle continues between two firmly-entrenched camps of scholars- those who favor the traditional **P-Celtic** and **Q-Celtic** divisions of the Celtic family tree, and those who support the unification of the **Brythonic** and **Goidelic** branches of the tree under Insular Celtic, with this latter idea being the Insular Celtic hypothesis. While much reconstructive work has been done, and much evidence has been brought forth, both for and against the existence of Insular Celtic, no one scholar has attempted a phonetic reconstruction of this hypothesized proto-language from its six modern descendents. In the pages that follow, I will introduce you to the Celtic languages; explore the controversy surrounding the structure of the Celtic family tree; and present a partial phonetic reconstruction of Insular Celtic through the application of the comparative method as outlined by Lyle Campbell (2006) to self-collected data from the summers of 2009 and 2010 in my efforts to offer you a novel perspective on an on-going debate in the field of historical Celtic linguistics.

0.1 Dedication:

“Whichever way you throw me, I will stand”: the official motto of the Isle of Man perfectly describes the Celtic languages, their histories, their present endangered and/or revived statuses, and captures the general attitude of Celtic speakers towards their languages. One such speaker and a participant in my research, Mr. John MacDonald, unfortunately passed away prior to the completion of this project. In light of his passing, “Mind Your P's and Q's” is dedicated specifically to him, to his daughter Ms. Magaidh Smith, who was a tremendous help to me during my stay on the Isle of Lewis, and finally, to the Scottish, Irish, Manx, Welsh, Breton, and Cornish speakers of today who are the future of the Celtic languages.

¹ Bold-faced items within the body of the text (excluding numbered section headings) mark important terms that are defined in section **8.0 Glossary**.

² These languages are listed in the order in which their contributions to the above cognate sets appear.

0.2 Author's Note:

Owing its start to my final project for Historical and Comparative Linguistics, “Mind Your P’s and Q’s” is the culmination of two years of research. With a summer and a half of data collection, half a summer and half a semester spent transcribing data, and half a semester spent on the reconstruction itself, this project has admittedly been a victim of undergraduate overzealousness. However, while very much a work-in-progress, the following project lays the groundwork for future research into Insular Celtic³ and is certainly capable of standing on its own two feet.

Its significance lies in the following points: 1) it is a truly unique study as no one scholar has attempted a phonetic reconstruction of Insular Celtic using a single body of cognate sets that spans all six modern Celtic languages; 2) it reaffirms some well-known Celtic sound changes (Indo-European/Proto-Celtic $k^w > p$ in Brythonic and $k^w > k$ in Goidelic (Stifter 2006: 2; Schrijver 1995: 348; Jackson 1953: 413; MacAulay 1992: 4-5; Russell 1995: 14-15) and 3) it offers new insights into the phonetics and phonology of the Insular Celtic languages.

Ideally, my reconstruction would have been completed and systematically compared to the works of Kenneth Jackson, Peter Schrijver, Kim McCone, Karl Horst Schmidt, Ranko Matasović, and Johann Kaspar Zeuss; however, this proved to be beyond the scope of this thesis. Finally, while admittedly not everything that I had hoped it would be, this thesis does represent a pivotal first step towards resolving the debate over the existence of Insular Celtic as it gives fresh

³ Such research would certainly involve work on Insular morphology, syntax, and semantics in addition to further work on phonetics and phonology. Similar reconstructive work on **Continental Celtic** as well as a comparison between these two proto-languages would also be necessary, with the comparison between the two ultimately holding the key to answering the question of Insular’s existence, while the current research endeavor can only speak to Insular’s potential existence through the backtracking of the phonetics and phonology of the modern Celtic languages to their hypothesized roots in Insular Celtic.

eyes a chance to look over original data without the influence of other reconstructive works and without favoring any modern language over the others⁴.

risk- more than others think is safe. care- more than others think is wise. dream- more than others think is practical. expect- more than others think is possible- Cadet Maxim⁵.

Over the course of this project, I have certainly taken many risks, grown to care more about these languages and their speakers than most undergraduate students care about their thesis research, dreamt of far larger things than were certainly practical (for example, the full reconstruction of Insular Celtic), and come to expect far more of both my research and myself than others think is possible. It has been a long and winding road to get to where I now stand, but I would not trade it for anything in the world.

-Rachel N. Carpenter

⁴ I cannot favor the Celtic language or languages which I speak because I am currently not a speaker of any of the modern Celtic languages.

⁵ This maxim is of unknown authorship, though it is widely quoted in motivational materials and on greeting cards, with one of the latter being where I first encountered it.

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1.0 An Introduction to the Celtic Languages:

The **Celtic** languages are a subfamily of the larger Indo-European language family. While the exact placement of Celtic in the Indo-European family tree is contested, with popular theories 1) backing direct descent from Proto-Indo-European as seen in Figure 1 or 2) the merging of the **Italic** and Celtic languages under **Italo-Celtic** as seen in Figure 2, which itself was directly descended from Proto-Indo European (Kortlandt 2007; Russell 1995; Stifter 2006).

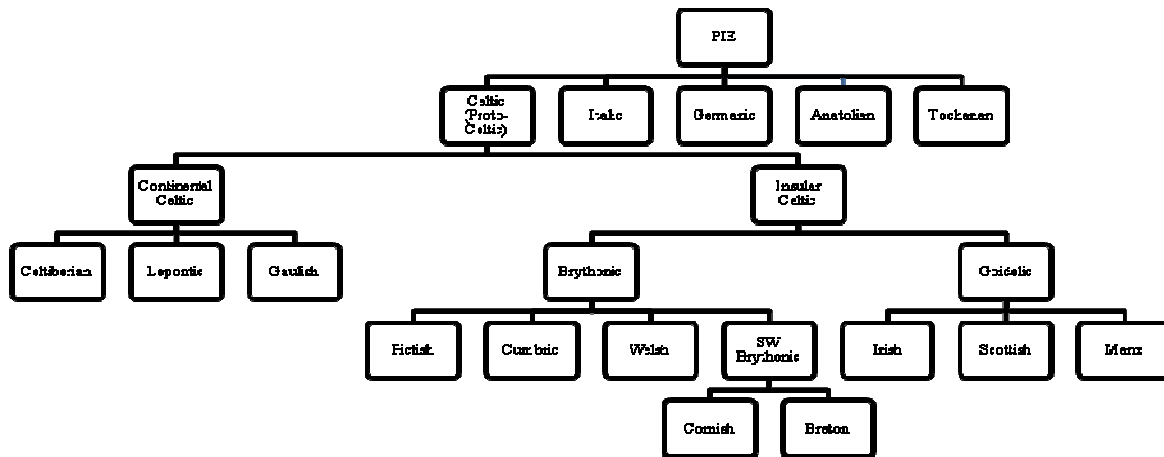


Figure 1- A subset of the Indo-European family tree with Celtic expanded. Adapted from Stifter 2006:1.

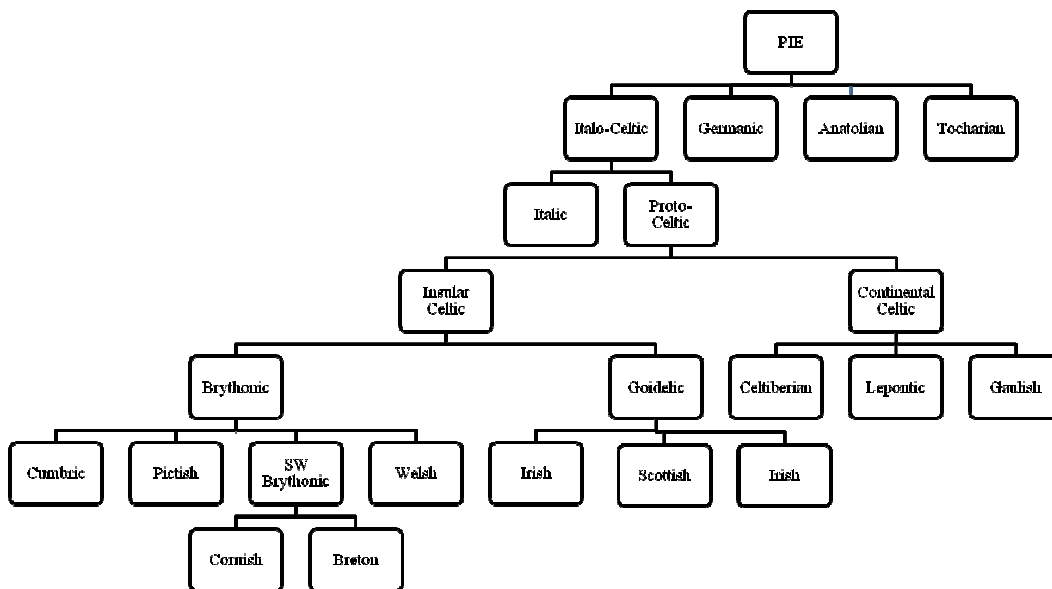


Figure 2- A subset of the Indo-European family tree demonstrating the place of Italo-Celtic with Celtic expanded. Adapted from Stifter 2006:1.

Early Celtic languages were spoken on the European mainland and have been associated with the Hallstatt and La Tène cultures (MacAulay 1992: 1; Snyder 2003). As Celtic peoples expanded their territory throughout Europe, including Great Britain and Ireland, they brought their languages with them (MacAulay 1992: 1-3). The **Continental Celtic** languages are all extinct and will not be addressed as they are beyond the scope of my current research on Insular Celtic (MacAulay 1992; Russell 1995). Figure 3 below shows estimated timelines for the appearance, existence, disappearance, and reappearance of the Insular Celtic languages that have survived to the present day. It is these languages that will be used in this thesis to work towards a phonetic reconstruction of Insular Celtic.



Figure 3- Attestation Chart- Showing years AD across the top, the colored bars represent the lives of the Celtic languages with the start of the colored area representing the earliest attestation of the language in question. White areas after the start of a colored bar indicate language death, and indicates language revival. In the case of Manx, revival efforts had began prior to the death of the last native speaker, Ned Maddrell in 1974; therefore, the colored bar is continuous as the language itself has never truly vanished (Abley 2003:96). In the case of Cornish, while Dolly Pentreath is credited as the language’s last native speaker, having died in 1777, some hold that small pockets of Cornish speakers may have survived into the early 1800s; however, it is generally agreed upon that Cornish was not a living language during the greater part of the 19th century, with the revival efforts picking up in the 1900s and continuing to the present day (MacAulay 1992: 346). Chart adapted from Stifter 2006:7 with additional dates supplied throughout MacAulay 1992.

Scottish, Irish, Manx, Cornish, Welsh, and Breton are spoken throughout the British Isles, Ireland, and Brittany. Figure 4 shows the regions in which the Celtic languages are still spoken and places emphasis on their endangered status (revived in the case of Cornish and Manx), through illustrating current speaker populations.

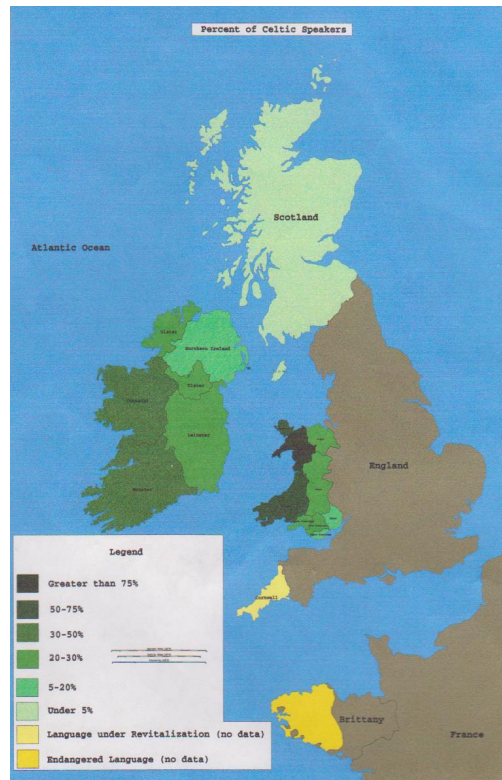


Figure 4- Map illustrating the modern Celtic regions shaded according to the percent of the population that remains Celtic-speaking. Map created by the author in 2009 using CARIS cartographic software.

Having briefly discussed the Celtic languages as a whole, I now present a more in-depth introduction to the Brythonic and Goidelic subgroups before delving into Insular Celtic and the debate over its actual existence.

1.1 The Brythonic Languages:

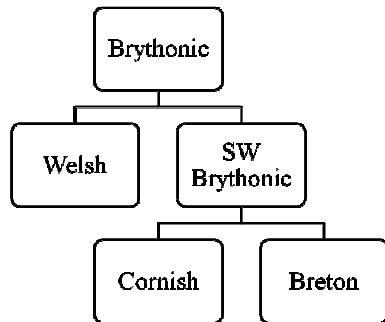


Figure 5- A Simplified Tree Diagram showing the Brythonic languages involved in my reconstruction of Insular Celtic.

The **Brythonic languages** include **Brythonic** itself, **Welsh**, **SW Brythonic**, **Cornish**, **Breton**, and the now-extinct **Cumbric** (Jackson 1953). **Pictish** is also assumed to have belonged to the Brythonic side of the Insular Celtic family tree; however, little of this language survives, so all that we can really be sure of is that Pictish was a Celtic language (Jackson 1953). Some models include a Northern Brythonic language that gave rise to Old Welsh (MacAulay 1992:6); however, for the sake of simplicity, Northern Brythonic will not be used as a label or further addressed in this thesis.

Brythonic is the hypothesized proto-language of Welsh, Cornish, Breton, and the intermediary steps that gave rise to these languages. In some works Brythonic is mistakenly called **P-Celtic** (MacAulay 1992). This label derives from Karl Horst Schmidt's model of the Celtic family tree based on the single sound change of Indo-European $k^w > p$ in the Brythonic languages (Welsh, Cornish, and Breton), Lepontic, and Gaulish [Hence the label P-Celtic] and of Indo-European $k^w > k^w$ (later k) in the Goidelic languages (Irish, Scottish, and Manx) and Celtiberian [yielding the label **Q-Celtic** to describe these languages] (Schmidt 1977; Schmidt 1986; Schmidt 1990; Schmidt 1997; McCone 1996). In this paper, the labels P-Celtic and Q-

Celtic will not be widely used and will only occur when discussing Karl Horst Schmidt's research.

1.2 The Goidelic Languages:

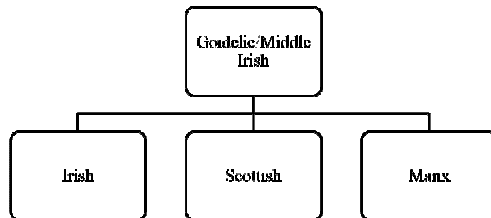


Figure 6- A Simplified Tree Diagram showing the Goidelic languages involved in my reconstruction of Insular Celtic.

The **Goidelic languages** include **Goidelic** itself, **Irish**, **Scottish**, and **Manx**. Goidelic is the hypothesized proto-language of Irish, Scottish, and Manx, and the intermediary steps that gave rise to these languages. In some works Goidelic is mistakenly called **Q-Celtic** (MacAulay 1992). As discussed above, this label derives from Karl Horst Schmidt's model of the Celtic family tree. This model will be further discussed in section **2.1 Disputed Familial Ties and Multiple Models**.

1.3 Insular Celtic and its Descendents (assuming that Insular existed):

Insular Celtic is the hypothesized proto-language from which the modern Celtic languages (as well as the now extinct Cumbric and Pictish) descend according to Celtic scholars and linguists who favor Kim McCone's model for the Celtic language family⁶, while to others it is simply a handy geographic label by which to categorize the remaining Celtic languages as well

⁶ This model is shown and discussed in section **2.1 Disputed Familial Ties and Multiple Models**.

as those that formerly occupied the British Isles (McCone 1996; Matasović 2007; Matasović 2009).

The language family trees below illustrate my initial understanding of the relationship between the Insular Celtic languages (Figure 6), my current understanding of the complex relationships between these languages derived from personal experience and research (Figure 7), and the simplified version of this complex family tree that was used to guide my reconstruction (Figure 8).

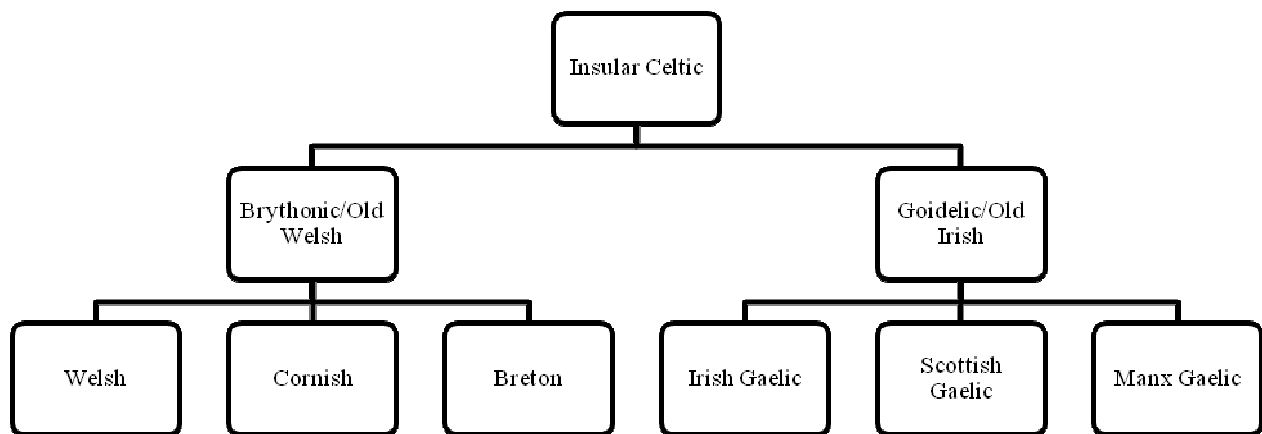


Figure 8: An extremely simplified view of the relationships between the Insular Celtic languages adapted from Lyle Campbell's Indo-European Family Tree on pages 190-191 of *Historical Linguistics: An Introduction* (2006).

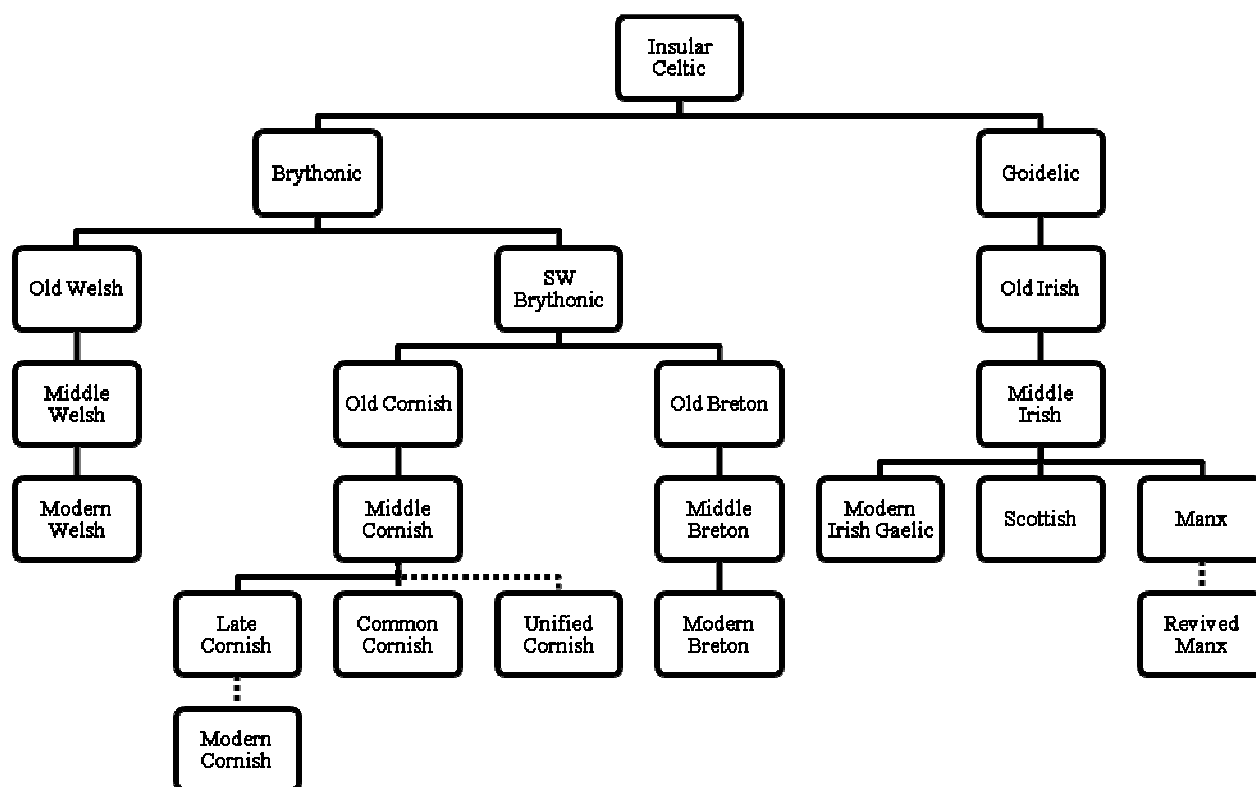


Figure 9: My own illustration of the complex relationships between the Insular Celtic languages. Dotted lines indicate revived languages.

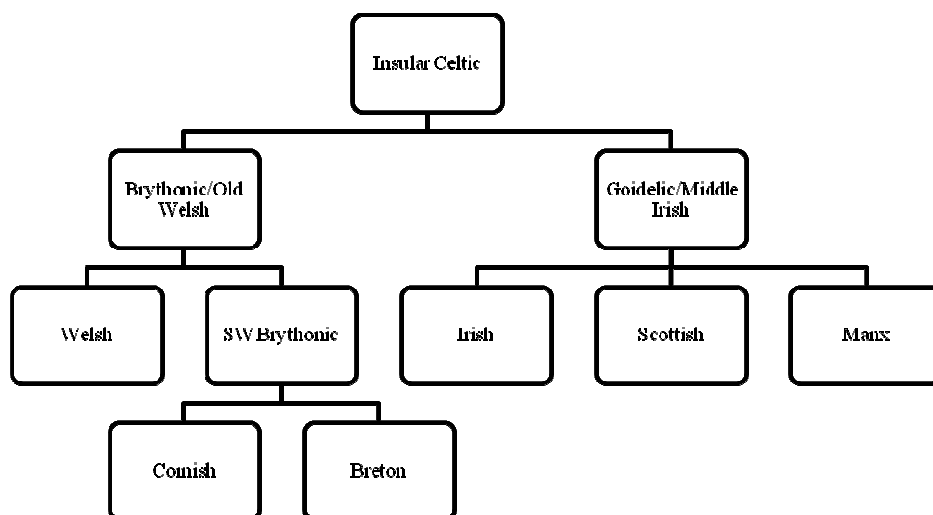


Figure 10: A simplified version of Figure 7 that allowed me to collapse the complex relationships of these languages into a more manageable framework which was then used to guide my reconstruction.

2.0 An Introduction to Celtic Historical Linguistics:

Celtic linguistics owes its beginnings to Johann Kaspar Zeuss and his mega-tome *Grammatica Celtica*. At over 1,000 pages, it was one of the first works of its kind in historical linguistics, in addition to being the first major systematic work on the Celtic languages (Davis 2001; Zeuss 1871). Written in Latin, this volume is largely inaccessible to those without a command of Latin; however, with the aid of Professor Radcliffe Edmonds of the Bryn Mawr College Classics Department and a good Latin dictionary, I was able to puzzle through some of Zeuss's work. In doing so, I have found that while Zeuss did use a geographic divider to explore the Celtic languages (similar to the modern day Insular vs. Continental Celtic groupings); he did not support Insular as having been an actual language, choosing instead to back a version of the Celtic family tree similar to the picture painted by Karl Horst Schmidt, where the Brythonic languages are closer linked to the Continental Celtic languages than to Goidelic and its descendents (Zeuss 1871; Schmidt 1977; Schmidt 1986; Schmidt 1990; Schmidt 1997).

The next major work on the Celtic languages was Holger Pederson's *Vergleichende Grammatik der keltische Sprachen*, followed by the updated English translation by Henry Lewis- *A Concise Comparative Celtic Grammar* (Davis 2001; Lewis and Pederson 1961). Remaining fairly neutral on the warring family tree issue, *A Concise Comparative Celtic Grammar* focuses more on changes in morphology, syntax, phonology, and phonetics in the Celtic languages, while making minimal efforts to date said changes, resulting in a fluid structure for the descent of the Celtic languages which recognizes the evidence for everything from Proto-Celtic to **Gallo-Brittonic** to Insular as potentially representing separate proto-languages (Lewis and Pederson 1961).

Kenneth Hurlstone Jackson was the next major player in Celtic historical linguistics (Davis 2001). Working with Breton, Cornish, Welsh, Irish, Scottish, and Manx over the course of his academic career, Jackson was a formidable linguist (Davis 2001). Following in the shoes of Pederson and Lewis, Jackson chose the more neutral route of recognizing and explaining changes without necessarily committing his full support to either the existence of Gallo-Brittonic (P-Celtic) or to the Insular Celtic hypothesis, though unlike Pederson and Lewis, Jackson did make systematic attempts to assign dates to relevant sound changes drawing on evidence from Latin, Anglo-Saxon, and French borrowings in Celtic (Jackson 1953; Jackson 1955; Jackson 1967; Jackson 1983). It should also be noted that the **Common Celtic** referred to in his works seems to be more akin to what is now known as Proto-Celtic than to Insular Celtic, therefore, its use does not in any way demonstrate Jackson's support of Insular as a language (Jackson 1953).

Kim McCone and Karl Horst Schmidt brought the debate over the structure of the family tree into the open by presenting their opposing views. Kim McCone's support of Insular Celtic as an actual proto-language and not just a handy geographic descriptor to be used when discussing both the Brythonic and Goidelic languages, draws mainly on verbal and morphological evidence that is beyond the scope of the current work (McCone 1996). Schmidt on the other hand, relies only on phonetic and phonological evidence in crafting his argument for P-Celtic and Q-Celtic with both deriving from Proto-Celtic (Schmidt 1977; Schmidt 1986; Schmidt 1990; Schmidt 1997).

Others in the field, including Peter Schrijver, continue to recognize evidence for both Gallo-Brittonic and Insular Celtic linguistic unity, and do not fully back either structure (Schrijver 1995). While still others, such as Ranko Matasović have taken sides and adamantly defended them. In his work on Proto-Celtic and in his paper on "Insular Celtic as a Language

Area” Matasović has made it clear that he supports the traditional P-Celtic (Gallo-Brittonic) and Q-Celtic divisions of the Celtic family tree and firmly believes that the term Insular Celtic does not describe an actual proto-language, representing an intermediary step between Proto-Celtic (Common Celtic) and the Brythonic and Goidelic branches; rather, its utility is limited to describing a “language area,” composed of Britain, Ireland, and Brittany in which the languages were all related, borrowed from each other, and borrowed from the same non-related languages (English, Anglo-Saxon, French, and Latin being the primary culprits) (Matasović 2007; Matasović 2009).

2.1 Disputed Familial Ties and Multiple Models:

As alluded to above, among the many models for the Celtic family tree, two have emerged as dominant. Both models are displayed in Figure 7 below.

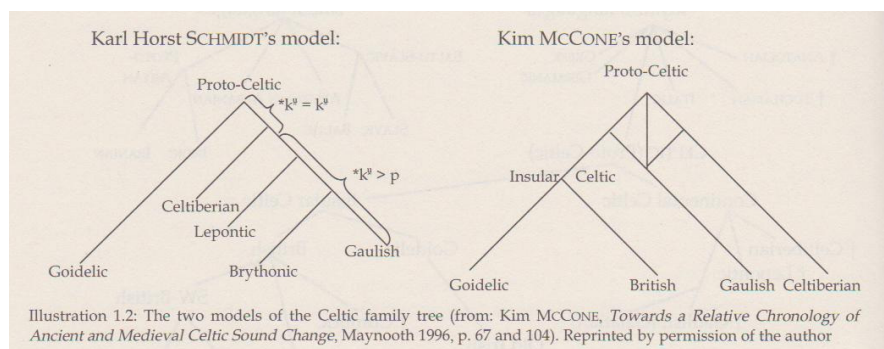


Figure 7: Karl Horst Schmidt’s model of the Celtic family tree alongside Kim McCone’s model. Figure is a scan of a diagram on page 2 of David Stifter’s *Sengoidelc: Old Irish for Beginners* (2006), which itself was reprinted from Kim McCone’s *Towards a Relative Chronology of Ancient and Medieval Celtic Sound Change*, Maynooth 1996, pg. 67 and 104).

Kim McCone's model has Proto-Celtic splitting into the Continental Celtic languages and Insular, with Insular yielding Goidelic and Brythonic⁷ (McCone 1996). The construction of his model relied heavily on his examination of Celtic verbal morphology (McCone 1996).

Karl Horst Schmidt's model is based on far less evidence, being contingent on a single sound change, that of Indo-European/Proto-Celtic $k^w > p$ in Brythonic, Gaulish, and Lepontic, hence the label P-Celtic for this group and of Indo-European/Proto-Celtic $k^w > k^w$ (later k) in Goidelic and Celtiberian, hence the label Q-Celtic for this group (Schmidt 1977; Schmidt 1986; Schmidt 1990; Schmidt 1997). However, Schmidt's reliance on $k^w > p$ and on the significance of this sound change is also his model's fatal flaw. To be useful in constructing Celtic subgroups this sound change would need to be reliably identifiable as a singular occurrence and not something that Brythonic, Gaulish, and Lepontic could have experienced independently rather than inherited through common ancestry in P-Celtic. The fact that Latin $k^w >$ Romanian p (with Romanian not being a Celtic language and having never even been spoken in Celtic territory) demonstrates that this same sound change, which Karl Horst Schmidt based his entire division of the Celtic languages upon has in fact occurred at least twice independently- once in Celtic and once in Romanian (Dr. Donald Ringe, Personal Communication January 31, 2011). Therefore, there is nothing preventing this same sound change from having occurred independently multiple times throughout the Celtic languages' history, resulting in its presence in Brythonic, Gaulish, and Lepontic as well as its absence in Goidelic and Celtiberian.

Both models have their pros and cons with Schmidt's model providing a simpler possibility, involving less intermediary steps between Indo-European and the modern Celtic languages, albeit one based on a potentially insignificant sound change and with Kim McCone's

⁷ See **8.0 Glossary** as the term **British**, which is employed in Kim McCone's model is just one of many terms that may be used in place of the term Brythonic within Celtic Studies.

model providing for a slightly more complex history of development through the addition of Insular Celtic and Continental Celtic as proto-languages rather than geographic labels, but being based on more evidence than a single sound change (McCone 1996; Schmidt 1977; Schmidt 1986; Schmidt 1990; Schmidt 1997). Bearing this in mind it should be noted that at present, neither model is fully capable of explaining the descent of the Celtic languages, as cross-borrowing between the different groups- Brythonic, Goidelic, and Continental Celtic, has blurred what would otherwise be much clearer lines of descent (McCone 1996; Schmidt 1977; Schmidt 1986; Schmidt 1990; Schmidt 1997; Stifter 2006).

3.0 Methodology and Theory: From Dictionaries to the Field and then to Praat and Excel:

To conduct my reconstruction I utilized the comparative method as laid out by Lyle Campbell (2006:122-167). Receiving a Hanna Holborn Gray Undergraduate Research grant to help fund my first summer of research, I created my initial, untranscribed **cognate sets** from dictionary sources⁸. These sets were then divvied up onto single-language Word documents or Cognate Sheets, which my participants read aloud with their reading being recorded using an Olympus LS-10 digital voice recorder.

Gaining Institutional Review Board approval, I went abroad to the UK and Ireland to collect data, with the goal of recording ten speakers per language. In that first summer, I visited Cornwall, the Isle of Lewis (Scotland), the Isle of Man, Ireland, and Wales. I was unable to visit Brittany at this time, and after a summer of recording speakers,⁹ I had met or exceeded my original goal for Welsh (with 12 speakers), Scottish (with 10 speakers), Irish (with 12 speakers), and Manx (with 10 speakers), but failed to do so for Breton (having only recorded 6 speakers) and Cornish (having only recorded 4 speakers).

While the first field season had been successful in getting much of the data I desired, one unexpected problem had been encountered in the field - Cognate Set 277: water. All three of the Goidelic languages had adopted a different word (albeit still a native one) for “water”. However, this problem was resolved by the addition of Cognate Set 288- “otter”, after a chance encounter with a children’s picture book thanks to participant Maggie Smith’s grandson resulted in my realization that the Gaelic word for this animal is literally “water dog” or more precisely “water hound.” Looking up “otter” in the others five languages on the fly, revealed that “otter” had

⁸ See section **4.5 Cognate Set Bibliography** for a full listing of the sources used to construct the cognate sets employed in the current research endeavor.

⁹ Native speakers were sought whenever possible; however learners were allowed to participate when a sufficient number of native speakers was not available to interview.

remained much the same across all six languages and was certainly a cognate form. From then on, the appropriate form for “otter” was penned in at the bottom of all Cognate Sheets and then formally added to the Cognate Sheets used during my second summer of data collection which was funded by an Alumnae Regional Scholar Award from Bryn Mawr College.

All of the research paperwork was also translated into French to facilitate my work in Brittany with the help of Professor Agnès Peysson-Zeiss prior to my second summer of data collection. During this additional field season, I was able to record 6 additional speakers of Cornish, and 13 additional Breton speakers. I then transcribed my data first by hand into notebooks and then compiled the transcriptions into a massive 755-page Excel database¹⁰ to aid in my reconstruction.¹¹

The completion of the Excel database midway through the Fall 2010 semester, brought me to the end of Lyle Campbell’s first step of “Assemble Cognates” (2006:126-127), which involves the compilation of transcribed cognates into sets. I was then able to advance to the next step, “Establish **Sound Correspondences**” (Campbell 2006:127-128). Upon the completion of the **sound correspondence sets**, I moved on to “Reconstruct **Proto-Sounds**” guided by the principles of **Directionality**, **Majority Wins**, **Factoring in Features held in common**, and **Economy** (Campbell 2006:128-136). Completing these three steps of Lyle Campbell’s seven-step reconstruction method occupied me for the remainder of the semester. This in conjunction with the general time constraints imposed by this project being an undergraduate thesis, which

¹⁰ When all sheets of the Reconstruction Database are printed the database is 755 separate sheets.

¹¹ The primary problem with my first reconstruction project from Historical and Comparative Linguistics had been that I could never see as much of my data as I wanted to in the data table I had been using within a Word document. This had led to me missing sound correspondence sets, which in turn led to many errors in that particular reconstruction. The Microsoft Excel spreadsheet of the Reconstruction Database employed in the current project, while time-consuming to construct; provides the ability to scroll through all of the speakers and has proved a valuable tool in allowing me to control how much (or how little) of the data is able to be viewed at a given time, with this allowing for my construction of complete sound correspondence sets.

only allowed for one semester rather than a year or more to complete the reconstruction and the final written accompaniment for the database, forced the truncation of the remaining four steps of Lyle Campbell's comparative method¹²: “Determine the status of **partially overlapping correspondence sets**,” “Check the plausibility of the reconstructed proto-sound from the perspective of the complete phonological inventory of the proto-language;” “Check the plausibility of the reconstructed proto-sound from the perspective of linguistics universals and typological expectations;” and “Reconstruct individual morphemes” (Campbell 2006: 136-147)¹³.

¹² The truncation of these steps resulted in my inclusion of a brief examination of significant sound changes with regards to Insular Celtic within this thesis, rather than an in-depth discussion of proto-sounds and conditioning factors governing multiple or differing manifestations of the same proto-sound.

¹³ It should be noted that Lyle Campbell's comparative method for historical reconstruction had to be performed four separate times as it was first necessary to reconstruct SW Brythonic, Brythonic, and Goidelic from their respective daughter languages, before a reconstruction of Insular Celtic was even possible.

4.0 An Original Phonetic Reconstruction of Insular Celtic:

This section centers on my partial phonetic reconstruction of Insular Celtic through the introduction, explanation, and discussion of the Reconstruction Database. It is divided into several smaller sections in an effort to increase the clarity and overall user-friendliness of the Reconstruction Database.

4.1 An Introduction to the Reconstruction Database:

While much reconstructive work has been completed on the Celtic languages, and much evidence has been brought forth, both for and against the existence of Insular Celtic, no one scholar has attempted a phonetic reconstruction of this hypothesized proto-language from its six modern descendents. The Reconstruction Database lays the ground work for such a phonetic reconstruction and was undertaken in the hopes that it would shed additional light on the current classification crisis within Celtic linguistics. The Reconstruction Database itself is an eight-sheet, 755-page Microsoft Excel workbook. This section is meant as a guide for the Reconstruction Database as well as for the findings made through its construction.

4.2 The Key to the Reconstruction Database:

This subsection of **4.0 An Original Phonetic Reconstruction of Insular Celtic** explains the layout of the Reconstruction Database as well as the formatting employed throughout it.












4.21 The Color-Code:

In addition to clear naming and labeling practices, colors are also employed in the Reconstruction Database to make it visually less intimidating and more accessible for visual

minds¹⁴. Label Columns, those that carry necessary information to understand the organization of the data- including Cognate Set # Column, are marked by light gray fill in Rows 1 and 3.

Individual languages were also assigned color codes. Therefore each Data Column (a column which contains transcribed or untranscribed cognates or reconstructed cognates also called proto-forms) is marked by color fill in Rows 1 and 3, corresponding to the language that the data belongs to. The language is also named in Row 2 on all sheets of the Reconstruction Database, so users who prefer to have things written down in word-form can also easily find the data they are interested in examining. It should be noted that the Color-Code is not sheet-specific and is maintained across all sheets of the Reconstruction Database.

The Color-Code is as follows:

Label Column	
Breton Data Column	
Cornish Data Column	
Welsh Data Column	
Scottish Data Column	
Irish Data Column	
Manx Data Column	
SW Brythonic Data Column	
Brythonic Data Column	
Goidelic Data Column	
Insular Data Column	

4.22 Columns and Types of Columns:

The columns within the Reconstruction Database are of two types: Label Columns and Data Columns.

¹⁴ It should be noted that all color codes used in the Reconstruction Database are arbitrary, having been decided upon by the author- there is nothing inherently light gray about labels nor is there is anything inherently pink about Breton.

The four Label Columns are Cognate Set #, English Gloss, SC Set #, and Applicable Cognate Sets By #. They are labeled as such in their Row 3 cells. Their Row 1 and Row 3 cells are also filled in light gray, in accordance with the author-assigned Color-Code for label columns.

The Cognate Set # column lists the number (1-288) assigned to each Cognate Set, with the designated Cognate Set then appearing in the row following this number. For example, Cognate Set 6- ‘brother’ (with the English meaning supplied by the English Gloss column) is found in Row 9. The Cognate Set # column is found on the following sheets in the Reconstruction Database: Speaker Database [the first sheet], Reduced Database [the second sheet], Reconstructed PF Database [the seventh sheet], and Cognate Sets- Orig. Orthography [the eighth and final sheet].

The English Gloss column always appears immediately to the right of the Cognate Set # column and supplies the English meaning for the Celtic words in each Cognate Set. This is only a rough meaning as it was designed to account for all those meanings assigned to these related items by each modern Celtic language. For instance, the English Gloss for Cognate Set #2 is “bread, bread with butter, cake.” This meaning corresponds to the fact that in Breton, Cornish, Welsh, and Scottish this cognate has retained its original meaning of “bread,” however in Manx it has taken on the meaning of “bread with butter” while the cognate form in Irish has been largely replaced by another form- arran, pushing bairghean into near-obsolescence, with the word being constrained to refer to a special kind of cake. The English Gloss column occurs in the following sheets of the Reconstruction Database: Speaker Database [the first sheet], Reduced Database [the second sheet], Reconstructed PF Database [the seventh sheet], and Cognate Sets- Orig. Orthography [the eighth and final sheet].

The third variety of label column, SC Set # (which is an abbreviation for Sound Correspondence Set #) replaces Cognate Set # on the following sheets of the Reconstruction Database: SW Brythonic SC Sets [the third sheet], Brythonic SC Sets [the fourth sheet], Goidelic SC Sets [the fifth sheet], and Insular SC Sets [the sixth sheet]. It indicates the number assigned to each Sound Correspondence Set. This number is arbitrary and simply represents the order in which sound correspondence sets were discovered by the author. This number can then be used to call out specific sound correspondence sets to discuss conditioning factors, phonological rules, and proto-sounds.

The fourth variety of label column, Applicable Cognate Sets By # also appears on SW Brythonic SC Sets [the third sheet], Brythonic SC Sets [the fourth sheet], Goidelic SC Sets [the fifth sheet], and Insular SC Sets [the sixth sheet]. This column lists the cognate sets by their assigned number (from the Cognate Set # column) in which each sound correspondence set occurs. For instance, on the Insular SC Sets sheet, SC Set # 4, Brythonic initial b and Goidelic initial b with the posited proto-sound of Insular Celtic b occurs in cognate sets 2, 3, 5, 6, 7, 8, 10, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 270, and 271.

Now finished explaining the Label Columns, let us move on to the Data Columns. Data Columns are of two subtypes- Speaker Data Columns and Language Data Columns.

Speaker Data Columns contain transcribed data from individual speakers and are only contained in sheet one- Speaker Database. These columns are labeled for the language that each participant speaks- with the corresponding color-code for the language imposed on cells in Rows 1 and 3 of each Speaker Data Column. In Row 2, each Speaker Data Column contains a Data

Identifier in the format: Language Speaker #-Name¹⁵. Example, the first Breton Speaker Data Column is labeled: Breton 1- Roisin O' Cuill.

Language Data Columns occur on the following data sheets and contain either cognates (transcribed on Reduced Database and Reconstructed PF Database, untranscribed on Cognate Sets-Orig. Orthography) or individual sounds/proto-sounds (on SW Brythonic SC Sets, Brythonic SC Sets, Goidelic SC Sets, and Insular SC Sets). All Language Data Columns are labeled with color coding in their Row 1 and Row 3 cells and display the language to which the data in that particular column belongs to in their Row 2 cells.

4.23 Sheets:

The Reconstruction Database contains eight separate sheets. The first sheet¹⁶ is named Speaker Database¹⁷. The Speaker Database sheet contains my transcriptions in IPA (the International Phonetic Alphabet) of each cognate as spoken by each participating Celtic speaker.

The second sheet is called Reduced Database. The Reduced Database sheet shows the IPA transcription chosen to be representative for each cognate within each of the six Celtic languages. Transcriptions shown here derive from those collected from individual speakers, with Lyle Campbell's principles of Directionality, Majority Wins, Factoring in Features held in common, and Economy being used to arrive at one transcription per cognate per language rather than the original 10-22 transcriptions yielded by participants and dictionary sources in preparation for the reconstructions of SW Brythonic, Brythonic, Goidelic, and finally, of Insular (Campbell 2006:128-136). It would have been ideal for conditioning factors, phonological rules,

¹⁵ It should be noted that this Data Identifier corresponds to the name of each field data recording.

¹⁶ When reading the tabs at the bottom of the Microsoft Excel window from left to right.

¹⁷ The name for each sheet is found on the corresponding tab at the bottom of the Microsoft Excel window.

and inventories to have been implemented at this level of reconstruction; however, this was deemed beyond the scope of the current project.

The third sheet is called SW Brythonic SC Sets, which is an abbreviation for SW Brythonic Sound Correspondence Sets. The SW Brythonic SC Sets sheet contains the Sound Correspondence Sets used in the reconstruction of SW Brythonic. These sets were constructed through systematic examination of the Breton and Cornish cognates in the Reduced Database sheet. The first column in the SW Brythonic SC Sets sheet is SC Set # (which stands for Sound Correspondence Set #), with the remaining columns providing the Breton reflex, the Cornish reflex, and the posited SW Brythonic proto-sound, with one asterisk in front of each proto-sound to mark that the sounds contained in this column are reconstructed sounds. The final column in this sheet is Applicable Cognate Sets By #. This column shows the cognate set numbers for all the cognate sets in which each sound correspondence set occurs.

The fourth sheet in the Reconstruction Database is Brythonic SC Sets, which following the pattern of the previous sheet, stands for Brythonic Sound Correspondence Sets. The Brythonic SC Sets sheet contains the Sound Correspondence Sets used in the reconstruction of Brythonic. These sets were constructed through systematic examination of the Welsh cognates found on the Reduced Database sheet and the reconstructed SW Brythonic cognates found on the Reconstructed PF Database sheet. The first column on Brythonic SC Sets is SC Set # (which stands for Sound Correspondence Set #), with the remaining columns providing the Welsh reflex, the reconstructed SW Brythonic reflex and the posited Brythonic proto-sound, with two asterisks in front of each proto-sound to mark that the sounds contained in this column are reconstructed sounds that follow from reconstructed sounds. The final column in this sheet is

Applicable Cognate Sets By #. This column shows the cognate set numbers for all the cognate sets in which each sound correspondence set occurs.

The fifth sheet in the Reconstruction Database is Goidelic SC Sets, which following the pattern of the previous sheets, stands for Goidelic Sound Correspondence Sets. The Goidelic SC Sets sheet contains the Sound Correspondence Sets used in the reconstruction of Goidelic. These sets were constructed through systematic examination of the Scottish, Irish, and Manx cognates found on the Reduced Database sheet. The first column on Goidelic SC Sets is SC Set # (which stands for Sound Correspondence Set #), with the remaining columns providing the Scottish reflex, the Irish reflex, the Manx reflex, and the posited Goidelic proto-sound, with one asterisk in front of each proto-sound to mark that the sounds contained in this column are reconstructed sounds. The final column in this sheet is Applicable Cognate Sets By #. This column shows the cognate set numbers for all of the cognate sets in which each sound correspondence set occurs.

The sixth sheet in the Reconstruction Database is Insular SC Sets, which following the pattern of the previous sheets, stands for Insular Sound Correspondence Sets. The Insular SC Sets sheet contains the Sound Correspondence Sets used in the reconstruction of Insular Celtic. These sets were constructed through the systematic examination of reconstructed cognates or **proto-forms** of Brythonic and Goidelic found on the Reconstructed PF Database sheet. The first column on Insular SC Sets is SC Set # (which stands for Sound Correspondence Set #), with the remaining columns providing the reconstructed Brythonic reflex, the reconstructed Goidelic reflex, and the posited Insular Celtic proto-sound, with four asterisks in front of each Insular proto-sound to mark that the sounds contained in this column are reconstructed sounds based off of reconstructed sounds (Goidelic) and reconstructed sounds based off of reconstructed sounds (Brythonic). The final column in the Insular SC Sets sheet is Applicable Cognate Sets By #. This

column shows the cognate set numbers for all the cognate sets in which each sound correspondence set occurs.

The seventh sheet in the Reconstruction Database is Reconstructed PF Database, with this being the abbreviated form for Reconstructed Proto-Form Database. This sheet begins with the Label Columns: Cognate Set # and English Gloss. The reconstructed proto-forms for SW Brythonic, Brythonic, Goidelic, and Insular are displayed in the remainder of the columns. These proto-forms were reconstructed based on the sound correspondence sets shown in sheets three through six of the Reconstruction Database. SW Brythonic proto-forms have one asterisk preceding them, indicating that they are a reconstructed form. Brythonic proto-forms have two asterisks preceding them, indicating that they are reconstructed forms derived from reconstructed forms. Goidelic proto-forms have one asterisk preceding them to indicate that they are reconstructed forms. Finally, Insular proto-forms have four asterisks preceding them to indicate that they are reconstructed forms based off 1) reconstructed forms (Goidelic) and 2) reconstructed forms based off of reconstructed forms (Brythonic).

The eighth and final sheet in the Reconstruction Database is Cognate Sets-Orig. Orthography, which is an abbreviation for Cognate Sets- Original Orthography. This sheet displays the cognate sets used in my partial reconstruction of Insular Celtic in their original orthographies.

4.24 General Formatting:

To make the Reconstruction Database more user-friendly, additional features (besides the Color-Code and labeling schemes) were also employed. The most important of these being the use of the Freeze Panes feature of Microsoft Excel. This feature was used to “freeze” Rows 1-3

on all sheets of the Reconstruction Database. Keeping these rows visible at all times allows users to always know what data they are looking at and prevents users from getting lost in the massive database. Freeze panes was also employed to freeze all of the Label Columns on the left-hand side of the Reconstruction Database: the co-occurring Cognate Set # and English Gloss columns on the first, second, seventh, and eighth sheets as well the SC Set # column on the third, fourth, fifth, and sixth sheets. This allows users to always know what set (cognate or sound correspondence) they are viewing and also keeps the English meaning of the Celtic cognates visible at all times.

A second additional feature employed to increase the Reconstruction Database's accessibility is the differential weight of horizontal and vertical borders throughout the database. Data Columns are demarcated by standard weight lines, while the rightmost border of a Label Column is demarcated by a heavier weight line. All rows are bound by matching heavy weight lines to draw the eyes across individual cognate sets, while still allowing for the identification of individual Data Columns through their lighter weight vertical limits.

4.3 Notes on IPA Transcriptions found in the Reconstruction Database:

This section addresses complications with the transcription of my field recordings into the International Phonetic Alphabet or IPA. In addition to IPA transcriptions of cognates, several notes are included throughout the Data Columns of the Reconstruction Database. Such notes often provide clarification or they may concern uncertainties with individual transcriptions for reasons of background noise, unusual waveforms or spectrograms (seen when the recordings were analyzed in Praat), or the author's own inexperienced ear. Below follows explanations of all additional notes that occur within the Reconstruction Database along with an example of each

note. General corrections and clarifications (which are not formally noted in the Reconstruction Database) are also expressed in this section.

4.31 General Notes and Clarifications:

1) Concerning stops in general, Praat recognizes very few fully voiced stop consonants within my Celtic data series. This may be due to 1) the possibility of voicing in Celtic in reality having more to do with the presence or absence of aspiration than of actual voicing, 2) background noise, or 3) Praat not being able to detect voicing that is present in the data.

2) Furthermore, as the rare East-coaster with the cot/caught merger, I admit having difficulty separating out α and ɔ with α occasionally being problematic; the symbol ɔ was used in my transcriptions to designate this group of sounds. To help others discern where I may have erred, F2 (2nd formant) measurements were taken on these values and appear alongside my transcriptions in the Reconstruction Database. Furthermore, sounds transcribed as æ , were at times more a-ey in nature, though this is not noted in the Reconstruction Database.

3) Stress and syllabification were only marked in transcriptions from dictionary or historical sources, and were not noted in the broad transcription of my recordings¹⁸. Perhaps in future editions of the Reconstruction Database this could be rectified, along with the α - ɔ -a- æ muddle mentioned above.

¹⁸ Through my analysis and reading I have come to see that all of the modern Celtic languages have a tendency to reduce vowels in unstressed syllables to schwa. This would not be much of a problem if schwa were a constant; however, in Celtic it can vary from something more ɛ -like to something more i -like or even ɔ -like, and pretty much anything in-between, so long as it is somewhat centralized. This variation in Celtic schwa may explain my large number of vocalic Sound Correspondence Sets. Therefore, marking stress in future editions of the Reconstruction Database would be a useful tool for distinguishing schwa from other vowels.

4) In transcribing my field recordings, I was sometimes unsure as to whether a sound was indeed a diphthong or was simply a long vowel. This was not explicitly marked in the Reconstruction Database and sounds were transcribed as I heard them. Examples: “gwəzi:n” from Breton 9- Tugdual Kaluez, Cognate Set # 89 versus “eɪ:n” from Cornish 7- Matthew Clarke, Cognate Set # 1.

5) The Goidelic palatal series is represented as Cj where C represents any consonant (i.e. nj for n^j, etc.). This non-standard representation came about as a result of my being unaware of the existence of the palatal series while undertaking the initial transcriptions of my data. However, during transcription, I would often hear something j-ey in association with consonants and so noted such occurrences in the Reconstruction Database as the consonant followed by a j. This notation was kept for the remainder of the project as it would have been too time-consuming to correct it.

4.32 Individual Notes and Clarifications with Examples:

- (R?) = This symbol designates uncertainty in the R-sound present: tap, flap, fricative, or r-colored vowel. When touching the IPA transcribed-cognate it also indicates uncertainty as to whether a final R-sound is actually present. Example: “gl_ohɔ(R?)” from Breton 1-Roisin O’Cuill, Cognate Set # 88.
- BLANK = This designates that this particular cognate was left unsaid by the speaker and therefore the cell that the transcribed cognate would have occupied is BLANK on purpose and is not indicative of oversight by the author. Example: “BLANK” from Breton 10- Marie-Louise Royant, Cognate Set # 7.

- MISSING = This designates that a particular cognate was left unsaid by the speaker by accident and typically stems from the skipping of an entire page of cognates. Example: “MISSING” from Breton 15- Yvonne Leboigne, Cognate Set # 78.
- (no longer in use) = This designates that a particular cognate is known by a speaker; however, that speaker believes the form to no longer be in use in the modern language (it should be noted that due to having speakers from different dialects- what is “no longer in use” to one person may in fact be a common word to another speaker of the same language). Example: “kæd (no longer in use)” from Breton 8- Bauol Le Bras, Cognate Set # 38
- (x=y?) = With the x being indicative of any one sound and the y being indicative of any sound not equal to x, this symbol designates uncertainty in transcription such that sound x may in fact be sound y. Example: “kɔłɛd (d = t?)” from Welsh 1- Paul Rogers, Cognate Set # 53.
- (V?) = This indicates uncertainty in the transcription of a vowel. Example: “beR (V?)” from Cornish 4- Raymond Chubb, Cognate Set # 21.
- (more modern) = This indicates that a speaker has provided multiple forms for the same cognate and has designated the form this note precedes as being “more modern” than the other form or forms. Example: “iner injõ (more modern)” from Breton 8- Bauol Le Bras, Cognate Set # 83.
- (speaker unsure of form) = This indicates that the speaker expressed uncertainty concerning the form of a particular cognate. Example: “inowin (speaker unsure of form)” from Irish 2- Fionn O'Grada, Cognate Set # 13.

- (speaker unfamiliar with form) = This indicates that the speaker expressed that they were unfamiliar with a particular form or cognate. Example: “(speaker unfamiliar with form)” from Irish 3- Vincent O'Donnell, Cognate Set # 26.
- b^h where b stands for any voiced stop= This indicates aspiration on a mostly-voiced stop consonant. Example: (dRo:g^h) from Cornish 1- Elizabeth Stewart, Cognate Set # 74.
- NOT KNOWN = This form was unknown to the speaker. Example: “NOT KNOWN” from Cornish 2- Craig Weatherhill, Cognate Set # 86.
- UNUSABLE = This means that the recording of this cognate was unable to be transcribed due to extremely loud background noise that prevented recovery of the cognate. Example: “UNUSABLE” from Cornish 1- Elizabeth Stewart, Cognate Set # 89.
- (1st V?) = This indicates uncertainty in the transcription of the first vowel in a particular cognate. Example: “bələ (1st V?)” from Manx 2- Julie Matthews, Cognate Set # 8.
- ðθ = This indicates that the first portion of the dental fricative is voiced, while the last part is unvoiced. When this symbol appears, it marks that the unvoiced portion of this sound is significant enough to not be attributable to the tendency of voicing to taper off as an utterance ends. Example: “keRhiðθ” from Cornish 8- Jori Ansell, Cognate Set # 44.
- (v=vfv) = This indicates that the beginning of the labiodental fricative is voiced, voicing ceases, and then voicing resumes prior to the start of the next sound. Example: “ævɔn (v = vfv)” from Welsh 1-Paul Rogers, Cognate Set # 16.

- (ðθð) = This indicates that the beginning of the dental fricative is voiced, voicing ceases, and then voicing resumes prior to the start of the next sound. Example: “bðði (ðθð)” from Welsh 1- Paul Rogers, Cognate Set # 19.
- (English borrowing) = This indicates that the speaker is giving multiple forms for a single cognate, with the form preceding this note being an English borrowing. Example: “pain (English borrowing) poun (native word)” from Cornish 9- Alex Robert, Cognate Set # 251.
- (Native Word) = This indicates that the speaker is giving multiple forms for a single cognate, with the form preceding this note being a native Celtic word. Example: “pain (English borrowing) poun (native word)” from Cornish 9- Alex Robert, Cognate Set # 251.
- (blink of an eye) = This marks a singular case where a speaker has provided a phrase containing the cognate in addition to the cognate itself. Example: “æmərænt^h miun æmrænt^h (blink of an eye)” from Welsh 6- D. Sheppard, Cognate Set # 11.
- (v=vf) = This indicates that the first portion of the labiodental fricative is voiced, while the last part is unvoiced. When this symbol appears, it marks that the unvoiced portion of this sound is significant enough to not be attributable to the tendency of voicing to taper off as an utterance ends. Example: “khlɛðiv (v = vf)” from Welsh 3- Felicity Roberts, Cognate Set # 48
- (v may be voiced due to bkgd noise) = This is a clarification note that means that v could be voiced due to background noise, which then caused interference which Praat detected as voicing. Example: “khlɛðiv (v may be voiced due to bkgd noise)” from Welsh 5- Jaci Taylor, Cognate Set # 48.

- (f=vf) = This indicates that the first portion of the labiodental fricative is voiced, while the last part is unvoiced. When this symbol appears, it marks that the unvoiced portion of this sound is 1) significant enough to not be attributable to the tendency of voicing to taper off as an utterance ends and 2) it is longer and or more prominent than the voiced portion of the sound. Example: “k^ho:f (f=vf)” from Welsh 6- D. Sheppard, Cognate Set # 50.
- (masc.) = This indicates that the speaker is providing two or more forms for a single cognate with the one preceding this note being the masculine form. Example: “k^hRoəŋ (masc.) k^hRəŋ (fem.) k^hRaiŋs” from Welsh 6- D. Sheppard, Cognate Set # 54.
- (fem.) = This indicates that the speaker is providing two or more forms for a single cognate with the one preceding this note being the feminine form. Example: “k^hRoəŋ (masc.) k^hRəŋ (fem.) k^hRaiŋs” from Welsh 6- D. Sheppard, Cognate Set # 54.
- (writing) = This indicates that the speaker is providing two forms for a single cognate with the one preceding this note only being used in writing or in literature. Example: “ei: (writing) i: (speech)” from Welsh 3- Felicity Roberts, Cognate Set # 77.
- (speech) = This indicates that the speaker is providing two forms for single cognate with the one preceding this note being used in speech (not writing). Example: “ei: (writing) i: (speech)” from Welsh 3- Felicity Roberts, Cognate Set # 77.
- zs = This transcription indicates that the first portion of the alveolar fricative is voiced, while the last part is unvoiced. When this transcription appears, it marks that the unvoiced portion of this sound is significant enough to not be attributable to the tendency of voicing to taper off as an utterance ends. Example: “ɛmʃɪz” from Irish 11- Sean O'Curraoin, Cognate Set # 9.

- **OBSOLETE FORM** = This indicates that the speaker has expressed that a particular cognate is now obsolete in their language. Example: “OBSOLETE FORM” from Welsh 3- Felicity Roberts, Cognate Set # 135.
- **UNKNOWN FORM** = This indicates that a particular cognate is unknown to the speaker. Example: “UNKNOWN FORM” from Welsh 3- Felicity Roberts, Cognate Set # 143.
- **(pl.)** = This indicates that the speaker is providing at least two forms for a single cognate, with the transcribed form preceding this note being the plural form of the cognate. Example: “tho: thəijən (pl.)” from Welsh 6- D. Sheppard, Cognate Set # 190.
- **(2ndV?)** = This indicates uncertainty in the transcription of the second vowel in a particular cognate. Example: “k^həglœg (2ndV?)” from Scottish 2- John MacDonald, Cognate Set # 47.
- **(F2v = #####)** = This is the format used to record measurements taken of the second formant, where v stands for any vowel and ##### stands for the actual measurement. Example: “k^həgjəl (F2v=1360)” from Scottish 1- Maggie Smith, Cognate Set # 46.
- **(d=t?- list effect)** = This indicates that d or any voiced consonant may in fact be its voiceless counterpart; with the voicing apparent in the recorded cognate being potentially attributable to the list effect. Example: “ɛnaid (d=t?- list effect)” from Welsh 11- Heulwen Jones, Cognate Set # 83.
- **(L?)** = This indicates uncertainty in the transcription of an L-sound. Example: “məilħ (L?)” from Scottish 1- Maggie Smith, Cognate Set # 109.

- (i= high e?) = This indicates that the i-sound may in fact be an abnormally high e-sound, as it has a formant structure akin to i, but sounds more akin to an e. Example: “k^hiʰəθ (i= high e?)” from Scottish 1- Maggie Smith, Cognate Set # 163.
- (o = ou?) = This indicates uncertainty in the transcription of the vowel o and whether or not the vowel is diphthongized. Example: “bRo (o = ou?)” from Irish 1- Roisin O’Cuill, Cognate Set # 34.
- (Initial Sound?) = This indicates uncertainty in the transcription of the initial sound of the transcribed cognate that this note follows. Example: “ðæowəRt^h (Initial sound?)” from Scottish 8- Donald Saunders , Cognate Set # 138.
- (genitive case) = This indicates that the speaker has provided multiple forms for a single cognate, with the form that this note precedes being in the genitive case. Example: “gəl gwɪl (genitive case)” from Irish 2- Fionn O’Grada, Cognate Set # 158.
- (Munster) / (Donegal) / (Connemara) = These labels specify that the speaker has provided forms of a particular cognate from separate dialects with these dialects being identified by the region in which they are spoken. Example: “fjʉnə (Munster) fin- (Donegal) fjɔn- (Connemara)” from Irish 2- Fionn O’Grada, Cognate Set # 234.
- (changed meaning- "respect") and (meaning of "respect" as above) = These two clarification notes go hand-in-hand and are one-time occurrences within the database where a speaker gave a different meaning (respect being substituted for acorn or fruit) for a particular cognate and then supplied another variant also having the changed meaning. Example: “mæs (changed meaning- "respect")

feinvəs (ɔ = a?; meaning of "respect" as above) “ from Irish 2- Fionn O’Grada, Cognate Set # 277.

- NOT LISTED = This is used to denote that a cognate does not occur in a dictionary or other historical source and therefore, that cognate’s transcription could not be included in the cell in which this label occurs. Example: “NOT LISTED” from Kenneth Jackson Adaptation [Manx Data Column], Cognate Set # 273.
- (F2v= starts ##### and falls to F1) = This indicates that the second formant of a vowel (v) falls throughout the course of the utterance and meets the first formant. Example: “k^hlyu (F2yu= starts 2283 and falls to F1)” from Manx 3- Kathleen Pitts, Cognate Set # 48.
- (place-names) = This indicates that a speaker has provided multiple forms for a particular cognate with the form (or forms) being preceded by this note being used in place-names only. Example: “k^hjɔn (F2ɔ = 1230) k^hjæoun k^hjən (place-names) k^hm (place-names)” from Manx 7- Robert Teare, Cognate Set # 215
- g^hk^h = This transcription and others consisting of an unreleased voiced stop immediately followed by an aspirated voiceless stop, occur word-finally throughout the Reconstruction Database. It was originally thought that the sounds represented by such transcriptions were strange double stops, with the first stop being voiced but unreleased, and with the second being voiceless, but bearing a lot of aspiration. After consulting Dr. K. David Harrison it was concluded that something strange did seem to be occurring here; however, the voicing was too small to really be perceptible and therefore, this strangeness that I was detecting likely represents an exorbitant amount of aspiration and nothing more. Example: “blɔnəg^hk^h (F2ɔ = 1117)” from Scottish 9- Sophia Dale, Cognate Set # 26.

4.4 A Discussion of the Database:

This section will discuss the Reconstruction Database. It will provide a brief analysis covering a few key findings, bring to light some its shortcomings, and discuss potential future improvements and uses for the Reconstruction Database.

4.41 Analysis, Findings, and Shortcomings:

In terms of analysis, something that jumps out at any user of the Reconstruction Database is the fact that it is incomplete. Due to time-constraints and the truncation of the final steps of the Comparative Method as laid out by Lyle Campbell, there are no sheets containing sound change rules with conditioning factors for the sounds of each reconstructed proto-language nor are there inventory sheets to display the reconstructed consonant and vowel inventories for each proto-language. These missing parts of the Reconstruction Database have created gaps and anomalies within the body of research itself. For instance, in the absence of sound change rules that state the conditioning factors whereby proto-sounds take multiple reflex forms, there is an extremely high amount of sound correspondence sets which would seem to put any potential inventory of proto-sounds well out of the typical range for a human language (Dr. Donald Ringe- Personal Communication January 31, 2011). Recognizing this incompleteness, any future research involving reconstructive work on Insular Celtic undertaken by the author would first systematically examine the compiled sound correspondence sets and arrive at rules governing the sound changes from Insular Celtic proto-sounds to the reflex in each daughter, as well as rules governing sound changes from Goidelic, Brythonic, and SW Brythonic to their respective daughters.

However, even with these shortcomings and the incomplete state of the Reconstruction Database, it is possible to discuss some individual sound changes and other interesting findings.

Indo-European/Proto-Celtic k^w : The one that started it all!- The sound change that was the catalyst for the entire P-Celtic and Q-Celtic division of the Celtic family tree did show up in my analysis. Sound Correspondence Set # 301, shows this sound change: Brythonic – p^h / Goidelic – k^h / Insular Celtic $****k^w$. This sound correspondence set is visible in Cognate Set # 103 ‘son’: SW Brythonic $*map^h$ / Brythonic $**map^h$ / Goidelic $*m\acute{o}k^h$ / Insular Celtic $****mak^w$. The same sound change is visible in Sound Correspondence Set # 442: Brythonic p^h – / Goidelic k^h – / Insular Celtic $****k^w$. This sound correspondence set is visible in Cognate Sets 161, 162, 163, 166, 167, 168, 169, and 170. As an example of this, I provide Cognate Set # 170 ‘who, whom’ : SW Brythonic $*p^hijju$ / Brythonic $**p^howiju$ / Goidelic $*k^hwe$: / Insular Celtic $****k^woweju$. It should be noted that this sound correspondence set partially overlaps another, Sound Correspondence Set #452: Brythonic p^h - / Goidelic p^h - / Insular Celtic $****p^h$. However, Sound Correspondence Set #452 seems to only occur in later Latin and English borrowings such as Cognate Set # 251 ‘pain’, Cognate Set # 254 ‘people’, and Cognate Set # 264 ‘park’, amongst others. That said, depending on when these borrowings entered into Celtic, this sound may not have been in Insular at all. While the validity of the $k^w > k^h$ (Goidelic) and $k^w > p^h$ (Brythonic) sound change in classifying the Celtic languages is questionable¹⁹ the fact that it does show up in my results, speaks to the validity of my methodology and of its application, as if this change did not show up within a series of 288 Cognate Sets, its absence would not speak well of my methodology or my ability to employ said methodology.

¹⁹ See my discussion of this sound change and its use in Karl Horst Schmidt’s classificatory model in section 2.1 **Disputed Familial Ties and Multiple Models**.

A second interesting sound change that was found in the analysis of my data is that indicated by Sound Correspondence Set # 273: Brythonic **g / Goidelic *f / Insular Celtic ****f. This sound correspondence set is found in Cognate Sets 89, 94, 95, 101, 118, 119, 120, 121, 122, 223, 225, 227, and 234. As an example of this, I provide Cognate Set # 234 ‘white, fair, pleasant, glorious, blessed, blank, clear, bright’: SW Brythonic *gwin: (masc.) and *gwen: (fem.) / Brythonic **gwin: (masc.) and **gwen: (fem.) / Goidelic *fr:n / Insular Celtic ****fr:n. This sound change does not seem to be conditioned by the following vowel, as a mix of vowels- high, low, short, long, front, and back, all seem to be able to occur in this environment. However, while Sound Correspondence Set # 273 seems to be unconditioned, this sound correspondence set does overlap with Sound Correspondence Set # 344: Brythonic h – / Goidelic f – / Insular Celtic ****f. This sound correspondence set only occurs in Cognate Set # 124: SW Brythonic *hair / Brythonic **hajil / Goidelic*fijilt^h / Insular Celtic ****faijilt^h. A possible explanation for this overlap may lie in the possibility that the Brythonic and SW Brythonic forms originally started with g; however, due to currently unknown conditioning factors, this g was weakened to the velar fricative, which then eventually became h. Sound Correspondence Set # 273 also overlaps Sound Correspondence Set # 42, which again only occurs in a single cognate set, Cognate Set # 11: SW Brythonic: *æbRænt^h / Brythonic **æbRænt^h / Goidelic *favRux / Insular Celtic ****fæbRænxt^h. This cognate set may or may

not be an actual cognate set as the Goidelic form does not really seem to fit with the Brythonic and SW Brythonic forms and may in fact be a borrowing or an alternate native Celtic word. If this were true then the posited Insular Celtic form would be incorrect. However, without further research into Cognate Set #11 it is impossible to say whether or not the overlapping of Sound Correspondence Sets # 273 and # 42 can be attributed to the entertained non-cognicity of Cognate Set #11.

A third interesting finding could explain why in Celtic mythology and children's stories Fionn is a hero while Gwen is a heroine, even though both names are cognates. Sound Correspondence Set # 596 and Sound Correspondence Set #598 indicate that the Celtic languages may once have marked a gender distinction using the vowels *ɪ* and *ɛ*. Nowadays gender, where it is still marked, often makes its presence known through initial consonant mutations. I return to Cognate Set # 234 to illustrate this potential marking of gender: SW Brythonic **gwin*: (masc.) and **gwen*: (fem.) / Brythonic ***gwin*: (masc.) and ***gwen*: (fem.) / Goidelic **fi:n* / Insular Celtic *****fi:n*. It would seem that the feminine form of **fi:n* in Goidelic, might have been something akin to **fe:n* (noting that the movement of length away from the nasal and back onto the preceding vowel seems to be a Goidelic trait, while Brythonic kept the length on the nasal; however, I did not have time to investigate this instance of length

movement²⁰ further). Unfortunately, I did not collect many cognates in both their feminine and masculine forms; the collection and incorporation of such data would be useful for future research into the marking of gender in the Celtic languages and how the marking of grammatical gender has changed through time in these languages.

4.42 Future Improvement and Uses for the Reconstruction Database:

Begun in an effort to work towards a phonetic reconstruction of Insular Celtic, the Reconstruction Database is a good foundation for working towards that goal. However, the marking of stress and the syllabification of the transcribed data would improve the Reconstruction Database's utility towards that end, as stress and syllable boundaries may be the conditioning factors behind some of the many sound correspondence sets compiled during the analysis of the transcribed cognate sets. Further improvements could involve the inclusion of additional data, specifically of gendered forms for both nouns and adjectives (where still extant), singular and plural forms for nouns, address the Celtic case systems as well as the roles of morphology and syntax in the Celtic sound system, specifically the Celtic mutations. Ideally, borrowed forms would also be clearly marked in future editions of the Reconstruction Database to facilitate their use in dating Celtic sound changes. Besides the use of the Reconstruction Database for exploring the question of the existence of Insular Celtic as a proto-language, the Database has also taken on an additional function- that of a repository of linguistic data from the Celtic languages, which are all either endangered or revived.

²⁰ This is not compensatory lengthening because nothing was deleted; the length was simply shifted from the final consonant to the vowel preceding it.

4.5 Cognate Set Bibliography:

While many sources were consulted (dictionaries and reference grammars included) throughout the course of my research on Insular Celtic, the following sources were utilized in the construction of the cognate sets which were then recorded in the field, transcribed, and compiled into the Reconstruction Database. It should be noted that the most modern spelling of a cognate was utilized in data collection, with the exception of Cornish- where multiple spelling systems created the need to include multiple entries for the same word.

In addition to the sources used in compiling the original cognate sets, some IPA-using sources (or pre-modern IPA phonetic notation in the case of Kenneth Jackson's work) were used directly as surrogate speakers and their entries for my cognate sets were directly incorporated into the Reconstruction Database. Entries from Ken George's mini-dictionary (which used IPA) were included in the Cornish data set and appear in the first Cornish Data Column on the Speaker Database sheet. This column is labeled Ken George Mini-Dictionary. Entries from Raymond Delaporte's 1995 dictionary [this Data Column is labeled Delaporte 1995 Dictionary], David ar Rouz' Breton Mini-Dictionary [this Data Column is labeled Rouz Mini Dictionary], and Kenneth Jackson's *Contributions to the study of Manx phonology* [this Data Column is labeled Kenneth Jackson Adaptation] were also included in the Speaker Database sheet in the hopes of widening the breadth of my coverage in terms of language variation, and in the case of Manx- to incorporate pre-language death speakers.

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5.0 Conclusion:

Having introduced you to the Celtic languages; explored the controversy surrounding the structure of the Celtic family tree; and presented a partial phonetic reconstruction of Insular Celtic, I have been unable to definitively prove whether Insular Celtic was the proto-language from which the modern Celtic languages descend. However, my research has laid the foundation for further reconstructive work on the Celtic languages that may yet be able to answer the question of Insular Celtic's existence as a spoken language.

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8.0 Glossary:

Breton

A Celtic language of the Brythonic group that is spoken in modern-day Brittany. Also sometimes referred to as Armoric.

Brythonic

The proto-language of the Brythonic group of Celtic languages, from which modern-day Welsh, Cornish, and Breton descend. Brythonic is also the label applied to the group of Celtic languages spoken in modern-day Great Britain, including not only Welsh, Cornish, and Breton, but the now-extinct Pictish and Cumbric as well. Also known as Brittonic, Brittonic, and British.

Celtic

Adjective applied to the native languages, cultures, and peoples of Great Britain, Ireland, Brittany, and certain other areas in Continental Europe- ex. Gaul.

Cognate

A form, such as a word or morpheme that is phonetically and semantically related to other forms across **sister languages** because these forms were inherited by the sister languages from a common proto-language.

Cognate set

A set of forms related to each other across sister languages due to inheritance from a single form in the sister languages' common ancestor.

Common Celtic

Synonymous with Proto-Celtic, this term refers to the proto-language of the entire Celtic family, and is a daughter of Indo-European.

Continental Celtic

Hypothesized proto-language of the Continental Celtic languages- Gaulish, Lepontic, and Celtiberian. The term Continental Celtic is also employed as the label applied to this group of languages (a geographic label, as these languages were spoken in Continental Europe).

Cornish

The Celtic language historically spoken in Cornwall. This language went extinct in the 1800s, only to be revived in the 1900s. Cornish is a Brythonic language and is the daughter of SW Brythonic as well as the sister of Breton.

Cumbric

The Celtic language historically spoken in Cumbria, it is extinct; however, most Celtic linguists agree that it was a Brythonic language similar to Welsh (Jackson 1953).

Daughter languages

Languages that descend from a common proto-language. For example, Breton and Cornish are both daughters of SW Brythonic.

Directionality

The linguistic knowledge that certain sound changes that reappear in the study of independent languages generally go in one direction, not both (Campbell 2006: 129). For example many languages demonstrate the change of $s > h$, but the opposite $h > s$, is fairly rare (Campbell 2006:129).

Economy

Choosing the sound that requires the fewest independent changes to yield the correct reflexes in the daughter languages (Campbell 2006:133-136).

Factoring in features held in common

The use of commonly shared phonetic features among reflexes to determine the appropriate proto-sound (Campbell 2006:132-133.)

Gallo-Brittonic

Synonymous with P-Celtic, Gallo-Brittonic refers to the group of languages composed of Gaulish, Lepontic, and the Brythonic languages. It also refers to this group's proto-language.

Goidelic

The proto-language of Irish, Manx, and Scottish. The term Goidelic also refers to this subfamily of Celtic (potentially a subfamily of Insular Celtic, see Insular Celtic below).

Insular Celtic

The controversial, hypothesized proto-language of both Goidelic and Brythonic. If it existed, it would have been a daughter of Proto-Celtic. This term is also used as a geographic label encompassing Goidelic, Brythonic, and their descendents.

Irish

A Celtic language of the Goidelic group, Irish has historically been spoken in Ireland, and continues to be spoken there today.

Italic

A daughter of Indo-European, Italic is the proto-language of the Italic family, which includes Latin and the Romance languages.

Italo-Celtic

A controversial, hypothesized proto-language of both the Italic and Celtic families that is a daughter of Indo-European.

Majority wins

Fairly self-explanatory, majority wins simply means that in cases where all other factors are equal, the sound that occurs most often is reconstructed as the proto-sound (Campbell 2006:131).

Manx

A Celtic language of the Goidelic group, Manx has historically been spoken on the Isle of Man. Like Scottish it bears a heavy Norse influence and like Cornish, it is a revived language. Having died in 1974, revival efforts had begun prior to the language's actual death, leading to a unique situation in which native speakers have ceased to exist, but the language has continued to be taught and spoken (Abley 2003).

Partially overlapping (sound) correspondence sets

(sound) correspondence sets which posit the same sound as a proto-sound in similar environments. For example, - o - - a - - oa - *oa and - o - - ɔ - - oa - *oa.

P-Celtic

Synonymous with Gallo-Brittonic. P-Celtic refers to the group of languages composed of Gaulish, Lepontic, and the Brythonic languages. It also refers to this group's proto-language.

Pictish

A now-extinct Celtic language once spoken in Scotland. From the little remnants of it that are left, most linguists concur that it was Brythonic in nature (Jackson 1953).

Proto-Celtic

The proto-language of the entire Celtic family. Also sometimes referred to as Common Celtic. It is a daughter of Indo-European.

Proto-language

Language from which **sister languages** share descent.

Proto-sounds

Sounds in the proto-language that are reflected by the cognate manifestations in the languages descended from the proto-language also known as **daughter languages**.

Q-Celtic

The term used to refer to the group of languages encompassing Goidelic and its descents as well as the Continental Celtic language, Celtiberian. It also refers to the hypothesized proto-language of this group.

Reflexes

Manifestations of proto-sounds in **daughter languages**.

Scottish

A Celtic language from the Goidelic group that has historically been spoken in main island Scotland as well as the Scottish Isles (excluding the Orkneys); however, in modern times it is mostly confined to the Isles, and is strongest in the Hebrides. Like Manx, it bears a strong Norse influence.

Sister languages

Related languages that share descent from a common ancestor: their “mother” or the **proto- language** from which they share descent.

Sound correspondence sets

Also known as sound correspondences or correspondence sets, these are the sets of cognate sounds found in the forms contained in the **cognate sets** that correspond across the **sister languages** because the sounds in the sister languages are manifestations of a single sound in the **proto-language**. In other words, the sounds in the sister languages are **reflexes** of the sounds from which they descended in the proto-language, and the **proto-sounds** of the proto-language are reflected by the cognate sounds found in their **daughter languages** (Campbell 2006:126)

SW Brythonic

The hypothesized proto-language of Breton and Cornish, SW Brythonic is a daughter of Brythonic. Also known as South West Brythonic, SW Brittonic, and South West Brittonic.

Welsh

A Celtic language from the Brythonic group that has historically been spoken in Wales and continues to be spoken there today.