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by

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Abstract

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by

PENNY WILLIS

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The Celtic languages have morphologically-conditioned processes, traditionally called initial mutations, in which the initial segment of a word undergoes various changes under the influence of a preceding word: thus Welsh [pɛn] 'head' : [i bɛn] 'his head' : [i fɛn] 'her head' : [və mhɛn] 'my head'. A number of scholars have attempted formal descriptions of the mutations in the Brythonic Celtic languages (Welsh, Breton, and Cornish), but none of these is adequate. In particular, they fail to account for the fact that one of the mutations, lenition, is by far the predominant one, and that in Welsh and Breton (the living Brythonic languages) it is extending itself at the expense of the other mutations and even of the radical (base form). Another frequent shortcoming of previous analyses is the inclusion among the mutations of low-level phonological rules affecting initial consonants. Since these may modify or even reverse the effects of the true mutations, the confusion prevents an adequate account of the latter.

In this dissertation, I present a detailed critique of the literature on the mutations, and propose a theory which I believe adequately accounts for them: inside a 'phonological word' (i.e., a sequence of morphemes which behaves as a single word even if it is spelled as a sequence of words), lenition is the unmarked case. Other mutations, and preservation of the radical, are triggered by morphological

features assigned to the first element in the sequence, while lenition is caused by the absence of a feature. (There is also a marked type of lenition, occurring outside the phonological word, which is effected by transformational rules.)

I examine, and reject, the possibility that the mutations are phonologically conditioned, and discuss the distinction between the mutations and low-level phonological rules.

I present a detailed description of the mutations, including 'phonological' (i.e. feature-changing) rules and an exhaustive list of environments. I put special emphasis on spoken usage; dialectal data are extensively used, and differences between the literary standards and the spoken languages, and among dialects, are noted. The Welsh and Breton mutations are described in considerably more detail than those of Cornish, which is extinct.

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The responsibility for any errors in this dissertation is, of course, strictly my own.

A NOTE ON SOURCES

Unattributed examples, phonemic inventories, etc., are usually composites taken from various handbooks of Welsh, Breton, and Cornish. Some examples, especially in Welsh, are original, taken from my own knowledge of the language. Dialectal and historical data are attributed in the text, as are examples obtained by personal communication.

Many examples of spoken Welsh were provided by a native-speaker informant, Mrs. Catherine Walker. Completely bilingual in Welsh and English, she was born and raised in Barry, South Glamorgan (south of Cardiff), and attended high school in Pontypridd, near the Rhondda Valley (north of Cardiff). She was 27 years old at the time she acted as my informant, and is a high school English teacher.

Mrs. Walker's father, a native speaker of Welsh, came from Bont-Llanbrynmair, Powys (eastern mid-Wales). Her mother is not a native speaker, but speaks Welsh as a second language. Mrs. Walker's spoken Welsh has elements of both her father's dialect and that of the Rhondda Valley where she went to school; also, since she has been educated bilingually, her speech has been somewhat influenced by the literary standard. However, while some of her usage of the initial mutations is literary, a good deal is dialectal, and some probably idiolectal.

PHONETIC SYMBOLS USED IN THIS TEXT

In my transcriptions, I have used a number of American modifications of the International Phonetic Alphabet, so that several symbols may be unfamiliar to some readers. Furthermore, certain symbols may have different values in other works, and some Celtic sounds have been transcribed differently by other writers. The following list of possibly confusing or ambiguous symbols should clarify matters:

[y] is the equivalent of I.P.A. [j] (that is, the high front unrounded glide)

[ü] = I.P.A. [y] (a high front rounded vowel)

[š] = [ʃ] [ẅ] = [ɥ]

[ž] = [ʒ] [ö] = [ø]

[č] = [tʃ] [ɔ̈] = [œ]

[ǰ] = [dʒ]

[ɨ] is a high back unrounded vowel

[i̯] is a high back unrounded glide (the [-syll] equivalent of [ɨ])

[ɦ] is a voiced glottal fricative (the voiced equivalent of [h])

[ɬ] is a voiceless unilateral fricative (see chapter II, note 5, for phonetic details). This sound is often transcribed as [ɬ], but [ɬ] is preferable for typographical reasons. There is no velarized lateral in Brythonic.

[f̌] is a labiodental contrasting with both [f] and [v] (see 3.9 for phonetic details). This sound has also been transcribed as [f̣], [ɟ], [ɣ], and even [φ], though it is not a bilabial.

A dot [.] underneath a consonant indicates voicelessness.
A colon [:] following a segment indicates length.

BRYTHONIC ORTHOGRAPHY

Welsh, Breton, and Cornish have a number of orthographic symbols which may be unfamiliar to readers, or may appear familiar but have unconventional pronunciations. Following is a list of problematical symbols used in this text, and their usual phonetic values. (Transcriptions will also be provided in the text.)

Welsh:

c = [k]
ch = [x]
dd = [ð]
f = [v]
ff = [f]
ng = [ŋ]; rarely [ŋg]
ll = [ɬ]
ph = [f]
rh = [r̥]
th = [θ]

i = (a) [i] or [ɪ]
    (b) in diphthongs, [y]
u = (a) standard and North Welsh [ɨ]
    (b) South Welsh [i]
w = (a) [u] or [ʊ]
    (b) [w]
y = (a) [ə]
    (b) North Welsh [ɨ], South Welsh [i]
ae = (a) standard and N.W. [aɨ̯]
     (b) S.W. [ay] or [a:]
au = (a) standard and N.W. [aɨ̯]
     (b) S.W. [ay]
     (c) as plural suffix, N.W. [a], S.W. [e]
ei, eu = (a) [əɨ̯]/[əy]
         (b) [aɨ̯]/[ay]
     (but note ein [ən] 'our', ei [i:] 'his/her', and eu [i:] 'their')
oe = (a) standard and N.W. [ɔɨ̯]
     (b) S.W. [ɔy] or [o:]
wy = (a) [uɨ̯]/[uy]
     (b) [wɨ̯]/[wi] (mostly following [g])

A circumflex (^) over a vowel indicates length.

Breton:

c'h = [x], [h], or [ɦ] depending on environment and dialect
ch = [š]
j = [ž]
zh = [s] or [z] in KLT dialects; [x] or [h] in Vannetais

eu = [ö] or [ɔ̈]
ou = [u] or [w]
u = [ü] or [ẅ]
ao = [aọ]
aou = [aw]

$\tilde{n}$ indicates nasalization of a preceding vowel.

Cornish:

c, q = [k]
ch = [č]
dh = [ð]
h = [x] or [h]
th = [θ]
wh = [hw]
zh = [ž]

y = [i]
$\hat{y}$ = (a) early Cornish [i:]
(b) late Cornish [ay]
ow = [aw]

A circumflex over a vowel indicates length.

DISTINCTIVE FEATURES

The phonological rules written in chapters III, V, VI, and VII are expressed in terms of distinctive phonetic features, some of which may be unfamiliar to readers. Following is a list of these features and the classes of sounds to which they refer.

Syllabic [syll]. A [+] value refers to vowels; a [-] value refers to glides and consonants.

Consonantal [cons]. [+] = consonants; [-] = glides and vowels.

Sonorant [son]. [+] = vowels, glides, nasals, and liquids; [-] = stops, fricatives, and affricates (obstruents).

Continuant [cont]. [+] = fricatives; [-] = stops and affricates.

Delayed release [del rel]. [+] = fricatives and affricates; [-] = stops.

Anterior [ant]. [+] = consonants articulated at or in front of the alveolar ridge (i.e., labials, dentals, and alveolars); [-] = consonants articulated further back (alveo-palatals, palatals, velars, etc.).

Coronal [cor]. [+] = consonants articulated with the tip of the tongue (i.e., dentals, alveo-palatals, and palatals); [-] = other consonants.

Lateral [lat]. [+] = [l] or [ɹ̥]; [-] = all other sounds.

Strident [stri]. [+] = 'noisy' consonants (i.e., [v f s z š ž č ǰ]).

[+low], in reference to consonants, specifies [h] or [ɦ].

[+high], in reference to consonants, specifies (in this text) alveo-palatals or palatals.

Other notations used in this text are described below:

+ = morpheme boundary.

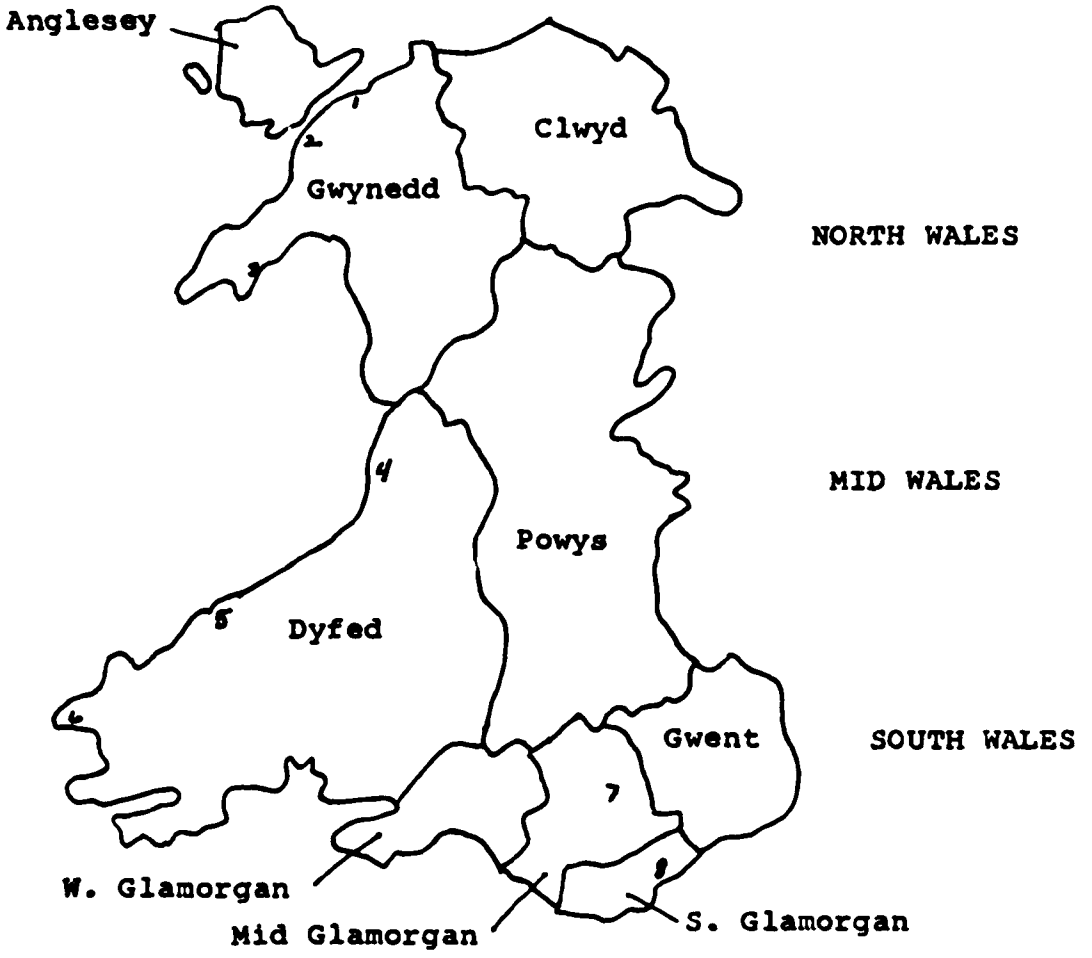
= word boundary.

$ = syllable boundary.

Parentheses ( ) indicate an optional element.
Curly braces { } mean 'either-or'.

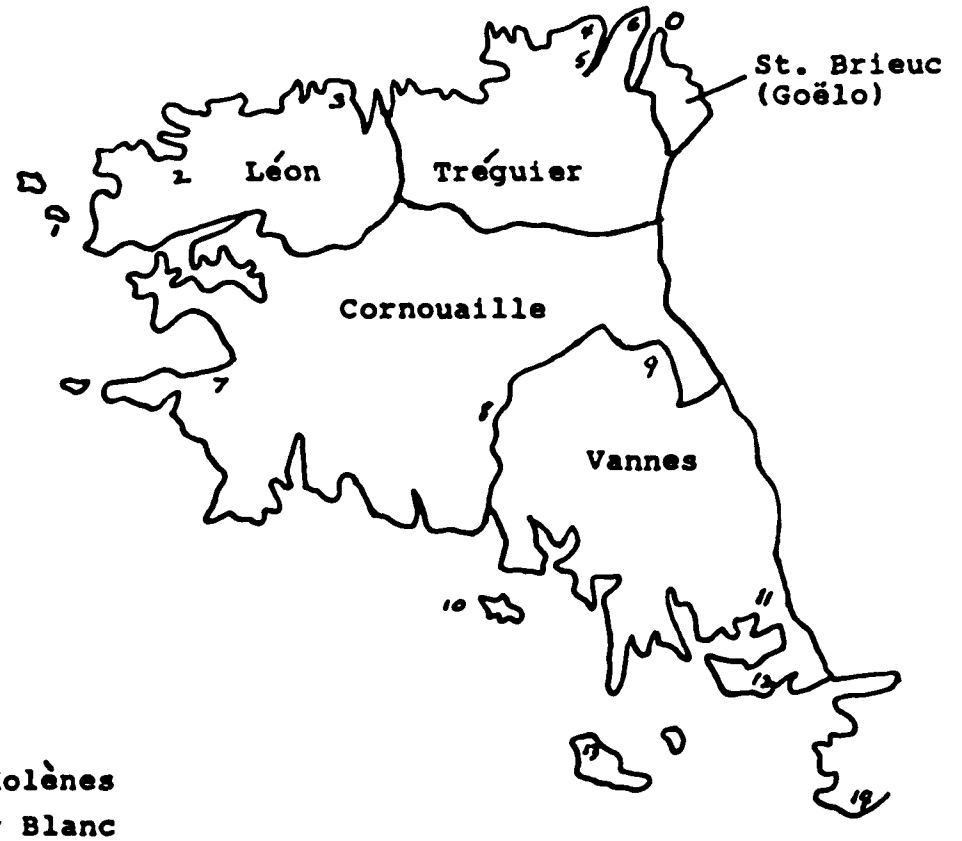
OUTLINE MAPS OF WALES AND BRITTANY

FIG. 1 : WALES



1 Bangor
2 Caernarvon
3 Abersoch
4 Aberystwyth
5 Cardigan
6 St. David's (Tŷ Ddewi)
7 Pontypridd
8 Cardiff

FIG. 2 : WESTERN BRITTANY (BASSE-BRETAGNE)



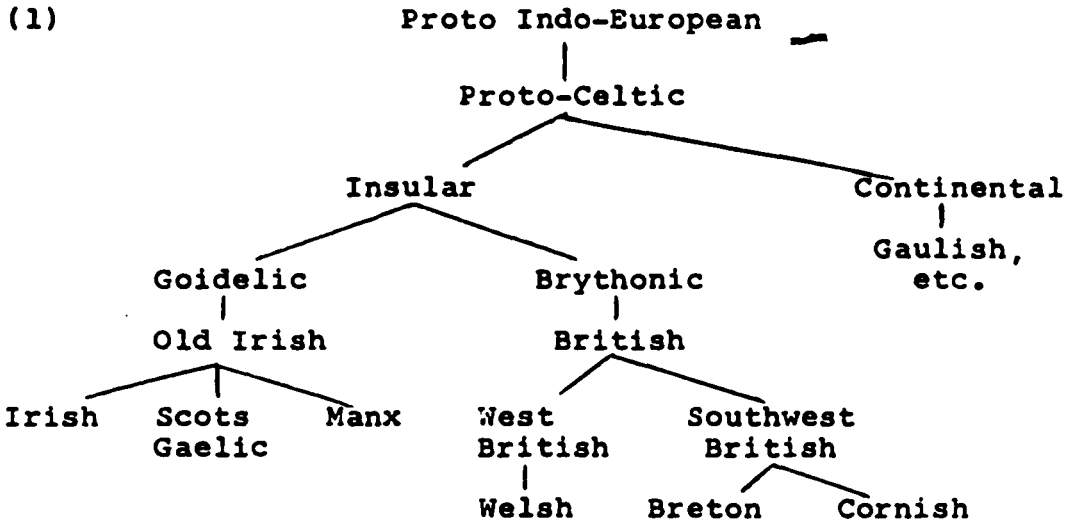
1 Ile Molènes
2 Bourg Blanc
3 St. Pol-de-Léon
4 Plougrescant
5 Tréguier city
6 Pleubian
7 Douarnenez
8 Le Faouët
9 Cléguérec
10 Ile de Groix
11 Vannes city
12 Sarzeau
13 Sauzon
14 Bourg-de-Batz

TABLE OF CONTENTS

CHAPTER I: INTRODUCTION

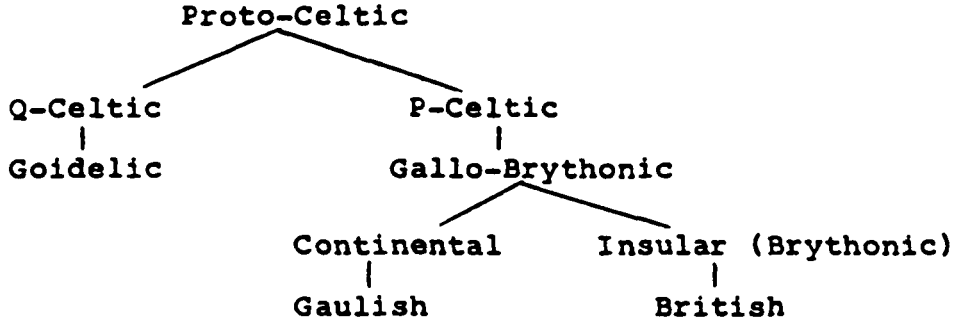
1.0. The Celtic languages are a branch of the Indo-European family. Most scholars set up the Celtic family tree as follows:

(1)



Jackson (1953:4) makes a different primary division, based on the reflexes of P.I.E. $*q^w$, which became /p/ in both Brythonic and Continental Celtic but /k/ in Goidelic:

(2)



Continental Celtic has been extinct since the early medieval period.

The Brythonic branch of Celtic includes Welsh and Breton, which are still spoken languages, and Cornish,

which has been extinct since the end of the 18th century. Breton and Cornish are more closely related to each other than either is to Welsh. As can be seen from (1), the parent language, British, was divided into at least two dialects: West British, which gave rise to Welsh, and Southwest British, which gave rise to Cornish and Breton.[1]

The Goidelic branch includes Irish, Scots Gaelic, and Manx, all descendants of Old Irish. Manx has recently become extinct.

1.1 Both the Brythonic and the Goidelic languages have a system of morphophonemic alternations--traditionally called the 'initial consonant mutations'[2]--involving word-initial segments. Mutable consonants undergo various feature changes (e.g., voicing, devoicing, spirantization, and nasalization). Preaspiration of vowels and glides (and in some dialects aspiration of nasals and liquids as well) is also traditionally regarded as a mutation.

The following examples of initial mutation are taken from standard Welsh:

(3) a. pen [pɛn] 'head; a head'
b. ei ben [ibɛ́n] 'his head'
c. ei phen [ifɛ́n] 'her head'
d. fy mhen [vəmhɛ́n] 'my head'
e. eu pen [ipɛ́n] 'their head'

(4) a. brawd 'brother; a brother'
b. ei frawd [ivráwd] 'his brother'
c. ei brawd [ibráwd] 'her brother'
d. fy mrawd [vəmráwd] 'my brother'

1.2 Pen 'head' and brawd 'brother' are the so-called radical, or basic, forms of these words. Ben and frawd are lenited forms. Lenition in the Brythonic branch

causes voicing of voiceless stops and spirantization of voiced stops (plus a few other processes; see 2.1). Phen illustrates the spirant mutation, which causes spirantization of voiceless stops (voiced stops remain in the radical form, as in example (4c) above). Mhen and mrawd are examples of the nasal mutation, which nasalizes both voiced and voiceless stops.

Following are examples (also from standard Welsh) of aspiration of vowels and glides:

(5) a. afal [ával] 'apple' : ei hafal [ihával] 'her apple'
b. iaith [yayθ] 'language' : eu hiaith [ihyáyθ] 'their language'

Similar phenomena occur in the other Celtic languages.

1.3 It is evident from the above data that the mutations are not phonologically conditioned, at least on a concrete basis: the segment [i] precedes three different variants of the word pen. I will later demonstrate that no reasonable abstract phonological conditioning can be set up, either.

Phonologically-conditioned word-initial alternations are less common in human languages than word-medial ones, but they do occur. Martinet (1952:194) cites Spanish [barθelona]: [a βarθelona] 'to Barcelona'; R. M. R. Hall (personal communication) cites, from the same language, [domiŋgo] 'Sunday': [kaða ðomiŋgo] 'every Sunday'.

It is a well-known rule of Spanish that word-medial voiced stops are spirantized intervocalically; in the examples given above, this rule operates even though the preceding vowel ends an orthographically separate word. It might be said, then, that in Spanish--and in other languages in which similar phenomena occur--certain words (for example, adjectives, or grammatical morphemes such

as articles or prepositions) act as prefixes to the following word, even if they are written separately. The initial segment of the orthographic second word is thus actually in medial position, and undergoes the same changes as any other medial consonant in such an environment. These phenomena, then, are not difficult to describe, and from a purely phonological point of view are not as interesting as they may seem at first. They are, however, interesting from a morphological point of view: there may be quite a number of languages for which we will need a new definition of the word.[3]

1.4 There are also instances of word-medial sound alternations conditioned by syntactic or morphological factors. These, however, usually either involve limited, specific environments (such as 'plural', 'first person singular', etc.), or are exceptional (such as the vowel changes in English plurals: man: men, goose: geese, etc.). At any rate, it is not a great problem to describe such changes by means of formal rules.

The Celtic mutations, on the other hand, are exceedingly difficult to describe formally. They are apparently conditioned by many different words or morphemes, and in some instances are actually or apparently not conditioned by any. At first glance, the situation is so chaotic that listing seems to be the only possible method of accounting for it. Indeed, this is the approach used in handbooks and in early linguistic studies; only in the past thirty years or so have systematic analyses of the mutations been attempted. In this dissertation I will demonstrate that systematic treatment is, however, both possible and necessary.

Although the Celtic languages are highly unusual, they are not unique in having non-phonologically-conditioned word-initial changes. Italian apparently has them, and the West Atlantic group of African languages

certainly does.[4]

1.5 Historically, the Celtic mutations were indeed phonologically conditioned (and, perhaps, we will find that this is true in all cases of word-initial alternation which cannot be accounted for by phonological rules). In the Brythonic branch, most of the mutation processes occurred in British, the parent language of Welsh, Cornish, and Breton.[5] Both word-medial and word-initial consonants (or, better, morpheme-medial and morpheme-initial ones) underwent various feature changes depending on which segments preceded and followed them. Thus lenition--the voicing/spirantization processes illustrated in examples (3b) and (4b)--occurred between a vowel and a sonorant:

(6) a. British *petwares > Welsh pedwar 'four'
b. Br. *esyo kattos > W. ei gath [igá:θ] 'his cat'

The spirant mutation--illustrated in (3c)--spirantized voiceless geminate stops:

(7) Br. *esyās kattos > *esyā kkattos > W. ei chath [ixá:θ] 'her cat'

The nasal mutation--illustrated in (3d) and (4d)--occurred following a nasal, and so on. (The examples cited in (6) and (7) were taken from Jackson (1953, 1967). A more detailed account of the historical background of the mutations is given in Appendix A.)

1.6 The present state of affairs in Celtic--as can be seen from (6) and (7)--is a result of the subsequent loss of the entire final syllable of polysyllabic words, and of most final consonants of monosyllables, so that the phonological environments of the word-initial mutations were almost entirely eliminated; what little remains is

opaque.[6] Yet, while word-medial mutation--for which phonological motivation still exists--no longer occurs, the initial mutations are today, after 1400 years, a living, essential part of the structure of the Celtic languages, and have even been extended into environments in which they did not originally occur. Loanwords in British underwent mutation, both initially and medially, just as native words did: Latin Aprīlis > Welsh Ebrill [ébriɬ] 'April'; British-Latin *esyo ponte- > W. ei bont 'his bridge'. In the modern languages, borrowings enter into the initial mutation system, but do not undergo medial mutation, as the following examples from Welsh show:

(8) a. poced [pɔ́kɛd] 'pocket; a pocket'
b. ei boced [ibɔ́kɛd] 'his pocket'
c. ei phoced [ifɔ́kɛd] 'her pocket'
d. fy mhoced [vəmhɔ́kɛd] 'my pocket'

Intervocalic lenition no longer occurs productively (the final [d] of poced is the result of a morpheme-structure constraint of modern Welsh which resists voiceless stops in word-final position).[7] In fact, in southeastern dialects of modern Welsh, there is intervocalic devoicing of stops--the opposite of the historical situation: standard Welsh pobi 'cooking'~Southeastern popi.

1.7 If only because the Celtic initial mutations are such a peculiar phenomenon--and therefore a possible source of new insights into what can happen in a human language--it is worthwhile to attempt to describe them. This dissertation is meant primarily as such a description, rather than as an extension of linguistic theory; indeed, deeper theoretical investigation may well have to wait until descriptions of similar phenomena in other languages have been made.

1.8 Many previous studies--including dialect descriptions

--have provided valuable insights into the Celtic mutations, but no one seems to have given a truly adequate account of them. One problem is that theoretical studies (including generativist ones) have tended to concentrate on the literary standards, thus missing some insights which dialectal data might provide, while material dealing with the dialects has usually been limited to observation of data. In this dissertation, I will combine a survey of data from the spoken languages (in the case of Welsh and Breton), as well as from the literary standards,[8] with the proposal of a theory which will deal with the factors hitherto neglected by other scholars.

1.9 I shall, almost entirely, limit my observations to the Brythonic branch of Celtic: Welsh, Breton, and--to a much lesser extent--Cornish. The Goidelic initial mutations are quite different from the Brythonic ones; indeed, some Celticists believe that phonological motivation can be established for the Goidelic mutations. As I am not yet adequately acquainted with this branch of Celtic, I cannot evaluate this claim.[9] I will occasionally cite some data from Goidelic, where appropriate, but will leave theoretical observations for future investigation.

1.10 Chapter II contains an informal description, with examples, of each type of mutation in each of the three Brythonic languages.

In chapter III, there is a short presentation of the relevant facts regarding the phonemics and phonetics of Welsh and Breton, plus formal 'phonological' rules, stated without environments.

Chapter IV contains an exhaustive list, with examples, of the environments for each type of mutation in Welsh and Breton, including data from the nonstandard dialects.

Chapter V examines, and rejects, the possibility of setting up phonological conditioning for the mutations. Also discussed are initial consonant alternations which

superficially resemble the mutations, but which are in fact phonologically conditioned and therefore distinct from the true, morphologically-conditioned mutations. Indeed, since these phonological rules occur at a lower level of the grammar than the mutations, they often modify--or even reverse--the outcome of the mutations. Most scholars have confused the two types of initial alternation, and this confusion has, not surprisingly, resulted in diminished insight into the true mutations.

Chapter VI examines the literature on the mutations. Traditional handbooks have generally avoided attempts at systematic description. Some historically-minded writers have stated that the mutations occur for purposes of 'euphony', which is obviously no longer the case if it ever was. Others have recognized that the mutations are now morphologically conditioned, but have not tried to set up any patterns; they simply give the phonetic details of the alternations and list the various environments.

In recent years, beginning with Hamp (1951), there have been genuine efforts to deal with the mutations from a systematic point of view. Hamp proposes abstract, underspecified morphophonemes at the end of mutation-triggering morphemes. Ellis (1965) and Albrow (1966) propose prosodic features. Ternes (1970) posits morphological features. Griffen (1975) presents an analysis based on stratificational grammar, and Awbery (1976) proposes transformational rules.

In this chapter I will show that, while some of these (and other) approaches have a good deal of merit, all of them fall short, in one way or another, of descriptive adequacy. Even the systematic analyses err in at least the following ways:

1. Extending the domain of the mutations to include

phonologically-motivated processes and modifications of the output of the true mutations;
2. Failing to distinguish between 'regular' mutation processes and sporadic, exceptional ones;
3. Failing to distinguish between lenition and the other mutations.

The third failure is an especially important one. Almost all writers on the subject have noted the obvious facts that lenition is by far the most common mutation (both in frequency of occurrence and in distribution) in all three Brythonic languages, and that lenition has been extending itself at the expense of the other mutations (and even of the radical) in spoken Welsh and Breton (and did so in Cornish before that language's death). In addition, there are a number of ways in which lenition acts differently from the other mutations; these, too, have been noticed. No one, however, has tried to account for these interesting observations. In chapter VII, I will show that in most environments in which lenition occurs it is the 'unmarked' case; the other mutations, some cases of lenition, and even preservation of the radical in certain environments, are 'marked'. 'Marked' lenition is effected by transformational rules; non-leniting mutations are triggered by morphological features assigned to the morpheme preceding the mutated word. 'Marked' preservation of the radical is also caused by a morphological feature. In the case of 'unmarked' lenition, the triggering morpheme does not have a feature: lenition here is automatic.

Since this dissertation is meant as a synchronic study of the Brythonic initial mutations, the historical background is not essential; however, as a point of interest, I have included a general survey of the historical facts in Appendix A.

Appendix B is a discussion of the phonemics of voiceless sonorants in Welsh. Although the conclusion of this

analysis is essential to some of the rules expressed in chapter III, the argumentation itself is long, complex, and not particularly germane to the dissertation as a whole, so I have excluded it from the main text.

1.11 For two reasons, I will be much less concerned with Cornish than with Welsh and Breton. First, the latter two are still living languages, whereas Cornish has been extinct since the end of the 18th century.[10] Therefore, there is no dialectal material from Cornish; data must be taken from literary sources, which are not always adequate. (Mutations are not always indicated, and in any case Cornish spelling is notoriously inconsistent.) Even handbooks of the language disagree with each other; the literature available to me has been incomplete and contradictory. Secondly, Cornish is quite closely related to Breton, and while the facts of mutation are not identical in the two languages, they are similar enough so that I judge it unnecessary to include mutation rules for Cornish in chapter III or environments of the Cornish mutations in chapter IV, except in the few cases where there are interesting differences.

1.12 I will be using a considerable amount of data from Welsh and Breton dialects, since the mutations in these are often different from those in the standard languages. There is not adequate space here for an exhaustive description of the dialects; the interested reader should consult Le Roux's monumental Atlas linguistique de la Basse-Bretagne and Jackson (1967) on Breton, and A. Thomas (1973) on Welsh. However, a short, general picture of the situation is in order.

In figures 1 and 2, pp. xiv-xv, outline maps of Wales and Brittany are provided. These show major dialect areas and, where possible, local dialects mentioned in the text.

The major dialect division in Welsh is North vs. South (or, perhaps, North vs. non-North; there is no sharp

line of demarcation). There are a number of differences in lexicon, and a few in phonetics. (One notable feature of North Welsh--especially in the northwest--is the high back unrounded vowel [ɨ], and its corresponding glide; in non-northern dialects these have merged with [i] and [y].

There are also some differences between eastern and western Welsh; i.e., western dialects in both the north and south may share some characteristics that eastern ones do not.

There are some dialectal differences with respect to the mutations, but most of these are not specifically regional; the major distinction is between literary and spoken usage.

The Breton language is spoken in Western Brittany. The eastern section of the province--including the cities of Rennes and Nantes--has never been Breton-speaking, and the French-Breton linguistic frontier has been retreating westward for many years. The dialect situation in Breton is more complex than in Welsh, and there is more variation in the mutations from dialect to dialect.

Breton is traditionally divided into four major dialects, corresponding to the four former dioceses of the region: Léonais (northwest), Trégorrois (northeast), Cornouaillais (central and southwest), and Vannetais (southeast). Some dialectologists add a fifth variety, Goëlo, to the east of the Trégorrois area, but most regard this as a subdialect of Trégorrois.

Cornouaillais, Léonais, and Trégorrois are similar enough so that they are often lumped together under the label KLT (K stands for Breton Kernew 'Cornouaille'). Vannetais, however, is so divergent from the others that it is sometimes regarded as a different language; it is said to be mutually incomprehensible with the KLT dialects. There are, in fact, two literary standards: one for KLT (based on some Léonais dialects) and one for Vannetais

(based on the speech of the city of Vannes).

The differences in pronunciation are indeed great. Most KLT dialects have penultimate stress; Vannetais has final stress, and this in turn results in different conditions of vowel-reduction in unstressed syllables. Velar consonants are palatalized before front vowels and glides in Vannetais: KLT [ki], V. [čʸi] 'dog'; KLT [gẅen], V. [ǰʸẅen] 'white'. In the interdialectal spelling brezhonek 'Breton (language)', zh represents [z] in KLT, [h] in Vannetais. There are other differences in phonetics, some in lexicon, and even a few in syntax. Yet there are also dialects of eastern Cornouaillais which have features of Vannetais (e.g., ultimate stress and palatalization) while otherwise retaining KLT characteristics. Dialect boundaries throughout the Breton-speaking area are not absolutely clear-cut, and as far as the mutations are concerned, there is often more divergence among subdialects of Vannetais and Cornouaillais than between Vannetais and KLT. Most scholars consider Vannetais to be a dialect, however divergent, of Breton, and I will do so in this dissertation.

NOTES

[1]A few Celticists have maintained that the Breton language is a survival of Gaulish. Most, however, agree that it--or rather the dialect of British that gave rise to it--was brought to Armorica by emigrants from Devon and Cornwall during the fifth and sixth centuries A.D. See Jackson (1953, 1967) for further discussion.

[2]There is a process traditionally called vowel mutation--a type of umlaut phenomenon--which has no connection with consonant mutation. There is no evidence that initial consonant mutation existed in Continental Celtic, which is one reason for the traditional family-tree division depicted in (1).

[3]See 7.4-5 for a discussion of the concept of the phonological word.

[4]J. Sapir (1971:65) gives the following examples from Konyagi: i-bal 'to be light (in color)': mpal-ek 'it is light': wa-val-na 'they are not light'. See Napoli and Nespor (1979) on word-initial gemination in Italian. Saltarelli (1970) and others have tried to set up phonological motivation for this process, but Napoli and Nespor make a convincing case for syntactic conditioning, at least in the modern language.

Bonaparte (1882) presents a rather peculiar comparative study of the Celtic mutations and of what he regards as lenition (or degemination) of word-initial consonants in dialects of Italian and Sardinian. He points out, quite rightly and with unusual insight for his time, that in modern Celtic the mutations must not be regarded as phonologically conditioned, though they were triggered originally by now-lost final segments. However, Bonaparte then claims that Italian-Sardinian 'lenition' is phonologically motivated, on the grounds that if the Latin/proto-Romance parent word ended in a vowel, degemination occurs in the Italian or Sardinian word; if the parent word ended in a consonant, degemination does not occur, even if this consonant has dropped out and left a vowel in final position. As this is more or less the same thing as happened in early Celtic, Bonaparte's reasoning is very odd. (Napoli and Nespor consider, and reject, the possibility that there are still underlying final consonants in geminating words, but no doubt the Latin situation was responsible for at least some types of word-initial gemination.)

[5]British is almost completely unattested, except for a few names recorded by the Romans. Jackson (1953, 1967)

holds that most of the mutations occurred during the fifth and sixth centuries A.D. in Late British, shortly before the breakup of that language into Welsh, Cornish, and Breton. (Jackson's dating is based on such evidence as the treatment of Latin loanwords and the probable date of the loss of final syllables.) At about the same time--again according to Jackson--the mutations occurred independently, and somewhat differently, in Goidelic, which is also mostly unattested. By this period, the Brythonic and Goidelic branches of Celtic had been separated for a very long time. See Appendix A for a more detailed account of the chronology of the British mutations, and for a suggestion as to why the same phenomenon occurred independently in the two branches.

[6]In Welsh, for example, yn [ən] 'in' has retained its final nasal, which triggered the historical nasal mutation and still does so: yn Ninbych [ənninbɨx] 'in Denbigh'. (The single nasal is due to a rule which degeminates consonants unless stress precedes.) However, there are other words ending in [n] in modern Welsh which do not cause the nasal mutation: mewn tŷ [mɛwntɨ:] 'in a house', not *mewn nhŷ.

[7]There have been some attempts to recreate the process deliberately in recently-coined learned words (e.g. berfol [bɛrvɔl] 'verbal'). These artificial cases must not, of course, be mistaken for the result of a productive rule.

[8]The term 'literary standard' is used here to refer to the usage taught by most handbooks of Welsh and Breton. There are gradations of standard usage, ranging from extremely formal (e.g. liturgical) to fairly formal (i.e., a cut or so 'above' educated conversational usage). The most formal styles preserve the speech of early modern Welsh (16th-17th centuries) and Breton (17th-18th centuries); less formal styles are also somewhat archaic, though not as much. Modern writers in both languages tend to be less formal than previously; some are quite populist.

[9]Prof. Eric Hamp of the University of Chicago, perhaps the most respected of American Celticists, has expressed this opinion (personal communication). It is true that the Goidelic languages retain a case system, which may give clues to the original final segments of words. However, I suspect that while phonological conditioning might be set up for the mutations in Old Irish, it is less likely that the modern Goidelic languages can be analyzed in this fashion.

[10]In recent years there have been efforts to revive Cornish as a native language. Some revivalists say that there are now children who speak it as their first language,

but I have no verification for this claim, and most reputable Celtic scholars are not impressed with the success of the movement.

CHAPTER II

AN INFORMAL DESCRIPTION OF THE MUTATIONS

2.0 There are at least five and probably six different mutation processes, not all of which occur in any one of the three Brythonic languages. A detailed but informal description of each mutation, with examples, follows.

2.1 Lenition

2.1.0 Lenition--traditionally called the 'soft mutation' --occurs in all three languages. However, the facts are not identical in each language, or in each dialect of Welsh and Breton.

2.1.1 In all three languages, voiceless stops are voiced: [p t k]→[b d g]. In late Cornish and in some dialects of Welsh, [č]→[ǰ].[1]

(1) Welsh
- a. pont 'bridge' : dros bont 'over a bridge'
- b. tad 'father' : heb dad 'without a father'
- c. cath 'cat' : y gath [əgáːθ] 'the cat'
- d. (Dial.) [čayn] 'chain' : [iǰáyn] 'his chain'

(2) Breton
- a. penn 'head' : e benn 'his head'
- b. tad 'father' : da dad 'thy father'
- c. kador 'chair' : ar gador 'the chair'

(3) Cornish
- a. pen 'head' : y ben [ibɛ́nː] 'his head'
- b. tâs 'father' : an dâs 'the father'
- c. car 'friend' : y gar 'his friend'
- d. (late C.) chŷ [čay] 'house' : dha jŷ [ðaǰáy] 'thy house'

2.1.2 Voiced stops are spirantized. There are some differences in phonetic outcome among the three languages

(and among dialects of Breton), due to different evolution of the historical mutation. Originally, according to Jackson (1953, 1967), British *[b d g] > *[β ð γ]. In all three languages, *[β] became [v], apparently independently. In most dialects of Breton, *[ð] became [z], though a few dialects retain [ð], as does both Welsh and Cornish. In most dialects of Breton, *[γ] > [h]; some dialects retain [γ]. Before [w], the surface outcome of lenition of [g] is [ø], but this can be attributed to a low-level rule [h] → ø / ___ [w]. In Welsh, and usually in Cornish, *[γ] > [ø] regardless of what follows.[2]

Thus in Welsh, [b d g] → [v ð ø]. In some dialects, [ʒ] is lenited to [ž] or [y].

(4) a. brawd 'brother' : dy frawd [dəvrawd] 'thy brother'
b. dyn 'man' : dau ddyn [daiðiːn] 'two men'
c. gardd 'garden' : yr ardd [ərarð] 'the garden'
d. gwen 'white' : caseg wen 'a white mare'

My informant Catherine Walker cited [ʒoːk] 'joke' : [iyoːk] 'his joke'. (This word is, of course, a borrowing from English.) Sommerfelt (1925a) reports lenition of [ʒ] to [ž], but gives no examples.

In standard Breton and most dialects, [b d g] → [v z h] (with [h] → ø / ___ [w]):

(5) a. baz 'stick' : ar vaz 'the stick'
b. den 'man' : daou zen 'two men'
c. glas 'blue' : ar gador c'hlas [hlas] 'the blue chair'
d. gwenn 'white' : bioc'h wenn 'white cow'

The Cléguérec dialect of Vannetais, which is apparently very conservative, retains [ð] and [γ] in lenition:

(6) a. [dele] 'debt' : [iðele] 'his debt'
b. [gar] 'leg' : [eγar] 'his leg'

The preceding examples were taken from Thibault (1914). In Cornish, as in Welsh, [b d g]→[v ð̆ ø]:

(7) a. blew 'hair' : dha vlew [ð̆avléw] 'thy hair'
b. den 'man' : dheu dhen 'two men'
c. gavar 'goat' : y avar [iávar] 'his goat
d. gwydn 'white' : byuh wydn 'a white cow'

It is not clear from the literature whether there is a [ʒ̆]:[z̆] alternation in late Cornish, parallel to [č̆]:[ǰ̆]. Jenner (1904) does list [ʒ̆] among the mutable consonants, but does not say what the lenited sound is. He cites orthographic dydh 'day' : y dhydh/dzhydh 'his day'. In earlier Cornish the alternation would certainly have been [dið̆]: [iðið̆] . In late Cornish, initial d of dydh would have been pronounced [ʒ̆] as a result of the dental palatalization rule referred to in note 1. Possibly dzh might represent [z̆], but Jenner gives no information.

2.1.3 In the preceding section I have treated lenition of [gw] as a subset of the lenition of [g], and this is the practice of most grammars and handbooks. However, some scholars set up a separate category for the alternation [gw]:[w], even in Welsh and Cornish. The motivation for this is evidently historical: in British there was no initial *[gw], but rather a fortis (tense) *[ẅ]. This became [gw] at a much later date than the historical mutations, and independently in each language. Thus, there was never a sequence *[ɣw] in the British period.[3] Jackson (1967:443) even says, 'We must...not think of Mod. B. w as being a lenition...of gw, but of gw as a secondary... strengthening of original fortis W...'

However, I consider this approach to be unjustifiable from a synchronic point of view. There is certainly no longer a rule converting initial non-lenited [w] to [gw] in Welsh; recent English loanwords beginning with [w]

keep their original initials (e.g. wallet → waled). Jackson (1967:446) points out that there are analogical cases of [gw]→[ʰw] in some dialects of Breton:

(8) Popularly...gw- is taken to be simply a case of ordinary g- in a consonant group...so that its lenition would be expected to be c'hw-, and the normal w- is regarded as a later corruption of an older [hw-...In point of fact, '[hw'- is actually found in parts of Léon..., but this is not really an archaic survival,it is an analogical secondary development under the influence of words with lenited '[h]'- from non-lenited g-...

Although Jackson intends the above statement to support his claim (i.e., that de-lenition of [w] rather than lenition of [g] in the cluster [gw] is what is occurring in modern Brythonic), it actually constitutes an argument against this view. The analogical change described by Jackson has resulted in an adjustment of the mutation rules in modern Brythonic, so that the cluster [gw] is now treated like any other sequence beginning with [g], and from a purely synchronic viewpoint the 'popular' perception is the correct one. In Welsh, and normally in Cornish, there is no difference in phonetic outcome between lenition of [g] before [w] and that of [g] before any other segment (see examples (4d) and (7d) above). In Breton, there is a difference, but as I have stated, it can easily be accounted for by a low-level [ʰ]- deletion rule. The occasional occurrence of [ʰw] on the surface is evidence in support of the existence of such a rule in modern Breton; certainly, if the history of Brythonic were not known, there would be no reason to segregate [gw].

There is one possible synchronic justification for proposing lenition of gw to [w], and that is if gw could be shown to represent a labiovelar phoneme /g^w/, rather

than a cluster. However, while it is possible to make such an analysis (indeed, gw is sometimes phonetically a labiovelar, as in Welsh gwlad [g^{w}la:d]'country'), there is no compelling reason to do so, and even Jackson does not make this suggestion.

2.1.4 In Welsh, Cornish, and most dialects of Breton, [m], like [b], becomes [v]. Originally, British *[m] was lenited to *[$\tilde{\beta}$], a nasalized bilabial fricative, but except in a few dialects of Breton, *[$\tilde{\beta}$] and *[β] merged to yield [v]. This seems to have happened independently in the three daughter languages rather than in British, since there are some dialects of Breton in which a distinction is made (see ex. (10) below).

(9) a. Welsh mynd 'going' : wrth fynd [urθvənd] 'while going'[4]
b. Breton mamm 'mother' : ar vamm 'the mother'
c. Cornish mam 'mother' : y vam 'his mother'

The Cléguérec dialect of Vannetais, in keeping with its conservative approach to lenition, has different lenited variants for [m] and [b]:

(10) a. mam 'mother' : er wam 'the mother'
b. bah 'stick' : er vah 'the stick'

2.1.5 Welsh has two voiceless liquids: ll [ɬ], a voiceless unilateral fricative,[5] and rh [r̥^{h}], phonetically a voiceless aspirated alveolar flap (but phonemically not aspirated; see 3.1.5). In lenition, these become ordinary voiced [l] and [r]:

(11) a. llaw [ɬaw] 'hand' : islaw 'under + hand = beneath'
b. rhôdd [r̥^{h}o:ð] 'gift' : ei rôdd 'his gift'

Some dialects of Welsh have lost [h]; these have also lost aspiration of the voiceless r, and the radical has become ordinary voiced [r]. These dialects still have lenition of [ɬ] to [l], but not, of course, lenition of [r̥ʰ] to [r].

There is no mention in the literature of voiceless liquids in Cornish. Standard Breton and most dialects also do not have them. However, some dialects apparently do have radical initial sonorants which are voiceless, or at least tense, and/or aspirated; in leniting environments these become voiced, lax, and/or non-aspirated. Humphreys (1972), writing on the Bothoa dialect of Cornouaillais, reports voiceless preaspirated r ([hr]) as a lenitable consonant:

(12) [hrɔstrən] 'Rostrenen' : [dərɔstrən] 'to R.'

Humphreys reports that radical [hl] and [mh] also occur, though these are apparently sporadic, unlike [hr], which is regular.

Falc'hun (1951) states that his own Bourg Blanc dialect of Léonais has fortis [L], [R], and [N̈] in non-lenited environments; these are longer than their lenis (lax) counterparts, and are described as being more forcefully articulated (tense, perhaps aspirated). In lenition, these become ordinary, lenis sonorants:

(13) a. [llod] 'share' : [elod] 'his share'
b. [rrastell] 'rake' : [erastell] 'his rake'
c. [nnadoz] 'needle' : [enadoz] 'his needle'

Note that there is no such thing as a 'lenis [m]'. In Breton [m] is always fortis; its lenis equivalent is [v] (or [w] in a few dialects such as Cléguérec Vannetais; see example (10) above).

Loth (1914:469), writing on the Ile Molènes dialect

of Léonais, reports that radical l, r, and n, which are fairly tense, have lenited versions in which 'the tongue does no more than lightly brush the [upper] teeth' (translation mine).

The written language does not normally record this alternation; in the standard, example (13a) is written lod : e lod. However, there are some grammars of non-standard dialects; in a grammar of Trégorrois the author[6] writes hel lestr or he llestr 'her vessel' (standard he lestr), vs. e lestr 'his vessel'. He 'her' normally preserves the radical,[7] while e 'his' causes lenition.

On the other hand, Jackson (1961) reports that the Plougrescant dialect of Trégorrois does not have fortis liquids or [N], so this is by no means a universal feature of spoken Breton, or even of any major dialect division.

Falc'hun (1951) suggests that spoken Welsh must also have a fortis [N] which becomes lenis in the appropriate environments, but he gives no examples, and I have never encountered any reference to such a mutation in the literature on Welsh.

Historically, at least in Welsh, the opposite process took place: liquids were devoiced in non-leniting environments.[8] Older borrowings from English or Latin underwent this rule (e.g. rhaca 'rake'; llythyr 'letter'). However, many recent borrowings retain initial voiced liquids, so that the devoicing rule, like the change of British fortis *[W] to [gw], no longer operates. In the modern language, voiceless liquids must be regarded as undergoing lenition.

In Breton, the situation is less clear. In those dialects which have fortis [L R N], the same rule evidently applied at one time; the question is whether it still operates. Some pre-generativist scholars regard the fortis sonorants as phonemes. Falc'hun (1951) contrasts /ellod/ 'her share' with /elod/ 'his share', but the distinction is predictable from a morpho-phonological standpoint, even

if not from a phonological one: [e] 'his' causes lenition and [e] 'her' does not. There is no contrast in initial position between fortis sonorants and their lenis counterparts. Therefore, it is possible that in these dialects what is happening is tensing of [l r n] in environments where lenition does not occur, rather than lenition of [L R N]. The Ile Molènes dialect described by Loth does, however, appear to have true lenition of liquids and [n], since these segments participate in other mutations as well (see 2.4.2 and 2.6.2 below).

2.2 Spirant Mutation

2.2.0 The spirant mutation--traditionally misnamed the 'aspirate mutation'--also occurs in all three Brythonic languages. In this mutation, voiceless stops are spirantized (not aspirated); no other consonants are affected.[9] There are some distinctions between Welsh and Cornish on the one hand, and Breton on the other, because of differences in historical evolution.

2.2.1 Historically, British *[p t k] became *[f θ x]; Welsh and Cornish retain this outcome.

(14) Welsh

a. pen 'head' : ei phen [ifɛ́n] 'her head'
b. tad 'father' : mam a thad [...θá:d] 'mother and father'
c. cath 'cat' : tri chath [trixá:θ] 'three cat(s)'

(15) Cornish

a. pen 'head' : ow fen 'my head'
b. tâs 'father' : hy thâs [hiθá:s] 'her father'
c. car 'friend' : aga har [agaxár] 'their friend'

2.2.2 In Breton, the situation is more complicated. Historical *[θ] became *[s] in most dialects, and remains so in some very conservative ones; thus Jackson (1967:369)

cites tad 'father' : me sad 'my father' from the Le Faouët dialect of Cornouaillais.

There are apparently a few dialects which retain [θ]; see the remark following example (17) below.

2.2.3 However, in most dialects the voiceless fricatives undergo a subsequent phonological rule, fricative-voicing. Following a sonorant, [f s x] → [v/f̬ z ɦ].[10]

Standard KLT recognizes only the [s]→[z] change. Handbooks treat it as if it were an integral part of the spirant mutation:

(16) a. penn 'head' : va fenn 'my head'
b. tad 'father' : he zad 'her father'
c. ki 'dog' : o c'hi [oxi:] 'their dog'

This, however, is a mistake. It is an accident of modern Breton that all morphemes which trigger the spirant mutation (there are only about a dozen in the standard and fewer in speech) end in vowels, glides, or [r], so that in dialects with fricative voicing, the rule will apply in all cases of the spirant mutation. However, the true spirant mutation in Breton, even in the standard, yields voiceless fricatives.

The generality of fricative voicing varies from dialect to dialect. In some, as in the standard, only [s] is voiced; in others [f] may be voiced as well, but not [x]. Falc'hun (1951) gives the following examples from his own dialect (Bourg Blanc Léonais), in which all the fricatives are affected:

(17) a. [pɛnn] 'head' : [ef̬ɛn:] 'her head'
b. [ta:d] 'father' : [eza:d] 'her father'
c. [ki:] 'dog' : [eɦi:] 'her dog'

Some dialects have [ð] rather than [z] as the surface

outcome of the spirant mutation of [t]; Loth (1910) cites [tat] 'father' : [maðat] 'my father' from the Sauzon dialect of Vannetais. In these cases, [θ] has evidently been retained as the spirant mutation of [t], and has subsequently undergone fricative voicing. (I have found no examples in the literature of [θ] remaining intact.)

See 5.1.1 for a more detailed discussion of fricative voicing.[11]

2.3 Nasal mutation

2.3.0 The nasal mutation occurs in Welsh only. There is a so-called 'nasal mutation' of Breton and Cornish, but this is a type of nasal assimilation rather than a true mutation (see 5.2.2).

2.3.1 In Welsh, stops are changed to their homorganic nasals. Voiced stops become ordinary voiced nasals: [b d g] → [m n ŋ].

(18) a. Bangor : yn Mangor [ənáŋgɔr] 'in Bangor'[12]
b. dafad 'sheep' : fy nafad [vənávad] 'my sheep'[13]
c. gardd 'garden' : yng ngardd Ifan [əŋarð ívan] 'in (the) garden (of) Ifan = in Ifan's garden'

2.3.2 Voiceless stops become, phonetically, clusters of nasal + [h]: [p t k] → [mh nh ŋh]. These are traditionally called voiceless nasals, though the nasal component is usually voiced.[14] However, there are convincing arguments for considering these clusters as true voiceless nasals --[m̥ n̥ ŋ̥] --at a higher level of representation (see 3.6-7 and Appendix B), so that the traditional view is correct.

(19) a. pen 'head' : fy mhen [vəmhén] 'my head'[15]
b. Treffynnon : yn Nhreffynnon [ənhrɛfə́n:ɔn] 'in Holywell'
c. Cymru [kə́mrɨ] : yng Nghymru [əŋhə́mrɨ] 'in Wales'

In some dialects, [č] and [ǰ] are also nasalized. Catherine Walker cites the following examples:

(20) a. [ǰo:k] 'joke' : [ənyo:k] 'my joke'
b. [čɔklɛt] 'chocolate' : [ənhyɔklɛt] 'my chocolate'

As the above transcriptions show, the phonetic results of nasalization in this case are clusters of [n] or [nh] plus [y], rather than palatal nasals. However, it seems reasonable to posit [n̂] and [n̤̂] at a higher level of representation, with lower-level rules yielding the surface forms.

Jones (1969) reports that in the Dyffryn Nantlle dialect of North Welsh, [ǰ] is nasalized to [nž] and [č] to [nž̤] (with [ž̤] apparently representing a partly devoiced [ž] rather than [š]):

(21) a. [ǰam] 'jam' : [ənnžami] 'my jam'
b. [čoklad] 'chocolate' : [ənnžokladi] 'my chocolate'

2.4 Provection

2.4.0 Provection, sometimes called fortition (i.e., the opposite of lenition), occurs in Breton and Cornish only.
2.4.1 In Cornish and standard Breton, voiced stops are devoiced. In spoken Breton, fricatives are also devoiced.[16]

(22) Breton:
a. breur 'brother' : ho preur [oprör] 'your brother'
b. dor 'door' : daz tor [dastor] 'to thy door'
c. glin 'knee' : ho klin 'your knee'

Ternes (1970) cites the following for the Ile de Groix dialect of Vannetais:

(23) a. [vwazines] 'neighbor' : [hufwazines] 'your neighbor'
b. [žardin] 'garden' : [hušardin] 'your garden'

(24) Cornish

a. bewa 'living' : ow pewa '(at) living'[17]

b. dos 'coming' : ow tos '(at) coming'

c. gwressa [gʷrɛ́ːsa] 'he would' : mar qwressa [...kʷrɛ́ːsa] 'if he would'

2.4.2 Falc'hun (1951) claims that Welsh also has a provective mutation, practiced in speech but not recognized in writing: eich brodyr [əxprɔdɨr] 'your brothers'. This, however, is not at all the equivalent of Breton and Cornish provection--which is not phonologically conditioned --but is rather a case of voicing assimilation: [b] is devoiced by preceding [x]. All three Brythonic languages have phonologically-conditioned voicing assimilation, which Jackson (1967:349) calls 'provective sandhi', though in most Welsh dialects this is much less extensive than in Breton and Cornish. In the latter two, we must distinguish between true provection, which is triggered by only a few morphemes, and provective sandhi, which is more common and which often cancels out lenition. See 5.1.3 and 5.2.2 for further discussion of the distinction.

2.4.3 A number of scholars have reported provection of nasals and liquids in some dialects of Breton. Loth (1914:469) describes a very clear case of such provection in the Ile Molènes dialect of Léonais. Following ho 'your', which causes provection of voiced stops, [l r m n] are pronounced very forcefully, with considerable pressure of the tip of the tongue against the upper teeth. Radical [l r m n] are noticeably less forceful (and lenited [l r n] less forceful still; see 2.1.5 above).

In the other reported cases, devoicing and usually aspiration occur. Jackson (1967:348) cites the following forms in the Moëlan dialect of Cornouaillais:

(25) a. [luːt] 'share' : [ilɦuːt] 'her share'

b. [mãm] 'mother' : [umɦãm] 'your mother'

c. [no:t] 'thread' : [inʰo:t] 'her thread'

Humphreys (1972) cites similar data from the Bothoa dialect of Cornouaillais. Glides are also affected:

(26) a. [ma:b] 'son' : [o m̥a:b] 'your son'
b. [ni:] 'nephew' : [i n̥i:] 'her nephew'
c. [le:] 'calf' : [i l̥e:] 'her calf'
d. [ya:r] 'hen' : [o ç̊ar] 'your hen

Humphreys transcribes his examples as above, with only voicelessness expressed, but he says (p. 266) that aspiration is also present.

It is somewhat arguable, however, whether the examples cited in (25) and (26) involve true provection or another mutation, aspiration (see 2.6 below). Note that in both dialects, [i] 'her' causes the mutation in question. In the standard language and in most dialects, this morpheme does not affect voiced stops, but rather spirantizes voiceless ones. In the Moëlan dialect cited by Jackson, 'her' does, indeed, cause provection of voiced stops. Humphreys does not say whether this is true of the Bothoa dialect, but it may well be, since a number of eastern Cornouaillais dialects have this feature.

However, 'her' also causes aspiration of sonorants in dialects in which it does not cause provection, and 'your' is also capable of causing aspiration. If 'her' preaspirates vowels and glides in Moëlan and Bothoa--Jackson and Humphreys provide no data--then it is possible that aspiration is what is occurring here.

There is no such ambiguity in the Ile Molènes case; this dialect has aspirated sonorants in addition to provected ones (see 2.6.4).

2.5 'Mixed' Mutation/Lenition-and-Provection

2.5.0 Breton and Cornish have a mutation traditionally

called 'mixed', since it appears to be a combination of several different mutations.

2.5.1 In standard Breton and most dialects, [d] is provected (→ [t]), other voiced stops and [m] are lenited ([m b d g] → [v v z ɦ], with [ɦ] → ø / ___[v]), and voiceless stops are not mutated:

(27) a. bevañ 'living' : o vevañ '(at) living'
b. mont 'going' : o vont '(at) going'
c. dibri 'he eats' : ma tibri 'if he eats'
d. gwelo 'he sees' : ma welo 'if he sees'
e. karet 'loving' : o karet '(at) loving'

2.5.2 In some dialects, a more conservative version of this mutation occurs. Historically, voiced stops and [m] were first lenited; at a later time, the resulting voiced fricatives were devoiced (provected). Thus British *[b m g] > late British *[β β̃ ɣ] > Breton [f f x] (*[ð] from *[d] was both devoiced and despirantized, yielding [t]; see Appendix A for a more detailed account).

In most dialects, the voiceless fricatives have reverted to voiced ones, and [t] is the only remaining provected sound: this is the 'mixed' mutation of the handbooks. The original version of the mutation has been called 'lenition-and-provaction' by Jackson (1967:331). From a synchronic point of view, lenition is not involved; the process now consists of the devoicing of [d] and the devoicing and spirantization of the other voiced mutable consonants. However, for convenience I will use Jackson's term.

The following examples were cited by Ternes (1970) from the Ile de Groix dialect of Vannetais:

(28) a. [mərwël] 'dying' : [efərwël] '(at) dying'
b. [ba:lay] : [efa:lay] '(at) taking a walk'
c. [dirox] : [etirox] '(at) snoring'
d. [gu:riyat] : [exu:riyat] '(at) sewing'

In the Cléguérec dialect of Vannetais, lenition-and-provection causes [b] to become [f], but [m] becomes [hw] (see 2.1.4). The following examples were taken from Thibault (1914):

(29) a. [barbotat] 'chattering' : [ima i farbotat] 'he is (at) chattering'
b. [marẅehɛ] 'he would die' : [mi hwarẅehɛ] 'that he would die'

In some dialects, lenition-and-provection is only partial: [b] and [m] becomes [f], but [g] is lenited to [h], or provected to [k]. In the Ile de Groix dialect, some morphemes trigger the full mutation, as in (28); others cause the partial version:

(30) a. [ba:k] 'boat' : [xafa:k] 'thy boat'
b. [mam] 'mother' : [xafam] 'thy mother'
c. [gran] 'seeds' : [xakran] 'thy seeds'

In this dialect, fricatives are provected by morphemes which trigger lenition-and-provection:

(31) a. [vwazines] 'neighbor' : [xafwazines] 'thy neighbor'
b. [zo:din] : [eso:din] '(at) trampling'

According to Humphreys (1972), morphemes which trigger lenition-and-provection cause provection of sonorants in Bothoa Cornouaillais:

(32) a. [ni:ža] 'he flies' : [pe n̥i:ža] 'when he flies'
b. [yeina] 'it gets cold' : [pe ç̥eina] 'when it gets cold'

(This is one argument in favor of regarding the examples in (26) as genuine cases of provection rather than aspiration; see 2.4.3.)

2.5.3 The Cornish 'mixed' mutation is basically lenition-

and-provection: [b m g]→[f f x]; [d]→[t]. However, voiced mutable consonants are sometimes lenited instead: [b m] may become [v], and [g] is usually if not always lenited when followed by [w] (i.e., [gw]→[w] or [hw]). In Cornish, unlike Breton, voiceless stops are lenited in this mutation.

(33) a. bras 'great' : en fras 'greatly'
b. myn 'he wishes' : y-fyn 'particle--he wishes'[18]
c. da 'good' : ynta 'well'
d. gwel 'he sees' : y-whel [ihwel] 'prt.--he sees'

2.6 Aspiration

2.6.0 Aspiration of sonorants occurs in both Welsh and Breton; it may also have occurred in Cornish, though the data available to me are not really conclusive.
2.6.1 Preaspiration of vowels and [y] occurs in standard Welsh and in most nonstandard dialects, at least some of which also have preaspiration of [w].

(34) Standard Welsh:
a. enw [ɛnu] 'name' : ei henw [ihɛnu] 'her name'
b. iaith [yayθ] 'language' : eu hiaith [ihyayθ] 'their language'

Albrow (1966) cites [watš] 'watch' : [iʰwatš] 'her watch' from the Abersoch dialect of North Welsh. (This word is, of course, a borrowing from English. All cases of radical initial [w] occur in recent loanwords, and aspiration of this segment is thus an extension of the original mutation.)
2.6.2 Preaspiration of vowels also takes place in many dialects of Breton. Although handbooks of standard Breton do not recognize this mutation, it does, in fact, exist in the standard as well. Several morphemes have orthographic prevocalic variants with final c'h or h; these almost certainly indicate preaspiration of a following

vowel rather than true underlying /x/ or /h/.[19]

(35) Standard Breton:

a. ober 'doing' : oc'h ober petra emaout? [oɦober...] '(at) doing what you are = what are you doing?'

b. an 'I go' : bremañ eh an [eɦã́] 'now--prt.---I am going'

c. iliz 'church' : hoc'h iliz [oɦí:lis] 'your church'

(but o karet '(at) loving'; bremañ e tibri 'now--prt.--he is eating'; ho penn 'your head')

(36) Plougrescant Tré́gorrois:

a. [alhwe] 'key' : [ihálhwe] 'her key'

b. [i:lis] 'church' : [məhí:lis] 'my church'

The examples in (36) were taken from Jackson (1961). He reports the dialectal spellings he'h alc'houez and ma'h iliz.

2.6.3 For Cornish, Bonaparte (1882) cites emlodh 'fight' : dho hemlodh 'to fight', but this is the only case I have found of what seems to be preaspiration.

2.6.4 A number of dialects of both Welsh and Breton have postaspiration of nasals and liquids. This phenomenon is not recognized by the literary standards.

(37) Welsh (Abersoch, North Wales)

a. [mam] 'mother' : [imɦam] 'her mother'

b. [nayn] 'grandmother' : [inɦáyn] 'her grandmother'

c. [lamp] 'lamp' : [ilɦámp] 'her lamp'

d. [rɨ́ban] 'ribbon' : [irɦɨ́ban] 'her ribbon'

The above examples are from Albrow (1966), who also cites postaspirated [v]: [vinɛgr] 'vinegar' : [ivɦinɛgr] 'her vinegar'.[20]

Only the nasal-initial words in the above list are

native. Voiced liquids occur as radical initial segments only in recent borrowings, and [v] rarely occurs as a radical initial in native Welsh words (see also 3.4).

Le Clerc (1908) cites the following spelled forms in Goëlo, a subdialect of Trégorrois:

(38) a. hec'h lien 'her cloth'
b. hoc'h mamm 'your mother'
c. hoc'h nez 'your nest'

No phonetic transcriptions are given for the above forms, but it seems likely that these spellings are an attempt to represent the possessives he 'her' and ho 'your' plus post-aspirated initial [l m n].

Jackson (1967:348) cites these forms in his chapter on provection, and suggests that the sonorants are voiceless. However, he 'her' does not provect voiced stops in Trégorrois/Goëlo (at least according to Jackson's own list of dialectal features, p. 836). Furthermore, Le Clerc also cites a spelled form mac'h occurring before nasals and liquids (he gives no examples), and ma does not provect voiced stops in any dialect. Finally, all these forms occur before vowels, indicating preaspiration. It is therefore reasonable to assume that postaspiration of nasals and liquids is what Le Clerc is reporting.

Le Roux (1896) cites [mam] 'mother' : [imham] 'her mother' from the Pleubian dialect of Trégorrois.

Loth (1914:469) reports that in the Ile Molènes dialect of Léonais, the possessive pronouns hə 'her' and və 'my' cause liquids and nasals to be pronounced rather forcefully and 'with a sort of aspiration, or better expiration' (translation mine), most noticeable in the liquids. Loth does not mention the effect of these morphemes on vowels.

In (25), I listed examples from Jackson (1967) of mutation of liquids and nasals in Mœlan Cornouaillais.

2.6.5 Preaspiration of vowels and glides and postaspiration of nasals and liquids (where both occur) are probably the same mutation--or, rather, the mutation is preaspiration of sonorants, followed by a phonological rule which causes metathesis of [h] + {N,L}. (A rule which does precisely this occurs in some dialects of Welsh. In the standard, the nasal mutation of plant 'children' is (fy) mhlant '(my) children'; in the dialects in question, the latter form is pronounced [əmlhant].) The only question is whether the same list of morphemes triggers both. In the examples cited so far, this is the case, but the data are not complete. For example, in some dialects of Welsh 'my' causes postaspiration: [əmham] 'my mother'. Does this morpheme also cause preaspiration (as in ?[əhɛnu] 'my name')? If not, then we must posit two different mutations, at least in these dialects.

It is in fact possible to question whether aspiration is a true mutation at all. It is strikingly different from the other mutation processes, involving as it does the insertion of a segment rather than feature changes, and affecting vowels and glides rather than consonants only. Some scholars class aspiration with the spirant mutation, but this is untenable from a synchronic point of view. Historically, aspiration was indeed part of the spirant mutation (see Appendix A), but in the modern languages the set of morphemes triggering spirantization and those causing aspiration are not the same. In chapter V, I will demonstrate that it is possible, at least in some cases, to analyze aspiration as a phonological rule, though the solution is not completely satisfactory (see 5.2.3).

2.7 Spirantization-and-lenition

2.7.0 In Welsh, there is a short list of morphemes which trigger spirantization of voiceless stops and lenition of other mutable consonants (voiced stops, [m], and voiceless liquids):

(39) a. daw 'he will come' : ni ddaw ef [niðˈáw ev] 'neg--will come he = he will not come'

b. talodd 'he paid' : oni thalodd ef? [ɔniθˈálɔð ev] 'Q-neg--paid he = didn't he pay?'

2.7.1 This seems similar to the Breton/Cornish 'mixed' mutation, but traditional analyses have never treated it as a separate mutation class. (Historically, it was the result of contamination between morphemes which caused lenition and homophonous ones which caused spirantization.) Increasingly in speech today, the morphemes involved cause lenition of all mutable consonants, including voiceless stops.

NOTES

[1]A number of Breton scholars have reported mutation of affricates ([č] and [ǰ]) in Vannetais and some dialects of Cornouaillais. While some of these cases do appear to be valid, most undoubtedly involve mutation of underlying /k/ and /g/, followed by a phonological rule which causes palatalization of velar consonants before front vowels and glides. See 5.1.4 for a more detailed discussion.

In Cornish, [č] and [ǰ] were originally derived from /t/ and /d/ by a rule which palatalized dental consonants before front vowels. The affricates later became phonemicized as a result of a vowel-shift rule changing [i:] to [ay] (thus early Cornish [ti:] > [či:] > late Cornish [čay] 'house'). Affricates in late Cornish are therefore truly mutable consonants.

[2]In chapter III, I will show that we can posit an underlying abstract */ɣ/ in Welsh and Cornish. In Welsh, a redundancy rule causes */ɣ/ to be realized as [ø]; in Cornish, */ɣ/ is realized as [h], which is usually--but not always--deleted. (Byuh whydn [hwidn] 'a white cow' is an optional variant of ex. (7d), byuh wydn.)

In Breton, the lenited variant of /g/ is spelled c'h, as in example (5c). It rarely, if ever, represents [x] in this environment, but rather [ɦ] ([h] in some dialects).

This sound is sometimes deleted in environments other than before [w]; these cases seem to be quite sporadic. Thus, the negative equivalent of gallan 'I can' is n'allan ket (not *ne c'hallan ket), but another way of saying 'I can' is me a c'hall, in which [ɦ] is present. Conversely, an expected [ɦ]-deletion before [w] sometimes does not occur, or is optional: Falc'hun (1951) cites [gwazied] 'veins' : [ewazied] ~ [eɦwazied] 'his veins' in his own dialect of Léonais.

In Cornish, [g] apparently alternates with [w] before [o], at least in some words: golow 'light' : e wolow 'his light'; gober 'reward' : dha wober 'thy reward'. The literature does not provide enough data to determine if this phenomenon is systematic.

[3]See Appendix A for further discussion. Until quite recently in Welsh, [w] was not an acceptable radical initial segment; initial [w] in English loanwords became [gw] (e.g. warrant > gwarant).

[4]In Celtic, the citation form of the verb is the verbal noun. This form is often erroneously equated with the English infinitive, so that mynd is translated as 'to go'. However, there are a number of reasons why verbal nouns should be analyzed as nouns rather than verbs; one is that they can be preceded by prepositions, as in example

(9a). Wrth is a preposition meaning 'by,with'; used with the verbal noun, it expresses simultaneity. See also 4.1.1.

[5]That is, one side of the tongue is pressed against the roof of the mouth; the air issues from the other side with a distinct hissing quality. To a non-Welsh speaker, this sound is easily mistaken for [θ] or [š], and may seem to have no [l]-quality at all. Welsh names and words beginning with this sound have been borrowed into or recorded in English with initial fl- or thl- (cf. the name Floyd < W. Llwyd [ɬuid], and Shakespeare's character Fluellen < W. Llewelyn).

[6]J. Hingant, Eléments de la grammaire bretonne, Tréguier 1868 p. 219. The reference was taken from Jackson (1967:348).

[7]In some dialects he causes aspiration or even provection of sonorants; see 2.4.3 and 2.6.4. Here, however, it seems that the radical is what is meant.

[8]Strictly speaking, the liquids were fortis (tense) in absolute initial position; they were devoiced about the 10th or 11th centuries A.D. according to Jackson (1953).

[9]Ternes (1970) and some other scholars consider [č̬] to be a spirantizable consonant which mutates to [x] or [ç] in dialects of Vannetais and Cornouaillais. However, in the examples I have seen, what is actually occurring is spirantization of [k] → [x] followed by velar palatalization. See also note 1 and 5.1.4. In some dialects, only stops are palatalized, so that [č] appears to alternate with [x]; in others, [x] is also palatalized, so that [č] appears to alternate with [ç].

[10]The symbol [f̬] represents a lenis, usually voiced, labiodental which contrasts with both [f] and [v]; see 3.9 for a more detailed description of this sound. In the case of [x] → [ɣ], it seems logical to posit an intermediate step *[ɣ̬] (see 2.1.2).

[11]Fricative voicing also occurs after leniting morphemes. It is often called 'double mutation', but this, too, is misleading. Jackson (1967) calls it 'new lenition', but recognizes it as a phonological rule rather than a true mutation.

[12]Subsequent to nasal mutation, the final nasal of yn 'in' undergoes assimilation to an initial nasal of a following word. (Any nasal, whether radical or derived, causes this assimilation: Môn 'Anglesey' : ym Môn 'in Anglesey'.) In some dialects the resulting geminated nasal remains; in

others, including the standard, it is simplified by a rule which degeminates consonants unless the immediately preceding syllable is stressed (cf. ateb [át:ɛb] 'answer' : atebion [atέbyɔn] 'answers').

[13]In speech, fy 'my' is usually pronounced [ən] (sometimes [vən]); it is thus generally homophonous with yn 'in'. Since only these two words, and a negative prefix an-, are regular triggers of the nasal mutation, it might appear that this mutation is phonologically conditioned. However, there are morphemes ending in nasals which do not trigger it; see 5.2.1.

[14]Davies (1935) reports that the glottal fricative is also voiced in some dialects (i.e., it is [ɦ] rather than [h]).

[15]On the surface, syllable division takes place between the nasal and the [h]: [(v)əm-hέn]; [ən-hrɛfə́n:ɔn]; [əŋ-hə́mrɨ].

[16]Some scholars consider [ɟ] to be provectable to [č], but, again, this almost always involves provection of underlying /g/ to [k], plus velar palatalization.

Initial voiced fricatives almost never occur in Breton except in borrowings from French; their provection is thus a quite recent analogical extension of the original mutation. (Historically, provection occurred soon after the fall of the British final syllables, as a type of voicing assimilation; see Appendix A.)

[17]Here again we have examples of the verbal noun. Ow plus the verbal noun is the semantic equivalent of the English present participle, and is used, as in English, with forms of the verb 'to be' to form the progressive. Ow must be considered a preposition; it is not translated in traditional grammars, but I will translate it, more or less arbitrarily, as 'at'. In Breton, the equivalent structure is o (e in some dialects) + verbal noun; see (27) and (28). In Welsh, it is yn + verbal noun. (Yn in this construction is sometimes translated as 'in' because it is homophonous with that preposition; however, the latter triggers the nasal mutation and the preposition used with the verbal noun preserves the radical. Therefore, I have chosen to distinguish the two, and use the translation 'at' in Welsh as well as in Breton and Cornish.)

[18]The morpheme y [i] is an affirmative preverbal particle. Equivalent particles exist in Welsh and Breton.

[19]In some dialects [x] does occur before consonants as well; Ernault (1873) cites houc'h penn [uxpɛn] 'your head' in the Lanrodec dialect of Cornouaillais. (The

standard form is ho penn [opɛn]. In these dialects at least, 'your' and similarly-behaving morphemes must be regarded as underlyingly /x/-final. See 5.2.3 for a discussion of possible phonological conditioning of aspiration.

[20]Albrow transcribes the aspiration as voiced in this dialect, but examples from other dialects usually have voiceless [h]. Fynes-Clinton (1913) cites [i ẉhats] 'her watch' in the dialect of Bangor (North Wales), with a post-aspirated voiceless [w].

CHAPTER III

THE 'PHONOLOGICAL' RULES OF THE INITIAL MUTATIONS

3.0 As I have stated several times, the environments of the initial mutations cannot be expressed in phonological terms. Hence, in spite of the title of this chapter, the mutations are not, in fact, phonological rules, but rather morphophonological ones. However, the structural changes involved in the mutations are phonological, and can be expressed in terms of distinctive features. In this chapter I will propose feature-changing rules for each mutation in Welsh and Breton, omitting the environments for now. (I will give complete rules, including environments, in chapter VII. I am excluding Cornish for the reasons discussed in chapter I.)

Some discussion of the consonant inventories of Welsh and Breton will be necessary in order to justify the rules proposed.

3.1 The inventory of consonants in standard Welsh is as follows:

(1)

p		t	č	k	
b		d	j	g	
f	θ	s	š	x	h
v	ð	z	ž		
m		n		ŋ	
(m̥)		(n̥)		(ŋ̊)	
		l̥, r			
		ɬ, (r̥)			

There are also the glides /y/, /ʍ/, and /w/.

I have deliberately avoided calling the above table a 'phonemic inventory', since the phonemic status of the segments in parentheses is disputed. 'Voiceless r' (r̥) is probably a phoneme. The three others--i.e., the 'voiceless nasals'--probably are not, but I am including them in the

inventory because they are involved in the feature-changing rules of the mutations. See 3.6-7 below for further discussion.

3.2 In standard Welsh, the mutable consonants are:

(2)

p	t	k
b	d	g
m		
	ɬ, r̥	

Only in lenition can all these consonants undergo mutation; the other mutations affect subsets of the above list.

In a number of dialects, [$\overset{\vee}{c}$] is also mutable; in some others, both [$\overset{\vee}{c}$] and [$\overset{\vee}{ɟ}$] are mutable. In most cases, this means subject to lenition only, but in a few dialects affricates can be nasalized.

Vowels and [y] are preaspirated in the standard language. Voiced liquids and nasals and [w] are also aspirated in a number of dialects ([v] undergoes aspiration in at least one).

3.3 The voiceless liquid /ɬ/, which is unquestionably a phoneme, is defined as a voiceless unilateral fricative (see chapter II note 5). In lenition, this sound becomes an ordinary [l] with no fricative quality.

The 'voiceless r̥' is phonetically a voiceless post-aspirated flap ([$\overset{\vee}{\text{r}}_{\text{̥}}^{\text{h}}$]); see 3.6-7 for a more detailed analysis. Voiced r̥ is an unaspirated trill ([r̃]).

In most dialects, the voiced liquids never occur initially in native Welsh words except in lenition. In dialects which have lost /h/, [r̥$^{\text{h}}$] does not exist, and [r] is therefore a radical initial consonant. Voiced liquids also occur as radicals in recent borrowings.

The 'voiceless nasals' are phonetically clusters of voiced nasals plus [h] (see 3.6-7 for a more detailed description). They never occur word-initially except as

the result of nasal mutation. They do not occur in dialects which have lost /h/.

3.4 Several other segments rarely or never occur as radical initials in native Welsh words:

Initial [ŋ] never occurs except as the outcome of nasal mutation.

In native words, [θ] occurs initially only as a result of the spirant mutation; it occurs as a radical in some borrowings (e.g. thrôn [θro:n] 'throne').

Initial [ð] occurs in a few 'permanently lenited' words in spoken Welsh: e.g. ddoe [ðɔî̯] 'yesterday' (standard doe [dɔî̯]). Otherwise it never occurs as a radical initial.[1]

Initial [v] is almost always the result of lenition in native words. It does occur in some 'permanently lenited' or abbreviated words, or as the result of metathesis: e.g. fy [və] 'my' (< British *men); colloquial [vále] ← afalau [avála î̯] 'apples'; feallai [veáɬay] ← efallai [evaɬay] 'perhaps'. It also occurs as a radical in borrowings: ficer [vɪkɛr] 'vicar'.

3.5 The phonemes /č/, /ǰ/, /z/, and /ž/ were borrowed from English, but have become more or less nativized, depending on the dialect.[2] In some dialects, /č̬/ and /ǰ̬/ have become mutable consonants.

3.6 The phonemic--and even segmental--status of 'voiceless r' (orthographic rh) and the 'voiceless nasals' (orthographic mh, nh, ngh) is a matter of dispute. While a phonemic analysis of Welsh is not strictly within the domain of this study, it is necessary, for the purpose of setting up the feature-changing rules of the mutations, to determine whether these sounds are segments or clusters; it is also important to determine if the 'voiceless nasals' (which are usually voiced phonetically) are indeed voiceless at a deeper level. The reasons are as follows:

1. If orthographic rh is a cluster, the lenition of

initial rh to r must be treated as an [h]-deletion rule, entirely separate and different from all the other sub-rules of lenition, which involve voicing or spirantization (see rule (3) below). This includes lenition of [l̥] to [l], which we would expect to be systematically parallel to that of [r̥ʰ] to [r].

2. In the nasal mutation, voiced stops become voiced nasals and voiceless stops become 'voiceless nasals'. If orthographic mh, nh, and ngh are clusters consisting of a voiced nasal plus /h/, then we apparently require an [h]-insertion rule following nasal mutation. If so, then we need a further condition specifying that only those nasals derived from voiceless stops undergo [h]-insertion, while radical voiced nasals, or those derived from voiced stops, do not.

3.7 The problem here is that orthographic rh, mh, nh, and ngh undoubtedly do represent clusters in many cases, and this is probably the reason why Celtic scholars have often failed to recognize that the same spellings may also represent segments.

Thus, orthographic rh in morpheme-medial position--as in arhosol 'lasting'--is a sequence of phonemes, /r/ plus /h/. Syllable division occurs between the two segments: [ar-hɔ́sɔl]. However, rh in morpheme-initial position--as in rhôdd [r̥ʰoːð] 'gift' and penrhyn [pɛn-r̥ʰɨn] 'promontory' (← pen 'head' + rhyn, meaning unclear)--is a segment, a voiceless aspirated flap, which serves as a syllable onset. Thus ei rhôdd 'her gift' is [i-r̥ʰoːð], not *[ir-hóːð]. This segment is also a phoneme, at least in contemporary Welsh, since initial [r̥ʰ] occurs in contrastive distribution with initial radical [r] in recent borrowings. (There are such near-minimal pairs as rhaca 'rake'--an older borrowing--and raced 'racquet'.) C. Thomas (1975) posits a phoneme /r̥̃/, a voiceless alveolar trill. If so, then aspiration is introduced by a subsequent rule; see also Appendix B.

Phonetically, orthographic mh, nh, and ngh almost always are clusters, with syllable division occurring between the nasal and the [h] even when nasal mutation is involved: yng Nghymru 'in Wales' (← Cymru) is pronounced [əŋ-hə́mrɨ]. However, there is a distinction between nasal + [h] sequences derived synchronically by the nasal mutation, and those not so derived. The latter type--even if they originated historically as the result of nasal mutation[3]--are clusters at the phonemic level. The former are segments--true voiceless, unaspirated nasals--at a higher level of representation; subsequent rules change them to [Nh]. It is impossible, however, to posit /m̥/, /n̥/, and /ŋ̥/ as phonemes of Welsh, at least according to generative phonological theory, since they occur only as a result of the nasal mutation.

The justification for this distinction is quite long and complex, and is really a side issue in this study. Therefore, for the benefit of the interested reader, I have presented my argumentation in Appendix B.

3.8 The 'phonological'--i.e., feature-changing--rules of the Welsh mutations, stated without environments, follow.

3.8.1 Lenition

(3) Standard Welsh:

a. $\begin{bmatrix} \text{-son} \\ \text{-del rel} \\ \text{+voice} \end{bmatrix} \longrightarrow [\text{+cont}]$ ([b d g] → [β ð ɣ])

b. $\begin{bmatrix} \text{-son} \\ \text{-del rel} \\ \text{-voice} \end{bmatrix} \longrightarrow [\text{+voice}]$ ([p t k] → [b d g])

c. $\begin{bmatrix} \text{+nas} \\ \text{+ant} \\ \text{-cor} \end{bmatrix} \longrightarrow [\text{+cont}]$ ([m] → [β̃])

d. $\begin{bmatrix} \text{+liq} \\ \text{-voice} \end{bmatrix} \longrightarrow [\text{+voice}]$ ([l̥ r̥] → [l r])

Subrule (a), which spirantizes voiced stops, must be ordered before subrule (b), which voices voiceless ones, since otherwise the output of the voicing rule would be spirantized. Alternatively, the two subrules could be collapsed:

(4) $$\begin{bmatrix} -\text{son} \\ -\text{del rel} \\ \langle +\text{voice} \rangle_a \end{bmatrix} \longrightarrow \begin{bmatrix} +\text{voice} \\ \langle +\text{cont} \rangle_b \end{bmatrix}$$

Condition: if (a) then (b)

That is, stops are voiced; if already voiced, they are spirantized. This would eliminate the need for ordering.

Subrule (3a) as it stands causes [b] to become [β] and [g] to become [ɣ]. These segments do not exist in Welsh, at least on the surface, and I know of no evidence apart from lenition to propose them as abstract phonemes. We could write three different rules in place of subrule (3a):

(5) a. $$\begin{bmatrix} -\text{son} \\ -\text{del rel} \\ +\text{ant} \\ -\text{cor} \\ +\text{voice} \end{bmatrix} \longrightarrow \begin{bmatrix} +\text{cont} \\ +\text{stri} \end{bmatrix}$$ ([b] → [v])

b. $$\begin{bmatrix} -\text{son} \\ -\text{del rel} \\ +\text{ant} \\ +\text{cor} \\ +\text{voice} \end{bmatrix} \longrightarrow [+\text{cont}]$$ ([d] → [ð])

c. $$\begin{bmatrix} -\text{son} \\ -\text{del rel} \\ -\text{ant} \\ -\text{cor} \\ +\text{voice} \end{bmatrix} \longrightarrow [\text{ø}]$$ ([g] → [ø])

However, this fragmentation is not necessary. The problem can be solved by proposing the following redundancy conditions:

(6) a. $\begin{bmatrix}+\text{cont}\\+\text{ant}\\-\text{cor}\end{bmatrix} \longrightarrow [+\text{stri}]$ (*[β] is realized as [v])

b. $\begin{bmatrix}+\text{cont}\\-\text{ant}\\-\text{cor}\\+\text{voice}\end{bmatrix} \longrightarrow [ø]$ (*[ɣ] is realized as [ø])

In this way, we can make a generalization: voiced stops, like voiceless ones, behave as a natural class in lenition.

Subrule (3c) must also be qualified, since it changes [m] to [β̃] --another segment which does not exist in Welsh. We could posit a more complex rule to replace (3c):

(7) $\begin{bmatrix}+\text{nas}\\+\text{ant}\\-\text{cor}\end{bmatrix} \longrightarrow \begin{bmatrix}-\text{nas}\\+\text{cont}\\+\text{stri}\end{bmatrix}$ ([m] → [v])

However, this would require three feature changes instead of the single one involved in each of the other subrules of (3). Alternatively, and preferably, we could change redundancy condition (6a) to read:

(8) $\begin{bmatrix}+\text{cont}\\+\text{ant}\\-\text{cor}\end{bmatrix} \longrightarrow \begin{bmatrix}+\text{stri}\\-\text{nas}\end{bmatrix}$ (*[β] and *[β̃] are realized as [v])

(Note that in condition (6a)/(8) I have not specified voicing. Thus it will also apply in the case of the spirant mutation, in which [p] becomes [f] rather than *[φ]; see 3.8.2.)

Subrule (3d) causes voicing of voiceless liquids. As I stated above (3.7; see also Appendix B), phonemic /r̥/ is not aspirated; aspiration is introduced by phonological rules at a lower level of the grammar, and deaspiration of [r̥ʰ] plays no part in lenition.

The feature [-del rel] in subrules (3a,b) is necessary in order to prevent the affricates [č] and [ǰ] from becoming lenited in standard Welsh. In some nonstandard

dialects, however, the affricates are indeed lenited, so that subrules (3a,b) must read:

(9) a. $\begin{bmatrix} -son \\ -cont \\ +voice \end{bmatrix} \longrightarrow [+cont]$

b. $\begin{bmatrix} -son \\ -cont \\ -voice \end{bmatrix} \longrightarrow [+voice]$

or, alternatively,

(10) $\begin{bmatrix} -son \\ -cont \\ \langle +voice \rangle_a \end{bmatrix} \longrightarrow \begin{bmatrix} +voice \\ \langle +cont \rangle_b \end{bmatrix}$

Condition: if (a) then (b)

Subrule (9a) could probably be interpreted as changing [ʸʒ] to [ʸz]. This is indeed the outcome of lenition of [ʸʒ] in some dialects (see Sommerfelt (1925a) on the dialect of Llanbrynmair, eastern Mid Wales).

In other dialects, such as Catherine Walker's, the phonetic outcome of lenition of [ʸʒ] is [y]. In these dialects, there is most likely a low-level rule converting [ʸz] to [y]. (Since [ʸz] does exist in borrowings, this rule would have to be minor, affecting only native words, perhaps, or applying only where lenition is involved.) Alternatively, we could change subrule (9a) so that it converts [ʸʒ] directly to [y]. However, it would be considerably more complicated, and rather awkward:

(11) $\begin{bmatrix} -son \\ -cont \\ +voice \\ \langle +del\ rel \rangle_a \end{bmatrix} \longrightarrow \begin{bmatrix} +cont \\ \langle +son \\ -cons \rangle_b \end{bmatrix}$

Condition: if (a) then (b)

(Voiced obstruents which are [-cont]--i.e. the stops [b d g] and the affricate [ǰ]--become [+cont]; if they are [+del rel]--i.e. affricates, i.e. [ǰ]--they become glides, i.e. [y].)

There are dialects in which [ǰ] apparently lenites to [ð̞y]: [ǰawl] 'devil' : [iðyawl] 'his devil'. However, in this case [ǰ] is derived from /dy/, which is palatalized by a low-level rule. (In the standard, this word is diawl [dyawl]). In at least some idiolects, there has been restructuring: Catherine Walker says [iyawl] 'his devil'.

There are also dialects in which [č] is voiced but [ǰ] remains in the radical. In these dialects, subrules (9a,b) cannot be combined:

(12) a. $\begin{bmatrix} -\text{son} \\ -\text{del rel} \\ +\text{voice} \end{bmatrix} \longrightarrow [+\text{cont}]$

b. $\begin{bmatrix} -\text{son} \\ -\text{cont} \\ -\text{voice} \end{bmatrix} \longrightarrow [+\text{voice}]$

In dialects which do not have /ṛ/ as a phoneme, subrule (3d) will read:

(13) $\begin{bmatrix} +\text{lat} \\ -\text{voice} \end{bmatrix} \longrightarrow [+\text{voice}]$

It is mechanically possible to set up a single schema 'collapsing' all the subrules of (3):

(14) $\left[\left(\left\{ \left[\begin{bmatrix} -\text{del rel} \\ \{[-\text{son}]\} \\ \{[+\text{nas}, +\text{ant}, -\text{cor}]\} \end{bmatrix} \right\} \right) \right] \longrightarrow \begin{bmatrix} +\text{voice} \\ \langle +\text{cont} \rangle_b \end{bmatrix}$

$\left[\left(\left\{ \left[\begin{bmatrix} +\text{son} \\ +\text{cont} \end{bmatrix} \right\} \right) \right] \right]$ $\langle +\text{voice} \rangle_a$

Condition: if (a) then (b)

(That is, the 'class' of stops plus [m], and the class of liquids, are voiced; if already voiced, they are spirantized.)

However, the left-hand side of the arrow here does not indicate a natural class of segments. Nasals are [-del rel], but in order to set up a natural rule including stops and nasals in the same category, [n] would have to be lenitable also, presumably to [ð] ([ŋ] cannot be an initial radical consonant). At the most, we can collapse subrules (3a,b) into (4), since stops do constitute a natural class. The lack of a complete generalization is not a defect; it reflects the fact that lenition is the most complicated of the mutation rules, affecting the most segments and involving the largest number of different changes. The other mutation rules are considerably simpler.

3.8.2 Spirant Mutation

(15) Standard Welsh:

$$\begin{bmatrix}\text{-del rel}\\ \text{-voice}\end{bmatrix} \longrightarrow [\text{+cont}] \qquad ([p\ t\ k] \rightarrow [\varphi\ \theta\ x])$$

I have posited [p] → *[φ] here as a parallel to the change [b] → [β] in lenition. Redundancy condition (8), which causes *[β] to be realized as [v], also causes *[φ] to be realized as [f].

I have seen no references in the literature to cases of [č] being spirantized to [š]; if such an alternation exists, in some dialects, the rule would read:

(16) $$\begin{bmatrix}\text{-cont}\\ \text{-voice}\end{bmatrix} \longrightarrow [\text{+cont}]$$

3.8.3 Nasal Mutation

(17) Standard Welsh:

$$\begin{bmatrix}\text{-son}\\ \text{-del rel}\end{bmatrix} \longrightarrow [\text{+nasal}] \qquad \begin{array}{l}([b\ d\ g] \rightarrow [m\ n\ ŋ];\\ [p\ t\ k] \rightarrow [m̥\ n̥\ ŋ̊])\end{array}$$

In dialects in which [č ǰ] are nasalized to [ñ n̤] (see 2.3.2), the rule is written as follows:

(18) $\begin{bmatrix}-\text{son}\\-\text{cont}\end{bmatrix} \longrightarrow [+\text{nasal}]$

For dialects in which [ǰ] → [nž] and [č] → [nž̤] (see 2.3.2), we would need a separate subrule.

Rules (17) and (18) assume that voiceless stops become unaspirated voiceless nasals; see 3.6-7 and Appendix B for justification of this approach. Low-level rules of [h]- insertion, nasal voicing, etc., are given in Appendix B.

3.8.4 'Spirantization-and-lenition'

(19) Standard Welsh:

a. $\begin{bmatrix}-\text{son}\\-\text{del rel}\end{bmatrix} \longrightarrow [+\text{cont}]$ ([p t k] → [φ θ x]; [b d g] → [β ð ɣ])

b. $\begin{bmatrix}+\text{nas}\\+\text{ant}\\-\text{cor}\end{bmatrix} \longrightarrow [+\text{cont}]$ ([m] → [β̃])

c. $\begin{bmatrix}+\text{liq}\\-\text{voice}\end{bmatrix} \longrightarrow [+\text{voice}]$ ([l̥ r̥] → [l r])

As I stated in 2.7.1, this 'mutation' is not usually treated as a separate category in traditional grammars of Welsh. I will show in chapter VII that this view is, in fact, correct; rule (19a) does not exist, and the other subrules belong to the lenition rule, (3). (See section 7.10 for my account of this apparent 'mixed' mutation.)

3.8.5 Aspiration

(20) Standard Welsh:

$$\emptyset \longrightarrow [h] / \# \_\_\_\_ \left\{ \begin{bmatrix}+\text{syll}\end{bmatrix} \atop \begin{bmatrix}-\text{syll}\\+\text{son}\\-\text{cons}\\+\text{high}\end{bmatrix} \right\}$$

That is, vowels and [y] are preaspirated. Alternatively, we could set up a more general rule:

(21) $\emptyset \rightarrow [h] / \#$ _____ [-cons]

--that is, vowels and glides are preaspirated--with a subsequent rule deleting [h] before [w].

Many nonstandard dialects have a much more extensive rule:

(22) $\emptyset \rightarrow [h] / \#$ _____ $\begin{bmatrix} +son \\ +voice \end{bmatrix}$

--that is, vowels, glides, voiced liquids, and nasals are preaspirated. (Voiceless nasals occur only as a result of the nasal mutation, and are never radical initial segments.) A subsequent metathesis rule causes postaspiration of liquids and nasals; see 2.6.5. Fynes-Clinton (1913) reports postaspiration of [w] in a dialect of North Welsh (see chapter II, note 20); presumably, the metathesis rule also involves [w] in this dialect.

Albrow (1966) reports postaspiration of [v] in the Abersoch dialect of North Welsh. The aspiration rule for this dialect is:

(23) $\emptyset \rightarrow [\hbar] / \#$ _____ $\left\{ \begin{bmatrix} +son \\ +voice \end{bmatrix} \right.$ $\left. \begin{bmatrix} -son \\ +cont \\ +ant \\ -cor \\ +voice \end{bmatrix} \right\}$

This dialect has no rule deleting [h] (or [ɦ], in this case) before [w] (see 2.6.1).

Note that aspiration is very different from the other mutations, in that it involves insertion of a segment rather than a change in features. Because of this, I have written the above rules in a way that is actually deceptive:

environment slashes have been included, as if aspiration were a conventional phonological rule. However, the environment is not, in fact, being stated here, since only a small list of morphemes causes aspiration. Even if this phenomenon does turn out to be a phonological rule, which is possible but not probable (see 2.6.5 and 5.2.3), the above rules are not complete. See chapter V for a detailed discussion.

3.9 The consonant inventory of standard Breton is as follows:

(24)

p	t		k	
b	d		g	
f	s	s̬	x	h
v, f̬	z	z̬		ɦ
m	n	ñ		
	l, r	l̃		

There are also the glides [y] and [w].[4]

The consonant transcribed above as [f̬] is a labiodental which is neither [f] nor [v]. It is considered by at least some scholars to be a phoneme that contrasts with both: Falc'hun (1972) cites the minimal pair <u>evit</u> [é:f̬it] 'drink!' : <u>evit</u> [é:vit] 'for'. This segment is not recognized by the orthographic systems generally in use, but it is pronounced even in formal speech, and some writers have tried to invent a spelling for it; Falc'hun (1972) uses <u>'f</u>.

In some dialects--such as Plougrescant Trégorrois, according to Jackson (1961)--it is phonetically voiceless but acts phonologically as if it were voiced. Most accounts describe it as voiced, but pronounced more forcefully than [v], and even somewhat aspirated; however, it is considered lenis in spite of this ([v] is also lenis; [f] is fortis).[5] The fricative-voicing rule causes [f] to become [f̬] (see 2.2.3).

In Vannetais and eastern Cornouaillais, there are phonetic palatal affricates or stops. Some scholars claim that these are phonemes. Normally, however, these segments are almost always the result of a rule which palatalizes velar stops before front vowels and glides (see chapter II, note 1 and 5.1.4).[6] A few words have been idiosyncratically restructured (e.g., an original front vowel has become back), and in such cases we must indeed analyze the palatals as phonemes. However, in the overwhelming majority of cases, the velar palatalization rule is still transparent.

3.10 The mutable consonants are (in the standard language):

(25)

p	t	k
b	d	g
m		

In some dialects, initial liquids and [n] undergo lenition; initial liquids and nasals may undergo provection and aspiration.

In spoken Breton, voiced fricatives ([v], [z], [ž]) undergo provection.

Where restructuring has occurred in Vannetais and Cornouaillais, creating phonemic palatals, these are often mutable.

Aspiration of vowels is not recognized as such in the standard language, but it does occur (see 2.6.2); it also occurs in many dialects. I have found one example in the literature of aspiration of [w]; see 4.6.9.

3.11 As in Welsh, [v] is not normally a radical initial consonant in native words. It does occur in a few 'permanently lenited' words such as va "my" (< British *men-; cf. Welsh fy [və]. Some dialects of Breton have ma.) It also occurs as a radical initial in borrowings from French.

The same is true of [z]. It occurs in the verb form zo 'is', as a result of fricative-voicing (the form was

originally *a so) and subsequent restructuring. It also occurs in borrowings.

In some dialects, [θ], [ð], and [γ] occur as the outcome of mutation; these segments are not permissible radical initials in the dialects in question.

3.12 According to Falc'hun (1951), the traditional voiced: voiceless opposition is not valid for Breton consonants; the true opposition is rather fortis : lenis. It is not always clear what these terms mean. Falc'hun describes fortis consonants as long: orthographic b in the radical form baz 'stick' represents a sound twice as long as b in e baz 'his cough' (←paz). In some dialects, however, 'fortis' seems to be the equivalent of tense, or even aspirated.

Some scholars, including Falc'hun, claim phonemic contrast between fortis and lenis consonants, since 'her stick' is [eb:a:s] while 'his cough' is [eba:s]. This seems to me to be an autonomous phonemic analysis at best; the real phonological opposition in the examples cited would be /p/:/b/, while the apparent /b:/:/b/ opposition is in fact predictable (since lenis [b] is derivable by a rule).

In any case, the phonological status of the fortis: lenis distinction in Breton is not really relevant to the expression of the feature-changing rules of the Breton mutations, except perhaps in the case of fortis liquids and [n] which become lenis in lenition in some dialects. The phonetic change (from [+long] to [-long] or perhaps [+tense] to [-tense]) could be included in the lenition rule; however, I will omit it here.

3.13 The feature-changing rules of the Breton mutations --again, stated without environments--follow.

3.13.1 Lenition

(26) Standard KLT:

a. $\begin{bmatrix} -\text{son} \\ -\text{cont} \\ -\text{voice} \end{bmatrix} \longrightarrow [+\text{cont}]$ ([b d g]→[β ð γ])

b. $\begin{bmatrix} -\text{son} \\ -\text{cont} \\ -\text{voice} \end{bmatrix} \longrightarrow [+\text{voice}]$ ([p t k]→[b d g])

c. $\begin{bmatrix} +\text{nas} \\ +\text{ant} \\ -\text{cor} \end{bmatrix} \longrightarrow [+\text{cont}]$ ([m]→[β̃])

In subrules (a) and (b), we can use the feature [-cont] instead of [-del rel] to represent stops, since affricates do not exist in the literary standard. It is possible to collapse these two subrules:[7]

(27) $\begin{bmatrix} -\text{son} \\ -\text{cont} \\ \langle +\text{voice} \rangle_a \end{bmatrix} \longrightarrow \begin{bmatrix} +\text{voice} \\ \langle +\text{cont} \rangle_b \end{bmatrix}$

Condition: if (a) then (b)

A redundancy condition causes *[β] and *[β̃] to be realized as [v] and *[ð̃] to be realized as [z]:

(28) $\begin{bmatrix} +\text{cont} \\ +\text{ant} \end{bmatrix} \longrightarrow \begin{bmatrix} +\text{stri} \\ -\text{nas} \end{bmatrix}$

This condition will also apply to the spirant mutation, so that [p]→[f] rather than *[φ] and [t]→[s] rather than *[θ]. See also 3.13.2.

Another condition causes *[γ] to be realized as [h̃]:

(29) $\begin{bmatrix} +\text{cont} \\ -\text{ant} \\ -\text{cor} \\ +\text{voice} \end{bmatrix} \longrightarrow [+\text{low}]$

As in Welsh, nonstandard Breton dialects may have different rules and redundancy conditions. In Trégorrois, [d] is immune to lenition, so that rule (26a) must be rewritten as follows:

(30) $\begin{bmatrix} -\text{son} \\ -\text{cont} \\ -\text{cor} \\ +\text{voice} \end{bmatrix} \longrightarrow [+\text{cont}]$ ([b g]→[β γ])

In this dialect, subrules (26a,b) cannot be collapsed.

In dialects in which there is lenition of initial fortis [L R N], the following subrules must be added to the list under (26):

(31) a. [+liq] ⟶ [-long] (or [-tense])

b. $\begin{bmatrix}+\text{nas}\\+\text{ant}\\+\text{cor}\end{bmatrix}$ ⟶ [-long] (or [-tense])

In dialects such as Cléguérec Vannetais, in which [m̃] is lenited to [w] rather than [v], subrule (26c) must be changed to read:

(32) $\begin{bmatrix}+\text{nas}\\+\text{ant}\\-\text{cor}\end{bmatrix} \longrightarrow \begin{bmatrix}-\text{syll}\\-\text{cons}\\+\text{round}\end{bmatrix}$ ([m] ⟶ [w̃])

Some dialects retain [ð]; in these, redundancy condition (28) is replaced by the following:

(33) $\begin{bmatrix}+\text{cont}\\+\text{ant}\\-\text{cor}\\+\text{voice}\end{bmatrix} \longrightarrow \begin{bmatrix}+\text{stri}\\-\text{nas}\end{bmatrix}$ (* [β] and * [β̃] are realized as [v])

(The feature [+voice] is specified here because these dialects do not necessarily have [θ] as the outcome of the spirant mutation of [t]. In those that do, voicing can be left unspecified. See also 3.13.2.)

In Cléguérec, [d] is lenited to [ð] and [g] to [γ], so that instead of redundancy conditions (28) and (29), this dialect has:

(34) $\begin{bmatrix}+\text{cont}\\+\text{ant}\\-\text{cor}\end{bmatrix} \longrightarrow [+\text{stri}]$ ([β] is realized as [v])

(35) $\begin{bmatrix}-\text{syll}\\-\text{cons}\end{bmatrix} \longrightarrow [-\text{nas}]$ ([w̃] is realized as [w])

A number of low-level phonological rules modify the outcome of lenition. Traditional accounts of the mutations state that [g] is lenited to [ø] before [w], or that [gw] becomes [w]. However--as I have already argued in 2.1.2-3 --[g̣] is in fact lenited to [ɦ̣] before [w] as well as before other segments; a subsequent rule deletes [ɦ̣] before [w].[8]

In Léonais, there appears to be an alternation [g̈ẅ]: [v], as in [g̈ẅele] 'bed' : [evele] 'his bed'. However, this too is the result of low-level rules. In most Breton dialects (Trégorrois is an exception) there is a rule fronting [w] before front vowels; the outcome is usually [ẅ], so that in most dialects, lenition appears to yield [eẅele]. In Léonais, there is an additional rule which causes [ẅ] to become [v] in certain environments.[9]

A few dialects have a rhotacism rule affecting [z], so that [d] appears to be lenited to [r]. The Houat dialect of Vannetais has, for example, [durn] 'hand' : [ör̈urn] 'his hand', according to Le Roux (1924, map #174).

Voicing assimilation rules often reverse or modify the outcome of lenition in Breton; see 5.1.3.

3.13.2 Spirant Mutation

(36) $\begin{bmatrix}-\text{cont}\\-\text{voice}\end{bmatrix} \longrightarrow [+\text{cont}]$ ([p t k] → [φ θ x])

Redundancy condition (28) causes *[φ] to be realized as [f] and *[θ] to be realized as [s]. There are, apparently, dialects in which [θ] is retained (see 2.2.3). If in these dialects [ð̀] also occurs as the lenited variant of [d], then redundancy condition (33) can be expressed as follows:

(37) $\begin{bmatrix}+\text{cont}\\+\text{ant}\\-\text{cor}\end{bmatrix} \longrightarrow \begin{bmatrix}+\text{stri}\\-\text{nas}\end{bmatrix}$ (*[β] and *[β̃] are realized as [v]; *[φ] is realized as [f])

If there are dialectal cases of true phonemic /č/ being spirantized, these would also be covered by rule (36).

In most dialects, a fricative-voicing rule (see 2.2.3) modifies the outcome of the spirant mutation.

3.13.3 Provection

(38) Standard Breton:

$$\begin{bmatrix} -\text{cont} \\ +\text{voice} \end{bmatrix} \longrightarrow [-\text{voice}] \quad ([\text{b d g}] \rightarrow [\text{p t k}])$$

In spoken Breton, fricatives are also provected:

(39) $$\begin{bmatrix} -\text{son} \\ +\text{voice} \end{bmatrix} \longrightarrow [-\text{voice}]$$

The above rule would also account for true provection of /ǰ/.

In some dialects, liquids, nasals, and even glides are also provected (i.e., lengthened, tensed, devoiced, and/or aspirated, depending on the dialect). In Ile Molènes (see 2.4.3), there is an additional rule:

(40) $$\begin{bmatrix} +\text{cons} \\ +\text{son} \end{bmatrix} \longrightarrow [+\text{tense}]$$

In Bothoa (see 2.4.3), where nasals, liquids, and glides are devoiced, we could write a generalized rule replacing (38):

(41) $$\begin{bmatrix} -\text{syll} \\ +\text{voice} \end{bmatrix} \longrightarrow [-\text{voice}]$$

Humphreys (1972) reports that these segments are also aspirated. We could include this aspiration in the provection rule:

(42) $$\begin{bmatrix} -\text{syll} \\ +\text{voice} \\ \langle +\text{son} \rangle_a \end{bmatrix} \longrightarrow \begin{bmatrix} -\text{voice} \\ \langle +\text{asp} \rangle_b \end{bmatrix}$$ Condition: if (a) then (b)

However, it would probably be better to posit a low-level rule causing aspiration of voiceless sonorants, instead of complicating the basic mutation rule.

3.13.4 'Mixed' Mutation/Lenition-and-Provection

In the standard 'mixed' mutation, the rules are as follows:

(43) a. $\begin{bmatrix}-\text{cont}\\-\text{cor}\\+\text{voice}\end{bmatrix} \longrightarrow [+\text{cont}]$ ([b m g] → [β β̃ γ])

b. $\begin{bmatrix}-\text{son}\\-\text{cont}\\+\text{ant}\\+\text{cor}\\+\text{voice}\end{bmatrix} \longrightarrow [-\text{voice}]$ ([d] → [t])

Redundancy condition (28) causes *[β] and *[β̃] to be realized as [v]; condition (29) causes *[γ] to be realized as [ɦ].

The complete version of lenition-and-provection is expressed as follows:

(44) a. $\begin{bmatrix}-\text{cont}\\-\text{cor}\\+\text{voice}\end{bmatrix} \longrightarrow \begin{bmatrix}+\text{cont}\\-\text{voice}\end{bmatrix}$ ([b m g] → [φ φ̃ x])

b. $\begin{bmatrix}-\text{son}\\-\text{cont}\\+\text{ant}\\+\text{cor}\\+\text{voice}\end{bmatrix} \longrightarrow [-\text{voice}]$ ([d] → [t])

Redundancy condition (28) causes *[φ] and *[φ̃] to be realized as [f].

In the incomplete version of lenition-and-provection, the rules are generally as follows:

(45) a. $\begin{bmatrix}-\text{cont}\\+\text{ant}\\-\text{cor}\\+\text{voice}\end{bmatrix} \longrightarrow \begin{bmatrix}+\text{cont}\\-\text{voice}\end{bmatrix}$ ([b m] → [φ φ̃])

b. $\begin{bmatrix} -\text{son} \\ -\text{cont} \\ +\text{ant} \\ +\text{cor} \\ +\text{voice} \end{bmatrix} \longrightarrow [-\text{voice}]$ ([d] → [t])

c. $\begin{bmatrix} -\text{cont} \\ -\text{ant} \\ -\text{cor} \\ +\text{voice} \end{bmatrix} \longrightarrow [+\text{cont}]$ ([g] → [ɣ])

In some cases, both [d] and [g] are devoiced, so that the following rule would replace (45b,c):

(46) $\begin{bmatrix} -\text{son} \\ -\text{cont} \\ \left\{\begin{matrix}[+\text{cor}] \\ [+\text{ant}]\end{matrix}\right\} \end{bmatrix} \longrightarrow [-\text{voice}]$ ([d g] → [t k])

In the Cléguérec dialect of Vannetais, [b] → [f] and [m] → [hw]; rule (44a) is replaced by the following separate rules:

(47) a. $\begin{bmatrix} -\text{son} \\ -\text{cont} \\ -\text{cor} \\ +\text{voice} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{cont} \\ -\text{voice} \end{bmatrix}$ ([b g] → [φ x])

b. $\begin{bmatrix} +\text{nas} \\ +\text{ant} \\ -\text{cor} \end{bmatrix} \longrightarrow \begin{bmatrix} -\text{syll} \\ -\text{cons} \\ +\text{round} \\ -\text{voice} \end{bmatrix}$ ([m] → [w̥])

A low-level rule would convert [w̥] to [hw].

3.13.5 Aspiration

In standard Breton, aspiration is not officially recognized. However, preaspiration of vowels does exist even in the standard, and aspiration of vowels, nasals, and liquids exists in many dialects. The data available to me have not specified whether glides are aspirated in the standard language; if so, then the rule would be:

(48) $\emptyset \longrightarrow [h] / \# \_\_\_\_ [-\text{cons}]$

If not, then the rule is:

(49) $\emptyset \longrightarrow [h] / \#$ ____ $[+syll]$

In dialectal Breton, if glides are affected the rule is as follows:[10]

(50) $\emptyset \longrightarrow [h] / \#$ ____ $[+son]$

If glides are excluded, the rule is more complex:

(51) $\emptyset \longrightarrow [h] / \#$ ____ $\left\{ \begin{bmatrix} +syll \end{bmatrix} \right.$
$\left. \begin{bmatrix} -syll \\ +cons \\ +son \end{bmatrix} \right\}$

A subsequent rule causes metathesis of $[h] + \{N,L\}$.

The same caution regarding the apparent statement of an environment holds true in Breton as it does in Welsh (see 3.8.5).

NOTES

[1]As far as I know, there are no borrowings beginning with [ð]; English words beginning with this segment (e.g. the article and pronouns) are not normally borrowed into other languages.

[2]In the literary standard, /č/ is usually spelled si and pronounced [š], as in siocled [šɔklɛd] 'chocolate', so that there is some doubt as to whether to include /č/ in the standard Welsh inventory. (It does, of course, exist in speech.) However, /ǰ/ is spelled j and pronounced [ǰ]. This situation is probably due to the fact that orthographic ch is pronounced [x] in Welsh; thus there is no acceptable way to spell [č]. The problem does not exist in the case of [ǰ], which does not represent any native Welsh sound.

[3]Morpheme-medial sequences of nasal + [h] originated as a result of the nasal mutation (see Appendix A). Today, however, these sequences can no longer be derived by nasal mutation. Many Celtic scholars are historicists, and may have been led by their knowledge of the evolution of the Welsh language to confuse morpheme-medial nasal + [h] sequences with morpheme-initial ones, which can still be derived synchronically by nasal mutation. See Appendix B.

[4]These are phonemes. They have several allophonic variants, including a front rounded glide [ẅ] occurring before front vowels (except in Trégorrois) and [e̯ o̯], lower and more open versions of /y w/ occurring after [a].

[5]Le Roux (1896:4) describes the sound as 'voiced like [v], but the breath is expired with more force. It seems that this is the only difference between the two consonants...' Falc'hun (1972:55) says that it 'exerts more pressure and expenditure of air than...[v]...; there remains in it something of the articulatory force of... [f].' (Translations mine.)

In Breton, a stressed vowel preceding a fortis (or voiceless) consonant is short; a stressed vowel preceding a lenis (or voiced) consonant is long. Since a stressed vowel preceding [v] is long (as in [e:vit] 'drink!'), this consonant is considered lenis, at least phonologically, in spite of what seems to be a fortis pronunciation.

[6]Other dialects also have fronted versions of /k g/ (generally [k' g']) preceding and/or following front vowels and glides; these are apparently always allophonic variants of the velars.

[7]In the rare cases in which /č/ and /ǰ/ are truly

phonemes and mutable, rule (26a,b) is satisfactory as it stands.

[8]The sequence [ɦw] does, in fact, exist in Breton. It is spelled c'hw in the standard, and is underlyingly /xw/. In spoken Breton, /x/ usually becomes [ɦ] or [h] (depending on the dialect) before sonorants. This rule presumably follows [ɦ]-deletion, since otherwise all instances of [ɦw] would become [w].

[9]Although *[gv] is impossible inside the same syllable because of Breton phonotactic constraints, there are examples of morpheme-final consonants immediately preceding [v]: [dasvele] 'to thy bed'. Thus, we cannot posit a preceding vowel as a condition for this rule.

[10]In the Ile de Groix dialect of Vannetais, [w] is preaspirated; see 4.6.9. I have found no examples in the literature of aspiration of [y].

CHAPTER IV
ENVIRONMENTS OF THE INITIAL MUTATIONS

4.0 In chapter III, the rules of the initial mutations were expressed without environments. In this chapter, environments will be given in the form of an exhaustive list of the individual morphemes which trigger each mutation; very little attempt will be made at this stage to express generalizations. (In chapters VI and VII it will be demonstrated that generalized environments can, indeed, be set up.)

This chapter lists environments for the mutations in Welsh and Breton only. The Cornish mutations have again been excluded, because the facts available from the literature are not as complete or consistent as in the other two, and those which are available are quite similar to those of Breton.

4.1 Lenition

Welsh:

4.1.1 The direct object of a verb is lenited.

(1) a. ci 'dog' : fe welodd fy nhad gi 'prt.--saw my father dog = my father saw a dog'

b. dod 'coming' : fe hoffe Megan ddod 'prt.--would like Megan coming = Megan would like to come'

Note that the subject may intervene between the verb and the object. (However, if a non-mutable determiner, adjective, etc., precedes the object noun, the form of the noun will be determined by the immediately preceding word: fe welodd fy nhad y ci 'my father saw the dog'.)

Note also that verbal nouns can serve as objects, as in example (1b).

Though the name 'verbal noun' is traditional, this form is used as the dictionary citation form of the verb, and is often equated with the English infinitive. Thus

gweld is usually translated as 'to see'. Awbery (1976) argues that verbal nouns are verbs, on the grounds that strict subcategorization features and selectional restrictions are identical for e.g. gweld and the finite verb form gwelodd '(he) saw'. Awbery sets up a separate category 'mutation of an embedded verb' (p. 36), and would consider (1b) as an example of such a mutation. In addition, rule 4.1.1 is expressed in the handbooks as 'lenition of the direct object of a finite verb', in contrast to e.g. mae fy nhad yn gweld ci 'my father is seeing a dog', in which ci is regarded as the object of the infinitive gweld.

However, analyzing the verbal noun as a verb--at least at the level of the grammar at which this mutation occurs--strikes me as an attempt to force Welsh syntax into the framework of English, and causes the loss of several possible generalizations regarding the structure of Welsh. Aside from removing the need for an extra category of mutation by including constructions such as (1b) in the direct-object lenition rule, we can achieve the following generalizations by considering verbal nouns as nouns:

1. A very characteristic and productive Celtic construction is the phrase structure rule NP → NP NP, in which the second noun phrase in the sequence acts as a genitive: llyfr Gwen 'book Gwen = Gwen's book'; drws y tŷ '(the) door (of) the house'. Gweld ci seems to be the same type of construction, and could be translated as 'the seeing of a dog'. Since the radical is preserved in the genitive NP construction, this analysis explains why the apparent 'object' of an 'infinitive' is not lenited. The direct object lenition rule need not specify the trigger as a finite verb; at the level at which this rule operates, all verb forms in Welsh are finite.

2. The equivalent of the English present participle

is formed by the sequence yn + verbal noun. Yn is traditionally regarded as a preposition, and often translated as 'in' because it is a homophone of that preposition and no doubt originated as the same word. I would not translate this word as 'in' in contemporary Welsh, since yn 'in' triggers the nasal mutation and the 'present participle' formative does not; however, I would still analyze it as a preposition, which I will translate as 'at' (see chapter II, note 17), with the verbal noun as its object NP.[1] Thus, mae fy nhad yn gweld ci could be translated literally as 'is my father at (the) seeing (of a) dog'.

3. In sentences such as mae'r dyn yn fy ngweld 'the man is seeing me', the presumed 'object pronoun' fy is identical to the possessive fy 'my' and triggers the same mutation. The conclusion draws itself that the pronoun is in fact the possessive, and is syntactically a determiner preceding a noun in a noun phrase. The above sentence could be translated literally as 'is the man at my seeing'. Contrast fe'm gwelodd ef 'prt.--me saw he = he saw me', in which 'm, a true object pronoun, does not mutate the verb. (True object pronouns may, however, cause mutation: 'th 'thee' triggers lenition, and several object pronouns, including 'm, cause aspiration. See 4.1.12 and 4.6.2.)[2]

In a sequence of direct objects, usually only the first is lenited: fe welodd ef gath, ci, a buwch 'he saw a cat, a dog, and a cow'. However, some speakers vacillate on this point. Catherine Walker sometimes lenites more than one object: weles i garped, ddrws, a wal 'I saw a carpet, a door, and a wall' (←carped 'carpet'; drws 'door').

Nominal direct objects of impersonal forms of the verb are not lenited: dysgir plant 'one teaches children; children are taught'. (These forms are not syntactic passives; plant in the above sentence is the object of dysgir.) Pronouns, on the other hand, are lenited: dysgir fi (←mi) 'one teaches me; I am taught'. The impersonal forms are

rarely used in speech now, having been replaced by periphrastic forms: mae'r plant yn cael eu dysgu 'are the children (at the) getting (of) their teaching'.

4.1.2 The subject of a verb, separated from that verb by an intervening word or phrase (adverb, prepositional phrase, etc.) is lenited.

(2) a. gardd 'garden' : oedd gyda nhw ardd fawr 'was with them (a) garden large = they had a large garden' (but oedd gardd fawr gyda nhw 'was (a) garden large with them'; same meaning as the first sentence but with verb and subject together)

b. llawer 'many' : mae yno lawer o bobl 'are there many (of) people = many people are there; there are many people there' (but mae llawer o bobl yno).

c. darllen 'reading' : darfu iddi hi ddarllen llyfrau 'happened to her (the) reading (of) books = she read books'

d. mynd 'going' : (oes) rhaid i mi fynd '(there is) necessity to me going = I have to go'.

Awbery (1976) would include (2c,d) in her category 'mutation of an embedded verb', but darllen and mynd are much better analyzed as nouns (see 4.1.1), acting here as the subjects of the sentences: 'the reading of books happened to her'; 'going is a necessity to me'.

Odd as this environment for lenition seems, it is very much alive. Welsh has apparently borrowed there-insertion from English; in sentences such as mae yna ddyn yn y tŷ 'is there (a) man in the house = there is a man in the house', yna has no locative meaning; the sentence means the same as mae dyn yn y tŷ, but the first sentence is quite common even though mutation is required there whereas none is required in the second. On the other hand, some speakers do not always lenite in this environment: Catherine Walker gave mae ganddo fe gardd 'is with him (a) garden' as a

translation of 'he has a garden', rather than the expected mae ganddo fe ardd. (This sentence is not Mrs. Walker's normal way of expressing the meaning involved, but her natural usage is also peculiar: mae ardd idde 'is a garden to him', in which over-lenition occurs.)

4.1.3 The postverbal negative marker dim is lenited after an intervening subject:

(3) a. ddaeth ef ddim 'came he not = he did not come'
b. dydw i ddim yn ddiog 'neg--am I not--predicate particle--lazy = I am not lazy'
c. dydy'r bara ddim yma 'neg--is the bread not here = the bread is not here'
d. fydd Gwen ddim yn mynd 'will be Gwen not at going = Gwen will not be going'

(but: Does dim bara yma 'neg--is no bread here = there is no bread here')[3]

In dictionaries, dim is cited as a noun 'nothing'. Thus in the sentence chlywes i ddim 'heard I nothing = I didn't hear anything', lenition of dim can be assigned to direct-object lenition (4.1.1). Does dim bara yma could be translated as 'nothing of bread is here', with dim as the adjacent subject of the verb does, and therefore not lenited (see 4.1.2). However, this analysis does not seem possible in the case of sentences (3a-d), which have intransitive verbs. (Ddim cannot be a subject in these sentences, either; in each case the subject follows the verb directly.)

Lenition of dim in this environment may have originated as direct-object lenition, but in the modern language it usually must be put into a different category. In fact, we may have to consider ddim as a 'permanently lenited' particle /ðɪm/, distinct from the noun /dɪm/ 'nothing' (which may or may not be lenited depending on its environ-

ment). If this is the case, then 4.1.3 is not an environment for lenition at all, since /ðrm/ would be underlying.

It might be possible to include at least 4.1.1 and 4.1.2, if not all three of the above categories, under the same basic environment. Given the following phrase structure:

(4) NP X $\begin{Bmatrix} NP \\ dim \end{Bmatrix}$

the third element is lenited. (See also 6.10.)

4.1.4 The initial consonant of expressions of time, distance, and manner is lenited, even in sentence-initial position:

(5) a. pob 'every' : bob dydd 'every day'
b. dwy 'two' : mae e'n byw ddwy filltir o'r dre 'is he at living (= he lives) two miles from the town'
c. llaw 'hand' : law yn llaw 'hand in hand'

4.1.5 Feminine singular nouns lenite a following adjective or intensifier:

(6) a. gwen 'white' : buwch wen 'a white cow'
b. rhy 'too' : cath ry dew 'cat too fat = too fat a cat'
c. da 'good'; doeth 'wise' : gwraig dda ddoeth 'a good wise woman'

(but: cathod gwyn 'white cats'; bachgen da 'a good boy')

The intensifier go 'rather' is usually immune to lenition: gwraig go hen 'a rather old woman'. (However, there are some cases of lenition of go; see 7.13.3.)

Note that if a series of adjectives follows the noun, all are lenited. However, if an intensifier intervenes, it is the intensifier that determines the mutation (or non-mutation) of the immediately following adjective. Thus rhy

'too' lenites tew 'fat' (as in (6b) above), but digon 'enough' preserves the radical: cath ddigon tew 'a fat enough cat'.[4]

4.1.6 In orthographic words, the first morpheme often lenites the second.

4.1.6.1 The following prefixes lenite stems:

a. ad- 're-'; pejorative
b. add-, intensive
c. af-, negative
d. ail-/eil- 're-'
e. all- 'other'
f. am- 'around'; 'different'
g. ar-, intensive; 'opposite'
h. arch- 'arch-, chief'
i. at-/ad-, intensive
j. cam- 'mis-'
k. can- 'with'; 'after'
l. cy- } 'con-'
m. cyd- } 'con-'
n. cyf- } 'con-'
o. cyf-/cyfr-, intensive
p. cyn-/cynt- 'pre-; former'
q. dad-/dat-, intensive; negative
r. dar-, intensive
s. di-, privative; 'outer'
t. dir-, intensive
u. do-, intensive
v. dy-, negative; 'together'
w. en-, intensive
x. go-/gwo-/gwa- 'sub-'
y. gor- 'over'
z. gwrth- 'against'
aa. hanner- 'half' (in speech)
bb. hy- 'well; -able'
cc. is- 'under'
dd. lled- 'half; part'
ee. mewn- 'in'
ff. prif- 'chief'
gg. rhag- 'pre-'
hh. rhyng- 'inter-'
ii. traws- 'trans-'
jj. try- 'through'
kk. ym-, reflexive; reciprocal

(7) a. llais 'sound' : adlais 'echo'
b. deall 'understanding' : camddeall 'misunderstanding'
c. pwys 'importance' : dibwys 'unimportant'
d. mawr 'big' : enfawr 'enormous'
e. llif 'flood' : gorlif 'overflow'
f. byw 'alive' : lledfyw 'half dead'
g. dinas 'city' : prifddinas 'capital'
h. gwlad 'country' : rhyngwladol 'international'
i. trochi 'immersing' : ymdrochi 'bathing'

Most of these prefixes appear to be productive, or at least transparent.

4.1.6.2 In compound words, the first element lenites the second:

(8) a. melyn 'yellow' : penfelyn 'yellow-head = blond'
b. morwyn 'maid' : mor-forwyn 'sea-maid = mermaid'
c. llais 'voice' : melyslais 'sweet-voiced'
d. dydd 'day' : haf-ddydd 'a summer's day'
e. glas 'blue' : gwyrdd-las 'greenish-blue'
f. tŷ 'house' : gweithdŷ 'work-house = workshop'
g. ci 'dog' : morgi 'sea-dog = shark'
h. mwy 'more' : mwyfwy 'more and more'
i. gwell 'better' : gwellwell 'better and better'

Pilch (1971) maintains that this type of compounding is no longer productive in speech, and that English words are now borrowed to fulfill the same purpose. However, Welsh speakers would certainly recognize the individual morphemes in the native compounds.

Roots ending in [n] or [r] apparently de-lenite liquids, so that we have e.g. gwinllan 'vineyard', not *gwinlan.

4.1.7 Several types of orthographic two-word phrases are often regarded, even in traditional grammars, as compounds. In these, the first word lenites the second.

4.1.7.1 Traditional grammars list the following as adjectives which exceptionally precede nouns and lenite them:[5]

a. ail 'second'
b. cam 'wrong'
c. gau 'false'
d. gwir 'true, real'
e. hen 'old'
f. prif 'chief'
g. unig 'only'

(9) a. bachgen 'boy' : yr ail fachgen 'the second boy'

b. cyfeillion 'friends' : gwir gyfeillion 'true friends'
c. gŵr 'man' : hen ŵr 'an old man'
d. peth 'thing' : yr unig beth 'the only thing'

4.1.7.2 A number of other adjective-type words (mostly determiners and quantifiers) also precede and lenite the noun:

a. ambell 'an occasional'
b. aml 'many a'
c. amryw 'several'
d. cryn 'quite a'
e. cwbl 'all'
f. cyfryw 'such'
g. holl 'all, whole'
h. pa...? 'what...?'[6]
i. rhyw 'some (indef.)'
j. sut...? 'what (kind of)...?'
k. unrhyw 'any'
l. ychydig 'a little, a few'
m. y fath 'the such = such a'
n. y naill 'the one'

(10) a. llawer 'a lot' : cryn lawer 'quite a lot'
b. gwaith 'work' : yr holl waith 'all the work'
c. peth 'thing' : pa beth? 'what (thing)?'
d. dyn 'man' : rhyw ddyn 'some man'
e. lliw 'color' : sut liw? 'what color?'
f. gŵr 'man' : y naill ŵr...y gŵr arall 'the one man ...the other man'

Most handbooks list the forms in 4.1.7.1 and those in 4.1.7.2 separately, though there is no really clear distinction between the two groups. There is a certain amount of confusion as to what distinguishes prefixes from adjectives, in fact: some of the prefixes listed in 4.1.6.1 are phonetically identical to some 'words' listed in 4.1.7.1-2. Morris-Jones (1921:81) distinguishes between 'strict compounds' such as prifddinas 'capital' (←prif- 'chief' + dinas 'city' and 'loose compounds' such as y prif ddyn 'the chief man'. Sometimes an adjective is combined orthographically with a noun; example (9c) may be spelled henŵr.

Most adjectives in Welsh normally follow the noun:

dyn caredig 'a kind man'. In poetic style, such adjectives may precede the noun. If so, the noun is lenited: caredig ddyn.

Note that, unlike lenition of adjectives following nouns, lenition of nouns following adjectives occurs regardless of the gender and number of the noun.

Some irregular comparative and equative forms of adjectives precede nouns. These normally preserve the radical: gwell dyn 'a better man'; cystal gwraig 'as good a wife'. Catherine Walker, however, cited cystal fenyw (←menyw) 'as good a woman'.

4.1.7.3 In earlier Welsh, sequences of noun + noun were often treated as compounds:

(11) a. morwyn 'maid, virgin' : Mair forwyn 'the Virgin Mary'
b. brenin 'king' : Dafydd frenin 'king David'
c. Duw 'God' : llaw Dduw 'the hand of God'
d. Dewi 'David' : Tŷ̂ Ddewi 'St. David's' (place-name; literally '(the) house (of) David')
e. Llun 'Monday' : nos Lun 'Monday night'
f. llaeth 'milk' : potelaid laeth 'a bottle of milk'
g. dur 'steel' : nodwydd ddur 'a needle of steel = steel needle'
h. pren 'wood' : llwy bren 'a wooden spoon'
i. gwynt 'wind' : melin wynt 'a windmill'
j. llyfrau 'books' : siop lyfrau 'a bookshop'

Note also such noun + adjective phrases as Hywel Dda (←da) 'Hywel the Good', in which an adjective used as an epithet is lenited even if the noun is masculine.

For the most part, this type of lenition is no longer productive; examples (11a-e) at least are fixed expressions, as are phrases of the type 'Hywel Dda'. Examples (11c-d) illustrate a genitive construction in which no mutation occurs in the contemporary language (see 4.1.1).[7]

4.1.8 Ordinal numerals lenite feminine nouns only:

(12) merch 'daughter' : y chweched ferch 'the sixth daughter' (but y chweched mab 'the sixth son')

Ail 'second', however, lenites masculine nouns also; see example (9a).

4.1.9 The definite article y (prevocalic yr, postvocalic 'r) lenites:

a. feminine singular nouns
b. adjectives (including ordinal numerals) preceding feminine singular nouns
c. dau/dwy 'two'; in speech sometimes tri/tair 'three'

(13) a. menyw 'woman' : y fenyw 'the woman'; gyda'r fenyw 'with the woman'
b. gardd 'garden' : yr ardd 'the garden'
c. cam 'wrong' : y gam ffordd 'the wrong way'
d. pedwaredd 'fourth' : y bedwaredd eneth 'the fourth girl'
e. dau 'two' : y ddau ddyn 'the two men'

but: y dyn 'the man'; y gerddi 'the gardens'; y cam ddewis 'the wrong choice'; y pedwerydd bachgen 'the fourth boy'

Feminine singular nouns beginning with ll and rh are not mutated in the standard: y llong 'the ship'; y rhôdd 'the gift'. However, lenition often does take place in the spoken language: y long, y rôdd.

4.1.10 Lenition occurs following the numerals:

a. un 'one' (in feminine adjectives and nouns)
b. dau (masc.) and dwy (fem.) 'two'
c. in speech sometimes tair (fem.) 'three'
d. in the standard saith 'seven' and wyth 'eight', optionally

(14) a. merch 'daughter' : un ferch 'one daughter' (but un mab 'one son')

b. gwir 'true' : un wir gyfeilles 'a true (female) friend' (but un gwir gyfaill 'a true (male) friend')

c. tad 'father' : dau dad 'two father(s)'

d. cath 'cat' : dwy gath 'two cat(s)'; saith gath/cath 'seven cat(s)'

Feminine nouns beginning with voiceless liquids are not lenited after un in the standard: un llong 'one ship'; un rhôdd 'one gift'. Again, in speech lenition does tend to occur.

Tair 'three (fem.)' preserves the radical in the standard, but sometimes triggers lenition in colloquial speech (and may be lenited by the article, thus behaving like 'two': Morgan (1952:133) cites y dair flaenaf 'the three foremost (women)'. Tri 'three (masc.)' triggers the spirant mutation in the standard; in speech it usually preserves the radical.)

Traditional handbooks usually state that voiceless stops only are obligatorily lenited after saith 'seven' and wyth 'eight', but several scholars, including Morgan (1952) and Evans (1909) say that lenition is optional in this case. In the spoken language, the radical is usually preserved.

The numerals pum 'five', saith 'seven', wyth 'eight', deg 'ten', can '100', and compounds of these exceptionally lenite the word gwaith 'time'; naw 'nine' and ugain 'twenty' do so optionally. The numerals are combined orthographically with gwaith: pumwaith 'five times'; nawwaith/nawgwaith 'nine times' (but teirgwaith 'three times').

4.1.11 Lenition occurs after the following possessive pronouns (including contracted forms with prepositions or conjunctions):

a. dy, 'th 'thy'

b. b. ei, 'i, 'w 'his'
c. in some dialects yn 'my'

(15) a. gardd 'garden' : dy ardd (di) 'thy garden (of thee)'; a'th ardd 'and thy garden'
b. caru 'loving' : oedd e'n dy garu (di) 'was he at thy loving (of thee) = he loved thee'
c. tŷ 'house' : ei dŷ (ef) 'his house (of him)'; o'i dŷ 'from his house' : i'w dŷ 'to his house'
d. gweld 'seeing' : mae hi'n ei weld (ef) 'is she at his seeing (of him) = she sees him'

T. Watkins (1967) cites [ɬaw] 'hand' : [ənlawi] 'my hand' from the Llansamlet dialect of South Welsh. (The standard form is fy llaw (i) [vəɬawi].)

Traditionally, dy in (15b) and ei in (15d) would be analyzed as the 'objects' of caru and gweld, which are considered as infinitive verb forms. However, as I argued in 4.1.1, the verbal nouns should be analyzed as nouns, and the pronouns as possessives acting as determiners.

Commonly in the spoken language, and optionally in literary Welsh, the subject/object equivalent of the possessive pronoun is repeated after the verbal noun. It seems logical to regard this as the genitive construction. The presence or absence of the repeated pronoun makes no semantic difference.

4.1.12 The true object pronoun 'th 'thee' lenites a following verb:

(16) gwelais 'I saw' : fe'th welais 'prt.--thee I saw = I saw thee'

Object pronouns preceding the verb are traditionally called 'infixed' pronouns; they always occur in a contracted form. They precede finite verbs, and thus must be distinguished from the so-called 'object' pronouns in (15b,d)

which are, of course, nothing of the sort.[8]

Unlike possessive pronouns before verbal nouns, 'infixed' object pronouns are not much used in speech today; instead, independent forms occur after the verb (in the order verb + subject + object pronoun). Thus the colloquial equivalent of (16) would be fe weles i di 'prt.--saw I thee'.

4.1.13 Lenition occurs after the following prepositions:[9]

a. am 'about; for; at'
b. ar 'on'
c. at 'to'
d. dan/tan 'under'
e. dros/tros 'over; for the sake of'
f. drwy/trwy 'through'
g. gan 'by; with'
h. heb 'without'
i. hyd 'until; against; along'
j. i 'to'
k. o 'of; from'
l. wrth 'by'
m. often yn 'in' in speech

(17) a. dau 'two' : am ddau o'r gloch 'at two o'clock'
b. tŷ 'house' : o dŷ i dŷ 'from house to house'
c. rhyddid 'freedom' : tros ryddid 'for freedom'
d. clwyd 'gate' : wrth glwyd 'by a gate'
e. colloquial Bangor : yn Fangor 'in Bangor'

4.1.14 Lenition occurs after the following intensifiers:

a. cyn 'so, as'
b. daran/taran/tran 'rather'
c. go 'rather, quite'
d. lled 'rather'
e. mor 'so, as'
f. prin 'hardly'
g. pur 'quite, very'
h. rhy 'too'

(18) a. mawr 'big' : lled fawr 'rather big'; rhy fawr 'too big'
b. tal 'tall' : mae Tom mor dal â'i dad 'Tom is as tall

as his father'

c. dau 'two' : prin ddau 'scarcely two'

In standard Welsh, cyn and mor do not lenite voiceless liquids. However, lenition often does occur in the spoken language: standard mor llawen 'so happy'; colloquial mor lawen. Pur and rhy also sometimes leave voiceless liquids unmutated in the standard, but this is not regular.

4.1.15 Lenition occurs after the following conjunctions:

a. neu 'or'

b. pan 'when'

(19) a. tri 'three' : dau neu dri 'two or three'

b. daeth '(she) came' : pan ddaeth Gwen 'when came Gwen = when Gwen came'

4.1.16 The predicate-forming particle yn lenites nouns and adjectives:

(20) a. plismon 'policeman' : mae Siôn yn blismon 'is Siôn prt.--a policeman = Siôn is a policeman'

b. da 'good' : mae'r dyn yn dda 'is the man prt.--good = the man is good; cân Gwen yn dda 'will sing Gwen prt.--good = Gwen will sing well'[10]

In standard Welsh, this particle does not trigger lenition of words beginning with voiceless liquids: y mae ef yn llenor 'he is a man of letters'. In the spoken language, lenition often does take place: mae e'n lenor.

In North Welsh, if more than one adjective follows yn, all are lenited, according to Morgan (1952:246), who gives no examples. In South Welsh, generally only the first adjective is lenited.

4.1.17 The verb is lenited after the following preverbal particles:

a. a, interrogative particle (deleted in speech)
b. a, relative particle (deleted in speech)
c. mi, affirmative particle (North Welsh)
d. fe, affirmative particle (Standard and South Welsh)

Mi may be deleted, but the mutation remains. Fe is obligatory in spoken South Welsh. It may be omitted in the written standard; if so, there is no mutation.

(21) a. gwelwch 'you see' : (a) welwch chi e? 'do you see him?'
b. daeth '(he) came' : Ifan (a) ddaeth '(it was) Ifan who came'
c. gwelodd '(he) saw' : standard fe welodd/gwelodd ef y tŷ 'he saw the house'; spoken fe/(mi) welodd e'r tŷ

The interrogative pronoun pwy 'who?' is often listed as a trigger of lenition in the spoken language: pwy ddaeth? 'who came?' However, in the standard this sentence would be pwy a ddaeth? and be answered as in the full form of (21b) above. In both these sentences the subject comes first; this is an inversion of normal word order in Welsh, and the relative particle a must be present between the subject and the verb. Though this particle is usually omitted in speech, there must be some type of abstract node R, analogous to English Q and Imp, which is the true trigger of lenition here, rather than pwy or Ifan. Similarly, though the interrogative particle is omitted in speech, it must be present in an abstract form. See also 6.6.

4.1.18 Lenition occurs following dyma 'here is'; dyna 'there is'; dacw 'yonder is':

(22) tŷ 'house' : dyna dŷ Siôn 'there is Siôn's house'

4.1.19 Words used in a vocative sense are lenited:

(23) bechgyn 'boys' : bore da, fechgyn! 'good morning, boys!'

Here, too, there is probably an abstract node which acts as the trigger of lenition.

4.1.20 The prepositions yn 'at' and wedi 'after', which normally preserve the radical of the verbal noun, lenite it in emphatic (reversed word-order) sentences in spoken Welsh:

(24) a. gweld 'seeing' : ei dad mae Ifan yn weld 'his father is Ifan at (the) seeing (of) = it is his father that Ifan is seeing' (but mae Ifan yn gweld ei dad 'is Ifan at the seeing of his father = Ifan is seeing his father')

b. darllen 'reading' : llyfrau mae e'n ddarllen 'books is he at (the) reading (of) = it is books that he is reading'

c. priodi 'marrying' : pwy mae'r dyn wedi briodi? 'who is the man after (the) marrying (of) = who is it that the man has married?'

This type of lenition arose from now-literary constructions such as ei dad y mae Ifan yn ei weld 'his father is Ifan at his seeing'. In the standard, the predicate must be repeated as a corresponding possessive pronoun preceding the verbal noun when this word order is used. It is the possessive pronoun that is the trigger of the mutation. However, we cannot set up an underlying possessive pronoun as the trigger of lenition in the sentences in (24), for the standard version of (24b) is llyfrau y mae ef yn eu darllen 'books is he at their reading', with eu 'their' maintaining the radical of darllen, and that of (24c) is pwy y mae'r dyn wedi ei phriodi? 'who is the man after her marrying?', in which ei 'her' triggers the spirant mutation of priodi. Thus in spoken emphatic sentences, yn and wedi must be regarded as the triggers of lenition. (Y in the

standard sentences cited above is an affirmative preverbal particle not normally used in speech.)

4.1.21 In spoken Welsh, lenition occurs after sy 'that/which is'

(25) gorau 'best' : p'un sy orau 'which one is it that is best?'

The standard language has sy'n, a contraction of sy + predicative yn. Thus the written equivalent of (25) is p'un sy'n orau?, in which yn is the leniting trigger. We could propose an abstract underlying predicate particle in cases such as (25); however, this is the only environment in which yn has disappeared, and this solution would be ad hoc. The trigger here must no doubt be considered sy.

Breton:

4.1.22 In a few fixed expressions, direct objects of verbs, and nouns or adjectives following verbal nouns, are lenited:

(26) a. mat 'good' (noun): ober vat 'the doing of good = to do good'
b. mat 'good' (adj.) : lavaret vat 'speaking well'
c. man 'attention' : ober van 'to pay attention'

In the case of verbal objects, the object does not have to follow the verb: vat a ra 'it is good which it does = it does good'.

4.1.23 The 'defective' verb eme 'said' lenites a following subject:

(27) Per : selaout, eme Ber '"Listen", said Pierre'

4.1.24 In expressions of time and manner in which the first word is peb/pep/pem 'every, each', this word is lenited:

(28) a. bep eur 'every hour'
b. beb an amzer 'each the time = from time to time, every so often'

The literature available to me does not reveal whether or not this mutation is productive. Apparently, no other words are affected.

Bep/bem also occurs as the first element of several compounds: bepsort 'all sorts'; bemdez 'every day'; bemnos 'every night'. (Contrast buhez pemdezieg 'everyday life'.)

4.1.25 Feminine singular nouns and masculine plural nouns denoting persons lenite adjectives which follow them; in Vannetais, all plural personal nouns do so:

(29) a. bras 'big' : un daol vras 'a big table'
b. mat 'good' : ar breudeur vat 'the good brothers'; Vannetais ar verhed vat 'the good girls'

(but: taoliou bras 'big tables'; ar paotr mat 'the good boy'; ar c'hirri bras 'the big cars'; KLT ar verc'hed mat 'the good girls')

This type of lenition is apparently dying out in speech; in some dialects only a few high-frequency nouns lenite a few high-frequency adjectives.

Low-level provective sandhi rules (see 5.1.3) usually devoice or de-lenite the output of lenition in this environment if the noun ends in an obstruent. Thus, instead of an expected *[ilisgayr] 'beautiful church' (iliz is feminine), we get [iliskayr]. However, some cases of lenition (generally in high-frequency expressions) are maintained intact even if the noun ends in an obstruent: ar gazeg wenn 'the white mare'; ur vaouez vat 'a good woman'.

There are some exceptional cases of lenition in this environment:

(30) a. avel 'wind' (masc. sing.) + kreñv 'strong' → avel greñv 'strong wind'

b. (Vannetais) ier 'chickens' (fem. pl. non-personal) + mat 'good' → ier vat 'good chickens'

The literature available to me is not clear as to whether lenition applies to all adjectives in a series in this environment. In Welsh it does (see 4.1.5); in Cornish only the first adjective in a series is lenited (byuh wyn tek 'a fine white cow' ← byuh 'cow' + gwyn 'white' + tek 'fine'). Breton usually resembles Cornish more closely than Welsh where the mutations are concerned, but further data are needed here.[11]

4.1.26 The following indefinite pronouns lenite adjectives:

a. an hini 'the...one' (fem.)
b. unan 'a(n)...one' (fem.)
c. ar re 'the...ones' (both genders)

(31) a. kozh 'old' : an hini gozh 'the old one'
b. bras 'big' : unan vras 'a big one'
c. glas 'blue' : ar re c'hlas 'the blue ones'

In (31a,b), the pronouns refer to feminine nouns; (31c) could refer to any plural noun.

4.1.27 In orthographic words, the first morpheme often lenites the second.

4.1.27.1 The following prefixes cause lenition:

a. ad- 're-'
b. am-, negative
c. ar-/er- 'near; -ish'
d. berr- 'short'
e. dam-/dem- 'slightly'
f. de- 'towards'
g. di-, privative
h. drouk- 'bad'
i. eil- 'second'
j. em-, reflexive
k. fall- 'bad'
l. gou- 'sub-'
m. gour- 'on'
n. gwall-/wall- 'very; bad'
o. gwir- 'true, real'
p. hanter- 'half'
q. he- '-able; -ous'
r. hir- 'long'
s. kamm- 'across'
t. ken- 'con-'

u. kent- 'pre'
v. kil- 're-'
w. krak-, pejorative; diminutive
x. krenn- 'medium; little'
y. mor- 'slightly'
z. oll- 'all'
aa. pe- 'which?'
bb. penn- 'chief'
cc. peur-, completive
dd. peuz- 'almost'
ee. rak- 'before'
ff. rann- 'part'

(32) a. bevañ 'living' : advevañ 'reviving'; krakvevañ 'getting by'
b. kredi 'believing' : amgredi 'doubting'
c. mor 'sea' : arvor 'coast'
d. gwel 'sight' : berr-wel 'myopia'
e. trous 'noise' : didrous 'silent'
f. tad 'father' : gourdad 'ancestor'
g. barn 'judgment' : gwall-varn 'bad judgment'; rakvarn 'prejudice'
h. kousket 'sleeping' : morgousket 'dozing'
i. kemend 'amount' : pegemend 'how many?' .

Lenition in this environment is often reversed or changed by provective sandhi.

4.1.27.2 The first element of a compound lenites the second:

(33) a. karr 'car' + ti 'house' → karr-di 'garage'
b. mor 'sea' + bleiz 'wolf' → mor-vleiz 'shark'
c. avel 'wind' + tro 'turning' → avel-dro 'whirlwind'
d. mamm 'mother' + bro 'country' → mamm-vro 'mother country'

This type of compound is probably no longer productive.

4.1.28 Several types of orthographic two-word phrases are treated as compounds.

4.1.28.1 The following adjectives and quantifiers lenite

nouns:

a. berr 'a few'
b. brizh 'bad'
c. eil 'second, other'
d. fall 'bad'
e. gwall 'bad; great'
f. gwir 'true, real'
g. holl/oll 'all'
h. kozh 'ugly'
i. pe 'which?'

(34) a. komzou 'words' : e berr gomzou 'in a few words'
b. tad 'father' : an eil dad 'the second father'
c. tud 'people' : gwall dud 'bad people'; an oll dud 'everyone'

In some dialects eil 'second' lenites only feminine nouns: Sommerfelt (1920) cites an eil tad 'the second father' from the St. Pol dialect of Léonais.

Provective sandhi may cause reversal of lenition if the adjective ends in an obstruent: ur c'hozh ti 'an ugly house'.[12]

Comparative and superlative forms do not usually cause lenition: ar gwella den 'the best man'. However, there are dialectal examples of such lenition, e.g. Trégorrois ar wella gazek (←kazek) 'the best mare'.

4.1.28.2 In sequences of noun + noun in which the second noun serves as a genitive or attribute, the second noun is lenited:

(35) a. koad 'wood' : un daol goad 'a table of wood = a wooden table'
b. Breizh 'Brittany' : tud Vreizh 'people of Brittany, Bretons'
c. penn 'head' : poan benn 'pain of the head = headache'
d. kalon 'heart' : poan galon 'pain of the heart = heartbreak'
e. Gwened 'Vannes' : bro Wened 'country of Vannes = Vannetais country'

f. Bezedour 'Baptist' : Sant Iann Vezedour 'St. John the Baptist'

The name of a saint is lenited after the title Sant: Sant Vazhew (←Mazhew) 'St. Matthew'; Sant Weltas (←Gweltas) 'St. Gildas'. Cf. also an Itron Varia (←Maria) 'the Lady Mary = the Virgin Mary'.

In the case of Vannetais mitin 'morning' : deh vitin 'today morning = this morning', arhoah vitin 'tomorrow morning', the first noun appears to have a genitive function.

Provective sandhi tends to occur if the first noun ends in an obstruent: ur votez koad 'a wooden shoe'.

The facts available to me are not sufficient to determine the productivity of this category of lenition. All the examples cited so far are high-frequency, idiomatic expressions, and even here there has been some erosion: spoken Vannetais has Bro Gwened 'Vannetais country' rather than Bro Wened. Morvannou (1975:472) does give at least one obviously modern example: tachenn-gampiñ (←kampiñ) 'campgrounds', in which the second noun is a recent borrowing from French. It is possible, however, that this is an artificial construct, perhaps made up by Morvannou himself.[13]

In double personal names, the second name is lenited: Per 'Pierre' : Yann Ber 'Jean-Pierre'. This construction is productive.

4.1.28.3 Adjectives used as epithets are lenited after proper names of either gender:

(36) a. bras 'big' : Youann vras 'big Yves'
b. kaezh 'poor' : Henri gaezh! 'poor Henri!'
c. kozh 'old' : an Aotrou de Kermenguy gozh 'old M. de Kermenguy'

This type of lenition is productive. Again, provective

sandhi may cancel it out: Fanch paour 'poor François'.

4.1.29 In dialectal Breton, ordinal numerals may lenite nouns which follow them:

(37) (Pleubian Trégorrois) [mɛrx] 'girl' : [e bedered vɛrx] 'the fourth girl'

The example cited above was taken from Le Roux (1896). In some dialects, including this one, lenition is restricted to feminine nouns.

In the standard, ordinals (except for eil 'second'; see 4.1.28.1) preserve the radical: an drede kentel 'the third lesson' (kentel is feminine).

4.1.30 Articles, and compounds of prepositions with articles, trigger lenition in:

a. feminine singular nouns (including adjectives acting as nouns)
b. masculine plural nouns denoting persons in KLT; all plural nouns denoting persons in Vannetais
c. adjectives and ordinal numerals preceding feminine singular and masculine plural nouns

(38) a. taol 'table' : un daol 'a table'
b. cegin 'kitchen' : er gegin 'in the kitchen'
c. brao 'beautiful' : ur vrao 'a beautiful one' (referring to a feminine noun)
d. paotred 'boys' : ar baotred 'the boys'
e. (Vannetais) tavarnourezed : en davarnourezed 'the (female) innkeepers'
f. gwir 'real' : ur wir yezh 'a real language'
g. trede 'third' : an drede kentel 'the third lesson'

(but: ur paotr 'a boy'; en ti 'in the house'; an taoliou 'the tables'; an tier 'the houses'; ar pempet ti 'the fifth house')

Cardinal numerals used as a part of compound ordinals may also be lenited by the article: ar bemp-war-n-ugent 'the five-on-twenty = the 25th'.

Masculine plural non-personal nouns, feminine plural nouns, and adjectives beginning with [k] are spirantized by the article:

(39) a. kirri 'carts' : ar c'hirri 'the carts'
b. kenitervezed '(female) cousins' : ar c'henitervezed; kadoriou 'chairs' : ar c'hadoriou
c. kozh 'ugly' : ur c'hozh ti 'an ugly house'

(Masculine singular nouns beginning with [k] are also spirantized: karr 'cart' : ur c'harr. See also 4.2.8.) In some dialects, masculine plural personal nouns are spirantized as well: in Pleubian Trégorrois, there is variation between [ar gemeneryen] and [ar hemeneryen] (←[kemeneryen]) 'the tailors'. In the same dialect, feminine plural nouns may be lenited: er gaderiou (←kaderiou) 'the chairs'.

In most dialects, [d] appears to be immune to lenition after the article: un dimezell 'a young lady'; an diaouled 'the devils', rather than *un zimezell, *an ziaouled. In these cases, the final [n] of the article reverses lenition by provective sandhi (see 5.1.3).[14] However, in some dialects, such as Cléguérec Vannetais, lenition of [d] is maintained: [dãtɛlɛn] : [ür zãtɛlɛn] 'a piece of lace'.

In some dialects, lenition of pronominal adjectives and ordinal numerals occurs regardless of the gender and number of the noun modified; Ernault (1873) cites [piempiet] 'fifth' : [ar biempiet tei] 'the fifth house', from the Sarzeau dialect of Vannetais. (Note that even when an ordinal numeral is lenited by the article, it does not usually in turn lenite the noun, even if the latter is feminine; see (38g). However, there are dialects in which both the ordinal and the noun are lenited; see 4.1.29.) Some individual words behave exceptionally: in ar wall

(←gwall) amzer 'the bad weather', amzer is masculine.[15]

Adjectives in the comparative and superlative degrees are also lenited: ar vrawañ plac'h 'the most beautiful girl'. However, they do not cause lenition of the noun.

A number of individual nouns which would be expected to undergo lenition after the article are immune to it in this environment: ur plac'h 'a girl'; an tadou 'the fathers'; an testou 'the witnesses'; ar priedou 'the married people'. In some dialects, some feminine singular nouns beginning with [g] are immune to lenition: Vannetais er gavr 'the goat' (cf. KLT ar c'havr); er gad 'the hare'.

In Vannetais, where lenition of feminine plural personal nouns is normal, there are some which are immune: ar mammeu 'the mothers'; ar merhed 'the girls'; ar grwagé 'the wives'; ar gwerhiezed 'the virgins'.

Some masculine plural personal nouns are also immune to lenition following the article: ar breudeur 'the brothers'; ar mipien 'the sons'. In the Pleubian dialect of Trégorrois, masculine plural nouns beginning with [gw] are not lenited: ar gwazed 'the husbands'. Today in many dialects, masculine plural nouns in general are no longer lenited after the article; Breton is apparently going the way of Welsh on this score.

Some masculine singular nouns exceptionally undergo lenition after the article: tra 'thing' : an dra 'the thing'; mat 'good' : ar vat. In some KLT dialects, a few feminine plural nouns are exceptionally lenited by the article: kroasiou 'crosses' : ar groasiou; matezienn 'servant girls' : ar vatezienn; moerebed 'aunts' : ar voerebed. Some masculine plural non-personal nouns are also lenited: mein 'stones' : ar vein.

4.1.31 Lenition occurs following the numerals:

a. daou (masc.), diou (fem.) 'two'
b. in many dialects tri, teir 'three'
c. in many dialects pevar, peder 'four'

d. in many dialects nao 'nine'
e. sometimes mil '1000'

(40) a. paotr 'boy' : daou baotr 'two boy(s)'
b. (St. Pol de Léon) [ti] 'house' : [tri di] 'three house(s)'
c. (St. Pol de Léon) [deis] 'day' : [pɛ:var zeis] 'four day(s)'

Examples (40b,c) were taken from Sommerfelt (1920).

In standard Breton, 'three', 'four', and 'nine' cause the spirant mutation; see 4.2.7. In the most innovative dialects, they preserve the radical.

Numerals may be written as orthographic prefixes: glin 'knee' : daoulin '(two) knees'. (Note that in this compound [g] exceptionally becomes [Ø] in lenition.)

In Léonais dialects, '200' is daou c'hant, with the spirant mutation of kant '100' rather than the expected *daou gant. This is probably a case of analogy to tric'hant '300'. Most other dialects do have daou gant.[16]

In the standard language, numerals except for ur 'one', tri 'three', pevar 'four', pemp 'five', and nao 'nine' lenite the single word bloaz 'year', as does the word pet 'how many?': seiz vloaz 'seven years'; tregont vloaz '30 years'; pet vloaz? 'how many years?' (but tri bloaz 'three years'; pemp bloaz 'five years'). In nonstandard dialects, more or fewer numerals may cause this type of lenition.

4.1.32 Lenition occurs following the possessive pronouns

a. da (Vannetais ha) 'thy'
b. e/he 'his'

(41) a. mamm 'mother' : da vamm 'thy mother'
b. tad 'father' : e dad 'his father'
c. karout 'loving' : he garout 'his loving = to love him'

Note that possessive pronouns also mutate verbal nouns, as in Welsh.

4.1.33 In some dialects of Vannetais, the 'infixed' object pronoun ha 'thee' causes lenition:

(42) bade 'baptized' : me ha vade 'I baptized thee'

However, this pronoun usually causes provection (see 4.4.2) or lenition-and-provection (see 4.5.4).

In standard KLT, no object pronouns cause lenition, though some cause other mutations. In spoken KLT, object pronouns are rarely used now; they have been replaced by periphrastic constructions such as me a wel ac'hanout 'I prt.--see of thee'. However, 'infixed' object pronouns are still used in both spoken and standard Vannetais.

4.1.34 In Vannetais, subject pronouns lenite verbs:

(43) a. (Standard Vannetais) gra 'do' : me hra 'I do'
b. (Ile de Groix) [bu:r] 'likes' : [xivu:r] 'she likes'
c. (Ile de Groix) [kreit] 'believes' : [yâgreit] 'he believes'
d. (Ile de Groix) [ǰal] 'can' : [xüyal] 'you can'

Examples (43b-d) were taken from Ternes (1970).

In standard KLT, the equivalent constructions would be me a ra, etc., in which the leniting trigger is the particle a. (As in Welsh, this particle must be used when the subject begins the sentence in KLT; see 4.1.39.) In Vannetais--at least in this environment--speakers have evidently lost a from their competence, and normal word order has become SVO. A possible trace of the particle exists in the Bourg-de-Batz dialect; Ernault (1882) cites [diskar] 'descends' : [hia ziskar] 'she descends'. (Normally in Breton, 'she' is he or hi.) However, even in this dialect subject pronouns do not regularly end in [a]; cf. [troa] 'turn' : [me droa] 'I turn'. There seems no good

reason to posit an underlying preverbal particle in these cases; the subject pronoun must be regarded as the trigger of lenition.

4.1.35 Lenition occurs following the prepositions

a. a 'of; from'
b. bete 'until'
c. da 'to; in order to'
d. diouzh 'from'
e. diwar/diar 'about; from; from above'
f. dindan 'under'
g. dre 'by; across; through'
h. dreist 'beyond'
i. edan 'under'
j. ouzh 'against'
k. war/ar 'on'

(44) a. Brest : a Vrest 'from Brest'
b. bremañ 'now' : bete vremañ 'until now'; diwar vremañ 'from now on'
c. Kemper : da Gemper 'to Quimper'
d. troad 'foot' : war droad 'on foot'

Ternes (1970) cites a preposition zo 'from' in the Ile de Groix dialect of Vannetais: [pel] 'far' : [zobel] 'from afar'. I have found no examples of this preposition in any other dialect.

Provective sandhi may cause de-lenition in some cases; there also seem to be dialectal differences regarding which prepositions trigger lenition. According to Sommerfelt (1920), for example, in the St. Pol de Léon dialect [di:var] 'from above' does not cause lenition (though it does cause fricative voicing), [var] 'on' does not usually cause lenition, and [di:ndan] 'under' triggers lenition only in the fixed phrase dindan boan (←poan) 'under penalty'.

4.1.36 Lenition occurs following the intensifiers

a. gwall/gol 'very'
b. mar 'so'
c. re 'too'
d. seul/sal 'the -er; the more'

(45) a. kozh 'old' : gwall gozh 'very old'; re gozh 'too old'

b. buanañ 'fastest'; gwellañ 'best' : seul vuanañ, seul wellañ 'the quicker the better'

4.1.37 Lenition occurs following the conjunctions

a. aba 'since'
b. endra 'while'
c. pa 'if; when'
d. pan 'when'
e. pe 'or'

(46) a. kouez 'falls' : pa gouez glao 'when falls rain = when rain falls'

b. du 'black' : gwenn pe zu 'white or black'

4.1.38 The following particles lenite the verbal noun:

a. en eur 'while; by'
b. en em, reflexive/reciprocal

(47) a. mont 'going' : en eur vont 'while going'

b. gwiskañ 'dressing' : en em wiskañ 'dressing oneself'

Jackson (1967:532) cites Trégorrois ouzh en for en eur.

4.1.39 The following preverbal particles lenite the verb:

a. a, affirmative/relative particle
b. na, negative relative
c. na, negative imperative
d. ne, negative (often deleted in speech)
e. ra, subjunctive

(48) a. gra '(it) does' : glao a ra 'rain prt.--it does = it is raining'

b. gwerzh '(he) sells' : ar paotr a werzh journaliou (a) zo mab da Yann 'the boy who sells newspapers

prt.--is the son of Jean'

c. gwel '(he) sees' : un den na wel ket 'a man who does not see'

d. gouelit '(you) weep' : na ouelit ket 'do not weep'

e. kouskan '(I) sleep' : (ne) gouskan ket 'I do not sleep'

The particle a (which may be deleted in speech) is used when the subject or object of the sentence comes first. (When the sentence begins with some other element, such as an adverb, the particle e, which triggers the 'mixed' mutation or lenition-and-provection, is used; see 4.4.1.) A was originally only a relative particle (as it is in Welsh); thus sentence (a) could be translated as 'it is rain which it does' and sentence (b) as 'it is the boy who sells newspapers who is the son of Jean'. Today in simple sentences (e.g. ar paotr a werzh journaliou) the particle has lost its relative content and is merely affirmative: 'the boy sells newspapers'.

If a or ne is deleted, the mutation remains.

4.1.40 In some dialects, the expressions ti 'at the house of' and da di 'to the house of' trigger lenition:

(49) Pleubian Trégorrois:

a. [mari] 'Marie' : [ti vari] 'at Marie's house'

b. [gwil] 'William' : [de di wil] 'to William's house'

The above examples were taken from Le Roux (1896), who says that he has not noted lenition here in other dialects.

4.2 Spirant Mutation

Welsh:

4.2.1 Following the possessive pronoun ei 'her' and its contracted forms 'i and 'w:

(50) a. cath 'cat' : ei chath 'her cat'; a'i chath 'and her cat'; i'w chath 'to her cat'

b. priodi 'marrying' : mae ef wedi ei phriodi (hi) 'is he after her marrying (of her) = he has married her'

In some dialects, ei is the only word that regularly triggers the spirant mutation.

4.2.2 Following na 'than; nor'

(51) a. tân 'fire' : yn gochach na thân 'redder than fire'
b. cath 'cat'; ci 'dog' : na chath na chi 'neither a cat nor a dog'

4.2.3 Following the numerals

a. tri 'three'
b. chwe 'six'

(52) pont 'bridge' : tri phont 'three bridge(s)'; chwe phont 'six bridge(s)'

4.2.4 Following the prepositions

a. â 'with'
b. efo 'with'
c. gyda 'together with'
d. tua 'towards; about'

(53) a. canu 'singing' : peidiwch â chanu 'cease with singing = don't sing'
b. Caerdydd 'Cardiff' : tua Chaerdydd 'towards Cardiff'

4.2.5 Following the conjunctions

a. a 'and'
b. o 'if'

(54) pentref 'village' : tref a phentref 'town and village'

4.2.6 Following the intensifier tra 'very, extremely'

(55) tawel 'quiet' : tra thawel 'very quiet'

The words listed in 4.2.3-6 usually cause the spirant mutation only in the literary standard. In spoken Welsh, they normally preserve the radical, except in a few compounds and fixed phrases such as trichan '300' (←can '100') and mam a thad (←tad) 'mother and father'. Catherine Walker sometimes lenites after tua: tua dwy/ddwy filltir 'about two mile(s)'.

4.2.7 Handbooks also list the following prefixes as triggers of the spirant mutation:

a. a-, intensive
b. dy-, intensive or pejorative
c. gor- 'super-; over'

(56) a. trist 'sad' : athrist 'sorrowful'
b. can 'song' : dychan 'satire'
c. trechu 'overcoming' : gorthrechu 'oppressing'

However, these prefixes are probably no longer productive, and an uneducated speaker might not consciously associate the original word with the derived one in the above pairings. Today gor- lenites rather than spirantizing (see 4.1.6.1).

Breton:

4.2.8 Following the possessive pronouns

a. ma/va, 'm 'my'
b. he 'her'
c. o 'their'
d. in some dialects hor 'our' and its variants

(57) a. penn 'head' : va fenn 'my head'
b. ti 'house' : da'm zi 'to my house'
c. kavoud 'finding' : deus da'm c'havoud 'come to my finding = come get me'
d. ki 'dog' : he c'hi 'her dog'; o c'hi 'their dog'
e. paean 'paying' : evid o faean 'for their paying =

to pay them'

f. (Trégorrois) tad 'father' : hom zad 'our father'

In some dialects he 'her' is the only word that regularly triggers the spirant mutation.

In most dialects hor 'our' triggers spirantization of [k] only; see 4.2.11 below.

4.2.9 Following the 'infixed' object pronouns

a. ma/va, 'm 'me'
b. he 'her, it (f.)'
c. o 'them'

(58) a. klevo '(he) will hear' : pa'm c'hlevo 'when me he will hear = when he hears me'

b. prenas '(he) bought' : he frenas 'he bought it'; o frenas 'he bought them'

The true object pronouns have the same phonetic forms as the possessives in 4.2.8, and are often identified with the latter in traditional grammars. However, the 'infixed' objects must be distinguished from the possessives (including the so-called 'objects' of verbal nouns), since they precede finite verb forms.

4.2.10 In the literary standard, following the numerals

a. tri (masc.), teir (fem.) 'three'
b. pevar, peder 'four'
c. nao 'nine'

(59) a. ki 'dog' : tri c'hi 'three dog(s)', pevar c'hi 'four dogs'; nao c'hi 'nine dog(s)'

b. plac'h 'girl' : teir flac'h 'three girl(s)'; peder flac'h 'four girl(s)'; nao flac'h 'nine girl(s)'

In spoken Breton, these numerals often cause lenition (see 4.1.31), or preserve the radical. Spirantization is

retained in very conservative dialects and in compounds or fixed phrases such as tric'hant '300' (←kant '100').

4.2.11 The following words trigger spirantization of [k] only:

a. ur 'a' in
   i. masculine singular nouns
  ii. adjectives preceding nouns

b. ar 'the' in
   i. masculine singular nouns (including superlatives used as nouns)
  ii. masculine plural nouns not denoting persons
 iii. feminine plural nouns
  iv. adjectives preceding nouns (including superlatives)

c. hor 'our'
d. hor 'us'
e. her 'him, it (m.)'

(60) a. kemener 'tailor' : ur/ar c'hemener 'a/the tailor'
     b. kosañ 'oldest' : ar c'hosañ euz e baotred 'the oldest of his boys'
     c. kirri 'carts' : ar c'hirri 'the carts'
     d. kenitervezed '(female) cousins' : ar c'henitervezed 'the (female) cousins'
     e. kozh 'ugly' : ur/ar c'hoz toq 'an/the ugly hat'
     f. kentañ 'first' : ar c'hentañ gwech 'the first time'
     g. karr 'cart' : hor c'harr 'our cart'
     h. kavoud 'finding' : d'hor c'havoud 'to our finding = to find us'
     i. klevas '(he) heard' : hor c'hlevas 'he heard us'; her c'hlevas 'he heard him/it'

(but: ar genitervez 'the (female) cousin'; ar gemenerien 'the tailors'; ar gosañ euz e verc'hed 'the oldest of his daughters'; ar pesk 'the fish'; ar pesked 'the fishes'; hor pesk 'our fish')

The numeral kant '100' is also spirantized by the article.

Often in speech ar now spirantizes rather than leniting masculine plural personal nouns: ar c'hemenerien 'the tailors'. Trépos (1968) cites ar c'hosañ euz e verc'hed 'the oldest of his daughters', with spirantization instead of lenition.

In Trégorrois hom 'our' spirantizes all voiceless stops: hom fenn (←penn) 'our head'; hom zad (←tad) 'our father'; hom c'hi (←ki) 'our dog' (see also 4.2.8). In some very conservative dialects hor always preserves the radical; spirantization after hor is innovative and analogous to the behavior of the articles.

4.2.12 According to the handbooks, the spirant mutation may occur after the prefixes gour- 'on, over' and penn- 'chief':

(61) kemenn 'announce' : gourc'hemenn 'command'

However, spirantization apparently does not always occur after these prefixes, and it is probable that cases such as the above example are no longer productive.

In some dialects hanter- 'half' causes the spirant mutation: Ternes (1970) cites [kãt] '100' : [hâterhãt] '50' from the Ile de Groix dialect of Vannetais.

4.2.13 The spirant mutation occurs in several idiomatic constructions and compounds:

(62) a. Pask 'Easter' : Sul Fask 'Easter Sunday'
b. tu 'side' : war-zu 'towards'
c. ti 'house' : leur-zi 'floor of a house'
d. tomm 'hot' : dour-zomm 'hot water'

This type of spirantization is not productive, and some of the above phrases have alternate forms with lenition or the radical: war-du, leur-di, dour tomm.

4.3 Nasal Mutation (Welsh)

4.3.1 Following the possessive pronoun fy/(f)yn 'my'

(63) a. tad 'father' : fy nhad (i) 'my father (of me)'
b. gadael 'leaving' : mae hi wedi fy ngadael (i) 'is she after my leaving (of me) = she has left me'

The possessive onoun may be deleted entirely, leaving the mutation intact: 'nhad! '(my) father!', used as a vocative, is quite common. Pilch (1958) reports [maɨ wɛdi ŋadɛli] 'she has left me' in dialectal Welsh.

In some dialects 'my' causes lenition, or preserves the radical, rather than nasalizing:

(64) Tŷ Ddewi (South Welsh):
a. [pɛn] 'head' : [imbɛni] 'my head (of me)' (standard fy mhen i)
b. [dru:s] 'door' : [indru:si] 'my door (of me)' (standard fy nrws i)

The above examples were taken from Jones (1971).

According to Watkins (1967), 'my' lenites [ɬ] and [č] in the Llansamlet dialect of South Welsh:

(65) a. [ɬaw] 'hand' : [ənlawi] 'my hand (of me)'
b. [čɔkɔlɛt] 'chocolate' : [ənǰɔkɔlɛti] 'my chocolate (of me)'

In most dialects, including the standard, 'my' does not mutate these segments; in some dialects it nasalizes [č]. (Stops are nasalized in Llansamlet Welsh.)

4.3.2 Following the preposition yn 'in':

(66) a. Bangor : ym Mangor 'in Bangor'
b. Cymru 'Wales' : yng Nghymru 'in Wales'

In some dialects, yn preserves the radical:

(67) (Llansamlet) [ti:] 'house' : [ən ti: ivan] 'in (the) house (of) Ifan = in Ifan's house' (standard yn nhŷ Ifan)

In spoken Welsh, place names are often lenited in this environment: yn Fangor 'in Bangor'. Sometimes [t] and [d] remain in the radical: yn Dowlais 'in Dowlais'.

4.3.3 Following the negative prefix an-:

(68) a. posibl : amhosibl 'impossible'
b. teg 'fair' : annheg 'unfair'

The handbooks also list the prefix cyn- 'con-; together' as a trigger of the nasal mutation: cerdd [kɛrð] 'music' : cyngerdd [kəŋgɛrð] 'concert'. However, both this prefix and the nasal mutation caused by it are probably no longer productive (see Appendix B).

4.3.4 In the literary standard, the numeral deg 'ten' nasalizes words beginning with [d] and [g] (it takes an assimilatory form deng [dɛŋ] in this case):

(69) a. dafad 'sheep' : deng nafad 'ten sheep'
b. gair 'word' : deng air 'ten word(s)'

The mutation of [g], as in (69b), is traditionally regarded as lenition, but the spelling is misleading here: this is surely a case of nasal mutation, nasal assimilation of deg, and degemination following an unstressed vowel: /deg + gayr/ → deg ŋayr → dɛŋ ŋayr → [dɛŋayr].

In spoken Welsh, deg usually preserves the radical.

4.3.5 In the literary standard, the words blynedd 'year' and blwydd 'year of age' are nasalized by the numerals un 'one', pum 'five', saith 'seven', wyth 'eight', naw 'nine', deg (→ deng) 'ten', ugain 'twenty', can '100', and compounds of these such as pymtheg (→ pymtheng) 'five + ten = fifteen' and deugain 'two twenties = forty'. In addition,

diwrnod 'day' is nasalized by pum, saith, wyth, naw, deng, and ugain.

(70) a. blynedd [blənɛð] : un mlynedd ar ddeg 'one year on ten = eleven years'
b. blwydd [bluiːð] : saith mlwydd oed 'seven year(s) old'
c. diwrnod [dyurnod] : deng niwrnod 'ten day(s)'

In spoken Welsh, diwrnod is not nasalized; also, deg and its compounds do not have nasal-final variants.

In some dialects, saith 'seven', wyth 'eight', and naw 'nine' do not nasalize blynedd and blwydd. In some others, the list of numerals causing nasal mutation has been extended. Catherine Walker nasalizes blynedd and blwydd after all numerals from 1-10, including occasionally dwy 'two', though she usually lenited in this case: dwy flynedd/mlynedd 'two years'; tair mlynedd 'three years'; peder mlwydd oed 'four years old'; chwe mlynedd 'six years'. Mrs. Walker's usage may be idiosyncratic, but at least some of these numerals cause nasal mutation in dialects other than hers; Watkins (1967) reports [mai en wex mluiːð od] 'he is six years old' in the Llansamlet dialect. (In the standard, dwy 'two' causes lenition; the other numerals listed above preserve the radical.)

4.4 Provection (Breton)

4.4.1 The following possessive pronouns cause provection:

a. ho 'your'
b. in some dialects he 'her'
c. in some dialects the second person singular possessive,[17] when it occurs in contraction with prepositions and conjunctions. (In Vannetais this pronoun is ha; in the relevant KLT dialects, it is realized phonetically as [ø].

(71) a. gar 'leg' : ho kar 'your leg'
b. bouetañ 'feeding' : d'ho pouetañ 'to your feeding = to feed you'

c. Le Faouët (Cornouaillais) [dorn] 'hand' : [itorn] 'her hand'

d. Vannetais breder 'brothers' : d'ha preder 'to thy brothers'

e. St. Pol de Léon [brör] 'brother' : [aprör] 'and thy brother'

f. St. Pol [gwele] 'bed' : [dakwele] 'to thy bed'

In KLT, ha 'and' alone preserves the radical; da 'to' alone causes lenition.

In standard KLT, 'thy' in contractions is -z [s], and is traditionally considered as causing provection:

(72) a. dorn 'hand' : ez torn [estorn] 'in thy hand'

b. gwele 'bed' : d'az kwele [daskwele] 'to thy bed'

c. breur 'brother' : ha'z preur [asprör] 'and thy brother'

However, this may be a case of voicing assimilation rather than true provection; see 5.1.3. D'az 'to thy' is the traditional spelling, but should more accurately be da'z.

4.4.2 The object pronouns corresponding to (and homophonous with) the possessives listed in 4.4.1 provect finite verb forms:

(73) a. gwelas '(he) saw' : ho kwelas 'he saw you'

b. Vannetais guelou '(I) will see' : ha kuelou 'I will see thee'

c. standard KLT gourdrouz '(he) scolds' : ma'z kourdrouz [maskurdrus] 'if he scolds thee'

Again, example (73c) may be a case of provective sandhi rather than true provection.

4.5 'Mixed' Mutation/Lenition-and-Provection (Breton)

4.5.1 Following the affirmative preverbal particle e:

(74) a. gwelez '(you) see' : bremañ e welez 'now prt.--you

see'

b. digor '(he) opens' : da bemp eur e tigor Yann an nor 'at five o'clock prt.--opens Jean the door = at five o'clock Jean opens the door'

c. Ile de Groix (Vannetais) [čapel] + [ə] + [marẅint] 'soon prt.--(they) will die' → [čapel farẅint]

4.5.2 Following the preposition o (e in some dialects), which in combination with the verbal noun forms the equivalent of the English present participle:

(75) a. diskenn 'descending' : emañ o tiskenn 'is he at descending = he is descending'

b. mont 'going' : o vont/o font '(at) going'

c. Trégorrois [bewã] : [e vewã] '(at) living'

4.5.3 Following the preverbal conjunctions

a. ma/me 'if; that'

b. in some dialects mar 'if'

(76) a. { gwelo '(he) sees' / dibri '(he) eats' } : evit ma { welo / tibri } 'so that he sees/eats'

(Mar preserves the radical in the standard language.)

Humphreys (1972) reports lenition-and-provection after pe 'when' in the Bothoa dialect of Cornouaillais. (In most dialects, including the standard, this conjunction causes lenition.) Most of Humphreys' examples involve provection of sonorants:

(77) a. [yeina] 'it gets cold' : [pe e̥eina] 'when it gets cold'

b. [ni:ža] 'he flies' : [pe n̥i:ža] 'when he flies'

He cites one example of the effect of this conjunction on an obstruent:

(78) [gle:ba] '(it) wets' : [pe l̥e:ba] 'when it wets'

Humphreys does not make it clear whether he is writing [hl] as [l̥] or whether /hl/ becomes [l̥] in this dialect. In either case, [hl] could be the result of either devoicing and spirantization (as part of the complete version of lenition-and-provection) or of lenition (as part of the 'mixed' mutation or the incomplete version of lenition-and-provection).[18] Unfortunately, Humphreys gives no examples of what happens to [m], [b], or [d] following [pe]. However, he cites the same changes after [ma] 'if', which does cause lenition-and-provection.

4.5.4 In some dialects of Vannetais, the second person singular possessive pronoun (both independent and in contractions) causes lenition-and-provection or the 'mixed' mutation:

(79) Ile de Groix:

a. [ba:k] 'boat' : [hafa:k] 'thy boat'
b. [breder] 'brothers' : [dafreder] 'to thy brothers'
c. [gẅele] 'bed' : [dahẅele] 'to thy bed'

The above examples were taken from Ternes (1970) and Jackson (1967).

In the same dialects, the second person singular object pronoun (homophonous with the possessive) also causes this mutation.

According to Falc'hun (1951), in most spoken dialects which have the standard 'mixed' mutation, o is the only morpheme which still requires the provection of [d]; e and ma often cause straight lenition.

4.6 Aspiration

Welsh:

4.6.1 Following these possessive pronouns (including contracted forms):

a. 'n, dialectal yn 'my'

b. ei, 'i, 'w 'her'
c. standard ein, 'n 'our'
d. eu, 'u, 'w 'their'

In the standard language, only the contracted form of 'my', as in example (80a) below, causes aspiration. In some dialects the independent pronoun also causes it, as in example (b). In spoken Welsh, 'our' preserves the radical, and in most dialects 'their' does the same.

(80) a. ewythr 'uncle' : fy modryb a'm hewythr 'my aunt and my uncle'
b. (North Welsh) mam 'mother' : y mham 'my mother'
c. ochr 'side' : ei hochr 'her side'; i'w hochr 'to her side'; o'i hochr 'from her side'
d. enwi 'naming' : mae ef wedi ei henwi (hi) 'is he after her naming (of her) = he has named her'
e. (North Welsh) lamp : ei lhamp 'her lamp'
f. iaith 'language' : ein hiaith 'our language'; eu hiaith 'their language'
g. (North Welsh) nain 'grandmother' : eu nhain 'their grandmother'

4.6.2 Following the object pronouns

a. 'm 'me'
b. 'i 'him, her, it'
c. 'n 'us'
d. 'u 'them'

(81) agorodd '(he) opened' : fe'i hagorodd ef 'prt.--it opened he = he opened it'

In spoken Welsh 'infixed' object pronouns are rarely used, and sentence (81) is fe agorodd e fe 'prt.--opened he it'. (The first fe is the affirmative preverbal particle; the second is the pronoun 'him, it'.)

4.6.3 Following the preposition ar 'on' in compound numerals:

(82) ugain 'twenty' : un ar hugain 'one on twenty = 21'

This is an exceptional case; ar does not cause aspiration in any other environment. (It lenites consonants.) This method of counting is now literary. In speech 'twenty-one' would be dau ddeg un 'two ten(s) one'--that is, if Welsh is used at all; for larger numbers, English is often used instead.

Breton:

4.6.4 Following the preposition o/e 'at' (with the verbal noun):

(83) ober 'doing' : oc'h ober petra emaout? [oɦober] 'at doing what you are = what are you doing?'

4.6.5 Following the affirmative preverbal particle e:[19]

(84) an '(I) go' : bremañ eh an da bourmen [eɦã] 'now prt.--I am going for a walk'

4.6.6 Following the possessive pronouns

a. ma 'my'
b. Vannetais ha 'thy'
c. he 'her'
d. ho 'your'
e. o 'their'

In both standard and nonstandard texts, aspiration is represented by final orthographic c'h or h: mac'h, hah, hec'h, hoc'h, oc'h. (Most of the pronouns listed above do not cause aspiration in standard KLT or Vannetais, but do so in many dialects of Trégorrois, Cornouaillais, and Vannetais, and in some dialects of Léonais. Ho 'your' does cause aspiration in standard KLT: iliz 'church' : hoc'h iliz 'your church'.)

Jackson (1961) cites the following forms in the Plougrescant dialect of Trégorrois:

(85) a. [alḥwe] 'key' : [ihalḥwe] 'her key'
b. [ane:vəl] 'animal' : [ohane:vəl] 'your animal'
c. [i:lis] 'church' : [məhi:lis] 'my church'

Le Roux (1896) cites [imham] 'her mother' from the Pleubian dialect of Trégorrois. Le Clerc (1908) cites the following examples from Goëlo Trégorrois in orthographic form: hec'h lien 'her cloth'; hoc'h mamm 'your mother'; hoc'h nez 'your nest'. He also states that mac'h 'my' occurs before nasals and liquids.

4.6.7 The object pronouns homophonous with the possessives listed in 4.6.6 also cause aspiration:

(86) (Trégorrois) ador '(I) adore' : me hoc'h ador [mehohador] 'I adore you'

The above example is from Le Clerc (1908).

4.6.8 The subject pronouns a 'thou' and ho 'you' aspirate the verb 'to have':

(87) a. ac'h eus 'thou hast'[20]
b. hoc'h eus 'you have'

This is apparently an idiomatic, exceptional case. I have found no other examples of aspiration triggered by subject pronouns.

4.6.9 In some dialects, the conjunction ma 'if/that' causes aspiration:

(88) Ile de Groix Vannetais:
a. [on] '(I) am' : [le mə hon gãnet] '(the) place that I am born = the place where I was born'
b. [way] '(it) was' : [gož mə hwa ərzül] 'because it was Sunday'

These examples were taken from Ternes (1970). Example (88b) is the only one I have found in Breton of aspiration of glides.

4.7 'Spirantization-and-lenition' (Welsh)

As I have stated, this is not really a separate mutation category; however, there are four morphemes--all negative preverbal particles--which cause the spirant mutation of voiceless stops and lenition of other mutable consonants:

a. ni, negative statement particle
b. oni, negative interrogative particle
c. na, negative answer particle (~nag / ___ V)
d. na, negative relative particle (~nad / ___ V)

(89) a. daw '(he) will come' : ni ddaw ef [niðáw ev] 'Neg--will come he = he will not come'; oni ddaw ef? 'Q-Neg--will come he = won't he come?'; na ddaw [náðaw] 'Ans-Neg--will come he = no (he will not come)'.
b. talodd '(he) paid' : ni thalodd ef [niθalɔð ev] 'he did not pay'; oni thalodd ef? 'didn't he pay?'; na thalodd 'no'.
c. daeth '(he) came' : y dyn na ddaeth 'the man--R-Neg--came = the man who did not come'

The above examples are from standard Welsh. In the spoken language, ni is deleted before consonants, but the mutation remains: thalodd e ddim 'he did not pay'. Oni has become ni: ni thalodd e ddim? 'didn't he pay?'

For many speakers, spirantization of voiceless stops in this environment has given way to lenition of all mutable consonants: dalodd e ddim 'he did not pay'; ni dalodd e ddim? 'didn't he pay?'; ddaw e ddim 'he will not come'.

NOTES

[1]There are several other prepositions which, when used with verbal nouns, act as the equivalent of aspect markers. All of these prepositions cause the same mutation (or lack thereof) whether the following noun is verbal or not, and there is no reason not to regard them as the same word in either case. Thus wedi 'after' is used to form the equivalent of the perfect or past tense: mae hi wedi mynd 'is she after going = she has gone/she went' (cf. wedi cinio 'after dinner'). Note also mae hi ar fynd (←mynd) 'is she on going = she is about to go', in which ar causes lenition as it does in the phrase ar bont (←pont) 'on a bridge'.

[2]There are some cases in which the verbal noun appears to require analysis as an embedded verb. Consider the following sentences:

a. fe alla (←galla) i weld y tŷ̂ 'prt.--can I see the house = I can see the house'

b. pam dylwm i fynd? 'why should I go?'

Note that the verbal nouns gweld 'seeing' and mynd 'going' are lenited. Galla '(I) can' and dylwm '(I) should' appear to be intransitive auxiliary verbs; if this is so, then gweld and mynd cannot be objects and must be interpreted as embedded verbs. Again, however, this may be forcing Welsh syntax into an English framework. If we translate sentence (a) as 'I can perform the act of (the) seeing (of) the house' and sentence (b) as 'why should I perform the act of going?', we can analyze the verbal nouns as objects; the so-called 'auxiliary' verbs would then be main verbs. (Cf. also gwnewch chi agor y drws? 'will you open the door?', which could be translated as 'do you do the opening of the door?')

There is also a problem with phrases such as the following:

c. cyn i Tom fynd (←mynd)... 'before to Tom going = before Tom goes'

d. ar ôl iddi hi briodi (←priodi)... 'after to her marrying = after she got married'

e. er iddo fe dorri (←torri) ei ben-lin... 'in spite of to him (the) breaking (of) his knee = although he broke his knee'

Cyn 'before', ar ôl 'after', and er 'in spite of' are prepositions, and we could thus regard the verbal nouns as their objects, even though another prepositional phrase intervenes. The preposition i 'to' sometimes has a possessive meaning, and we could translate (c-e) as 'before Tom's going', 'after her marrying', and 'in spite of his breaking of his knee'.

However, cyn, ar ôl, er, and other prepositions used in this construction do not lenite nouns which follow them directly: cyn cinio 'before dinner'; ar ôl mynd 'after going'. The most likely explanation is that a noun separated from its governing preposition is lenited, as is a subject separated from the verb (see 4.1.2).

In the idiomatic English translations given in (c-e) above, the verbal nouns are treated as if they were verbs, and cyn, etc., as conjunctions. There is no compelling reason to consider this as the actual syntactic situation in Welsh; nevertheless, even if we analyze the verbal nouns as nouns, we must set up a separate environment for lenition in order to describe these constructions, since there are no verbs present of which the verbal nouns could be objects.

[3]The use of dim as a negative marker is generally a feature of colloquial speech rather than the formal standard. In the latter, negativity is expressed on the surface by the preverbal particle ni (prevocalic nid): ni ddaeth ef 'he did not come'; nid ydyw i 'I am not'; nid ydy ef 'he is not'; ni fydd hi 'she will not be'; nid oes 'there is not'. In speech, ni is omitted altogether (though the mutation triggered by it remains; see 4.7), and the d of nid is tacked onto the initial vowel of the verb.

[4]According to Morgan (1952:55), if one adjective modifies a series of nouns, the gender and number of the last noun determine whether or not the adjective is lenited: mam a thad gofalus 'a careful mother and father' but tad a mam ofalus 'a careful father and mother'.

[5]Several of these adjectives may occur after the noun, but with different meanings: cam 'crooked', unig 'lonely'. If the adjective is qualified by an intensifier, it comes after the noun: gwraig go hen 'a rather old woman'; gwr hen iawn 'a very old man'.

[6]In South Welsh pwy is the form used. Pa is often omitted in speech, while the mutation remains: beth welwch chi? 'what see you = what do you see?' (← pa beth ← peth 'thing'); faint o bobl? 'how many (of) people?' (← pa faint ← maint 'quantity').

The interrogative adjective sut 'what (kind of)...?' must be distinguished from the adverb sut 'how?', which does not cause lenition. The interrogative pronoun pwy 'who?' appears to cause lenition, but this is probably not so; see 4.1.17.

[7]It may be that examples (11g-j) represent a still-productive subclass of this type of lenition. Morgan (1952:68) suggests that in these cases the second word, though a noun in form, acts as an adjective describing the

type of object involved. Thus he distinguishes between e.g. ogof lladron 'a thief's cave' (i.e., a cave belonging to a certain thief) and ogof ladron 'a thieves' cave' (i.e., a type of cave). The former phrase is an example of the genitive construction described in 4.1.1, in which no mutation occurs; the latter is what Morgan calls an 'adjectival genitive'. (In all these examples, the first noun is feminine singular, so that this type of lenition might be considered a special subtype of 4.1.5.)

[8]The mutational characteristics of the two types of pronoun are quite different; it is a coincidence that both dy 'thy' and 'th 'thee' cause lenition. Several 'infixed' pronouns cause aspiration (see 4.6.2); otherwise, they preserve the radical. (Thus 'i 'him' preaspirates vowels, as in fe'i henwodd (←enwodd) 'he named him', and does not mutate consonants: fe'i gwelais 'I saw him'. On the other hand, ei 'his' causes lenition whether it precedes a verbal noun or any other type of noun.

[9]There seems to be a rule, though I have not seen it expressed, that if a preposition is separated from its noun object, then the latter is lenited, even if the preposition in question does not cause mutation of a noun directly following it. Thus we have cyn i Tom fynd (←mynd) 'before to Tom going = before Tom's going' but cyn cinio 'before dinner'. See the more detailed discussion in note 2 above.

[10]In the Brythonic languages there is no difference in form between adjectives and adverbs; the distinction must be made on the basis of the role of the word in the sentence.

[11]The only example I found of noun + adjective + adjective was ur plac'h yaouank koant 'a pretty young girl', in Morvannou (1975:8), in which koant 'pretty' is in the radical. However, this example is inconclusive, since yaouank 'young' ends in an obstruent and lenition of [k] may therefore have been reversed by provective sandhi (see 5.1.3).

[12]The spirant mutation of kozh →c'hozh is caused by the indefinite article ur (see 4.2.11). Note that when kozh follows the noun, it means 'old' (see 4.1.26).

[13]A number of Breton revivalists are trying to expand the vocabulary of Breton to accord with the technological advances of the 20th century. Most are purists who insist on using native Breton roots to construct new words, rather than borrowing them from French (e.g. sonenroller instead of magnetofon for 'tape recorder'). Morvannou, however, does not share this prejudice against borrowing.

[14]Breton articles have three variants: ul, al / __ [l]; un, an / __ [t d n h V]; ur, ar everywhere else. (This distribution also applies to hor, hon, hol 'our'.)

[15]Amzer 'weather; time' also exceptionally causes lenition of adjectives: an amzer gozh 'the old time'.

[16]Jackson (1967:320) regards daou c'hant as the original form. In British, *kanton '100' was neuter gender; the neuter form of the British word for 'two' triggered spirantization rather than lenition. In the descendants of British, there is no longer a neuter gender: kant is masculine, and daou is the masculine variant of 'two', which triggers lenition. Most dialects do treat daou as a leniting trigger in this environment, but in Jackson's view Léonais keeps the original situation as a frozen form.

[17]The independent possessive pronouns (V. ha, KLT da) usually cause lenition (see 4.1.32). In some dialects of Vannetais, ha (both independent and in contractions) causes lenition-and-provection (see 4.5.4).

[18]The derivation could be either /pe + gle:ba/ → pe hle:ba → pe l̥e:ba] (lenition) or /pe + gle:ba/ → pe xle:ba → pe hle:ba → [pe l̥e:ba] (devoicing-and-spirantization). According to Humphreys, [x] never occurs in initial position in the Bothoa dialect: /x/ → [h] / # __ . (Hence, the spirant mutation, too, can result in initial [l̥]; Humphreys cites [klɔh] 'bell' : [o l̥ɔh] 'their bell'.

[19]E also has a prevocalic variant ez: breman ez an exists, apparently as a free variation, alongside breman eh an. Historically, ez was the original form and eh a derived variant. (There is no general rule causing [z] to become [h] in Breton, but there is some variation between the two segments; for example, [z] in KLT often corresponds to [h] in Vannetais. See also note 20.) For now I will consider ez as a suppletive variant of e, with the latter causing aspiration of vowels. In 5.2.3, I will consider the possibility that the e variant is underlyingly /eh/, and that aspiration is phonologically motivated.

[20]Ac'h eus has an alternate form az eus which, like ez (see note 19) is the original historical form.

CHAPTER V

THE QUESTION OF PHONOLOGICAL CONDITIONING

5.0 Several times in the preceding chapters, I have made the claim that the Brythonic initial mutations are not phonologically conditioned, even on an abstract level. This claim should be examined, since there have been attempts to establish such conditioning.

5.1 First, however, we must deal with the fact that there are a number of initial consonant alternation processes in Welsh and Breton which are undoubtedly phonologically conditioned. As I will demonstrate in this chapter, these rules must be distinguished from the true mutations in order to arrive at an adequate description of the grammars of the Brythonic languages.

5.1.1 Fricative Voicing ('New Lenition')

In Breton, and possibly also in Cornish, initial voiceless fricatives are often voiced following sonorants:

(1) Breton (Bourg-Blanc Léonais)

a. forc'h [fɔrx] 'pitchfork' : ar forc'h [arv̥ɔrx] 'the pitchfork'

b. sac'h [sa:ɦ] 'sack' : va zac'h [vaza:ɦ] 'my sack'

c. chadenn [ʃa:den] 'chain' : ar jadenn [arʒa:den] 'the chain'

d. c'hoar [xo̯a:r] 'sister' : e c'hoar [eɦo̯a:r] 'his sister'[1]

The above examples are from Falc'hun (1951).

Bonaparte (1832) cites the following examples from Cornish:

(2) a. fordh [fɔrð] 'way' : y vordh [ivɔrð] 'his way'

b. sendzhyn 'we consider' : ni zendzhyn 'we do not consider'

In Breton, this rule affects both radical fricatives

(as in the above examples) and fricatives derived from stops via the spirant mutation: va fenn (←penn) 'my head' is [vaf̌ɛn] or [vavɛn] in most dialects. Even the literary standard partly recognizes fricative voicing, though not officially; handbooks state that [t] becomes [z] in the spirant mutation. (See also 2.2.3.)

Jackson (1967) calls this phenomenon 'new lenition'.[2] It is in a sense a replay of the fifth-century lenition process, though it affects fricatives instead of stops. It occurs in almost exactly the same environment as British lenition (i.e., sonorant + single fricative + vowel), both word-initially and word-medially.[3] However, in the modern language British lenition is no longer phonologically conditioned; the final vowels which originally caused word-initial lenition have been lost, and word-medial lenition no longer operates. Word-initial fricative voicing, on the other hand, is conditioned by final sonorants in modern Breton, and word-medial fricative voicing is an active rule of the language.

Most Breton scholars--Jackson is an exception--mistakenly include fricative voicing among the true mutations. The process has been regarded as an extension of lenition because words which trigger lenition of stops (e.g. e 'his') also cause fricative voicing. At the same time, it has been considered an extension of the spirant mutation, because words which trigger the latter (e.g. va 'my') also cause fricative voicing. Forms such as [vavɛn] 'my head', resulting from the spirant mutation plus 'new lenition', are often called examples of 'double mutation'.

Obviously, there is something wrong with this analysis. On the one hand, a generalization is being missed, since a single process is being assigned to two different initial mutations (lenition and spirantization), and the fact of medial fricative voicing is being ignored. On the other hand, we have over-generalization, since two processes

which are conditioned differently are being included in the same category.

However, the confusion between 'old' and 'new' lenition is understandable on several grounds. First, although there are examples of fricative voicing recorded in writing as far back as the 18th century, and the rule surely dates from even earlier, the rule is not yet complete in any dialect so far studied; even in the most innovative ones, there are some words which are not affected, or some fricatives which do not get voiced either initially or medially. Thus for a dialect of Trégorrois, Le Clerc (1908) cites ma zac'h 'my sack', with 'new lenition', but he sac'h 'her sack'; there is no explanation of why this gap should exist. (There are other dialects in which he 'her' does cause fricative voicing.)

Furthermore, there are some cases of initial fricative voicing that do seem to be morphologically conditioned and therefore true mutations. Consider the following examples from Falc'hun (1956b):

(3) a. an hini fall [aninifal] 'the bad one' (masc.)
b. an hini fall [aninifal] 'the bad one' (fem.)
c. ar c'hwil [arxwil] 'the beetle'
d. ar c'hoar [arɦoa:r] 'the sister'

In these forms (from the Bourg Blanc dialect of Léonais), fricative voicing apparently depends on the gender of the trigger word. When the pronoun an hini 'the one' (see 4.1.26) represents a masculine noun, no fricative voicing occurs, even though hini is vowel-final; if the same pronoun is representing a feminine noun, then the rule applies. C'hwil 'beetle' is masculine; c'hoar 'sister' is feminine; the article, though sonorant-final, does not cause 'new lenition' in the former. In these examples, we may indeed have an exceptional case of true lenition of fricatives.

Finally, provecting triggers such as ho 'your' do not cause 'new lenition'. Jackson (1967:365) suggests that this

is because initial fricatives following these triggers are in fact geminate--that is, provected--and thus not subject to the rule. If this is true, the provection rule (39) stated in 3.13.3 will have to be reformulated to express gemination of obstruents.

In spite of these problems, fricative voicing is in most cases at least a minor phonological rule, operating at a lower level of the grammar than the mutation rules. If fricative voicing were generally an extension of true lenition, then we could not explain why a morpheme such as va 'my' lenites fricatives but spirantizes voiceless stops and leaves voiced ones unmutated. In addition, sac'h 'sack' is a masculine noun; if fricative voicing were true lenition, ar zac'h 'the sack' should be impossible (see 4.1.30).

Fricative voicing does have some relevance to the mutation phenomenon, since it reflects a continuing tendency of the Celtic languages to undergo this type of change. The mistake is to include the two types of rule in the same formal category, not to be aware of the parallelism.

Although Jackson states that 'new lenition' is purely a Breton phenomenon, it seems to have occurred independently in Cornish, as example (2) shows. Available data, however, have not been sufficient to lead to a definite conclusion.

5.1.2 Nasal Assimilation

Breton and Cornish have a phenomenon traditionally called 'nasal mutation'. This, however, is entirely different from the nasal mutation of Welsh; in fact, the same words that trigger nasalization in that language either cause the spirant mutation or preserve the radical in the others.[4]

The 'nasal mutation' in Breton and Cornish is a minor rule of nasal assimilation, probably conditioned by lexical features on individual words. It occurs in a few fixed phrases; certain words--usually if not always the article

--cause nasalization of a following [d], also in only a few words:

(4) Breton:
  a. an + dor → an nor 'the door'
  b. an + douar → an nouar 'the earth' (= 'world'; but an douar 'the ground')
  c. (Tregorrois) un + derwenn → un nerwenn 'an oak'
  d. (Trégorrois) an + danvad → an nanvad 'the sheep'

Some dialects of Breton (notably Vannetais) have more such phrases than others, but the list is always quite small.

Cornish also has an + dor → an nor 'the door'.

In spoken Breton, there is nasal assimilation of [b] and [d] in the first and third person singular forms of the verb 'to have'. These forms are preceded by a preverbal particle em/en:

(5) a. standard KLT em boa unnek vloaz 'prt.--I had 11 years = I was 11 years old' : Douarnenez Cornouaillais [mɔɛ ɛnɛg vlwa]
  b. standard KLT padout en doe graet 'lasting prt.--it had done = it had lasted' : Douarnenez [pa:dut nɔɛ grɛ:t]

The above examples were cited by Denis (1972a). As far as I can determine from available data, this is the only environment in which [m] and [b] are involved, rather than [n] and [d].

In contrast to this very limited type of assimilation, the true nasal mutation in Welsh affects all initial stops, plus [č] and [ǰ] in some dialects. In spoken Welsh, however, there are some cases of nasalization which have been traditionally included in the nasal mutation but which are in fact sporadic cases of nasal assimilation, just as in Breton and Cornish. The contracted possessives a'm 'and my', i'm 'to my', and o'm 'of/from my' nasalize a following [b]:

(6) brawd 'brother' : yn chwaer a'm mrawd 'my sister and my brother'

While any word beginning with [b] is subject to this nasalization rule, the fact that other stops are unaffected, that 'm does not cause nasalization in this environment in the literary standard, and that it does not cause any mutation when used as the 'object' of a verbal noun lead me to conclude that what is involved here is a minor phonological rule, and not a mutation.

In some dialects of Welsh, only numerals which end in nasals can cause nasalization of blynedd and blwydd 'year' (see 4.3.5). In these dialects, it is possible that what was once true nasal mutation has become nasal assimilation. In most dialects, however, there are some numerals which do not end in nasals and yet nasalize blynedd and blwydd; in these (including the standard language) the phenomenon is a true, though exceptional, mutation. (See also 5.2.1.)

5.1.3 Provective sandhi

In Breton and Cornish, there is a complex system of obstruent voicing assimilation, involving both word-medial and word-initial consonants. The following rules of Breton are relevant here:

(7) Obstruents are devoiced following voiceless obstruents: mis genver [miskenvər] '(the) month (of) January'; ar verc'h vat [arvɛrxfat] 'the good girl' (but ar vamm vat [...vat] 'the good mother').

(8) Sequences of two voiced obstruents may optionally stay as they are or be mutually devoiced: iliz vihan [i:liz vi:ãn] or [i:lis fi:ãn] 'little church'.

Jackson calls these and similar processes 'provective sandhi' to distinguish them from true provection (which he calls the 'provective mutation'). The particular rules

mentioned above are interesting because of their interaction with the true mutations.

Provective sandhi often has the apparent effect of blocking the lenition of voiceless stops in certain environments--for example, noun + adjective (see 4.1.25). In practice, lenition of [p t k] survives only if the noun ends in a sonorant. If the noun ends in an obstruent, the adjective is written and pronounced as if it were occurring in its radical form:

(9) kozh 'old' : ar vamm gozh 'the old mother'; ar vaouez kozh 'the old woman'.

Voiced stops and [m] become fricatives in lenition; subsequently, the fricatives may be devoiced by provective sandhi if the noun ends in an obstruent:

(10) a. mat 'good' : ar vamm vat 'the good mother'; ar verc'h vat [arvɛrxfat] 'the good girl'
b. du 'black' : un daol zu 'a black table'; ar gazeg zu [argazeksu] 'a black mare'.

In some high-frequency expressions, lenition is exceptionally maintained intact even after an obstruent: ur vaouez vat 'a good woman'. (In any case, if the final obstruent of the noun is voiced, the initial fricative of the adjective may remain voiced; cf. rule (8) above.)

Most handbooks treat cases of the type illustrated in (9) as exceptions to lenition. The changes illustrated in (10), as can be seen from the examples given, are not recognized in writing. Most scholars do acknowledge their existence, but usually describe them as a sort of double mutation, or even 'lenition-and-provection' (which is not to be confused with the true mutation that Jackson has given this name). However, provective sandhi is not a mutation; it is a phonological rule considerably more regular than 'new lenition'. The most satisfying analysis

of the data in (9) and (10) is that lenition of all mutable consonants has occurred and has subsequently been reversed or otherwise modified by phonological rules of provective sandhi. If we say that (9) exemplifies a true exception to lenition and (10) a modification of it, we will miss a generalization.

Another type of provective sandhi affects the behavior of [d] in feminine singular nouns following the articles un 'a' and an 'the'.[5] Normally, feminine singular nouns are lenited in this environment (see 4.1.30), but [d] appears to be immune in most dialects: an dimezell 'the young lady', not *an zimezell. Again, the literature usually treats this as an exception to lenition, but it is more likely that reversal of lenition is involved. Sequences of [n] + [d] often behave idiosyncratically in Breton and Cornish; we have already seen that in some cases [d] is nasalized.[6]

Provective sandhi may also reverse the effects of the spirant mutation. Words beginning with [p] appear to be immune to spirantization following words ending in [m]: da'm penn 'to my head', but da'm zad (←tad) 'to my father' and da'm c'hazh (←kazh) 'to my cat'.

Welsh also has some cases of provective sandhi, though these are sporadic, at least across word-boundaries.[7] Most such instances are dialectal: for example, standard W. cannwyll 'candle' + brwyn 'rush' → cannwyll frwyn [kannuiɬ vruin] 'rush candle', but many dialects have [kannuiɬ fruin], with the voiceless [ɬ] causing devoicing of [v]. However, even in the standard there are some instances: e.g. nos da 'good night', not *nos dda, though nos 'night' is feminine. (But cf. noswaith dda 'good evening'.)

5.1.4 Velar Palatalization

A characteristic feature of the Vannetais dialect of Breton, and a common one in eastern Cornouaillais (which borders on the Vannetais area) is a rule which causes palatalization of velar consonants before front vowels and

glides: /k/ becomes [č̆], /g/ becomes [ǰ], and, in some dialects, /x/ becomes [ç̆]. Most Breton dialects also have a rule which fronts /w/ before front vowels. In Vannetais and Cornouaillais, this rule precedes velar palatalization, so that the latter occurs before the resulting [ẅ]. The following equivalents thus exist between the literary standard and dialects with velar palatalization:

(11) a. standard KLT ki 'dog' : Vannetais [č̆i]
b. ger 'word' : V. [ǰir]
c. gwen 'white' : V. [jẅɛn]
d. ar c'hezeg (←kezeg) [arxezəg] 'the horses' : Bothoa Cornouaillais [əçezəg]

The above examples were taken from Ternes (1970) and Humphreys (1972). Contrast V. [kox] 'bad', [galw] 'call', and [gwa:z] 'husband', in which palatalization does not occur and the initial consonants are the same as in KLT.

At first glance, the affricates resulting from velar palatalization appear to undergo mutation:

(12) Ile de Groix:
a. [č̆i] 'dog' : [eǰi] 'his dog' (lenition); [ürhi] 'a dog' (spirant mutation)
b. [ǰẅeiren] 'glass' : [eẅeiren] 'his glass' (lenition); [huč̆ẅeiren] 'your glass' (provection)

However, the alternations listed above can also be accounted for by positing underlying /k/ and /g/ and the following derivations:

(13)	/ki/ 'dog'	/e + ki/ 'his dog'	/ür + ki/ 'a dog'
Lenition	--	egi	--
Spirant mut.	--	--	ürxi
Velar pal.	č̆i	eǰi	--
Other rules	--	--	ürhi
	[č̆i]	[eǰi]	[ürhi]

(In some dialects, 'a dog' would be [ürʒi]; in Ile de Groix, however, only velar stops are palatalized.)

(14)	/gweiren/ 'glass'	/e + gweiren/ 'his glass'	/hu + gweiren/ 'your glass'
Lenition	--	eɦweiren	--
Provection	--	--	hukweiren
w-fronting	gẅeiren	eɦẅeiren	hukẅeiren
ɦ-deletion	--	eẅeiren	--
Velar pal.	ǰẅeiren	--	huč̌ẅeiren
	[ǰẅeiren]	[eẅeiren]	[huč̌ẅeiren]

The above derivations obviate the need to posit such peculiar rules as [ǰ] → ø / ___ [w̃] in lenition and [č̌] → [x] in the spirant mutation. In both these cases, we would have to add separate and rather complex rules to those listed in chapter III. The results would be especially distressing in the case of the spirant mutation, which is otherwise quite simple. However, if it is underlying /k/ and /g/ which undergo mutation, we have the perfectly familiar rules /g/ → *[ɦ] → ø / ___ [w] (see 3.13.1) and /k/ → [x] (see 3.13.2).

Furthermore, [w]-fronting is a low-level rule, and since velar palatalization is conditioned by it (as in [ǰẅeiren] 'glass'), it follows that velar palatalization is also a low-level rule, and that the affricates created by it do not yet exist at the level of the grammar at which the mutations occur.

Ternes (1970), however, claims that /č̌/ and /ǰ/, whatever their origins, are now phonemes in the Ile de Groix dialect. There are a few minimal pairs:

(15) a. [boč̌et] 'flower' : [boket] 'kiss'
b. [pič̌] 'magpie' : [pik] 'thorn'

In the above examples, [k] occurs before a front vowel, and

[č͡] occurs in an environment other than before a front vowel. There are also cases of [č͡] and [ǰ͡] occurring before back vowels and glides: [č͡apel] 'soon'; [ǰ͡al] '(he) can'; [ǰ͡unael] 'swallow'; [ǰ͡wa:deir] 'spider'.

In these cases, we must concede that even if the affricates were originally derived by velar palatalization with subsequent vowel changes, restructuring has taken place, and in these words at least, /č͡/ and /ǰ͡/ are true phonemes.

It is interesting to note that the facts of mutation are different in these cases: [ǰ͡] may be lenited to [y], as in [ǰ͡al] 'can' : [huyal] 'you can', or not lenited at all, as in [ǰ͡wa:deir] 'spider' : [dewǰ͡wa:deir] 'two spider(s)' ([dew] normally lenites mutable consonants).[8]

Even if affricates can be analyzed as phonemes in Ile de Groix Vannetais and other dialects with velar palatalization, it is still probable that where [č͡] and [ǰ͡] occur before front vowels and glides, and behave like /k g/ in mutation, they are in fact underlyingly /k g/. Where they can no longer be derived synchronically by velar palatalization, and where they behave differently from /k g/ in mutation, we can analyze them as underlying, and add them to the inventory of mutable consonants in the dialects in question. However, true mutation of affricates is, in my view, considerably rarer than Ternes and some other scholars assume.

This problem does not apply to Welsh and Cornish. In Welsh, /č͡/ and /ǰ͡/ are indisputably phonemes, occurring in words borrowed from English. The affricates are not mutable in the standard or in most dialects. In some dialects /č͡/ is lenitable but not /ǰ͡/, in some both are lenitable, and in a few they can also be nasalized. Affricates also occur in speech as the result of a dental palatalization rule: /dy/ → [ǰ͡]; /ty/ → [č͡]. Usually, initial [ǰ͡] derived in this fashion is still underlyingly /dy/, but in some dialects or

idiolects restructuring may occur (see 3.8.1).[9]

In Cornish, /č/ and /ǰ/ were originally derived by a rule palatalizing /t/ and /d/ before front vowels. Early Cornish had tŷ [ti:] 'house' : y dŷ [idi:] 'his house'. Later, these became [či:] : [iǰi:] , and presumably the same situation existed as exists now in Vannetais, with dental palatalization in the place of velar palatalization. However, there was a subsequent vowel shift: [i:] became [ay], thus destroying the environment for dental palatalization. Late Cornish chŷ [cay] 'house' : y jŷ [ijay] 'his house' is thus an example of true lenition of /č/.

5.2 The preceding account presents the true initial mutations as high-level, morphophonemic operations. Fricative voicing, provective sandhi, and velar palatalization are phonological rules which operate at a much lower level of the grammar and which modify the output of the mutation rules. This last fact makes it certain that even if the mutations can be shown to be phonologically conditioned, they are still in a different category from these two rules. (Nasal assimilation seems to be a lexically-conditioned rule, but it is also, surely, different from the mutations. If aspiration is phonologically conditioned, it could be a low-level rule, since there is no interaction with the other phonological rules discussed above.)

Let us now investigate the possibility that the mutations are high-level phonological rules.

5.2.1 Nasal Mutation

The Welsh nasal mutation seems at first glance to be a promising candidate for phonological conditioning. As we have seen, all the forms which trigger the regular nasal mutation do end underlyingly in nasals--at least in spoken Welsh, in which fy 'my' is usually [(v)ən]. We could propose the following rule:

(16) $[-\text{cont}] \longrightarrow [+\text{nas}] \;/\; [+\text{nas}] + \_\_\_\_$

However, most nasal-final morphemes do not cause the nasal mutation:

(17) a. enfawr (←en, intensive + mawr 'big') 'enormous'
b. mewn tŷ 'in a house'
c. un dyn 'one man'; un ferch (←merch) 'one girl'
d. am ddau (←dau) o'r gloch 'at two o'clock'
e. mae'r dyn yn dda (←da) 'is the man pred. prt.--good = the man is good'
f. yn gweithio '(at) working'
g. gan ddyn (←dyn) 'by a man'
h. dan goed (←coed) 'under trees'

We could propose that these and other nasal-final morphemes end underlyingly in something else (e.g. /mɛwn[-son]/; /gan[+syll]/), but as I will show in this chapter (see 5.2.4 and 5.3), this is untenable.

We might also consider the nasal mutation to be a minor rule, though of a different type than nasal assimilation in Breton and Cornish, since any stop-initial word can be nasalized. (There are also nasal assimilation rules in Welsh which must be distinguished from the nasal mutation; see 5.1.2.) Knudsen (1973:140) sets up such a rule:

(18) $[-\text{cont}] \rightarrow [+\text{nas}] / \left\{ \begin{matrix} \text{yn } [ə\text{n}] \text{ 'my'} \\ \text{yn } [ə\text{n}] \text{ 'in'} \end{matrix} \right\} \ \# \ \_\_\_\_$

However, this 'rule'--which is not, in fact, a phonological rule at all--is merely the equivalent of listing. Even if we could write a rule which formally reflected the fact that the triggering morphemes end in nasals, the most we would be saying is that a few such morphemes cause the nasal mutation, while most do not. This hardly seems a satisfactory expression of phonological conditioning.

At best, we could set up a redundancy rule: in order to be capable of triggering the nasal mutation, a morpheme must end in a nasal.

Even this--for whatever it is worth--may not be valid for standard Welsh, in which fy 'my' is [və] even before vowels, and the only evidence for final /n/ is the nasal mutation itself. It can be argued that this is not enough, and that in standard Welsh fy is underlyingly /və/. If so, the nasal mutation in standard Welsh could not be phonologically conditioned, and there could be no redundancy rule.

There is also a problem with the exceptional nasal mutation of blynedd and blwydd 'year' and diwrnod 'day' after numerals (see 4.3.5). Some of the numerals which trigger this mutation do not end in nasals: saith 'seven', wyth 'eight', naw 'nine', and in a number of dialects chwe 'six'. It is true that the British forms for 'seven' and 'nine' were *[sextan] and *[nawan] respectively, and wyth may have descended from an analogical *[oxtan] (cf. PIE *oktō), but there is no independent evidence for positing an underlying final /n/ in the Welsh numerals. Chwe causes nasalization by analogy only; the British form was *[sweks]. (In the literary standard it causes the spirant mutation of voiceless stops and does not mutate blynedd, etc.; in the spoken language it usually preserves the radical.) In Catherine Walker's dialect or idiolect, there are still other non-nasal-final numerals which cause this mutation, including tair 'three', pedair 'four', and even sometimes dwy 'two' (see 4.3.5). Certainly, there can be neither phonological conditioning nor a redundancy rule in these cases.

On the other hand, A. Thomas (1966) reports that in his own dialect he does not nasalize blynedd, etc., after saith, wyth, and naw; apparently for him, the process is conditioned by a final nasal.

There are several numerals which do have surface-final nasals in modern Welsh and which trigger this mutation: un 'one', pum 'five', deng [dɛŋ] 'ten', pymtheng [pəmθɛŋ] 'fifteen', ugain 'twenty' and its compounds, and can '100' and its compounds.

However, this list is deceptive. In the case of deng and pymtheng, final [ŋ] cannot be regarded as the cause of nasal mutation; quite the contrary, it is the result. The underlying forms of the numerals (and the surface forms before non-nasal segments) are deg and pymtheg; in these words only, final [g] is nasalized before a nasal consonant. (This may be an underlying nasal, as in deng munud 'ten minute(s)', or it may be derived by nasal mutation, as in deng mlynedd 'ten year(s)'.) In the spoken language, moreover, the forms with final [ŋ] are no longer used. It may be noted that the British word for 'ten', *[dekan], was nasal-final, but there is no independent evidence for an underlying form such as /degn/ in modern Welsh.

Of the other numerals in this group, only can '100' was also nasal-final in British (*[kanton]), and it is an accident of history that can happens to be nasal-final in modern Welsh. All the rest of these numerals ended in something else in British: *[oinā] 'one', *[pempe] 'five', *[wikantī] 'twenty'.[10]

The nasal mutation of blynedd, etc., might be attributed to the present-day final nasals of these numerals. If so, this type of nasal mutation would involve two different rules: a minor nasal assimilation rule in the case of un, pum, ugain, and can, and a non-phonologically-conditioned rule in the case of the other numerals. However, while a minor assimilation rule is more plausible here than in the 'regular' nasal mutation, since there are no nasal-final numerals which do not trigger nasalization of blynedd and blwydd,[11] it seems peculiar to require two different rules to describe one exceptional type of nasalization. Except in dialects such as A. Thomas's, there is no reasonable alternative to considering nasal mutation after numerals to be a single morphologically-conditioned rule. That some of the triggers are nasal-final must be regarded as an accident; we shall see (5.2.3) that in the spirant mutation a similar accident occurs.

The nasal mutation of [d] and [g] after deg (→deng) 'ten' in standard Welsh (see 4.3.4) is also not phonologically conditioned; again, the final nasal of deng is derived by a rule which follows the nasal mutation.

Thomas does not say whether he nasalizes blynedd and blwydd after deg; if he does, we might have to make the distinction suggested above, with deg triggering a non-phonologically-conditioned mutation and the other numerals causing nasal assimilation.

5.2.2 Provection, 'Mixed' Mutation, Lenition-and-Provection

These three mutations of Breton have the same historical origin. They were a fairly late development, occurring after the loss of the British final syllables, possibly in the earliest stages of Breton/Cornish. Certain of the new final segments of proclitics caused devoicing of initial voiced consonants (radical or lenited; some provecting morphemes had ended in vowels at the time of British lenition).

Devoicing of radical voiced stops resulted in the mutation now called provection. Devoicing of lenited consonants resulted in the mutation which Jackson (1967) calls 'lenition-and-provection', and which survives intact in some dialects. In this mutation, voiced stops derived by lenition from original voiceless stops became voiceless once again; voiced fricatives derived from voiced stops were also devoiced. In most dialects, including the standard, the resulting voiceless fricatives were revoiced; the result was the 'mixed' mutation, in which the only element of provection that survives is that of [d]→[t]. (See Appendix A for a more detailed account of the historical background.)

After these processes had occurred, the new final consonants which had caused them were themselves deleted in some--but not all--of the morphemes involved. The result is that Breton and Cornish have both a provective mutation and external provective sandhi.

Note that even if we can show that the provective mutation is phonologically conditioned, it must be distinguished from provective sandhi. In the case of the former, if there is a conditioning final obstruent it need not occur on the surface, while in the case of provective sandhi the conditioning obstruent must be present at the phonetic level. Thus provective sandhi is a much lower-level rule than the provective mutation.

There is a considerable amount of confusion as to which changes fall into which category. Handbooks of standard KLT Breton list the provecting triggers as ho 'your/you' and -z [s] 'thy/thee' (see 4.4). In Vannetais, the second person singular form is ha; in most KLT dialects it is phonetically realized as [ø]. Thus we have standard breur 'brother' : d'az preur [dasprör] 'to thy brother' (but [daprör] in most KLT dialects) and Vannetais breder 'brothers' : d'ha preder [dapreder] 'to thy brothers'.

Jackson (1967:333) suggests that in dialects which retain [s] in this environment, provective sandhi is what is occurring rather than the provective mutation. Jackson distinguishes between 'primary provection', in which the consonant originally causing the change dropped out, and 'secondary provection', in which the final consonant remains as a phonetic environment. Ho 'your', which in Jackson's view was *[θ]-final in the earliest stages of Breton, causes primary provection, since *[θ] dropped out after devoicing a following stop. In dialects which have ha or [ø] (< *[(a)θ]) as the second person singular morpheme, primary provection occurs here too. However, in dialects (including the standard) in which *[θ] remained, eventually becoming [s], secondary provection occurs.

Jackson thus implies that in these dialects the second person singular morpheme causes provective sandhi. This is a reasonable analysis, and yet we cannot prove that the provective mutation is not taking place here. Voiced fricatives following [s] are devoiced, apparently by provective

sandhi; however, fricatives are also devoiced by the provective mutation in spoken Breton. From a synchronic point of view, it could be argued that it is a coincidence that this provecting trigger ends in an obstruent, just as it is a coincidence that some nasalizing numerals end in nasals in Welsh.

Provective sandhi may modify the output of lenition-and-provection or the 'mixed' mutation. Jackson (1967:338) cites [dasfele] 'to thy bed' from the Bourg Blanc dialect of Léonais. The radical form of 'bed' is gwele [gẅele], and the derivation of [dasfele] is most likely as follows:

(19)	/da + s + gwele/
Lenition	ɦ
ɦ-deletion	ø
w-fronting	ẅ
ẅ → v	v
provective sandhi	f
	[dasfele]

In standard KLT, 'to thy bed' is da'z kwele, with either provection or provective sandhi.

If lenition-and-provection were taking place in (19), we would expect *[dasxwele]. In Léonais, [ẅ] is usually realized as [v] (see 3.13.1). Since [v] does not occur until late in the derivation, it must be provective sandhi that yields the voiceless fricative [f]. The second person singular 'infixed' morpheme does cause lenition-and-provection in some dialects; in others, it causes lenition, by analogy to the independent possessive pronoun (see 4.1.32). In Bourg Blanc it causes either lenition or the 'mixed' mutation (in which [g] is lenited), or perhaps an incomplete version of lenition-and-provection, in which [g] is lenited rather than devoiced and spirantized (see 3.13.4. No data have been provided concerning what happens to initial [d] under these circumstances.)

By contrast, Falc'hun (1951) cites, from the same dialect, [dafrödör] 'to thy brother' (←[brödör] 'brother'). Since this dialect normally retains [s] in the second person singular 'infixed' morpheme, let us propose the following derivation:

(20)	/da + s + brödör/
Lenition	v
Provective sandhi	f
s-deletion	ø
	[dafrödör]

The trouble is, there seems to be no reason why [s] should be deleted here, and not in [dasfele]. Furthermore, as we have seen, a consonant which causes provective sandhi must be present phonetically. Thus [dafrödör] seems to be a genuine case of lenition-and-provection. In this dialect, therefore, the second person singular morpheme causes the incomplete version of lenition-and-provection; if [s] is present, provective sandhi also occurs.

In standard Breton, ho 'your/you' has an orthographic form hoc'h before vowels; as we have seen, this appears to represent aspiration of the following vowel. In some dialects, however, this word ends in [x] before consonants as well; Le Roux (1896) cites houc'h penn 'your head' from a dialect of Cornouaillais. In such dialects at least, we must posit underlying final /x/ in the second person plural, and it is possible to argue that a form such as houc'h preur (←breur) 'your brother' is the result of provective sandhi.

It might be argued that even in the standard, ho is underlyingly /ox/, and that both provection and aspiration are caused by this segment. Note that he 'her' also causes provection in some dialects, and that this pronoun, too, may preaspirate vowels (see 4.4.1 and 4.6.6). Vannetais ha 'thy' also causes preaspiration, and provects voiced ob-

struents in some dialects.

We could try to support this argument by pointing out that ho does not cause fricative voicing.[12] However, it turns out that we cannot necessarily attribute this to a final underlying /x/. Le Clerc (1908), writing on Trégorrois, describes he 'her' as causing aspiration but not fricative voicing: hec'h evn 'her bird'; he sac'h 'her sack'. However, he does not cause provection in this dialect, and ma 'my', which also aspirates but does not provect, does cause fricative voicing: mac'h iliz 'my church'; ma zac'h 'my sack'. Moreover, there are dialects in which he does cause fricative voicing.

We could, of course, suggest that /x/ causes both provection and aspiration and that /h/ causes only aspiration, and that he has underlying /x/ in dialects in which it causes provection but underlying /h/ in dialects in which it causes only aspiration (see also 5.2.3).[13] As for fricative voicing, there are a number of unexplainable gaps in any case; see 5.1.1.

The trouble with setting up such conditioning, however, is that the same segment may cause more than one mutation. The morphemes which trigger the 'mixed' mutation/lenition-and-provection can also be analyzed as /s/-, /x/-, or /h/-final: o (prevocalic oc'h) 'at'; e (prevocalic eh/ez), preverbal particle; ma 'if; that', which causes aspiration in some dialects (see 4.5.3 and 4.6.9). Yet they either lenite most voiced stops instead of provecting them in the 'mixed' mutation (except for [d] which they do devoice) or they spirantize as well as devoicing them in lenition-and-provection (again except for [d] which they only devoice). The second person singular morpheme may cause provection in dialect A, lenition-and-provection in dialect B, and lenition (or the lenition part of the 'mixed' mutation) in dialect C. Lenition-and-provection may be complete (with [b m g] all becoming voiceless fricatives) or incomplete (with only [b m] being devoiced and spirantized); and one

dialect may have some morphemes which cause the complete version and some which cause the incomplete version. In light of this fragmentation, no phonological conditioning for the provective types of mutation is possible.

5.2.3 Spirant Mutation and Aspiration

Historically, aspiration was a subrule of the spirant mutation. Word-final *[s] in British became *[h], which was prefixed to a following vowel or glide. Final *[h], *[k], or *[x] caused gemination of initial stops; geminated voiceless stops subsequently became spirantized. (See also Appendix A. Whether British final *[h] caused aspiration of nasals and liquids, or whether this was a later, analogical development, probably cannot be determined; I have found no discussion of it in the historical literature.)

Let us see whether it is possible to establish phonological conditioning in the modern Brythonic languages for the spirant mutation, aspiration, or both.

Knudsen (1973:146) sets up the following partially phonological rule for the spirant mutation in standard Welsh:

(21) $\begin{bmatrix} -\text{cont} \\ -\text{vce} \end{bmatrix} \longrightarrow [+\text{cont}] \; / \; \left\{ \begin{matrix} \text{C} \\ \text{efo} \\ \text{tra} \\ \text{tri} \\ \text{chwe} \\ \text{ei 'her'} \end{matrix} \right\} \; \# \; \_\_\_$

Knudsen noticed that a number of proclitics which trigger the spirant mutation in literary Welsh are obstruent-final when preceding a vowel, but vowel-final when preceding a consonant:

(22) a. ag ef 'with him' : â thi (←ti) 'with thee'
b. ag afalau 'and apples' : a phen (←pen) 'and a head'
c. gydag ei brawd 'together with her brother' : gyda fy mrawd 'together with my brother'
d. tuag Aberystwyth 'toward Aberystwyth' : tua Chaer-

dydd (←Caerdydd) 'toward Cardiff'

e. nag ydw 'no (I'm not)' : na ddaw (←daw) 'no (he will not come)'

f. nag ef 'than him' : na hi 'than her'

g. y dyn nad arosodd 'the man who did not wait' : y dyn na thalodd (←talodd) 'the man who did not pay'

h. nid arosodd ef 'he did not wait' : ni welodd (←gwelodd) ef 'he did not see'

i. onid agorodd ef? 'didn't he open?' : oni thalodd (←talodd) ef? 'didn't he pay?'

j. os agorodd ef 'if he opened' : o gwelodd ef 'if he saw'

Knudsen's spirant mutation rule is followed by a final-consonant deletion rule:

(23) $C \longrightarrow \emptyset$ / ____ # C

It is true enough that the proclitics listed in (22) must be regarded as underlyingly consonant-final. However, Knudsen's rules are far too general. There are many consonant-final proclitics which do not cause spirantization; there are even obstruent-final ones which do not. In addition, the words listed in (22) are the only ones which lose their final consonants before an initial consonant of a following word.

However, let us see if we can use the data in (22) to set up an adequate rule.

Some of the alternations in (22) reflect the historical situation. Final consonants of monosyllables (such as *[ak] 'and' and *[nak] 'than') survived, and were voiced, before vowels (gydag 'together with' and tuag 'toward' are compounds of ag 'with'). In the case of (22a-f), we could propose the underlying forms /ak/, /gədak/, /tɨak/, and /nak/, in which /k/ spirantizes a following voiceless stop, becomes voiced before a vowel, and is deleted before any

consonant. An underlying form /os/ would also reflect the historical situation. There is a problem in the case of the negative particles ni(d) and na(d), which spirantize as a result of contamination rather than their original final segments, but let us include /d/--or rather, /t/, as a parallel to /k/--in the inventory of spirantizing consonants.

There is another synchronic alternation, which Knudsen has missed:

(24) a. ci 'dog' : chwe chi [xwexi:] 'six dog(s)'
b. cŵn 'dogs' : faint o gŵn? chwech [xwe:x] 'how many (of) dogs? six'

Chwech occurs in isolation, chwe before other words (including vowel-initial ones, at least in the standard: chwe afal 'six apple(s)').

Provisionally, then, let us set up the following rule:

(25) $$\begin{bmatrix} -\text{del rel} \\ -\text{voice} \end{bmatrix} \longrightarrow [+\text{cont}] \Big/ \left[\begin{bmatrix} -\text{son} \\ -\text{voice} \end{bmatrix} \begin{bmatrix} -\text{ant} \\ -\text{cor} \end{bmatrix} \begin{bmatrix} +\text{ant} \\ +\text{cor} \end{bmatrix} \left\{ \begin{matrix} [-\text{del rel}] \\ [+\text{stri}] \end{matrix} \right\} \right] \#\ \_\_$$

That is, voiceless velar obstruents--/k/ and /x/--and voiceless dental obstruents which are either stops (/t/) or strident (/s/) cause spirantization of an initial voiceless stop.

This is a very bad rule; it is overly complex, and fails to express a true generalization. The segments supposedly conditioning spirantization do not constitute a natural class. In this respect, rule (25) resembles rule (14) of chapter III.

Furthermore, there is the problem of what to do about

the non-alternating forms ei 'her', tri 'three', tra 'very', and efo 'with', which Knudsen lists in rule (21). For these words, let us propose an underlying abstract final consonant; /h/ would be a good candidate, since no Welsh word ends in this segment on the surface. (Historically, ei and tri ended in *[s], which became *[h] before causing the spirant mutation.) The aspirating mutation provides some support for this proposal: ei henw 'her name' could be regarded as /ih + ɛnu/.

For the moment, let the unsatisfactory rule (25) stand. (It need not be altered to include /h/, since the latter is [-ant, -cor].) We still must account for the voicing of /t/ and /k/ before vowels, and the deletion of consonants in the words listed in (22) and in the chwe/chwech alternation. We could do this with rule (23) plus the following rule:

(26) $\begin{bmatrix}\text{-del rel}\\ \text{-voice}\end{bmatrix} \longrightarrow [\text{+voice}] \;/\; \underline{\quad} \;\#\; [\text{+syll}]$

Rules (23) and (26) are not ordered with respect to each other, though both must follow (25).

However, if we look at other words in the language, it becomes clear that no general rules can be written to account for these changes, and we find that all three rules are hopelessly inadequate. Consider the following examples:

(27) a. eich tŷ̂ [əxti:] 'your house'
b. at y ddrws [atəðru:s] 'to the door'
c. at ddrws (←drws) y tŷ̂ 'to (the) door (of) the house'
d. dros bont (←pont) 'over a bridge'

Eich, at, and dros do not cause the spirant mutation. Eich maintains the radical; the other two trigger lenition. They do not lose their final consonants before initial consonants, and at does not become [ad] before a vowel.

Knudsen does note that there are obstruent-final words which trigger lenition, including at, dros, hyd 'as far as',

wrth 'by', and heb 'without'. His solution to this problem amounts to placing a condition on rule (21) that only those consonants which are destined to be deleted before other consonants can trigger spirantization. However, if (21) applies before consonant-deletion, it must be blind to whether or not the subsequent rule applies. The final consonants of the words listed in (22) are deleted before any initial consonant, spirantized or not, as can be seen from many of the examples in (22); the initial consonants may even be lenited, as in (22e,h). It is an interesting fact of standard Welsh that all of the proclitics which alternate in this fashion trigger spirantization of voiceless stops, but in a purely phonological context there is no way this fact can be made formally relevant to the spirant mutation itself.

We could attach a lexical or morphological feature to the triggering morphemes, marking them as causing the spirant mutation, and impose a condition that if a given morpheme is so marked, and if it ends in a consonant, this consonant will be deleted if another consonant follows, and voiced if a vowel follows. This solution, however, requires non-phonological conditioning of the spirant mutation itself.

In spoken Welsh, the relationship no longer exists: most of the alternating proclitics now preserve the radical. (The negative particles still spirantize voiceless stops and lenite voiced ones, but in many dialects they cause straight lenition.)

We might propose a redundancy rule: in order for a word to trigger the spirant mutation in standard Welsh, it must end underlyingly in /k/, /x/, /s/, /t/, or /h/. However, even this (for whatever it is worth, since there is still no generalization here in terms of natural class) does not hold up, because the argument for abstract final /h/ does not. I suggested above that the aspirating mutation

could be used as evidence in favor of final /h/; however, this is true only of ei 'her', which both spirantizes and aspirates. The other morphemes for which final /h/ has been proposed do not cause aspiration: tri enw 'three name(s)', not *tri henw. There are also words which aspirate but do not spirantize: eu henw 'their name'; eu tad 'their father'.

We could suggest that /h/ triggers spirantization but that something else causes aspiration. (This raises the question of what does cause aspiration, and why ei causes both, but let us leave that aside for the moment.) According to this analysis, ei, tri, tra, and efo would be the only words in Welsh to end in /h/; moreover, in no other rule of the language would this final segment be required. Final /h/ is thus entirely ad hoc. Even the fricative quality of the mutated initial consonant is not sufficient to imply a preceding /h/--or even a fricative--since some spirantizing proclitics end underlyingly in /k/ or /d/. (There is no evidence at all for such forms as /nakh/ or /nidh/).

If ei, tri, tra, and efo are underlyingly vowel-final, then there is no phonological generalization, not even the faulty one reflected in rule (25), or the redundancy rule suggested above.

Most dialects of Welsh retain only ei 'her' and perhaps the negative particles as regularly spirantizing forms. (There are also a few fixed phrases such as bar'a chaws (< caws) 'bread and cheese'; these must be treated as idioms.) At first glance, the case for final /h/ seems stronger here, since ei also triggers the aspirating mutation. From a purely mechanical viewpoint, final /h/ is possible; however, it is still ad hoc, since ei would be the only Welsh word with this final. (Also, in dialects in which the negative particles still spirantize voiceless stops, we could not use this solution.)

The Breton/Cornish spirant mutation had the same basic

historical origin as in Welsh. However, there were dialectal differences in British that are reflected in its daughter languages. In West British (which gave rise to Welsh), proclitics ending in *[n] caused the nasal mutation, but in Southwest British the final nasal had changed into something else (Jackson (1967:318) suggests a glottal stop), which caused spirantization rather than nasalization. Thus Breton va/ma 'my'--the cognate of Welsh (f)yn--causes the spirant mutation.

In modern literary Breton, all the forms which trigger the spirant mutation end in vowels, glides, or liquids on the surface (see 4.2.8-13). Most have no relevant alternating forms,[14] though va/ma 'my', he 'her', and o 'their' cause aspiration in some dialects (see 4.6.6).

In Breton as in Welsh, setting up underlying final /h/ or /x/ as the conditioning factor for spirantization and aspiration turns out to be unsatisfactory. There are words which cause aspiration but not spirantization: ho 'your', which provects and aspirates, never spirantizes voiceless stops, even in those dialects in which it is certainly /ox/. He 'her', on the other hand, causes spirantization, aspiration, and provection in some dialects. Ma 'my' causes spirantization and aspiration, but never provection. Tri 'three' and nao 'nine' spirantize but do not aspirate. Even if we consider provection to be non-phonologically conditioned, we must still set up a final segment for ho that aspirates but does not spirantize, one for tri and nao that does the reverse, and one for ma, he, and o that does both. This can be done on a completely arbitrary basis --for example, we could propose /hox/ vs. /triʔ/, /naǫʔ/ vs. /heh/, /mah/, /oh/--but there is absolutely no independent evidence for such distinctions.

The evidence for any final consonant at all in spirantizing triggers becomes shakier when we consider the phenomenon of fricative voicing. In the Tregorrois dialect described by Le Clerc (1908), ma 'my'--which spirantizes

and aspirates--also causes fricative voicing: ma zac'h 'my sack'. On the other hand he 'her'--which also spirantizes and aspirates--does not cause it: he sac'h 'her sack'. (Provection of obstruents by he is not a Trégorrois characteristic; thus, there is no difference in the mutational behavior of ma and he that might account for the presence vs. absence of fricative voicing.)

Fricative voicing is conditioned by a preceding sonorant. If he ends underlyingly in an obstruent (say /h/), this could block the application of the rule. If ma is also underlyingly obstruent-final, however, we cannot explain why fricative voicing does occur after it, unless we again resort to arbitrary distinctions. (For example, we could say that /h/ is a glide and therefore a sonorant, and that ma is underlyingly /mah/, while he ends underlyingly in something else, perhaps /x/. However, /h/ must otherwise be considered a fricative in these languages, and there is no independent reason to distinguish between ma and he in this fashion. Furthermore, tri and nao also cause fricative voicing, and while it is possible to consider an underlying final /ʔ/ as a glide, there is no evidence for any such final segment in these words.)

As I have pointed out (see 5.1.1), there are unexplainable gaps in the fricative voicing rule in every dialect so far studied in which it occurs. He sac'h in Trégorrois may well be such a gap, and have nothing to do with any final consonant in he. (Note, too, that Le Clerc's description dates from 1908; perhaps by now he does cause fricative voicing in this dialect, as it does in some others.)

A number of spirantizing triggers end in [r]: teir 'three (fem.)', pevar/peder 'four'; ur 'a'; ar 'the'; hor 'our/us'; her 'him; it'. (The last four cause spirantization of [k] only; see 4.2.11.) Historically, British *[r] did cause the spirant mutation; however, these words did

not end in *[r] in British. For example, pevar 'four' < British *[petwares], in which final *[s] (→*[h]) caused the mutation. On the other hand, the preposition war 'on', which had this form in British and did cause the spirant mutation, now triggers lenition except in the fixed phrase war-zu 'towards' (see 4.1.35 and 4.2.13). Also, the [r]-final pronouns and articles which spirantize /k/ in some nouns lenite it in others, and they do not spirantize /p/. (See 4.1.30 and 4.2.11.)[15]

Thus we cannot regard [r] as conditioning the spirant mutation, and there is no evidence for such forms as /pevarh/. We must conclude that the spirant mutation is not phonologically conditioned in either Breton or Welsh.

Let us consider, however, the possibility that while the nasal mutation, provection, and the spirant mutation are not phonologically conditioned, aspiration is.

In British, aspiration was caused by a segment which also conditioned the spirant mutation (namely, *[h] < *[s]). In the modern languages, the two processes cannot be included in the same category--partly because several other segments caused spirantization but not aspiration, and partly because of analogical disturbances over time. Thus, in both Welsh and Breton, there are morphemes which cause spirantization but not aspiration, and vice versa. (In Welsh, ei 'her' is the only word which causes both.)

Although aspiration is traditionally considered a mutation (if only because of its historical origin), it is different from the others, since it is the only one which affects initial vowels rather than consonants, and which involves the addition of a segment to the mutated word, rather than a distinctive feature change in the initial segment. Could it be that in the modern Brythonic languages aspiration is not a mutation after all, but a phonological rule like provective sandhi?

Let us propose that morphemes in Welsh and Breton

which cause aspiration end underlyingly in /h/, and that the following rules apply:

(28) Resyllabification

$$[h] + \{V,G\} \longrightarrow + [n]\{V,G\}$$

(29) Metathesis[16]

$$[h]\{N,L\} \longrightarrow \{N,L\}[h]$$

(30) Deletion

$$[h] \longrightarrow \emptyset \; / \; \_\_\_\_ \; [-son]$$

In Welsh, then, /ih + ɛnu/ → [i-hɛnu] 'her name'; /ih + mam/ → [imham] 'her mother'; /ih + brawd/ → [ibrawd] 'her brother'. There are parallel derivations in Breton.

The proposed final /h/ has nothing to do with the spirant mutation or provection; thus in Breton ho 'your', he 'her', and ma 'my' could all be considered /h/-final. Even the fricative voicing problem could be dealt with by saying that [h] (even if regarded as an obstruent) does not block the application of this rule:

(31) $$\begin{bmatrix}+cont\\-voice\end{bmatrix} \longrightarrow [+voice] \; / \; [+son]\,(h)\,(+) \; \_\_\_\_$$

There are several problems with this analysis. In Welsh, a number of aspirating morphemes end in nasals: 'm 'my' (in contractions)/'me'; ein 'our'; 'n 'our' (in contractions)/'us' (see 4.6.1-2). Aspiration after ein/'n 'our' is literary now, and 'infixed' object pronouns (including 'm and 'n) have become obsolete in speech. However, the contracted possessive 'm 'my' is still current in speech. In addition, in some dialects the independent possessive yn 'my' causes postaspiration of liquids and nasals (I have

found no data regarding preaspiration of vowels and glides by this word).

For these morphemes, we would have to propose the underlying forms /(v)ənh/, /ənh/, etc. There is no independent evidence for such forms, but then the same thing is true for e.g. /ih/ 'her': no other rules of Welsh require final /h/ in these words. Moreover, 'm 'my' conditions a minor phonological rule of nasal assimilation (see 5.1.2). Unless we force the facts to fit the theory by saying that the nasal assimilation rule works in spite of the intervening /h/, we are hard put to explain nasalization in this environment.

In many dialects of Welsh, ei 'her' is the only regularly aspirating morpheme left. In these dialects final /h/ does work mechanically, but it is ad hoc: only one form in the language has it, and only for the sake of this rule.

In Breton, all the morphemes which cause aspiration are vowel-final on the surface before consonants (see 4.6.4-9). Thus there are no problems parallel to the Welsh one of nasal-final aspirating triggers which cause nasal assimilation. Though the list of words with final /h/ in Breton would still be quite short, it would be considerably longer than in Welsh, and the solution is thus a bit less ad hoc. Even so, as in Welsh there are no other rules which would require final /h/, and therefore no independent evidence for phonological conditioning of aspiration.

I would say that in Welsh, phonological conditioning is highly doubtful. In Breton, it is somewhat more plausible, but not by much.

Even if we could say for sure that aspiration is phonologically conditioned, this very circumstance would prove that the other mutations are not, since morphemes ending in /h/ could trigger any of them.

5.2.4 Lenition

In Breton, it appears at first glance that almost all

lenition-triggering morphemes end in sonorants on the surface. However, as I have shown, this circumstance is largely due to reversal or modification of the results of lenition by provective sandhi rules (see 5.1.3). Thus, there are obstruent-final morphemes which do cause lenition, and there are also apparently sonorant-final morphemes which preserve the radical or cause other mutations:

(32) a. an hini 'the one' + bras 'big' → an hini bras 'the big one (referring to a masculine noun)'
b. e 'in' + Brest → e Brest 'in Brest'
c. pevar 'four' + penn 'head' → pevar fenn 'four head(s)'
d. ho 'your' + breur 'brother' → ho preur 'your brother'

In Welsh, too, there is no generalization regarding possible final segments of morphemes which trigger lenition; they can end in either sonorants or obstruents. (There are also cases in both Welsh and Breton in which there is no apparent trigger at all.)

Let us propose, however, that while all the other mutations (with the possible exception of aspiration) are non-phonologically conditioned, lenition is conditioned by some underlying segment which is subsequently deleted.

Lenition itself could be taken as evidence that there is a preceding underlying vowel. While we cannot retrieve the original British final vowel of most morphemes which trigger lenition,[17] we could posit a specific abstract underlying vowel. A good candidate is /ə/, since this vowel does not occur word-finally in Welsh except in unstressed monosyllables: y 'the', fy 'my' (in the standard), and dy 'thy'. Dy causes lenition, fy could be regarded as underlyingly /vən/, and y is underlyingly /ər/, at least in the masculine and plural. (This segment also does not occur word-finally in Breton, except perhaps as the result of a

low-level vowel-reduction rule.)

Following the lenition rule, there is a rule which deletes /ə/ at the end of polysyllables.

In Welsh, this analysis will give us underlying forms such as /ganə/ 'with, by'; /atə/ 'to'/ /urθə/ 'by', etc. Y 'the' would be /ərə/ in the feminine singular, /ər/ in the masculine and plural. Un 'one' (fem.), which causes lenition, would be underlyingly /i̬nə/; un 'one' (masc.), which preserves the radical, would be underlyingly /i̬n/. A sample derivation follows:

(33)	/ərə + merxə + da/ 'the good girl'	/i̬n + di̬n + da/ 'a good man'
Lenition	v	---
ə-deletion	ø ø	---
Other rules	ø a:	i̬: a:
	[ə verx ɣa:]	[i̬n di̬:n da:]

However, there are problems with this proposal. Some lenition-triggering morphemes do end in vowels other than [ə] (e.g. o 'of/from'; i 'to'; dau [dai̯] 'two'; rhy [r̥^{h}i̬:] 'too'). There are also vowel-final morphemes which preserve the radical (e.g. wedi 'after' and mwy [mui̬] 'more') or which cause other mutations (e.g. ei 'her', which spirantizes). There is certainly no justification for setting up underlying /oə/, /iə/, dai̬ə/, etc. Indeed, there is no independent evidence for final /ə/ at all; this segment was chosen for no better reason than that it can be conveniently deleted.

Let us propose, then, that any final vowel or diphthong conditions lenition. In words which are consonant-final on the surface we cannot determine which vowel is involved; we must posit forms such as /ganV/, /urθV/, /atV/, etc. For words such as wedi, we must posit an underlying final consonant (also underspecified) which would prevent them from causing lenition.

The same system could be proposed for Breton. It does work from a purely mechanical point of view, except in those instances in which lenition is not caused by an immediately preceding morpheme. In these cases, no phonological conditioning can be set up, but no matter how we analyze the mutations, they must be treated separately.

Once again, however, we are dealing with an ad hoc solution. It is true that we could cite aspiration as independent evidence of a final consonant in such phonetically vowel-final words as W. ei 'her' and eu 'their' and B. ma 'my', he 'her', and ho 'your'. On the other hand, there is no such independent motivation for a final underlying consonant in W. wedi 'after', mwy 'more', or tri 'three', or in Breton e 'in'; nor is there independent evidence for a final vowel in consonant-final triggers of lenition.

I stated in 5.2.3 that one justification for treating aspiration, but not the other mutations, as phonologically conditioned is that aspiration involves a different type of phonetic change. A similar argument could be made in the case of lenition. The nasal mutation, the spirant mutation, and provection each involve a single feature change in a single natural class (respectively, [-nasal]→[+nasal], [-cont]→[+cont], [+voice]→[-voice]). Lenition, on the other hand, is a far more complex rule--or, rather, set of rules--involving several natural classes (voiced stops, voiceless stops, liquids) plus the single segment [m], and different feature changes affecting each. Lenition is different in several other ways, too; notably, it is by far the predominant mutation, both in distribution and in frequency. (Other important differences will be discussed in chapters VI and VII.) However, this distinction alone is not sufficient to justify the ad hoc treatment proposed above; in chapter VII I will propose a non-phonological type of conditioning that will account more adequately for

the differences between lenition and the other mutations.

5.3 In section 5.2, I examined the possibility of positing specific underlying segments as environments for the various mutations, and concluded that in almost all cases this approach fails because of the inconsistencies among morphemes regarding the mutations they trigger. At the most --and then at the cost of an ad hoc treatment--we can set up such conditioning only for aspiration; for lenition, we can set up phonological conditioning only if we posit abstract underspecified final segments (and here, too, the analysis is ad hoc).

Hamp (1951) has proposed such abstract segments--which he calls morphophonemes--for all the mutations. Each Celtic language has a list of morphophonemes:

(34) Welsh:

a. /L/ = lenition
b. /N/ = nasal mutation
c. /S/ = spirant mutation
d. /A/ = aspiration
e. /P/ = provection (in certain suffixes)

(35) Breton:

a. /L/ = lenition
b. /P/ = provection
c. /S/ = spirant mutation
d. /N/ = nasal mutation

These symbols are tacked onto the phonemic representations of proclitics which trigger the mutations, as in the following examples taken from Hamp (1951:235-7):

(36) Welsh:

a. <u>fy nhad</u>	[və n̥ha:d]	vəN ta:d	'my father'
b. <u>dy dad</u>	[də da:d]	dəL ta:d	'thy father'

c. ei dad	[i da:d]	iL ta:d	'his father'
d. eu hamser	[i hamser]	iA amser	'their time'

(37) Breton:

a. va zi	[va zi:]	vaS ti	'my house'
b. da di	[da di:]	daL ti	'thy house'
c. e di	[e di:]	eL ti	'his house'
d. ho tiouhar	[o tiwar]	oP diwar	'your legs'

There are also combinations of morphophonemes. In Welsh, /SA/ represents both spirantization and aspiration:

(38) a. ei thad	[i θa:d]	iSA ta:d	'her father'
b. ei hamser	[i hamser]	iSA amser	'her time'

In Breton, /PL/ represents the 'mixed' mutation. Hamp gives a context-sensitive description of the morphophoneme (p. 234):

(39) /PL/ = /P/ before /d-/
= /L/ before /g-, gw-, b-, m-/
= /x/ before vowels (i.e., aspiration)

Thus o/oc'h 'at' is /oPL/. Hamp gives no specific illustration of the operation of this morphophoneme, but the following examples would be parallel to those listed above:

(40) a. o tont	[o tõnt]	oPL dont	'(at) coming'
b. o vont	[o vônt]	oPL mont	'(at) going'
c. oc'h ober	[o ɦober]	oPL ober	'(at) doing'

A morphophoneme causes no change if the following segment is not subject to the mutation conditioned by it:

(41) a. W. eu tad	[i ta:d]	iA ta:d	'their father'
b. W. fy amser	[və amser]	vəN amser	'my time'
c. B. ho ti	[o ti:]	oP ti	'your house'

Morphemes which never cause mutation have no final morphophoneme:

(42) Breton hon ti [õn ti:] on ti 'our father'

Hamp's morphophonemes look very much like morphological features, and act like them, too. However, Hamp claims that they are not merely arbitrary labels, but represent actual sounds, or classes of sounds. He lists these as follows (p. 239):

(43) a. L = *V
b. N = *nasal-C
c. S = *non-nasal-C
d. A = *h
e. P = *spirant-C; = *z (Breton)

Oftedal (1962:96) has basically the same idea: 'Mutations are part of the mutating morpheme, but they manifest themselves phonetically in the initial of the immediately following form.' Thus, in Scottish Gaelic /ə vãhéŕ/ 'his mother' (pp. 97-98), 'the phoneme /ə/ and the fricative quality of /v/ belong to the first morpheme, while the labiality of /v/ together with the rest of the phrase belongs to the second morpheme.'

In Welsh, we might propose the following:

(44) a. /i $\begin{bmatrix}-\text{son}\\+\text{cont}\end{bmatrix}$ + ta:d/ → [i θa:d] 'her father'

b. /i [+syll] + ta:d/ → [i da:d] 'his father'

Underspecified segments are by no means an outlandish concept; there are cases in which they are necessary. A frequently-used classroom example is Turkish vowel harmony. In certain morphemes it is impossible to determine which alternant vowel is underlying; for example, the plural morpheme is [lar] or [ler] depending on whether the pre-

ceding vowel is [+back] or [-back]. The phonemic representation of the plural morpheme in Turkish is therefore

(45) $$/l \begin{bmatrix} +\text{syll} \\ -\text{high} \\ -\text{round} \end{bmatrix} r/$$

Hamp's proposed final segments (or classes thereof), listed in (43) are, in his own words (p. 239) 'stated diachronically'. One of his arguments in favor of his system of morphophonemes is that it reflects the historical situation. Certainly, languages do have synchronic rules which are identical to historical sound changes; a commonly-cited example is German final-obstruent devoicing. However, the evidence that this historical change is retained as a rule of modern German is present in such alternations as [rat] : [ratəs] 'council (nominative sing./genitive sing.)' and [rat] : [ra:dəs] 'wheel'. Given alternations like these, it is even possible to make an abstract analysis: Chomsky and Halle (1968) propose the underlying forms /serēn/ and /divīn/ in modern English because of the surface alternations serene/serenity and divine/divinity. Chomsky and Halle regard these alternations as evidence that the Great Vowel Shift is a synchronic rule of modern English, and that the underlying forms of the roots involved--which contain segments that do not appear in any of the alternants (or, in fact, in any surface form in modern English)--are identical to the pre-vowel-shift forms.

However, it is highly questionable whether there is enough evidence remaining in the modern Brythonic languages to enable us to use historical facts as a basis for synchronic phonological conditioning, even with underspecified segments. To be sure, the alternation between the radical form of a word and its mutated version could be taken as surface evidence of some preceding underlying segment, and this is what Hamp tries to demonstrate.

Hamp does not make it clear whether the segments, or

classes of segments, listed in (43) are meant only as a historical summary or are to be considered synchronically useful as well. If the latter is true, then Hamp's segments simply do not work in modern Welsh and Breton.

Consider, for example, the interrelationships of aspiration and the spirant mutation in Welsh. According to Hamp, /h/ conditions aspiration and a 'non-nasal consonant' conditions spirantization. Ei 'her', which causes aspiration, could be represented as /ih/; final /h/, which is a non-nasal consonant, would also enable this word to cause the spirant mutation. Words which spirantize but do not aspirate--for example, tri 'three' in the standard--would have to be represented with a final underspecified consonant. However, since tri does not cause aspiration, /h/ would have to be excluded from the feature specification of this consonant. Thus, instead of

(46) $$/\text{tri} \begin{bmatrix} +\text{cons} \\ -\text{nas} \end{bmatrix} /$$

we would have to posit

(47) $$/\text{tri} \begin{bmatrix} +\text{cons} \\ -\text{nas} \\ -\text{low} \end{bmatrix} /$$

This is perfectly acceptable so far, but there is an unresolvable problem with words which cause aspiration but not spirantization, such as eu 'their'. If we represent this word as /ih/ in order to enable it to aspirate, we cannot prevent it from spirantizing. If /h/ is excluded from the class of consonants which can spirantize, then we cannot explain how ei 'her' causes both mutations.

Hamp posits a 'spirant consonant'--or, more specifically for Breton, /z/--as the segment which conditions provection. With one exception, morphemes which spirantize voiceless stops do not provect voiced ones, and vice versa; the exception--in a few dialects--is he 'her', which does

both. In these dialects (in which he causes the spirant mutation, provection, and aspiration), we could posit

(48) $/e \begin{bmatrix} +\text{cons} \\ -\text{nas} \end{bmatrix} /$

--but in most dialects he does not cause provection, and even in the dialects in which it does, none of the other spirantizing morphemes causes provection.

Therefore, /z/ must be excluded from the class of non-nasal consonants which conditions spirantization. The result of this is that we no longer have a natural class of spirantizing consonants. The underspecified final segment would be a list of consonants capable of conditioning the spirant mutation, or a very complex feature specification which would exclude /z/. Either choice would not express any valuable generalization.

In 5.2.2, I discussed the possibility of setting up specific segments as environments for provection, and concluded that it could not be done. I proposed /x/ and /s/ rather than /z/, but the objections are the same. (In medieval Breton, the second person plural morpheme was spelled hoz, but there is no evidence of final /z/ here in the modern language.)

We might suggest that /h/ conditions aspiration, any fricative conditions provection, and any other non-nasal consonant (i.e. a stop) conditions the spirant mutation:

(49) a. $/o \begin{bmatrix} +\text{cons} \\ +\text{cont} \end{bmatrix} /$ 'your'

b. $/ma \begin{bmatrix} -\text{cont} \\ -\text{nas} \end{bmatrix} /$ 'my'

This, however--aside from being ad hoc--leaves us with the familiar problem of words which cause both the spirant mutation and aspiration (such as ma 'my'). If these words end in /h/, which is [+cont], they can cause aspiration but not

the spirant mutation; if they end in a segment which is [-cont], they can spirantize but not aspirate.

The symbol /PL/, representing the 'mixed' mutation, cannot be given any natural class label. According to the description given in (39), the morpheme /oPL/ 'at' would be:

(50) a. /oz/ before /d-/
b. /oV/ before /g-, gw-, b-, m-/
c. /ox/ before vowels

There would be no single underlying form for o but rather three separate morphological variants whose final segments have nothing in common.

A crucial question which Hamp does not consider is: how do we account for morphemes which preserve the radical? There must be some distinction between them and those which cause the various mutations. In Hamp's analysis, they simply have no final morphophoneme:

(51) Breton hon ti [õn ti:] on ti 'our house'

(Hamp gives no examples for Welsh, but presumably he would write /əx tɨ/ for eich tŷ 'your house'.)

However, these morphemes still end in a segment which will fit into one or another of the classes that Hamp lists in (43). If Welsh eich 'your' is /əx/, and /x/ belongs to the category of non-nasal consonants, how can we prevent this word from causing spirantization? We would have to set up another morphophoneme, /R/ let us say, which would represent some class of consonants that could be distinguished from those which cause spirantization, provection, nasalization, etc. The distinctions made would be arbitrary, and have no more value as conditioning for the mutations than morphological features with no phonological content at all.

In fact, if the list in (43) is meant to have historical validity only, and is not meant to reflect actual sounds, then Hamp's morphophonemes might as well be morpho-

logical features, and are best regarded as exactly that.

Hamp was writing in 1951, and was the first Celticist to attempt a systematic treatment of the mutations; for this he deserves a great deal of credit. If his morphophonemes are shorn of phonological content and treated as morphological features, his analysis can be considered one of the best ones, though still not quite adequate. (Notably, Hamp treats lenition on the same basis as the other mutations; as I have noted before and will demonstrate in detail in chapter VII, it must be distinguished from them.)

Hamp's attempt to establish phonological conditioning for the mutations stems from his expert knowledge of the history of the Celtic languages. It may well be that his analysis works in the Goidelic languages, or at least in Old Irish. In the modern Brythonic languages, however, history cannot be retrieved in synchronic rules. Except for aspiration, which <u>may</u> be a phonological rule, the mutations must be regarded as not phonologically conditioned.

NOTES

[1]Note also the voicing of voiceless initial /r/ in the Bothoa dialect of Cornouaillais: [hrošəd] 'shirt' : [mərošəd] 'my shirt'. (Example from Humphreys (1972); see also 2.1.5.)

[2]For a more detailed description of fricative voicing, see Jackson (1967:360-371).

[3]Orthographic KLT ifern 'hell' is pronounced [ifɛrn] or [ivɛrn] in most dialects; in Vannetais the word is spelled ivern. (Cf. the Welsh cognate uffern [ɨfɛrn].) Geminated fricatives are not affected. The spelling sec'han can represent either [se:ɦã] 'drying' or [sɛx:ã] 'driest'. In the verbal noun, [x] is single and therefore subject to fricative-voicing; in the superlative, it is geminate and therefore immune.

[4]The Welsh mutation was caused by a final *[n] in West British proclitics. The corresponding morphemes in South-west British (which gave rise to Breton and Cornish) had evidently lost or changed their final nasals so that this mutation never took place in that dialect. See Appendix A for further details.

[5]See chapter IV, note 14 regarding variant forms of the article in Breton.

[6]In Trégorrois, [d] is never lenited in any environment; here, we do have an exception to lenition, which must be accounted for in the mutation rules. See 3.13.1.

[7]There are some productive voicing assimilation rules which operate across morpheme boundaries. For example, a voiced stop + [h] becomes a geminate voiceless stop: /tɛg/ 'fair' + /hav/, superlative suffix → [tɛk:av] 'fairest'.

[8]One problem in Ternes' analysis is that while he gives many examples of initial [ǰẅ], he gives only one of initial [ǰ] before a front vowel: [ǰivin] 'nail' : [i ivin] 'his nail'. Normally, /g/ becomes [h] in lenition in this dialect: [galw] 'call' : [hahalw] 'they call'. Is [h] regularly deleted before a front vowel in Groix? Or is [ǰivin] an exception?

[9]Initial /ty/ apparently does not occur in Welsh, and I have found no examples cited in the literature of medial /ty/→[č], though C. Thomas (1975) mentions its occurrence.

[10]In West British, final *[n] in numerals caused the nasal mutation; no doubt the mutation was at first regular,

with all voiced stops becoming nasalized. (Nasal mutation of voiceless stops took place in Welsh rather than British; see Appendix A.)

The isolation forms of the words for 'five' and '100' are pump [pɨmp] and cant respectively. Pum and can occur before nouns: pum cath 'five cat(s)' : pump o gathod 'five (of) cats'. Pum and can probably originated as a result of the nasal mutation of voiceless stops in such cases as early Welsh *pump + eryr 'eagle' > *pumh + eryr > medieval Welsh pum heryr (but modern Welsh pum eryr) 'five eagle(s)'. The short forms became used as the general prenominal forms and cannot be synchronically attributed to the nasal mutation; there must be some sort of lexical rule in the grammar that pump → pum and cant → can / ___ [+N].

Ugain 'twenty' has no variant form *ugaint, but in Breton the word is ugent, and no doubt it underwent the same historical evolution.

[11]Un 'one' does not nasalize diwrnod 'day' (see 4.3.5).

[12]Jackson (1967:365) suggests that ho causes gemination--i.e. provection--of voiceless obstruents, and since fricative voicing does not apply to geminates, this would explain why ho does not cause it. However, Jackson also states (p. 332) that this gemination does not occur in modern Breton.

[13]Final orthographic h exists in KLT (e.g. in eh, a prevocalic variant of the affirmative preverbal particle e), but phonetic [h] never occurs in absolute final position. In Vannetais, h is the orthographic equivalent of KLT c'h, and represents [x] in absolute final position. In most dialects of Breton, /x/ is realized as [h] or [ɦ] before vowels; thus we could posit either final /x/ or final abstract /h/ in aspirating morphemes.

[14]Like the articles, the pronouns hon/hol/hor 'our/us' and hen/hel/her 'him, it' vary according to the initial segment of the following word; see also chapter IV, note 14.

[15]Before /t/, these morphemes are [n]- final. According to Jackson (1967:319), the masculine singular definite article in British was *[sindos]. Jackson gives the derivation *[sindos kattos]>*[hindəh kattəh] > *[hində kkattəh] > *[hinn xaθ] > *[an xas] 'the cat', with the last-cited form occurring in medieval Breton. Thus until quite late the definite article in Breton was [an] even before [k]; the variant [ar] developed quite recently, and the mutational behavior of the indefinite article and the pronouns appears to be analogical to that of the definite article. It is thus entirely an accident of history that so many spirantizing triggers end in [r] in modern Breton.

It is interesting to note that in Welsh there seems to be a tendency to spirantize [k] after [r]. Catherine Walker gave pedair chath (standard pedair cath) as a translation of 'four cats'. This construction--numeral + singular noun --is mostly literary these days; Mrs. Walker's normal usage is pedair o gathod 'four (of) cats', with the noun in the plural. What made her choose the spirant mutation in the unfamiliar locution? There is no general rule; Mrs. Walker gave pedwar qi (standard pedwar ci), with lenition, as a translation of 'four dogs'. There seems to be no way of accounting formally for instances of spirantization of [k] following [r].

[16]See 2.6.5 on a metathesis rule of this type which occurs in some Welsh dialects.

[17]In both Welsh and Breton there is an umlaut process, traditionally called vowel-mutation or vowel-affection; originally, it was conditioned by a vowel in a following syllable. In some cases this conditioning still exists on the surface; in others it has disappeared as a result of the loss of a syllable. Thus there are such alternations as W. brawd 'brother' : brodyr 'brothers' and bardd 'poet': beirdd 'poets'. While this process may allow us to retrieve a missing vowel--we could, for example, posit /barð + i/ as the underlying form of beirdd--it is not generally useful for establishing phonological conditioning for lenition, since there are many cases in which this alternation does not occur, and since both vowel-mutation and lenition have been disturbed by various historical vicissitudes. (For example, in Welsh masculine plural nouns such as beirdd do not cause lenition, even if they can be analyzed as underlyingly /i/-final.)

CHAPTER VI

NON-PHONOLOGICAL ANALYSES OF THE MUTATIONS: A SURVEY AND CRITIQUE OF THE LITERATURE

6.0 The usual--if not the only--approach to the Celtic mutations before 1951 was quite simply to list their environments, as I did in chapter IV, under the assumption that no generalizations can be set up in regard to them. In the past thirty years, beginning with Hamp's paper, there have been a number of attempts to make a systematic analysis. Hamp tried--unsuccessfully as I have shown--to set up phonological conditioning, but most studies have proposed various types of syntactic, morphological, or lexical conditioning.

6.1 In some cases, though system was apparently aimed at, it is barely evident; this happens in Knudsen (1973), Thomas (1966), and Awbery (1975), all on Welsh.

6.2 Knudsen sets up the following 'rules':

(1) Nasal mutation

$$[-\text{cont}] \rightarrow [+\text{nas}] \;/\; \left\{\begin{matrix} \text{yn } [\text{ən}] \text{ 'my'} \\ \text{yn } [\text{ən}] \text{ 'in'} \end{matrix}\right\} \quad \# \_\_\_\_$$

(2) Spirant mutation

$$\begin{bmatrix} -\text{cont} \\ -\text{vce} \end{bmatrix} \rightarrow [+\text{cont}] \;/\; \left\{\begin{matrix} \text{C} \\ \text{efo} \\ \text{tra} \\ \text{tri} \\ \text{chwe} \\ \text{ei 'her'} \end{matrix}\right\} \quad \# \_\_\_\_$$

(3) Lenition

$$[\alpha\text{vce}] \longrightarrow \begin{bmatrix} \alpha\text{cont} \\ +\text{vce} \\ -\text{nas} \end{bmatrix} \;/\; \quad X$$

where X = a list of environments for lenition

Knudsen's nasal and spirant mutation rules were discussed in chapter V.

Statements (1-3) are notated as generative phonological rules. However, although Knudsen uses distinctive feature notation to express the consonant alternations (not always accurately),[1] and though he makes a wrongheaded attempt at partial phonological conditioning for the spirant mutation (see 5.2.3), his 'rules' are really a method of listing, as he himself acknowledges (p. 164): '[the initial mutations] seem to be highly restricted processes which are marked by no generalizations. They must simply be specified as processes occurring under certain listed circumstances.'

6.3 Thomas makes a distinction between two types of mutations: those conditioned by syntax and those conditioned by the lexicon. An example of the former is gender distinction. 'His' and 'her' are both pronounced [i] in Welsh; the only way to distinguish them, according to Thomas, is by means of the mutations they govern: ei gath (←cath) 'his cat', with lenition, vs. ei chath 'her cat', with spirantization. Grammatically feminine nouns are lenited after the article but masculine nouns are not: y cog 'the cook' vs. y gog (←cog) 'the cuckoo'.

An example of lexical conditioning is mutation after prepositions, which occurs regardless of the gender of the mutated word. In this case, a lexical marking on the particular preposition would trigger the mutation.

As I will demonstrate, we do need to distinguish some types of mutation from other types. However, the distinction Thomas makes does not mean very much. The mutations often do make grammatical and semantic distinctions, but these are so idiosyncratic and inconsistent that no reasonable generalizations can be made.

For example, the mutations are not sufficient to make gender distinctions. Welsh ei ffenestr [ifɛnɛstr] can mean either 'his window' or 'her window'; there is even a third homophone, eu ffenestr 'their window'. This happens whenever a non-mutable consonant (such as [f]) follows a morpheme which causes mutation of a mutable consonant. However, the

mutations are also not necessary for this purpose: the language is perfectly capable of disambiguating these forms. Normally in speech and often in the standard, a pronoun is added after the noun: ei ffenestr ef 'his window of him'; ei ffenestr hi 'her window of her'; eu ffenestr nhw [nu] 'their window of them' (see also 4.1.11). These pronouns are used even where mutation (or the lack of it) serves to distinguish gender and number: ei gath ef 'his cat'; ei chath hi 'her cat'; eu cath nhw 'their cat'. Hence, the mutations are redundant in this respect.

The mutations are also not always sufficient to distinguish masculine from feminine nouns. Obviously, they do not do so if the noun begins with a non-mutable consonant. Furthermore, there are a limited number of environments in which mutation depends on grammatical gender; in most cases there is no connection. Ei goq (←coq) can mean either 'his cook' or 'his cuckoo'; ei chog can mean either 'her cook' or 'her cuckoo'; eu coq is 'their cook/cuckoo'.

The mutations may, in some instances, prevent syntactic ambiguity. They may distinguish subjects from objects: clywodd ci 'a dog heard' : clywodd gi 'he/she heard a dog'. They may distinguish progressives from states: mae e'n marw 'he is dying' : mae e'n farw 'he is dead'. (In the first case we have yn 'at' + verbal noun; in the second yn, predicate particle + adjective.) Again, however, there are gaps: clywodd y ci can mean either 'the dog heard' or 'he/she heard the dog'.

In many cases, the mutations actually create ambiguities: ei ffair hi 'her fair' and ei phair hi (←pair) 'her cauldron' are both pronounced [ifayrhi], and ei fodd [ivo:ð] could mean either 'his manner' (←modd) or 'his pleasure' (←bodd).

In short--at least where the notion of grammatical conditioning is concerned--Thomas is not making any truly systematic analysis of the mutations in Welsh; he is merely

observing a few cases in which the mutations can make certain distinctions.

6.4 Awbery (1975) has a similar analysis. She proposes four types of mutation: lexical, categorial, structural, and transformational.

In lexical environments, mutations are triggered by individual words, such as ei 'his'. In categorial environments, mutations are caused by and affect grammatical categories; an example is lenition of adjectives after feminine singular nouns. In both these environments, the mutating and mutated elements are adjacent to each other inside the same phrase node.

In structural environments, there may be no apparent trigger; if there is, it need not immediately precede the mutated word. Examples are lenition of nouns used in a vocative sense (bechgyn 'boys' : bore da, fechgyn 'good morning, boys') and lenition of the direct object following a verb (ci 'dog' : gwelodd Wyn gi 'Wyn saw a dog').

An example of a transformational environment is lenition of a subject separated from the preceding verb by an intervening word or phrase; lenition occurs as a result of the reordering of the structure Verb + Subject + X to Verb + X + Subject by means of a transformational rule.

Awbery does recognize a distinction between mutations which involve adjacent forms and those which do not; to this extent, her analysis is more insightful than Thomas's. However, she still falls short of achieving any significant generalizations; she is not doing much more than dividing a large list of environments into a number of smaller lists.[2]

The Thomas-Awbery approach is reminiscent of the proposals of some earlier scholars that the mutations be regarded as a kind of case system, with the inflectional marking in prefix rather than suffix position. This idea is untenable for several reasons. First, in Brythonic the role of case is assumed by word-order, determiners, prepositions, etc. (In Goidelic, there are case endings.) Secondly, there

is no more consistency in this approach than in that of Thomas or Awbery. One mutation may express several different 'cases': Welsh fy mhen (←pen) 'my head' (genitive) and ym Mangor 'in Bangor' (locative) are both examples of the nasal mutation. Several different mutations can express a single 'case': fy mhen 'my head', ei ben 'his head', and ei phen 'her head' all express the genitive. (The radical can do so also: eu pen 'their head'; tŷ Dafydd 'David's house'.) Finally, this notion ignores the existence of non-mutable consonants.

6.5 The trouble with merely writing lists is that, Knudsen to the contrary, there are, indeed, generalizations that can be made regarding the mutations:

1. Almost all environments for mutation involve two morphemes adjacent to each other inside the same word, or two words adjacent to each other inside the same syntactic phrase node; the first of these elements triggers mutation in the second. A few cases of lenition do not involve this construction.
2. Lenition is by far the most widespread of the mutations in all three Brythonic languages, and there are several other ways in which lenition behaves differently from the other mutations.
3. Some mutational phenomena are more 'regular' than others. For example, fy 'my' and yn 'in' trigger the nasal mutation of all stops, but the numerals pum 'five', saith 'seven', etc., nasalize only a few individual words. Listing the environments of the mutations implies that there is no distinction between these instances of nasal mutation.

6.6 Oftedal (1962) recognizes at least the first of these generalizations, and deals with it more effectively than Thomas or Awbery. He sets up a hierarchy of mutational types, based on structure rather than on semantics or grammatical functions. This hierarchy is outlined as follows:

(2) I. Projected mutations
II. Incorporated mutations
A. Free mutations
B. Bound mutations
1. Inherent mutations
2. Retrospective mutations

While some of the above categories apply mainly or only to the Goidelic languages, most--including the two major divisions--also apply to Brythonic.

Projected mutations are those in which a prefix triggers a mutation in an immediately following stem, or in which a word causes a mutation in another directly following it in the same phrase node. Examples include Welsh annheg (←teg) 'unfair' (prefix + stem), ei phen (←pen) 'her head' (NP → Det N), i dŷ (←tŷ) Ifan 'to Ifan's house' (PP → P NP), merch dda (←da) 'a good girl' (NP → N Adj). In Brythonic, this type of mutation is by far the most common.

Incorporated mutations are those which are not caused by an immediately preceding word or morpheme. There are two main subclasses of them. Free mutations are those which--at least on the surface--have no trigger at all; bound mutations do have a trigger, but not one which immediately precedes the mutated word in the same phrase node.

Free mutations apparently occur mostly in Goidelic. Oftedal cites as a Brythonic example negative sentences in spoken Welsh, such as thalodd (←talodd) e ddim 'he did not pay' (literary ni thalodd ef). Presumably, Oftedal would also include spoken Welsh questions in this category (e.g. welwch (←gwelwch) chi e? 'do you see him?' (literary a welwch chwi ef?).

Inherent mutations apparently occur only in Goidelic.[3] Retrospective mutations are syntactically linked to preceding forms, but not to those in the same phrase node. In Welsh, the subject of a verb, separated from that verb by some intervening structure, will be lenited; Oftedal regards

the lenited subject as retrospectively bound to the verb. In Breton, the phrase eme Ber 'Pierre said', also falls into this category, since the verb eme and the subject Per are obviously not in the same phrase node.

Oftedal suggests that the spoken Welsh negative may not involve truly free mutation--that the mutation in, e.g., thalodd e ddim is bound to the negative morpheme ddim. He has no name for this; we could suggest 'anticipatory', as the opposite of retrospective.

Although Oftedal's distinction between 'projected' and 'incorporated' mutations is a prerequisite to an adequate description of the initial mutations, he does not make a satisfactory formal analysis of the latter. He believes that only the incorporated mutations merit study as syntactically or morphologically conditioned processes; he states (p. 102) that the projected mutations 'may be reduced to mere sandhi phenomena'. I have shown, however, that this is not true, at least in Brythonic.

Oftedal's interpretation of his categories is sometimes arguable; this is especially the case in his discussion of 'free' mutations in Brythonic. Oftedal considers only surface structure, thereby missing important generalizations. For example, constructions such as spoken Welsh thalodd e ddim can be better analyzed as involving projected mutations. The literary Welsh negative particle ni has the prevocalic variant nid (see 5.2.3): nid ydy ef yn canu 'neg--is he at singing = he is not singing'. While the spoken language eliminates this particle altogether before consonants, it retains [d] as a prefix to vowel-initial verbs: dydy e ddim yn canu. Hence it is plausible--and, in fact, necessary--to posit underlying /d/ as a negative preverbal particle in spoken Welsh. This particle triggers mutation in a following verb, and is subsequently deleted before a consonant. There is a parallel phenomenon in Breton: in the standard, the negative phrase is ne + verb + ket, but in speech ne is

omitted before consonant-initial verbs: welit (← gwelit) ket an dra-se? 'don't you see that (thing)?' (literary ne welit ket...). The [n] of the negative remains, however, before a vowel, in both literary and spoken Breton: n'eo ket mat 'it is not good'. Thus we can posit an underlying /n/ as a negative morpheme in the spoken language.

The situation is more complicated in the case of questions and relative clauses; in both languages, the triggering particles are usually deleted entirely in speech. Nevertheless, it can be argued that mutation is projected here. Prof. Ceinwen Thomas (personal communication) has suggested that Welsh children may indeed pick up the literary particles from fairy tales, church services, etc., even if they do not hear them in everyday speech; the same could be true of Breton-speaking children. Hence, these children might have these particles underlyingly in their grammars. Even if this is not the case, however, we can posit abstract syntactic triggers with no phonetic realization. In English, questions have been analyzed as containing a pre-sentential node Q in deep structure, to distinguish them from declarative sentences, which do not have this node. A similar approach could be used in Brythonic: Welsh positive questions might be regarded as having an abstract preverbal particle Q, realized phonetically as [ø], but nevertheless present in the competence of speakers, since they must be able to identify a sentence as interrogative.

If the above analysis is used, we do not have to claim, as Oftedal does, that a given mutation is projected in the literary standard but free in speech; we can make a generalization.

In the case of the vocative, there is no triggering particle on the surface even in standard Welsh (see 4.1.19), but we could nevertheless posit an abstract trigger.

In Welsh, lenition occurs in expressions of time, location, and manner: bob (← pob) dydd 'every day'; law yn llaw 'hand in hand' (see 4.1.4). Breton has a similar con-

struction, though only in the case of the word pep 'all': bep eur 'every hour'. (See 4.1.24). This type of mutation --and the vocative as well--could be a true free mutation, though even here we might posit some abstract adverbial node which could act as a trigger. If this is the case, the Brythonic languages may have no free mutations.

Whatever the defects in detail of his analysis, Oftedal deserves great credit for making one distinction that is essential to an adequate description of the mutations--i.e., between those which involve adjacent elements in the same word or phrase node, and those which do not. For the time being, I will use the terms 'projected' and 'non-projected' to refer to the two types of mutation. (I will make little further mention of the subcategories of 'incorporated'--or non-projected--mutations, since these are irrelevant to my own study.)

6.7 A number of modern linguists--some Celticists, some not--have attempted systematic non-phonological descriptions of the initial mutations. Ellis (1965) and Albrow (1966) propose a solution based on prosodic features; Griffen (1975) tries to account for them by means of stratificational grammar; Awbery (1976) proposes transformational rules; Ternes (1970) sets up morphological features.

Some of these analyses are entirely inadequate; none is entirely satisfactory, though morphological features and transformational rules will indeed be involved in my own solution.

6.8 Prosodic features

6.8.0 Ellis (1965) and Albrow (1966)--both writing on Welsh--use prosodic feature analysis in their descriptions. Ellis also follows M.A.K. Halliday's ideas regarding grammatical rank.

The motivation for a prosodic treatment appears to be that the mutations are phenomena involving a sequence of words, at least in the case of projected mutations, with

some factor in the first word attaching itself to the second. (Ellis describes Oftedal's account of the projected mutations, referred to in 5.3, as prosodic.)

6.8.1 Ellis lists the following features--or, as he calls them, exponents of Functional Series--as superscripts attached to the triggering morpheme:[4]

(3) a. o = radical
    b. h = aspiration
    c. xh = spirant mutation and aspiration
    d. x = spirant mutation
    e. xv = spirant mutation and lenition
    f. v = lenition
    g. vo = lenition except for rh, ll
    h. bo = lenition of voiceless stops only
    i. n = nasal mutation

Words which trigger mutation are listed in the lexicon with these superscript symbols (for example, ei$^{\underline{v}}$ 'his'; ei$^{\underline{xh}}$ 'her'; eu$^{\underline{h}}$ 'their'). Some words have more than one exponent the numeral saith 'seven' is listed as saith$^{\underline{bo/n}}$, along with a statement concerning which feature operates where. (In standard Welsh, saith lenites voiceless stops[5] but nasalizes blynedd and blwydd 'year' and diwrnod 'day').

So far, this system seems to account only for the projected type of mutation. However, Ellis also sets up a grammatical ranking system in which his exponents can be used to describe non-projected mutations as well. In addition to the exponents, there are five units of grammatical rank for Celtic languages:

(4) a. sentence = ///
    b. clause = //
    c. group = /
    d. word (no symbol)
    e. morpheme = +

Square brackets indicate embedded clauses and groups.

According to Ellis (pp. 320-321), 'Exponents of any of these five units may show mutation at the beginning (i.e. may have as their initial sound one belonging to a Functional Series other than that (o) in which all initials are radical...)' The exponents can be inserted before a mutated word even if there is no preceding trigger; in this case, the exponents are not written as superscripts, but rather in lower-case italics.

Below are some examples of Ellis's usage of exponents and grammatical ranking:

(5) a. ///Prynodd/fy^{n} brawd/v ceffyl/// → Prynodd fy mrawd geffyl 'bought my brother (a) horse = my brother bought a horse'

b. ///v Boneddigesau a boneddigion.../// → Foneddigesau a boneddigion... 'ladies and gentlemen...'

In (5a), the nasal mutation of brawd 'brother' is caused by the exponent n attached as a superscript to fy 'my'; lenition of ceffyl 'horse'--the direct object of prynodd '(he) bought'--is caused by the exponent v, which is not attached to a triggering word, but is rather placed before the object (i.e., the word which undergoes lenition). In (5b), lenition of the vocative is triggered by an exponent placed before the lenited noun. (Boneddigion 'gentlemen' is not lenited because it is immediately preceded by a 'and', which in the standard would be a^{x} according to Ellis's system.)

Ellis also proposes what he considers a modified version of Oftedal's hierarchy of mutation types. However, he sets up four basic categories rather than two (p. 324):

(6) a 'mutating quality'...can be:--
i. part of exponent of a morpheme..., e.g. na^{xv} or
ii. exponent of a morpheme, e.g. y + vo... or
iii. exponent of a word, e.g. /v... or
iv. exponent of a group, e.g. //v/...

According to Ellis, categories (i) and (ii) correspond to Oftedal's projected mutations; (iii) corresponds generally to retrospective and sometimes to free mutations; (iv) corresponds to free mutations.

This 'system' is far from clear. Category (i) seems to refer to multiple exponents; in the example given, na$^{\underline{xv}}$ (negative particle), x and v are each 'part of the exponent' of the morpheme na, x being the part that spirantizes voiceless stops and v being the part that lenites other mutable consonants.

Category (ii), by this reasoning, should include such examples as ei$^{\underline{v}}$ 'his' and fy$^{\underline{n}}$ 'my', each of which has a single exponent. The example used to illustrate this category, y + vo..., is confusing. Apparently Ellis does not consider vo as a multiple exponent, perhaps because o indicates non-mutation. However, Ellis does list o as an exponent, so the distinction between xv and vo is inconsistent.

It is also unclear what 'morpheme' Ellis is referring to here. The exponent is not part of y 'the', but rather precedes feminine singular nouns or adjectives. Presumably, Ellis does not want to set up two different articles, y$^{\underline{vo}}$ preceding feminine singulars and y$^{\underline{o}}$ preceding other categories. He gives an example /y + vo brawddeg/ → y frawddeg 'the sentence'. Ellis does use the symbol '+' to indicate a morpheme, so perhaps he is trying to express the idea that an article + a noun are two morphemes of the same word; the distinction between lenition of brawddeg and lenition of e.g. ceffyl in example (5a)--a case of category (iii)--is therefore that the former is a morpheme-initial mutation and the latter is a word-initial mutation.

Ellis gives no example of category (iv).

The issue is further confused by the fact that Ellis refers to sentence-initial, clause-initial, group-initial, word-initial, and morpheme-initial mutations, which seem to have nothing to do with determining the category of a

mutation. Thus //Ydych/chi/'n dŵad,//n tad?/// → Ydych chi'n dŵad, 'nhad? 'are you (at) coming, (my) father?' is given as an example of a clause-initial mutation, yet the position of the exponent n before tad 'father' would seem to make it 'the exponent of a word'--category (iii)--if not 'the exponent of a morpheme'--category (ii).

It is difficult to see what is to be gained by this approach. Ellis is evidently trying to improve on Oftedal, yet he loses Oftedal's essential distinction between projected and non-projected mutations, by setting up two equal categories for each type. There is also no clear justification for Ellis's choice of categories. For example, why must there be a distinction between multiple and single exponents, if that is how categories (i) and (ii) are divided? If there are exponents of words and exponents of groups, why not exponents of clauses and sentences?

Ellis's prosodic exponents themselves are a good deal clearer than his attempts to integrate them into a grammatical ranking system. However, there are several defects in the exponents too.

First, Ellis fails to distinguish lenition from the other mutations; v is just an exponent among many others.

Second, Ellis lists too many different exponents, thereby missing possible generalizations. For example, he sets up a separate 'functional series' vo--lenition except for rh and ll--to deal with cases such as the lenition of feminine singular nouns after the article. This extra category is unnecessary if initial voiceless liquids are simply assigned an exception feature immunizing them to lenition if certain words precede them (see also 7.12.2).

Third, Ellis's exponents fail to distinguish exceptional cases of mutation from more regular ones. For example, the feature n is assigned both to morphemes which trigger the nasal mutation of all stops and to numerals which cause nasalization of only a few words. In the latter case, there is an extra statement specifying context. Again, it would

be better to assign an exception feature to the three mutated words, marking them in the grammar of standard Welsh as undergoing nasalization after certain numerals.

Actually, though Ellis intends his exponents to be prosodic features, they might as well be morphological or lexical ones; the same will be seen to be true of Albrow (1966). Prosody has been proposed to deal with processes that are propagated over several segments in a word, but the Celtic initial mutations are confined to the initial segment of a word or morpheme, and there seems to be no particular reason for using prosodic analysis to describe them.

6.8.2 Albrow (1966) sets up four 'junction features' to handle the mutations:

(7) a. R = radical
    b. N = nasal mutation
    c. S = soft mutation (lenition)
    d. H = spirant mutation and aspiration

Albrow also posits two features to deal with voicing oppositions:

(8) a. h = voicelessness
    b. $\overline{h}$ = voicing

The voicing feature is attached to the initial consonant of a word; the other junction features are apparently attached to the boundary between a trigger word and the word which is to be mutated.

Albrow rejects the 'phonemic type of statement' (p. 3), which treats the relationship of the initial consonants in e.g. pen/ben 'head' and brawd/frawd 'brother' as morphophonemic alternations, and which regards /b/ in ben and brawd as belonging to the same phoneme. Albrow therefore sets up the following system for a North Welsh dialect (Abersoch):

(9) a. ^{Rh}pɛn = pɛn 'head'

$və^{Nh}$pɛn = və mɦɛn 'my head'

i^{Sh}pɛn = i bɛn 'his head'

i^{Hh}pɛn = i fɛn 'her head'

b. $^{R\bar{h}}$praud = braud 'brother'

$və^{N\bar{h}}$praud = və mraud 'my brother'

$i^{S\bar{h}}$praud = i vraud 'his brother'

$i^{H\bar{h}}$praud = i braud 'her brother'

c. ^{Rh}lɔŋ = ɬɔŋ 'ship'

$və^{Nh}$lɔŋ = və ɬɔŋ 'my ship'

i^{Sh}lɔŋ = i lɔŋ 'his ship'

i^{Hh}lɔŋ = i ɬɔŋ 'her ship'

d. $^{R\bar{h}}$lamp = lamp 'lamp'

$və^{N\bar{h}}$lamp = və lamp 'my lamp'

$i^{S\bar{h}}$lamp = i lamp 'his lamp'

$i^{H\bar{h}}$lamp = i lɦamp 'her lamp'

Note that for <u>brawd</u> 'brother', Albrow has set up a base form /praud/. The voicing feature $\bar{h}$, attached to the initial consonant, causes it to become voiced. The junction feature R, in combination with the voicing feature, yields the radical form <u>brawd</u>; the other junction features, with $\bar{h}$, yield the various mutational forms listed in (9b). In contrast, <u>pen</u> 'head', which has the base form /pɛn/, retains this form in the radical because of the feature h, denoting voicelessness, which is attached to /p/. The various junction features, in combination with h, yield the forms listed in (9a). A similar analysis is given for all words beginning with stops ('plosive words'), so that voiced

stops do not occur underlyingly in initial position, and the radical is a sort of mutation in itself. Albrow justifies this approach to initial voiced stops by saying (p. 4-5): 'This preserves the parallelism with h initials --and in any case the stops are almost certainly only comparable, not absolutely identical, in the two different environments.'

The $\overline{h}$ feature does not prevent the junction feature S (leniting) from causing voicing of /p/ in ei ben. Albrow dismisses this problem with the statement (p. 5), 'This simply becomes a fact about...S.'

Albrow also treats voiceless liquids as underlyingly voiced, as in (9c); the feature h causes voicelessness of the initial liquid in the non-lenited forms. In borrowed words such as lamp, the feature $\overline{h}$ maintains voicing of the initial liquid; see (9d).

Finally, Albrow states (p. 7) that 'under this statement there is no phonological correspondence between e.g. the [f]s of [i fɛn] 'her head' and say [i fɛnɛstr] 'her window', the first being ^{Hh}p-- and the second f, or more probably ^{h}v (since the [v] of [vinɛgr] has already been called $^{(\overline{h})}$v rather than f).'

It is very difficult to see what this treatment explains. Albrow's choice of base forms takes no notice of the realities of Welsh phonemics. He admits that he is not an expert on Welsh, and though he claims that he has long been interested in Celtic, either he knows very little of the language or he does not care whether or not his analysis reflects its real structure. It cannot be doubted, for example, that there is a phonemic contrast between voiced and voiceless stops and between voiced and voiceless liquids in Welsh; aside from Albrow's desire to set up up a system that will work mechanically on his terms, there is no reason to posit such base forms as /praud/ and /lɔŋ/. The statement regarding [f] and [v] is especially perverse, since almost no native words in Welsh begin with [v] in the

radical; almost all words with initial [v] are borrowings from English, including vinegr 'vinegar', which Albrow cites as undergoing aspiration in the particular dialect he is discussing. (See also 2.6.4.) Albrow's paper is the only one I have seen in which aspiration of [v] is mentioned. It may well be an anomaly, perhaps confined to the dialect or even the idiolect of Albrow's informant; yet Albrow posits base forms with /v/ for [f]- initial words such as ffenestr.

Albrow describes e.g. radical /b/ and [b] derived by lenition as 'almost certainly' not phonetically identical. This is true, at least in the case of voiced stops, and at least in some dialects. Radical voiced stops tend to be partly devoiced in spoken Welsh; in some dialects they are even phonetically voiceless (Sommerfelt (1925a) describes such a dialect). In Breton, radical consonants are long or tense (fortis) and lenited ones short or lax (lenis); see 3.12. However, these differences are predictable.

Albrow considers that the orthographic distinction between radical /f/ (spelled ff) and [f] derived by the spirant mutation from /p/ (spelled ph) is prosodic in nature. The orthographic difference does reflect, as Albrow says, a distinction in the phonological status of the two types of [f]. However, this spelling distinction is unique; radical /x/ and [x] derived from /k/ by the spirant mutation are both written ch. There is also no orthographic distinction between radical voiced stops or nasals and those derived by mutation.

We do want to say that, for example, lenited [b] is underlyingly /p/ (though /b/ is also a phoneme of Welsh); but we also want to say that lenited [v] is underlyingly /b/ (though /v/ is also a phoneme of Welsh). Albrow's analysis actually interferes with making distinctions between radical consonants and the 'same' consonants derived by mutation. Morphophonemic alternation, which Albrow rejects, presents a much clearer view of what is happening.

As I pointed out in 6.8.1, prosodic analysis does not seem to be of much value in describing a process that involves only a single change in a word. Albrow justifies prosody on the grounds that it 'relates sound (through phonetics) to grammatical structure (in this case pronoun-noun or noun)' (p. 3). However, it is perfectly possible to do this with morphophonemic alternation, even if the latter is not phonologically conditioned; the purpose of this study is to show how it can be done. The real problem in accounting for the mutations is discovering generalizations regarding the grammatical structures that the sound is related to. Albrow considers a tiny number of such structures ('pronoun-noun' and 'noun'), and makes no attempt at generalization. This, no doubt, is due to Albrow's ignorance of the language, as are several errors of fact (the most serious of these being the inclusion under one feature of both the spirant mutation and aspiration, though in most dialects these do not have the same list of triggering morphemes).

6.9 Stratificational grammar

Griffen (1975) accounts for the mutations by means of stratificational grammar. According to this theory, the mutations are not rules, but rather a set of choices. Welsh words consist of 'morphons' realized as phonemes; the speaker makes a choice, in the appropriate environment, of which phoneme to use. Griffen proposes (pp. 9-10) that

(10) the mutation system of Welsh consists of relationships among three strata--the lexemic stratum (roughly corresponding to surface syntax), the morphemic stratum...and the phonemic stratum. On the lexemic stratum, certain grammatical relationships are established [for] example...'direct object' (which is one element of the soft mutation).

In the word mab 'son', the 'morphons' are $^{Mn}/m/$, $^{Mn}/a/$, and $^{Mn}/b/$. $^{Mn}/m/$, the only morphon subject to mutation

(p.11)

(11) is realized as the phoneme ^{P}/m/ unless it is dominated by a conditioning factor within the realm of soft mutation from a higher stratum (such as relating to the direct object position of an inflected verb). Thus, there is a choice -- ^{P}/v/ if there is soft mutation, ^{P}/m/ otherwise. An initial ^{Mn}/b/...is realized as ^{P}/b/ unless a conditioning factor dominates it; in which case it is realized as ^{P}/v/ if the factor is soft mutation, or ^{P}/m/ if the factor is nasal mutation.

The motivation behind Griffen's approach involves a highly interesting phenomenon associated with the mutations: a type of back-formation or reanalysis (Powkes (1976) calls it 'metanalysis') in which the radical forms of some words come to be regarded as the lenited forms, and new radicals are then invented. This process occurs in all the Celtic languages; in Welsh and Breton it happens most often in the case of borrowings beginning with [v], since this segment almost never occurs as an initial radical consonant in native Celtic words. Hence English velvet has been borrowed into Welsh as melfed [mɛlvɛd], with the lenited form felfed [vɛlvɛd]; middle French véage 'voyage' has been borrowed into Breton as beaj (lenited veaj). Other examples follow:[6]

(12) a. MF voez [vwɛz] 'voice' → B. mouez [mwez] (Vannetais boeh)
b. Fr. volonté 'will' → B. bolontez
c. Eng. villain → W. milain 'angry, fierce'
d. Eng. vex → W. becsio

Welsh first borrowed Eng. vicar as bicar (or micar); recently it has been 'corrected' to ficer, in keeping with the elevated standing of the word.

There are also cases of English words beginning with liquids which have been borrowed into Welsh with voiceless liquid initials, since until quite recently voiced liquids

could not occur word-initially in Welsh: Eng. rake → W. rhaca; lappet → llabed.

That this should occur is natural enough--but it also happens in words that begin with perfectly admissible radical segments. Eng. honest has been borrowed into Welsh as gonest, though many Welsh words begin with vowels in the radical. Voiced stops may be reanalyzed as voiceless:[7]

(13) a. Old Eng. bræs 'brass' → W. pres
b. OE botel 'bottle' → W. potel
c. Eng. destiny → W. tesni
d. Eng. damp → W. tamp
e. Eng. grand → W. crand
f. Eng. goblin → W. coblyn
g. Fr. glisser 'to slip' → B. klisia

As can be seen from the Old English examples, the reanalysis phenomenon is very old. Native Celtic words as well as borrowings are subject to it. Welsh gallt 'hill' should etymologically be allt. Parry-Williams (1923) cites a North Welsh form poles 'filly', probably from eboles reanalyzed as y boles 'the filly'. There are dialectal variations resulting from reanalysis in one dialect but preservation of the original form in another: Morgan (1952) cites das 'hayrick' (lenited form ddas) alongside the reanalyzed form tas (lenited variant das).

There are, or were, some cases of [w] → [gw]: Eng. warrant → W. gwarant. This, however, is probably not a true case of reanalysis but rather an adjustment to Brythonic phonotactic constraints; there was a historical rule *[w] → [gw] / # ____, which may still have been in operation at the time of these earlier borrowings. Today in Welsh, [w] is generally maintained: Eng. wallet → W. waled; watch → wats.

French had the same historical rule (cf. Frankish werra → Fr. guerre), and therefore has few words beginning

with [w]. Hence there are few if any equivalents of warrant →gwarant in Breton.

There are apparently some cases of double reanalysis. Eng. angle has been borrowed into Welsh as both ongl and congl; the latter seems to be a case of reanalysis first to *gongl and then still further to congl (Prof. Ralph Ward, personal communication).

A quite striking result of reanalysis, again occurring in both native and foreign words, is variation in the radical between [b] and [m], by way of their mutual lenited variant [v]. Welsh modrwy 'ring' is derived from Old Welsh maut 'thumb'--but the modern word for 'thumb' is bawd. 'Woman' can be either menyw or benyw (the Cornish cognate is benen). In Breton, 'bellows' is begin or megin (the Welsh cognate is megin).

Eng. bushel has been borrowed into Welsh as bwysel (with the lenited form fwysel), as mwysel (as a back-formation from fwysel), and as pwysel (with bwysel as the lenited form).[8]

Other examples of confusion between [b] and [m] follow:

(14) a. Eng. bench →W. mainc
b. Eng. marble →W. barbal
c. Eng. bargain →W. margen~bargen

Griffen maintains that the stratificational-grammar solution accounts for both mutation and reanalysis. A Welsh speaker will interpret the initial [v] of a word like velvet as the phoneme ^{P}/v/, since there is no initial morphon ^{Mn}/v/ in Welsh, and consider ^{P}/v/ as the lenited realization of a morphon ^{Mn}/b/ or ^{Mn}/m/. Therefore, he will choose melfed (or, in earlier times, belfed) in what Griffen considers the unmarked (i.e. radical) environment. While the generativist approach complicates the grammar of Welsh because it requires separate rules to account for

mutation and reanalysis, stratificational grammar deals with both processes as a unity.

Unfortunately, this analysis simply does not work. There is, indeed, an initial morphon ^{Mn}/v/ in Welsh, both in native and in borrowed words. In the native words, initial /v/ can occur in 'permanently lenited' forms such as fy [və] 'my' and in words derived by abbreviation or metathesis (e.g. fagddu 'utter darkness' ← afagddu; feallai 'perhaps' ← efallai. See also 3.4.) These words, and loanwords such as ficer, must be treated as underlyingly /v/-initial. Other 'prohibited' initial segments which occur in recent borrowings include [l], [r], [θ], and [w]; these, too, are initial morphons of Welsh even by Griffen's standards. Furthermore, voiced stops and vowels, which have always been perfectly good initial morphons of Welsh, can be reanalyzed, and Griffen himself gives examples of these cases.

An important point that Griffen has overlooked is that reanalysis occurs exclusively, or virtually so, in terms of lenition. Nowhere in the literature dealing with this phenomenon is there an example of reanalysis in terms of nasalization (e.g., taking a word beginning with [n] and reinterpreting it as having initial radical [d]; the [b]/[m] variations I discussed above go by way of an intermediate lenited [v]). There are words with original initial voiceless stops which have become voiced,[9] but these can hardly be regarded as cases of reanalysis in terms of provection, since Welsh does not have a provective mutation. Rather, they are cases of permanent lenition. There is a possible case in Welsh, and a probable one in Breton, of reanalysis in terms of the spirant mutation: English throne has been borrowed into Welsh as both thrôn [θro:n] and trôn; the latter may be a case of reanalysis, or it may simply be a 'mispronunciation' of the English word. A more likely example is Breton prenest 'window'; the Welsh word is ffenestr, borrowed from Latin fenestra. These are very

exceptional cases, however; if Griffen's account had any validity, we would expect many more.

It is, in fact, impossible to write any rules at all--generativist or stratificational--to account for reanalysis; it is just not predictable enough. It is a tendency, at best an analogical process, reflecting Celtic speakers' intuitions about the morpheme structure and morphophonological processes of their languages. Many words are heard more often in their lenited form than in any other; loanwords used in context after lenition-triggering morphemes are thus often--but by no means always!--interpreted as lenited. Even Griffen appears to recognize the lack of predictability in this phenomenon, saying that when confronted with a [v]-initial loanword, a Welsh speaker will choose either ^{Mn}/b/ or ^{Mn}/m/ as an initial morphon. There is no way of telling which of the two will be chosen; there is often vacillation between them. (Melfed 'velvet' was belfed at one time.)

As I will show in chapter VII, I consider reanalysis to be important evidence in favor of my claim that lenition is the 'unmarked' case in projected mutations, but the phenomenon cannot be integrated into the formal rule structure of the Celtic languages. In attempting such an integration, Griffen resorts to a model that is quite inadequate to describe the Celtic mutations. In fact, his analysis seems to be a notational variant of listing, since each 'conditioning factor' must be mentioned separately.

Griffen's model does not explain why some types of alternation or more common and expected than others. Why do the Celtic mutations seem stranger to us than word-medial assimilation, or even phonologically-motivated initial changes, if all alternations are merely a matter of 'choices' made by the speaker?

6.10 Transformational rules

Awbery (1976:9), writing on Welsh, proposes that the

mutations be effected by transformational rules: 'words should be marked with the feature [+α mutation] late in the syntactic derivation. In the phonological component this feature will trigger the correct phonological changes.' Hence, the mutations are generated by both the syntactic and the phonological components.

Examples of Awbery's transformational rules follow:[10]

(15) T. Soft Mutation of Direct Object (p. 22)

X	[V, +tense]	NP	NP	Y	
1	2	3	4	5	⇒ oblig.
1	2	3	[4, +soft mut.]	5	

(16) T. Prepositional Object Mutation (p. 28)

X	[P, +α mut.]	NP	Y	
1	2	3	4	⇒ oblig.
1	2	[3, +α mut.]	4	

(17) T. Preposed Pronoun Mutation (p. 27)[11]

X	[Det, +pro, +α mut.]	{N, [V, -tense]}	Y	
1	2	3	4	⇒ oblig.
1	2	[3, +α mut.]	4	

In (16) and (17), Awbery assigns the feature [+α mut.] in the structural description to words which trigger mutation, and assigns the same feature in the structural change to words which undergo mutation. The variable feature is necessary because different individual prepositions, possessive pronouns, etc., trigger different mutations, or

none at all. Evidently, each individual proclitic-type morpheme is assigned a feature specifying which mutation it triggers. Thus /i/ 'his' would be marked [+leniting], /i/ 'her' would be marked [+spirantizing] , and /ə̃n/ 'in' would be marked [+nasalizing]. Non-mutating morphemes such as /i/ 'their' and /ən/ 'at' would either have no marking or be marked [-mutating].

In some ways, as I will show, Awbery's analysis is good. However, there are several problems, stemming from her failure to make certain essential distinctions and generalizations.

First, she fails to distinguish adequately between projected and non-projected mutations; indeed, she does not explicitly note any difference between the two types. In practice, however, Awbery's transformational rules do express a distinction. In projected mutations, the structural description includes an element (such as a possessive pronoun) which has been assigned a feature that causes it to trigger a certain mutation in the immediately following element. This mutation feature reappears in the structural change, copied onto the second element. In non-projected mutations, there is no triggering morpheme, and the mutation feature appears only in the structural change.

Nevertheless, Awbery does not call attention to this distinction. Separate rules are set up for each individual case of mutation, projected or non-projected. Thus there is a prepositional object mutation rule, a preposed (i.e. possessive) pronoun mutation rule, and, presumably, rules to deal with mutation after articles, numerals, adjectives, etc., as well as rules for non-projected mutations such as direct-object lenition. No generalization is made regarding projected mutations, and it becomes an accident that the great majority of mutations in Welsh are projected. It also becomes an accident that all non-projected mutations involve lenition.

Awbery also fails to distinguish between lenition and the other mutations (or preservation of the radical); all mutations are assigned by features.

Transformational rules probably are the best way to account for non-projected lenition--what I will call 'marked' lenition. Awbery has an excellent argument for including lenition of the direct object in the transformational component of the grammar. If we regard VSO as the deep-structure word order in Welsh, as well as normal surface-structure order, then Welsh has the sentential phrase structure rule S→VP NP NP. In the rule T. lenition of the direct object, the structural description is V NP NP, with lenition applying to the second NP (see rule (15) and note 11). Thus we have gwelodd dyn gi (←ci) 'saw (a) man (a) dog = a man saw a dog'. If the subject NP is a pronoun, it may optionally be deleted: gwelodd ef gi or gwelodd gi 'saw he a dog = he saw a dog'. If optional subject pronoun deletion is a late transformational rule, as seems likely, it must follow lenition of the direct object, since the structural description of the direct-object lenition rule does not allow lenition to apply to the NP that directly follows the verb. If lenition could apply to this NP, it would wrongly affect subjects which directly follow the verb: *gwelodd ddyn ci. Hence, lenition of the direct object must be in the transformational component of the grammar of Welsh.

On the other hand, none of the projected mutations that Awbery expresses as transformational rules must be ordered before another T-rule, and most, if not all, must be ordered after other T-rules. There is, therefore, no evidence that the projected mutations must be included in the transformational component of the grammar.

Awbery herself provides evidence for excluding projected mutations from the syntactic component, in the form of the rule T. preposed pronoun mutation, expressed in (17). She gives the following examples of this rule in operation

(pp. 27-28):[12]

(18) a. gwelais ei frawd (←brawd) ef 'I saw his brother (of him)'
b. gwelais fy mrawd i 'I saw my brother (of me)'
c. rhoddais y llyfr i'w frawd ef 'I gave the book to his brother (of him)'
d. mae Ifor wedi fy nghweld (←gweld) i 'is Ifor after my seeing (of me) = Ifor saw me'
e. mae Ifor wedi ei weld ef 'is Ifor after his seeing (of him) = Ifor saw him'

In (18c) above, the contracted variant 'w 'his' triggers the same mutation (lenition) as the full form ei. However, consider the following sentences, also from Awbery (1976: 27-28):

(19) a. rhoddais y llyfr i'm brawd i 'I gave the book to my brother (of me)'
b. mae Ifor wedi fy nghweld i a'm galw i 'is Ifor after my seeing (of me) and my calling (of me) = Ifor saw me and called me'

The contracted variant of 'my', 'm, preserves the radical rather than nasalizing as fy does.[13] Awbery herself recognizes the implications of this (p. 27): 'It seems likely that T. Preposed Pronoun Mutation must follow the morphological rules which give the correct form of the preposed pronoun'--that is, the suppletion rules which state that 'w or 'm will occur in certain environments, rather than ei or fy. If these rules are morphological, as they surely are, then they are not part of the syntactic component, and if the mutational characteristics of the suppletive variants must be determined after these rules have operated, then 'preposed pronoun mutation' cannot be in the transformational component of Welsh.

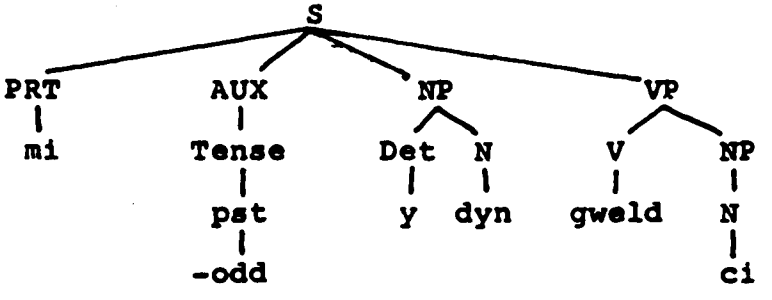
Whether transformational rules are a legitimate way of

accounting for projected mutations depends on how far we can extend the domain of T-rules. These have, indeed, been used to deal with fully phonological rules such as vowel nasalization/nasal consonant deletion or consonant deletion/ compensatory lengthening. However, such rules are still not in the syntactic component, which is where Awbery places her projected-mutation rules.

We could say that there are two different types of transformational rules corresponding to the two major mutational types: syntactic T-rules would account for non-projected mutations and phonological T-rules would account for projected mutations. However, even in this case we would need some way of distinguishing lenition from the other mutations; there would have to be two different types of phonological T-rules.

Jones and Thomas (1977) consider VSO order in Welsh to be a surface structure only; the phrase structure rule for the sentence is S → PRT AUX NP VP. PRT is a particle such as fe or mi (see 4.1.17); it is considered here to be presentential rather than preverbal. AUX can be a verb form such as mae 'is', or a tense suffix such as -odd, third person singular past tense. Thus mi welodd y dyn gi 'prt.--saw the man a dog = the man saw a dog' would have the following deep structure:

(20)



Jones and Thomas, like Awbery, regard verbal nouns as verbs. When AUX → Tense, as in the above sentence, a transformational rule fronts the main verb into AUX position; the

verb thus becomes tensed. However, in a sentence such as mi wnaeth y dyn weld ci 'prt.--did the man see a dog = the man saw a dog', the underlying structure is kept: the verb gwnaeth '(he) did' is under AUX, and gweld is the main verb.

If Jones and Thomas are correct, and Welsh has the phrase structure rule VP → V NP, then can direct-object lenition be considered a projected mutation?

There are some complications to this proposal. According to the Jones-Thomas model, at deep-structure level, where the verb is next to the object, the verb is always in the form of a verbal noun (or infinitive). In surface structure, the verbal noun does not cause lenition of its 'object' (cf. the above-cited sentence mi wnaeth y dyn weld ci). In the Jones-Thomas account, a verb becomes tensed--and thus capable of leniting its object--only after it is fronted, and thus separated from the object. If the mutation is projected, and if projected mutations are part of the morphological component (or even late transformational rules), then projected mutations must be sensitive to a level of the grammar much deeper than the one at which they operate. Awbery (1975) does consider such a possibility, though in a somewhat different context. In this earlier paper, she does not set up transformational rules for the mutations, considering them rather as idiosyncratically-conditioned phonological rules (see 6.4). Her argument that optional subject-pronoun deletion must follow direct-object lenition is here used in support of the idea that certain cases of mutation are conditioned by syntactic structures below the surface, and that the standard theory of Chomsky and Halle (1968)--the 'interface' model--is therefore wrong.

As further support, Awbery cites the optional deletion of preverbal particles such as the affirmative fe and the interrogative a, as in (fe) welodd Wyn y ci 'Wyn saw the dog' and (a) welodd Wyn y ci? 'did Wyn see the dog?' (If the particles are omitted here, then the sense is conveyed

by intonation.) If particle deletion is caused by a transformational rule, then lenition must be sensitive to the structure existing before the operation of that rule.

It has been suggested by Bresnan (1977) that some phonological processes of English are conditioned by subsurface syntactic structures.[14] However, I do not think this analysis is necessary in the case of the mutations. The ordering of direct-object lenition and optional subject-pronoun deletion is much better handled as it was by Awbery herself in her 1976 monograph (in which direct-object lenition is regarded as a transformational rule preceding pronoun-deletion). The argument involving preverbal particles can be countered by proposing that even though the particles in question are realized phonetically as [ø], there are still abstract nodes at the surface structure level (analogous to English Q, etc.; see 6.6) which are capable of triggering lenition.

In my view, there is not enough justification for the Jones-Thomas model; as I pointed out in 4.1.1, treating verbal nouns as nouns rather than infinitive verbs results in a much more adequate description of several different syntactic structures in Welsh.

I believe that Awbery is correct in setting up transformational rules to account for non-projected lenition. Her rules are not general enough; for example, she posits a rule T. Mutation of Embedded Verb, separate from T. Soft Mutation of Direct Object, though these two rules, plus one or two others, can be collapsed; see 4.1.1-3. However, her most serious mistake is, as I have noted, treating projected mutations as transformational rules.

6.11 Morphological features

6.11.0 As we have seen, there is good evidence that non-projected lenition may be accounted for by means of transformational rules. In the case of projected mutations--which have, so far, been described as those involving

adjacent elements and occurring either across a morpheme boundary inside the same word or across a word boundary inside the same phrase node--there is equally good evidence that we must deal with a shallower level of the grammar: syntactic surface structure, readjustment rules, or the morphological component.

It is possible to account for the projected mutations by assigning a morphological feature to the first element in the sequence. In discussing Hamp (1951) in 5.3, I noted that his analysis could be regarded as using morphological features if his symbols were stripped of the phonological content that he attributed to them.

6.11.1 Ternes (1970), writing on the Ile de Groix dialect of Vannetais Breton, posits morphological features, using superscript numerals to represent each mutational process. Ternes' features are as follows:

(21) a. //1// = lenition
b. //2// = lenition except for [d]
c. //3// = lenition of voiceless stops only
d. //4// = lenition of [blay] (→[vlay]) 'year' after some numerals
e. //5// = spirant mutation
f. //6// = spirant mutation of $[k]^{15}$
g. //7// = provection
h. //8// = incomplete lenition-and-provection ([m b]→[f]; provection of other consonants)
i. //9// = complete lenition-and-provection
j. //10// = nasal mutation
k. //11// = fricative voicing
l. //x// = aspiration

Examples of Ternes's features in operation follow:

(22) a. $//xa^{1,11}$ - + galw// → [hahalw] 'they call'
b. $//\ddot{u}r^{2,6,11}$ - + γweix^{1} + biyãn// → [ürẅex viyãn] 'a

little glass'

c. //ən^{2,3,10} - + amzeir^{1} + čeãt// → [ənamzɛrǰeãt] 'the old time'

d. //xu^{x,7} - + ba:g// → [hupa:k] 'your boat'

e. //e^{x,9} - + a:rat// → [eha:rat] '(at) plowing'

f. //a:rxwax + ɔ^{x,9} - + bow gla:w// → [a:rhwax fo gla:w] 'tomorrow prt.--(there) will be rain'

g. //xa^{x,8} - + gran// → [hakran] 'thy seeds'

h. //xu^{x,5,11} - + kwein// → [huhẅein] 'their dinner'

Ternes regards words such as subject pronouns, possessive pronouns, articles, preverbal particles, etc., as prefixes, which is why he writes a hyphen after them in his morphophonemic representations. As I will show in chapter VII, he is correct in this.

However, Ternes's features, which resemble Ellis's prosodic features, share certain defects of the latter: Ternes fails to distinguish between lenition and the other mutations, and he sets up too many different categories. Even if we do not set lenition apart, only //1//, //5//, //7//, //9//, and probably //x// are valid features; the others are either subclasses of these or represent phonological rules. Category //2// describes de-lenition by provective sandhi (see 5.1.3); //10// is nasal assimilation (see 5.1.2); //11// is 'new lenition' (see 5.1.1). As I will show in chapter VII, it is possible, and better, to include categories //3//, //6//, and //8// under //1//, //5//, and //9// respectively, rather than set up separate classes for them.

Category //4// involves lenition of a single word; it is more reasonable to mark that word in the grammar of Breton as exceptionally subject to lenition in certain environments than to treat this case on the same basis as regular lenition.

Ternes also posits features not attached to a trigger

word:

(23) $//^{1,11}$ - + gwe:ran + čet// → [ẅe:rančet] 'I do not know'

As I have shown (see 6.6), in the above sentence we must have an underlying negative-particle trigger.

Like Hamp, Ternes does not propose any feature to account for preservation of the radical.

6.11.2 Humphreys (1972) also uses superscripted morphological features:

(24) a. R = radical
b. L = lenition
c. LP = lenition-and-provection
d. S = spirant mutation
e. P = provection

Humphreys' system works much like the others': ^{L}/m/ → [v]; ^{LP}/m/ → [f]; etc:

(25) a. /tre$^{(R)}$ hrɔstrən a$^{(R)}$ plõ:nəve/ 'between Rostrenen and Plounevez-Quintin'
b. /əid e də$^{(L)}$ rɔstrən/ 'he went to Rostrenen'
c. /$^{(R)}$hri:dəg/ 'running'
d. /$^{(L)}$ri:dá kəd/ 'he does not run'

(The above examples, except for the features, seem to be phonetic representations; (25b) would be more clearly illustrated as /...də$^{(L)}$ hrɔstrən/ → [də rɔstrən].)

As can be seen from (25c,d), Humphreys also proposes that features can exist by themselves without being affixed to actual triggers. An unusual variation here is that even a radical form in absolute initial position (i.e., unpreceded by a proclitic element) must have a feature to put it into radical form.

Like Hamp and Ternes, Humphreys does not distinguish lenition from the other mutations.

6.11.3 I do, in fact, regard morphological features as the best way to account for projected mutations in the Brythonic languages. However, in the form so far proposed, they have not been used to the best descriptive advantage. I would posit the following features:

(26) a. /+S/ = spirant mutation
b. /+N/ = nasal mutation (Welsh)
c. /+P/ = provection (Breton)
d. /+Lp/ = lenition-and-provection (Breton)
e. /+A/ = aspiration
f. /+R/ = preservation of the radical

(If aspiration is a phonological rule, there would be no feature /+A/.)

Note that I have not listed a feature /+L/ as the cause of lenition. We can consider the features listed in (26) as referring to classes of grammatical morphemes which trigger spirantization, nasalization, etc., in a following word, just as in English we can speak of classes of nouns which form their plurals by means of medial vowel changes, lack of change, etc. In most cases, the membership of the classes listed in (26) is quite small, especially in the spoken languages; even in the case of /+R/, there are a limited, if fairly large, number of morphemes which preserve the radical.

However, a glance at chapter IV makes it obvious that it is as meaningless to speak of a 'class' of lenition-triggering morphemes as it would be to refer to a 'class' of English nouns which form their plurals by adding <u>-s</u>, and for more or less the same reason: lenition is the unmarked case in the environment of what I have been calling projected mutations. It is lack of a feature marking, not the presence of one, which causes lenition. Most Celticists

consider the radical form to be the unmarked case in all environments, but I will show in chapter VII that in projected mutations (which I will define more specifically) the radical form is in fact exceptional, requiring a morphological feature.

NOTES

[1]Knudsen's rule for lenition wrongly causes voicing of fricatives and spirantization of [n].

[2]In her 1976 monograph, Awbery abandons this analysis in favor of one in which the mutations are effected by transformational rules. See 6.10.

[3]In Scottish Gaelic, for example, the genitive case of masculine proper names is always lenited regardless of the case, gender, and number of the governing word: thus nominative [kalaŃ] 'Colin' : genitive [xalaŃ] 'Colin's'. The mutation is an inherent characteristic of the genitive of masculine proper names, but since the genitive is never found in isolation or in absolute initial position, Oftedal regards this mutation as bound rather than free. Note that in the Goidelic languages, lenition involves spirantization of voiceless as well as voiced stops; there is no spirant mutation.

[4]Ellis is dealing basically with standard Welsh. He does note some differences in non-standard dialects (for example, in dialects lacking [h], categories (3b) and (3c) are absent.)

[5]Although this is the case in literary Welsh according to traditional handbooks, a number of Celticists disagree; see 4.1.10.

[6]These and subsequent examples have been taken from a number of sources, including Griffen (1975), Parry-Williams (1923), Powell (1883), Fowkes (1949, 1959, 1976), Morris-Jones (1913), Lewis-Pedersen (1937), Gourvil (1968), and d'Arbois de Jubainville (1881).

[7]Parry-Williams (1923) suggests that at least some of these cases may involve a kind of permanent provection. Welsh initial voiced consonants are not very voiced (see 6.8.2), and in some dialects they are even devoiced. The grand → crand type of change may be an example of this, rather than of true mutational reanalysis. Parry-Williams also cites some native examples from a northern dialect: tyfn [tɘvn] (standard dwfn [duvn]) 'deep'; the personal name Cwilym (standard Gwilym). However, even if all stop-devoicing cases could be accounted for in this way, there would still be instances of true reanalysis of permissible initial radical segments (e.g. honest → gonest).

[8]Jackson (1967) also cites Breton poezell (Vannetais boezell) from Old French boissel. Jackson thinks that the variants with [p] in both languages are not strictly due to

reanalysis, but have also been influenced by the native words for 'weight' (W. pwys; B. poes).

[9]See 7.3.

[10]I have made some changes in the expression of Awbery's rules in order to conform to more familiar usage. An example of Awbery's symbolism follows:

T. Soft Mutation of Direct Object (obligatory)

SD.	$(_S$	V [+tense]	NP	NP	X
	1	2	3	4	5

SC. Add the feature [+soft mut] onto 4.

[11]Awbery considers verbal nouns to be verbs; hence the feature [+tense] on the verb in the structural description of rules (15) and (17). However, as I have argued in 4.1.1, there is good reason to regard verbal nouns as nouns. Therefore, I would rewrite rule (15) with no tense specification on the verb, but with a condition that if the verb is impersonal and the object a noun, lenition does not take place (see 4.1.1):

X	V	NP	NP	Y	
1	2	3	4	5	
1	2	3	[4 +L]	5	⇒

Condition: if 2 = [-pers] and 4 = [+N], rule does not apply

Similarly, in rule (17) I would leave out altogether the element [V -tense] and write the rule as follows:

X	[Det +pro +α mut]	N	Y	
1	2	3	4	
1	2	[3 +α mut]	4	⇒

[12]In sentences such as (18d,e), Awbery regards the first pronoun as the object of the verbal noun. She con-

siders that the pronoun at the end of each sentence in (18) is in the deep structure, and that the pronoun preceding the noun or verbal noun is derived by a rule T. Possessive Pronoun Preposing (p. 25):

X		$\begin{Bmatrix} V \\ N \end{Bmatrix}$	PRO	Y
1		2	3	4
1	3	2	3	4

There is a subsequent rule optionally deleting the second occurrence of (3) in the structural change, since, for example, gwelais ei frawd is entirely grammatical.

Awbery's proposal is based on a supposed parallel between, e.g. llyfr y dyn '(the) book (of) the man = the man's book' and *llyfr ef '(the) book (of) him = his book'. An obligatory T-rule copies the pronoun in determiner position before the noun, and a subsequent morphological rule converts ef to ei, i to fy, etc., in this position. My own view is that, if anything, the opposite is true: the first pronoun in each sentence in (18) is in the deep structure as a determiner, and the pronoun is copied onto the end of the sentence by an optional T-rule.

The element V in the above rule is intended to account for (18d,e), since Awbery treats verbal nouns as verbs. I, of course, consider verbal nouns to be nouns, and the pronouns preceding them to be possessives.

[13] In spoken Welsh, 'm conditions a nasal assimilation rule which affects [b] only; see 5.1.2.

[14] 'When the relative pronoun derives from the underlying position between want and to, contraction to wanna is blocked...' (pp. 42-43):

Teddy is the man I want to succeed

a. Teddy is the man (whom) I want ___ to succeed = I want Teddy to succeed

b. Teddy is the man (whom) I want to succeed ___ = I want to succeed Teddy

Teddy is the man I wanna succeed

b. Teddy is the man (whom) I want to succeed ___ = I want to succeed Teddy

Meaning (a) is impossible.

[15]Ternes describes //1// (lenition) as including /č/→[ǰ] and /ǰ/→[ø] or [y], //5// and //6// (spirant mutation) as including /k č/→[x], //7// (provection) as including /ǰ/→[č], and //9// (lenition-and-provection) as including /ǰ g/→[č]. However, in all these cases the affricates are almost always derived by velar palatalization from /k/ and /g/ (see 5.1.4). Thus, the morphophonemic representations in (22b,c) are incorrect in positing affricates.

CHAPTER VII

LENITION AS THE UNMARKED CASE

7.0 Several times in this dissertation I have claimed that an adequate description of the Brythonic initial mutations requires that lenition be treated differently from the other mutations, and that it be considered the unmarked case in projected mutations. Let us now look at the evidence for this claim.

7.1 First, lenition is by far the predominant mutation in all three Brythonic languages, in terms of both distribution of environments and frequency of occurrence.[1] Indeed, in projected mutations more grammatical morphemes cause lenition than preserve the radical, and in non-projected mutations, lenition seems to be the only one that occurs.[2]

7.2 Second, lenition is in a certain sense productive. Here it must be specified that in discussing productivity, I am referring to the left-hand, or mutation-triggering, side, rather than the right-hand, or mutated, side. New words--for example, borrowings--added to Welsh and Breton will undergo spirantization, provection, and nasalization, as well as lenition. In a number of dialects of Welsh, the inventory of lenitable consonants has been extended to include /c͡ɣ/ and /ɟ͡ʝ/; however, in some of these dialects, affricates can also be nasalized. In spoken Breton, voiced fricatives have been added to the inventory of provectable consonants. To this extent, then, all the mutations are equally productive.

Even when we consider the left-hand side, moreover, the 'productivity' of lenition is not the same as that of, for example, the English -s plural. The projected mutations are triggered by grammatical morphemes such as articles, prepositions, possessive pronouns, etc., and since languages do not normally add such morphemes to their lexicons, there is no point in trying to claim that a new grammatical morpheme in Welsh or Breton would predictably trigger leni-

tion.

Nevertheless, there are several reasons for regarding lenition as productive in a sense in which the other mutations are not.

7.2.1 The number of environments in Welsh and Breton in which lenition occurs has been steadily increasing over time: words which originally caused another mutation, or maintained the radical, have come to trigger lenition instead. Today, this process continues: morphemes which do not cause lenition in the standard languages may do so in most people's speech, or at least in some dialects. In Breton, tri 'three' triggers the spirant mutation in the standard, but lenition in most dialects (see 4.1.31). In Welsh, yn 'in', which normally triggers the nasal mutation, often causes lenition of place names in speech (see 4.3.2). In standard Welsh, the negative particle ni causes spirantization of voiceless stops and lenition of other mutable consonants; increasingly in speech, however, ni (or its abstract trace) causes lenition of all mutable consonants (see 4.7). Pronouns are immune to lenition after prepositions in standard Welsh: rhaid i mi 'it is necessary to me; I must'; many speakers, however, normally say rhaid i fi. There are many other similar examples.

7.2.2 Not surprisingly, the mutation system tends to disintegrate in cases of aphasia and in language or dialect death. What is surprising--and significant--is that it does not disappear to be replaced by the radical; rather, overmutation, and particularly over-lenition, tends to occur. Dressler (1977), working with Breton-speaking aphasiacs, reports such forms as o benn (←penn) 'their head' for o fenn and va vamm (←mamm) 'my mother' for va mamm (o and va ordinarily spirantize voiceless stops and leave voiced ones alone), and ho droad (←troad) 'your foot' for ho troad (ho normally causes provection, which does not affect voiceless stops).

Pilch (1976) studied the effects of aphasia on Welsh-

speaking patients. Here the results are not conclusive; Pilch seems to have used mostly expressions with numerals, and these are subject to variation even among normal speakers. Thus Pilch elicited forms such as tri fechgyn for tri bachgen 'three boy(s)', but the patient was most likely influenced by the construction tri o fechgyn 'three (of) boys'. Pilch also cites dau mab 'two son(s)' for dau fab and dau diwrnod 'two days' for dau ddiwrnod, thus suggesting that the patient being studied usually dropped lenition in favor of the radical. However, there are simply not enough examples to yield valid conclusions. By contrast, Dressler gives a fairly large sample, and though he does note some cases of 'wrong' non-leniting mutations, and of preservation of the radical where lenition should have occurred, in general there are many more examples of over-lenition than of any other error.

Jenner (1904:177) states that in the last stages of Cornish 'there was a tendency to [lenite] after nearly anything, especially prepositions...' Ernault (1882), reporting on the then-dying Bourg-de-Batz dialect of Vannetais, cites lenition after the article of nouns which are masculine in other dialects: er gik 'the meat' (standard Vannetais er kig). Ernault also reports er zourn 'the hand' (standard V. en dourn), which is doubly interesting because even if dourn were feminine, initial [d] would remain intact in the standard as a result of provective sandhi after [n]. In the same dialect, me 'my' caused lenition of [b] and [m]: me vrer (←brer) 'my brother'; me vam (←mam) 'my mother'.[3]

7.3 Sections 7.2.1-2 seem to indicate that in Celtic there is a tendency to increase the proportion of grammatical morphemes which cause lenition by comparison to those which cause other mutations or preserve the radical. There are cases in which morphemes which caused a mutation (even lenition) come to preserve the radical; however, the normal direction of change is from non-lenition to lenition. In

this rather limited sense, we can speak of lenition as being 'productive'.

There are other indications that lenition has a special position among the mutations. As I pointed out in 6.9, the reanalysis phenomenon takes place almost exclusively in terms of lenition. The opposite process occurs, too: permanent lenition. Both native words and borrowings are affected by this process, and sometimes the result is a 'prohibited' initial radical segment. Standard Welsh fy [və] 'my' is derived from a British form *men-; in modern Breton, 'my' varies between va and ma depending on the dialect. In many Welsh dialects dau and dwy 'two' are now ddau and ddwy even in sentence-initial position: standard dau ddyn 'two men'; dialectal ddau ddyn [ðaɨðɨ:n]. Note also colloquial Welsh ddoe (standard doe) 'yesterday'. Wedi 'after' is derived from an older form gwedy; Breton golc'hed 'coverlet' was spelled colcet in Old Breton.[4]

Examples of permanent lenition in borrowings include

(1) a. Eng. croft → W. grofft
b. Eng. prologue → W. drolog 'nonsense'
c. British-Latin *paradesus → B. baradoes 'paradise'

New radicals may be lenited in their turn. Breton bremañ 'now' (←pred 'time' + -mañ 'this') has apparently been disassociated from pred: bete vremañ 'until now'. There is a place name Rofft in Wales, presumably derived from y rofft (←grofft) 'the croft'.

On the other hand, permanent spirantization, nasalization, etc., do not occur. Borrowings with [kw] often yield initial chw in Welsh (ME cuarel → W. chwarel; quart → chwart), but this is surely a matter of adjustment to phonotactic constraints, since [kw] is not an admissible initial cluster in native Welsh words. (It does occur as a result of the provection of gw in Breton and Cornish, but not as a radical initial in these languages.)

There are dialectal and idiolectal examples of 'double' lenition even when the original radical is still present. Ernault (1882) cites the following from the Bourg-de-Batz dialect of Vannetais: kouader 'chair' : ur gouader 'a chair' : do ouader 'two chairs'. In some dialects of Welsh, cwningen 'rabbit' has become or coexists with gwningen, and constructions such as yr wningen have been attested even in modern writing (Prof. Ralph Ward, personal communication). Another dialectal example is hen fobl 'old people' ← bobl ← pobl.

It should be noted that double spirantization, double nasalization, and double provection would be phonetically impossible; even double lenition is impossible unless the original radical consonant was a voiceless stop. However, it is interesting that many speakers seem to feel that where lenition can occur, it should.

7.4 All the above observations refer to what I have been calling 'projected' mutations, after Oftedal's usage. As I will show, the tendency of lenition to be maximized sometimes overflows into non-projected environments, but in most cases, it is confined to projected ones.

We must now determine more accurately what is meant by a projected mutation. Oftedal appears to mean a mutation which occurs across word-boundaries inside the same syntactic phrase node; Ternes (1970) describes the mutations as occurring in either this environment or in a prefix + stem construction. A number of other scholars have said the same thing, or the equivalent.

At first, it looks like a good definition. It includes --as we want it to--structures such as article + noun and possessive pronoun + noun (NP → Det N); preposition + noun (PP → P NP); Adj + N. It excludes--also as we want it to--such mutation types as lenition of the direct object in Welsh, since the subject must intervene between the verb and the object, at least in deep structure, and the verb

and object are thus not in the same phrase node.

However, a closer look reveals some serious problems. One type of noun phrase in Celtic is N + Adj; as we have seen, this is an environment for lenition. However, in Welsh only feminine singular nouns trigger lenition, so that the majority of noun forms would have to be marked as preserving the radical; matters are made still worse by the fact that most nouns (native or borrowed) are masculine. In Cornish and literary Breton, masculine plural nouns also cause lenition, but even so, no more than half of noun forms would be unmarked. (In spoken Breton, masculine plurals often do not lenite adjectives.) If lenition of the adjective after the noun is projected, then it constitutes a counterexample to lenition as the unmarked case.

Furthermore, a frequent NP structure in Brythonic is N + N, in constructions involving possession, attribution, apposition, etc. The most frequent--and perhaps only truly productive--use in modern Welsh is as a possessive construction: tŷ gwraig '(the) house (of a) woman'. In this environment, as we see, the radical is preserved. If this is a projected construction, then we must mark all nouns as preserving the radical if a noun follows. This is, if anything, even worse than setting up a feature /+L/ to trigger lenition, since new nouns are added to the lexicons of Welsh and Breton through borrowing, learned coinage, etc.

There are, however, some convincing, independently-motivated reasons for claiming that these two constructions are not, in fact, environments for projected mutations, and that this type of mutation does not occur across word-boundaries inside the same phrase node.

As I suggested in 1.3, many sequences spelled as separate words in Celtic may actually be morphemes of a single word. This view is held by such scholars as Sommerfelt (1965), Borgstrøm (1968), and Pilch (1975), who base much of their arguments on the ideas of Greenberg (1957)

regarding the definition of the word. Ternes (1970) also considers certain morphemes spelled as words to be prefixes; see 6.11.1.

If this is true, then we can say that projected mutations occur across morpheme boundaries inside a single 'phonological word'; sequences such as article + noun are a type of prefix + stem construction, rather than a noun phrase consisting of a determiner plus a noun. By contrast, the sequences N + Adj and N + N (possessive) are truly separate words; lenition of the adjective after a feminine singular noun is a non-projected mutation, effected by a transformational rule. Preservation of the radical in the possessive N + N construction need not be accounted for, since lack of mutation is unmarked outside the phonological word.

7.5 There are at least two possible arguments for proposing this definition of the word in Celtic.

7.5.1 One criterion that has been used to determine word boundaries is stress patterns. In some languages, sequences which are spelled as phrases may show the same stress pattern as single words. In Welsh, Cornish, and KLT Breton, words normally have penultimate stress; examples have been cited in Breton (and a few in Welsh) of penultimate stressing of an orthographic phrase. Trépos (1968) cites, for standard KLT:

(2) a. an 'the' + oll 'all' + tud 'people' → an óll dud 'everyone'
b. en em, reflexive + koll 'losing' → en ém goll 'getting lost'
c. re 'too' + tomm 'hot' → ré domm 'too hot'
d. ur 'a' + karr 'cart' → úr c'harr 'a cart'
e. pévar 'four' + marc'h 'horse' → pevár marc'h 'four horses'
f. un 'a' + hánter 'half' + kant 'hundred' → un hantér kant 'half a hundred'

In the negative construction ne + verb + ket, the stress is on the ultima of the verb: gwélit 'you see' : ne welít ket 'you do not see'.

Sommerfelt (1920) cites examples of this stress pattern from the St. Pol dialect of Léonais: [ɛ́r mo:r] 'a sea'; [trí di:] (←[ti:]) 'three house(s)'; [an éil ta:t] 'the other father'.

In orthographic single words in which a prefix is followed by a monosyllabic stem, the prefix is stressed: ar- 'near' + mor 'sea' → árvor 'coast'. Compound words also get penultimate stress: ável 'wind' + tro 'turning' → avél-dro 'whirlwind'.

In the above cases, the second element is monosyllabic. When it is polysyllabic, primary stress is not on the first element. Sommerfelt cites [ɛr gá:zek] (←[ká:zek]) 'a mare'; [tɛir váɣwes] (←[máɣwes]) 'three women'. The stress on the orthographic phrase is still penultimate. A polysyllabic morpheme such as pevar 'four' carries penultimate stress in isolation; it is not pronounced [pevár] unless a monosyllable follows it. (Cf. also ad- 're-' + bévañ 'living' → advévañ 'reviving'.)

In Welsh, this phenomenon is much less extensive, but there are some cases. Pilch (1975) gives some examples of orthographic phrases stressed as if they were words: dyn bach [dínbax] 'dear old man' is an idiom in which bach 'little' is used as a term of affection. (When the phrase is given its literal meaning '(a) little man', it carries double stress: [dín báx]; non-idiomatic noun + adjective sequences are not stressed as if they were a single word.)

As in Breton, prefixes attached to monosyllabic stems are stressed: en-, intensive + mawr 'big' → énfawr 'enormous'; rhag- 'pre' + gweld 'seeing' → rhágweld 'foreseeing' (but prif- 'chief' + dínas 'city' → prifddínas 'capital'). Compounds behave similarly: mélys 'sweet' + llais 'voice' → melýslais 'sweet-voiced' (but pen 'head' + mélyn 'yellow' → penfélyn 'blond').

Although such stress phenomena may be regarded as evidence that certain orthographic phrases are phonological words, they are by no means sufficient in themselves. Welsh does not have cases such as those in (2); speakers say pèdwar cí 'four dog(s)', rhỳ ddá 'too good', etc., not *pedwár ci, *rhý dda. Literary Welsh has [ibɛ́n] 'his head' (← pen). In spoken Welsh this is [ibɛ́ne], with penultimate stress, but the pattern fails with polysyllables: [igá́l:ɔne] 'his heart' (← cálon).

In Breton, while there are a few other morphemes in addition to those listed in (2) which take the stress when a monosyllable follows, there are some which do not. The definite article is never stressed: ar mór 'the sea'. Possessive pronouns are also unstressed: va zí 'my house'. No reasonable distinction can be made between these sequences and those listed in (2); if an indefinite article + noun is a single word, then so, surely, is a definite article + noun.

7.5.2 Greenberg (1957) also objects to the stress criterion on the grounds that there are too many exceptions (though he is not referring specifically to Celtic). He prefers to determine word boundaries on the basis of limited interruptibility of a sequence.

Since there are languages which permit infixes, definition of a word as 'a sequence within which another sequence cannot be inserted' (p. 28) is too strong; Greenberg's definition is rather 'a unit at whose boundaries certain types of insertions occur if it coincides with a word boundary, which are not permitted when it is not such a boundary'.[5]

In Celtic, there are indeed sharp limitations on possible insertions between the elements of most sequences heretofore considered the domain of projected mutations. Between an article and a noun, for example, an adjective or numeral may be inserted, but if more than one such element is permitted, it is a very small number (unlike, for example,

English, where an infinite number of adjectives may be inserted between an article and a noun). There are similar restrictions on insertions between prepositions and nouns, preverbal particles and verbs, etc. On the other hand, any number of adjectives can occur after a noun in Celtic; in fact, a phrase may intervene between a noun and the adjectives that modify it. By Greenberg's standards, then, a noun + adjective sequence would have to be considered as separate words in Brythonic.

7.6 An interesting fact in this connection is that in Welsh, if there is more than one adjective in a series following a feminine singular noun, all the adjectives will be lenited if possible:

(3) a. gwraig 'woman' + da 'good' + doeth 'wise' → gwraig dda ddoeth 'a good wise woman'

b. y frawddeg 'the sentence' + enwol 'nominal' + pur 'pure' → y frawddeg enwol bur 'the pure nominal sentence'

The above examples are from Morgan (1952). As we see in (3b), lenition will take place in an adjective separated from the noun by another adjective with a non-mutable initial segment.

We could claim that this happens because adjectives are unmarked, and therefore one adjective lenites a following one. However, the propagation of lenition in adjectives happens only after feminine singular nouns (contrast dyn da doeth 'a good wise man'). We would have to posit at least two lexical entries for each adjective--one for the masculine and plural, which would be marked as preserving the radical, and one for the feminine singular, which would be unmarked. A few adjectives do have different phonetic forms depending on the number and gender: 'white' is gwyn in the masculine and plural (tŷ gwyn 'a white house'; buchod gwyn 'white cows') and gwen in the feminine singular (buwch wen 'a white cow'). However, these are exceptional cases; in

most adjectives there is no such distinction, and it seems a needless complication to posit two forms.

Furthermore, if an adjective that normally follows a noun in Welsh is placed before the noun, that adjective will lenite the noun regardless of the latter's gender and number; we would have to say that a masculine/plural adjective is marked as radical-preserving if it follows a noun, but is unmarked if it precedes one. Again, the complication is unreasonable.

Finally, lenition can take place even if an entire phrase intervenes between the noun and the adjective. Oftedal (1962) quotes the following sentence from medieval Welsh: kaer vawr a welynt, vwyhaf or byt '(it was) a large town that they saw, the largest in the world' (←kaer 'town' + mawr 'large' + mwyhaf 'largest'). There is no way that lenition of mwyhaf could be regarded as a projected, or phonological-word, mutation. Oftedal considers lenition of an adjective immediately following a noun as projected, and that of an adjective separated from the noun as incorporated (retrospective). Example (3b) would also fall into this category. This analysis, however, considers only linear sequence rather than structure, and misses a generalization. Surely the most economical and insightful approach is to regard lenition of adjectives--or intensifiers--after feminine singular nouns as marked in most cases.

On the other hand, orthographic compound words of the type listed in 4.1.6.2 and 4.1.27.2--even those which consist of noun + adjective or noun + noun--are certainly phonological words: the compounds are stressed on the penult, and nothing can be inserted between their component elements. Hence, lenition in these cases is unmarked.

There is some question, at least in Welsh, as to whether this type of compounding is productive; today borrowing apparently serves the same purpose. However, if such compounding does still occur, even if rarely, the first element would be expected to lenite the second.

In 4.1.7.3 and 4.1.28.2-3, I gave examples of lenition in certain orthographic phrases (e.g. W. siop lyfrau 'bookstore'; B. poan galon 'heartbreak'). These constructions seem at first glance to be true phrases rather than phonological words, so that lenition would have to be marked in them. However, we can also argue that they are idiomatic expressions into which additional elements cannot be inserted. On this basis, we can analyze such sequences as W. llaw Dduw '(the) hand (of) God' as phonological words after all, though identical grammatical structures which are not idioms (e.g. llaw Marged '(the) hand (of) Margaret = Margaret's hand') cannot be so analyzed.

It is obvious that a noun plus an unlimited string of adjectives could not be regarded as a single, compound word; by contrast, the one or two adjectives permitted before a noun could be considered as forming a compound with that noun. This would explain why most adjectives will always lenite a following noun regardless of gender and number (see 4.1.7.1-2), while only a certain class of nouns can cause lenition of adjectives which follow them.

It is interesting to note here that a number of morphemes spelled as adjectives are phonetically identical to ones spelled as prefixes. It is thus sometimes difficult to determine whether a given prefix is a true prefix or a root entering into a compound; in either case, however, we are certainly dealing with a phonological word, whether the prefix/adjective is spelled separately from the following element or not.

In Cornish, only the first adjective in a series is lenited:

(4) bugh 'cow' + gwyn 'white' + tek 'fine → bugh wyn tek 'a fine white cow'

I have found no conclusive data for Breton. Morvannou (1975) cites ur plac'h yaouank koant 'a pretty young girl'

(←plac'h 'girl' + yaouank 'young' + koant 'pretty'), which seems to agree with the Cornish situation; however, the apparent lack of lenition in koant could be due to provective sandhi. On the other hand, Breton and Cornish are often closer to each other than to Welsh in regard to the mutations. (See also 4.1.25.)

Perhaps in Breton and Cornish a noun and the first adjective following it form a compound, and lenition after feminine singular nouns is thus a phonological-word mutation. If so, then in these languages there is a strong counterexample to lenition as the unmarked case inside the phonological word, since there are so many cases of non-lenition. Yet there is no compelling evidence that noun + adjective sequences must be regarded as compounds in Breton and Cornish, and there is some evidence to the contrary. Dressler (1977), in discussing the effects of aphasia on the mutations in Breton speakers, notes that over-generalization of lenition takes place much more often in such sequences as possessive pronoun + noun than in noun + adjective. In the latter case, there are more instances of wrong spirantization and wrong preservation of the radical than of over-lenition, whereas in possessive pronoun + noun sequences there were many more cases of over-lenition than of anything else. Obviously, there is a significant structural difference between these two types of sequence.

I believe that in all three Brythonic languages, lenition of adjectives and intensifiers after nouns is marked, effected by transformational rules:

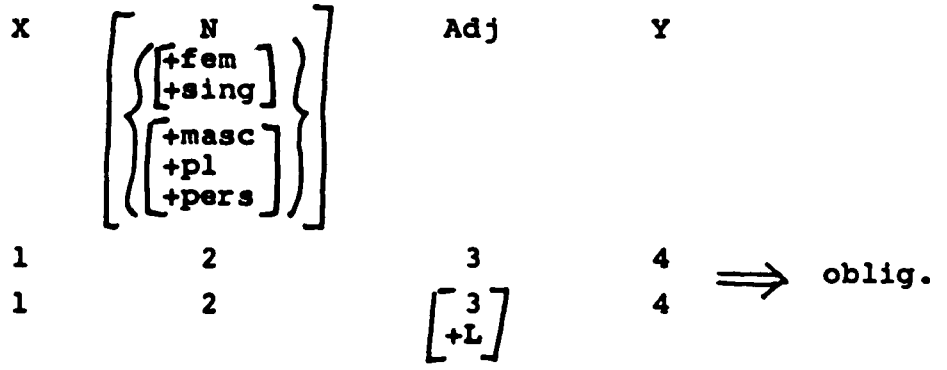
(5) Welsh:

$$X \quad \begin{bmatrix} N \\ +fem \\ +sing \end{bmatrix} \quad \begin{Bmatrix} Adj^n \\ Int \end{Bmatrix} \quad Y$$

$$1 \quad 2 \quad 3 \quad 4 \Rightarrow \text{oblig.}$$

$$1 \quad 2 \quad \begin{bmatrix} 3 \\ +L \end{bmatrix} \quad 4$$

(6) Breton and Cornish:



Note that in Welsh, a sequence of feminine singular noun + intensifier is not a phonological word, and lenition is marked in this environment.[6] I have not seen any data regarding noun + intensifier sequences in Breton and Cornish.

7.7 Given a sequence of two morphemes (or orthographic 'words') inside the same phonological word, lenition is unmarked--the expected, normal state of affairs--in the second morpheme. Anything else--either a different mutation or the preservation of the radical--is the result of a morphological feature assigned to the first element in the sequence.

It must be emphasized that this is the only circumstance under which lenition is unmarked. In other cases it is the radical that is unmarked, and if lenition occurs it is the result of a transformational rule. (The only mutation that can occur outside a phonological word is lenition.)

Even inside the phonological word, there is no question of regarding a lenited form as underlying. Any one of the following observations would be sufficient to demonstrate this:

7.7.1 In all three languages, [v] is the lenited variant of both [b] and [m]; thus we have W. buwch 'cow' : y fuwch 'the cow' and merch 'girl' : y ferch 'the girl'. If we considered /vɨwx/ and /vɛrx/ as underlying forms, we could not predict the 'de-lenited' forms; we would have no way of

deriving [b] or [m] correctly. Indeed, as we have seen, there has been confusion in some words between the two radical consonants (see 6.9); however, except in these few cases there is an established radical: buwch, not *muwch; merch, not *berch.

7.7.2 In Welsh, vowels and [w] can be either radical initials--as in afal 'apple' and waled 'wallet'--or the lenited initials of words whose radicals begin with [g]--as in ei ardd (←gardd) 'his garden' and y wraig (←gwraig) 'the woman'. If we regarded /aval/, /arð/, /walɛd/, and /wrayg/ as underlying, we could not predict where prothetic [g] would appear.

Note also that the nasal-mutation forms of the words for 'garden' and 'woman' are [ŋarð] and [ŋwrayg]; afal and waled cannot be nasalized.

7.7.3 Also in Welsh, initial voiced liquids can be radical, as in lamp and ruban 'ribbon', or derived by lenition from either a voiceless liquid or the cluster [g] + liquid: ei long (←llong) 'his ship'; y lan (←glan) 'the shore'. Again, if we took voiced liquids as underlying, we could make no predictions respecting initial 'de-lenited' segments.

7.8 Lenition outside the phonological word--marked lenition --takes place in the transformational component of the grammar, with phonological rules later interpreting the feature changes involved. The cases of lenition listed in 4.1.1-5 and 4.1.22-26 are marked.

Mutation--or the lack thereof--inside the phonological word takes place at some point after the syntactic surface structure has been established--perhaps as part of the readjustment rules, or in the morphological component of the grammar if such a component exists.

First, certain sequences of lexical elements--e.g.,an article plus a noun, a preposition plus a noun, an adjective plus a noun, article + adjective + noun, preverbal particle

+ verb--are defined as single, complex words: 'phonological words'. These may be the equivalent of a prefix + stem, a compound, or a combination of the two.

Certain parts of the phonological word--the first element of a two-element sequence, or the first two elements of a three-element sequence--may be assigned one or more morphological features, though in most cases no feature is assigned. (I use the word 'element' here because while most orthographic words which trigger mutations are single morphemes, some are not.)

If no feature is assigned to an element, the phonological component will cause the initial consonant of the following element to undergo lenition.

If morphological features are assigned to an element, the initial segment of the following element will either be maintained intact or will undergo a non-leniting mutation, depending on the feature:

(7) a. /+R/ causes preservation of the radical (all three languages)
b. /+S/ causes the spirant mutation (all three languages)
c. /+N/ causes the nasal mutation (Welsh)
d. /+P/ causes provection (Breton, Cornish)
e. /+Lp/ causes lenition-and-provection (Breton, Cornish)
f. /+A/ causes aspiration (Welsh, Breton, possibly Cornish)

Examples of these features in operation follow:

(8) Spoken Welsh:

a. $/\begin{bmatrix}ən\\+N\end{bmatrix}$ + ta:d$/ \longrightarrow$ [ənha:d] 'my father'

b. $/\begin{bmatrix}ən\\+R\end{bmatrix}$ + kanɨ$/ \longrightarrow$ [ənkanɨ] '(at) singing'

c. /ən + da:/ $\longrightarrow$ [ənd̆a:] 'pred. prt.--good'

d. $/\begin{bmatrix} i \\ +S \\ +A \end{bmatrix} + \begin{Bmatrix} ta:d \\ \varepsilon nu \end{Bmatrix}/ \rightarrow \begin{bmatrix} i\theta a:d \\ ih\varepsilon nu \end{bmatrix}$ 'her father' 'her name'

e. $/\begin{bmatrix} i \\ +R \end{bmatrix} + ta:d/ \rightarrow [ita:d]$ 'their father'

f. /i + ta:d/ → [ida:d] 'his father'

(9) Spoken Breton

a. $/\begin{bmatrix} e \\ +S \\ +A \\ +P \end{bmatrix} + \begin{Bmatrix} p\varepsilon n: \\ i:lis \\ br\ddot{o}r \end{Bmatrix}/ \rightarrow \begin{bmatrix} ef\varepsilon n: \\ e\tilde{n}i:lis \\ epr\ddot{o}r \end{bmatrix}$ 'her head' 'her church' 'her brother'

b. $/\begin{bmatrix} e \\ +R \end{bmatrix} + treger/ \rightarrow [etreger]$ 'in Tréguier'

c. /e + pɛn:/ → [ebɛn:] 'his father'

d. $/\begin{bmatrix} o \\ +P \\ +A \end{bmatrix} + \begin{Bmatrix} br\ddot{o}r \\ i:lis \end{Bmatrix}/ \rightarrow \begin{bmatrix} opr\ddot{o}r \\ o\tilde{n}i:lis \end{bmatrix}$ 'your brother' 'your church'

e. $/\begin{bmatrix} o \\ +S \\ +A \end{bmatrix} + \begin{Bmatrix} p\varepsilon n: \\ i:lis \end{Bmatrix}/ \rightarrow \begin{bmatrix} of\varepsilon n: \\ o\tilde{n}i:lis \end{bmatrix}$ 'their head' 'their church'

As the above-cited examples show, more than one feature may be assigned to a given triggering element. The number and type of features assigned often vary according to dialect. Thus in most dialects of Breton, /e/ 'her' would not have the feature /+P/; in some it would not have the feature /+A/. In many Welsh dialects, /i/ 'their' would not have the feature /+A/. In literary Welsh /ən/ 'our' would have the feature /+A/ (to account for e.g. <u>ein henw</u> [ənhɛnu] 'our name'), but in the spoken language the assigned feature would be /+R/, since aspiration does not occur in speech.

7.9 This system seems, so far, to be quite neat. Multiple features, where necessary, do not conflict with each other, since they affect different classes of sounds; some features affect only voiceless stops, others only voiced ones, still

others only vowels, etc. However, the picture presented above is not complete. In all three Brythonic languages, there are morphemes which are apparently assigned two or more features that do conflict with each other.

7.9.1 In Welsh, the negative particles ni (or its trace), oni, na (~nag), and na (~nad) spirantize voiceless stops but lenite other mutable consonants (see also 4.7):

(10) a. talodd '(he) paid' : (ni) thalodd ef ddim 'he did not pay'
b. gwelodd '(he) saw' : oni welodd ef? 'didn't he see?'

If we leave these particles unmarked, we account for the lenition part of the mutation; however, we fail to account for the spirantization part. If we assign the feature /+S/, we account for the spirant mutation, but the particles will then be marked, and therefore should not cause lenition.

7.9.2 A similar paradox occurs in Breton, in the 'mixed' mutation and lenition-and-provection. The morphemes which trigger the 'mixed' mutation provect /d/, maintain voiceless stops intact, and lenite other mutable consonants:

(11) a. dont 'coming' : o tont '(at) coming'
b. mont 'going' : o vont '(at) going'
c. kousket 'sleeping' : o kousket '(at) sleeping'

In dialects with the complete form of lenition-and-provection, these morphemes provect /d/, cause devoicing and spirantization of /b m g/ (/b m/→[f]; /g/→[x]), and preserve the radical of voiceless stops. In some dialects, only /b/ and /m/ are devoiced and spirantized; /g/ and /d/ are devoiced (or /g/ is lenited and /d/ devoiced). Sometimes the same dialect will have some morphemes which cause the complete version and some which cause the incomplete one.

In the case of the 'mixed' mutation, we cannot leave the triggering morphemes unmarked because they lenite only

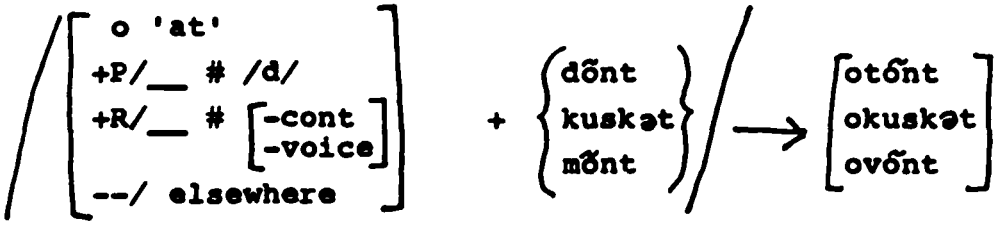
a few consonants, but we cannot prevent a feature /+P/ from devoicing /b/ and /g/ as well as /d/. In the case of lenition-and-provection, a feature /+Lp/ (causing devoicing and spirantization together) would wrongly spirantize /d/; a feature /+P/ would wrongly cause simple devoicing of /b/ and /g/. The problem is aggravated in dialects which have both complete and incomplete versions of this mutation.

7.10 We have a choice of two solutions to this problem. The first is to set up additional morphological features: say /+Sl/ for spirantization/lenition in Welsh and /+M/ for the 'mixed' mutation in Breton (in dialects with lenition-and-provection, the feature /+Lp/ could be used for all operations including provection).

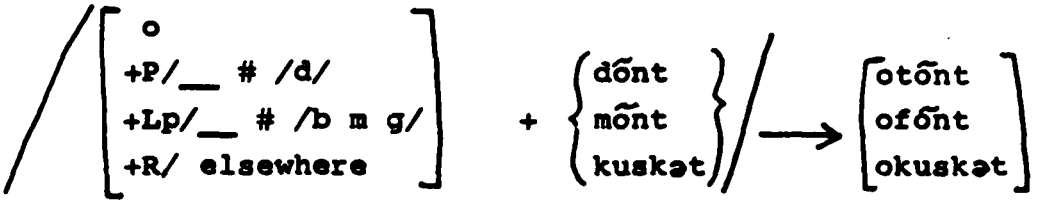
Ellis (1965) chooses this solution for Welsh, with his prosodic feature xv; Ternes (1970) sets up the features //8// and //9// to represent the complete and incomplete types, respectively, of lenition-and-provection.

The second possibility is context-sensitive morphological features. The Welsh negative particles would be marked /+S/ if a voiceless stop follows, but be unmarked elsewhere. The Breton 'mixed' mutation and lenition-and-provection would be treated as follows:

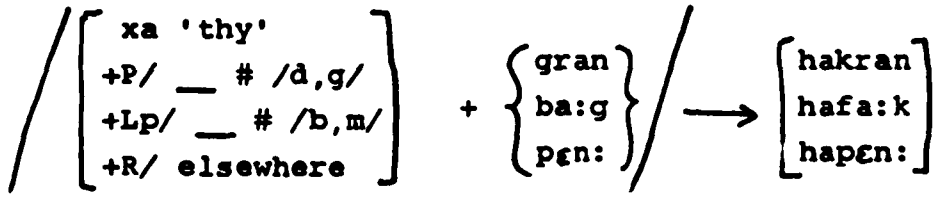
(12) 'Mixed' mutation:



(13) Lenition-and-provection (complete):



(14) Lenition-and-provection (incomplete; Ile de Groix Vannetais):



(See also 4.5.)

This system is decidedly sloppy, and matters are made still worse by the fact that words like those listed in (8) and (9), which did not require context-sensitive features before, now do require them: Welsh ei 'her', which spirantizes voiceless stops and does not affect other mutable consonants, must be marked as radical-preserving where it does not spirantize; otherwise lenition would occur.

7.11 It might seem, then, that separate mutational categories are preferable. However, these turn out to have even more serious shortcomings.

7.11.1 The other morphological features each cause a different phonological process: /+N/ causes nasalization; /+S/ causes spirantization of voiceless stops; /+P/ causes devoicing of obstruents; /+Lp/ causes devoicing and spirantization of voiced stops. (Lenition involves two processes, both distinct from any of these: voicing of voiceless stops and liquids, and spirantization of voiced stops and /m/.) A class /+Sl/, on the other hand, would cause alternations that occur elsewhere. If such a class bears the same relationship to /+S/ as /+S/ does to /+N/ and /+R/, then there are two different kinds of spirantization of voiceless stops, and two different kinds of lenition inside the phonological word. We might, of course, say that lenition which operates only partially is exceptional, and therefore the specific marking for it here is justifiable, but aside from this I find no evidence that such a distinction is necessary. In fact, there is evidence to the

contrary. In many dialects of spoken Welsh, there is straight lenition in negative sentences: dalodd e ddim 'he did not pay', rather than thalodd e ddim. We could describe this as a loss of the marking /+Sl/, which would mean a change from a marked type of lenition to an unmarked type (as well as loss of one type of spirantization), but it would surely be more satisfactory to regard the change as a loss of the /+S/ component of a context-sensitive feature designation, leaving the negative particles unmarked.

7.11.2 In the case of Breton lenition-and-provection, it is necessary to posit a feature /+Lp/ (or, perhaps, /+Ds/) which triggers that part of the mutation involving devoicing and spirantization together. This change is different from any of the others mentioned so far. However, the other processes are ones which do occur elsewhere: provection (of /d/) and preservation of the radical (of voiceless stops). The 'mixed' mutation consists entirely of processes which occur elsewhere: lenition, provection, and preservation of the radical. Again, there is no reason to regard these processes as distinct from the same ones in other environments. Though the standard Breton 'mixed' mutation is traditionally considered as being in a separate category, in fact it must be treated as a combination of other mutations. Interestingly, in Welsh the spirantization + lenition combination has not generally been regarded as a separate type of mutation.

7.12 The concept of context-sensitive features is not completely new; both Hamp (1951) and Ellis (1965) propose such features in certain circumstances. Hamp uses the feature /PL/ to represent the Breton 'mixed' mutation (see also 5.3):

(15) /PL/ = /P/ before /d-/
= /L/ before /g-, gw-, b-, m-/
= /x/ before vowels

In Ellis's prosodic system, more than one feature may be assigned to a single morpheme, as in saith$^{\underline{bo/n}}$ 'seven' (see also 6.8.1). In this example, <u>bo</u> represents lenition of voiceless stops; <u>n</u> represents nasalization of the words <u>blynedd</u> and <u>blwydd</u> 'year' and <u>diwrnod</u> 'day'. There is a separate statement in the grammar specifying the conditions under which each feature operates.

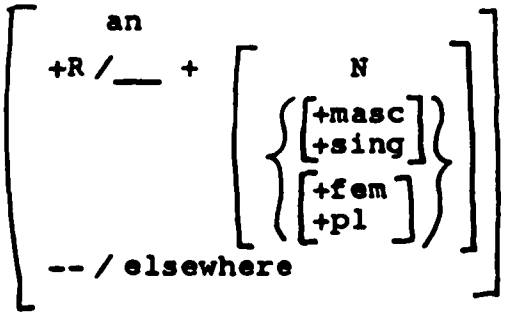
7.12.1 As the Ellis example suggests, context-sensitive features are rendered necessary not only by 'mixed' types of mutation, but also by partial applications of 'simple' types. Take, for example, lenition of nouns after the article. In all three Brythonic languages, gender and number distinctions are involved. In Welsh, only feminine singular nouns are lenited; masculine and plural nouns remain in the radical. In Breton and Cornish, the definite article lenites both feminine singular and masculine plural nouns; masculine singular and feminine plural nouns remain in the radical.

Unlike lenition of adjectives following nouns, this is a phonological-word mutation, and must be accounted for by means of morphological features. We could propose several distinct underlying articles in each language, with different specifications as to gender and number; for example, in Welsh /ər/ 'the (masc./pl.)' would be marked /+R/, whereas /ə̀r/ 'the (fem. sing.)' would be unmarked. However, the same objection applies here as in the case of adjectives discussed in 7.6: in all three languages, the articles have the same phonetic and phonemic shapes regardless of the gender and number of the noun they precede, so there is no independent justification for such a distinction. I would propose a single definite article /ə̀r/ in Welsh, with feature assignment as follows:

(16)
$$\left[\begin{array}{l} \text{ə̀r} \\ +R \;/\; \underline{\quad\quad} + \left[\begin{array}{c} N \\ \left\{\begin{array}{l}[+\text{masc}] \\ [+\text{pl}]\end{array}\right\} \end{array}\right] \\ \text{--/ elsewhere} \end{array}\right]$$

Similarly, Breton and Cornish each have one definite article /an/, with feature assignment as follows:

(17)



The indefinite article /ün/ in Breton, and the numeral /ɨn/ 'one' in Welsh also have context-sensitive features depending on the gender of the following noun. In Breton, several morphemes, including the articles ar 'the' and ur 'a', cause the spirant mutation of certain classes of words beginning with /k/ (see 4.2.11). This, too, can be accounted for by means of a context-sensitive morphological feature. Ternes (1970) sets up a special category for these morphemes (see 6.11.1), but, again, this implies that spirantization of /k/ by articles, etc., is different from the spirantization of /k/ by e.g. he 'her'.

7.12.2 In standard Welsh, feminine singular nouns beginning with voiceless liquids are not lenited by the article. There are two possible ways of accounting for this: one is to add still another environment for preservation of the radical to (16); the other is to attach some kind of exception feature to the voiceless liquids themselves, which would immunize them against lenition if the article or certain other morphemes precede them.[7] Either way, we need a context-sensitive feature specification.

It is interesting that in spoken Welsh, lenition of voiceless liquids usually does occur in these environments; the unmarked case has been maximized.

Ellis (1965) attaches a separate feature vo to the article (see 6.8.1), but this solution has the same disadvantage as the /+Sl/ or /+M/ features proposed above:

both lenition and preservation of the radical are unjustifiably distinguished from the same processes in other cases of mutation.

7.12.3 In literary Welsh, the numeral deg 'ten' nasalizes /d/ and /g/ but preserves the radical elsewhere (except in the words blynedd, etc., which are nasalized). Again, context-sensitive features appear to be the best way to deal with this situation: /deg/ is marked /+N/ if /d/, /g/, blynedd, blwydd, or diwrnod follow, /+R/ everywhere else. (In spoken Welsh, the feature /+N/ has usually been lost.)

7.13 The previous sections have been concerned with 'regular' exceptions to the mutation processes (i.e., those which involve certain grammatical classes, or classes of sounds). These, as I have shown, are probably best dealt with by means of context-sensitive morphological features. However, there are also irregular, truly 'exceptional' exceptions: certain individual words are unexpectedly subject, or immune, to certain mutations.

7.13.1 In Breton, the single word bloaz 'year' is lenited by certain numerals which do not cause lenition anywhere else (see 4.1.31). In Welsh, blynedd 'year', blwydd 'year of age', and (in the standard) diwrnod 'day' are nasalized by some numerals (see 4.3.5). Also in Welsh, gwaith 'time' is exceptionally lenited by certain numerals (see 4.1.10).

7.13.2 In Breton, feminine singular nouns are normally lenited after the article, but the word plac'h 'girl' is not. Masculine plural personal nouns are also normally lenited by the article, but tadou 'fathers' remains in the radical (the same is true of the Cornish cognate tassow). Several other masculine plurals beginning with /t/ are likewise immune to lenition. (See 4.1.30 for a more extensive list of nouns in Breton which exceptionally undergo or fail to undergo lenition in this environment.)

7.13.3 In Welsh, there are also individual words which are immune to lenition:

(18) a. byth 'always' : Cymru am byth! 'Wales forever!' (not *am fyth, though am 'for' is unmarked)

b. braf 'fine' : mae'r tywydd yn braf 'is the weather pred. prt.--fine = the weather is fine' (not *yn fraf, though the predicate particle is unmarked)

c. gau 'false' : dau gau broffwyd 'two false prophets' (not *dau au broffwyd, though dau 'two' is unmarked)

The intensifier go is generally not lenited: gwraig go hen 'a rather old woman'; yn go dda 'pred. prt.--rather good'. Morgan (1952) reports that there are some examples of lenition of go in older Welsh literature.

Some English borrowings beginning with /g/, such as gem 'game' and gini 'guinea', are also unlenitable.[8]

7.14 The Welsh examples listed in (18) are immune to lenition in all environments. In these cases, it is obvious that we must assign an exception feature to the immune word itself (i.e. the right-hand element). The alternative would be to assign a context-sensitive feature /+R/ to every morpheme which normally causes lenition--a highly undesirable solution, since a generalization would be lost.

Ternes (1970) sets up a separate category //4// to account for the lenition of bloaz 'year' after numerals, but it is clearly wrong to treat this exceptional case on the same basis as the 'regular' mutations. However, in cases such as these, in which certain words have exceptional mutational characteristics following a few specific morphemes, it is possible to argue in favor of assigning context-sensitive features to the left-hand element, rather than assigning an exception feature to the right-hand one:

(19) Breton:

$$\begin{bmatrix} \text{/seys/ 'seven'} \\ \text{-- / \_\_\_ bloaz} \\ \text{+R / everywhere else} \end{bmatrix}$$

(20) Welsh:

$$\left[\begin{array}{l} \text{/say0/ 'seven'} \\ \text{+N / \_\_\_ } \underline{\text{blynedd}}\text{, etc.} \\ \text{-- / \_\_\_ } \underline{\text{gwaith}} \\ \text{-- / \_\_\_ + } \left[\begin{array}{l}\text{-del rel}\\ \text{-voice}\end{array}\right] \text{ (opt.)} \\ \text{+R / everywhere else} \end{array}\right]$$

Alternatively, in these cases too we can assign an exception feature to the right-hand element. Such features might specify, for example, that Breton <u>bloaz</u> and Welsh <u>gwaith</u> undergo lenition if preceded by certain numerals, that Welsh <u>blynedd</u>, etc., undergo nasalization if preceded by certain numerals, that Breton <u>plac'h</u>, <u>tadou</u>, etc., are immune to lenition if preceded by an article, and so on.

If this approach is used, lenition of <u>bloaz</u> and <u>gwaith</u> would be marked, even though phonological-word mutation is involved. However, this is in fact desirable here, since in these words lenition is not expected; the triggering morphemes are marked except in these individual cases.

7.15 We should be able to make a distinction between exceptions which are more 'regular' (i.e., those that involve whole groups of sounds or words, such as voiceless liquids or masculine singular nouns) and those which involve individual words. We can do this by proposing that the 'regular' exceptions be accounted for by assigning context-sensitive features to the triggering (left-hand) element, and that the 'irregular' exceptions be accounted for by assigning an exception feature to the right-hand element, even when the latter is treated exceptionally only in certain environments. Thus, non-lenition of Welsh voiceless liquids after the article, the predicate particle, the numeral <u>un</u>, etc., is brought about by assigning a feature

(21) $\left[\text{+R / \_\_\_ } \left[\begin{array}{l}\text{+liq}\\ \text{-voice}\end{array}\right]\right]$

to these morphemes. On the other hand, non-lenition of Breton plac'h, tadou, etc., is caused by a feature assigned to these particular words, specifying that they remain in the radical if preceded by an article.

7.16 Personal names in Welsh are often immune to lenition: i Dafydd 'to David'; dyna Megan 'there's Megan'; edrychwch, Tom! 'listen, Tom!' This is especially true of foreign names, though native ones can also be immune, as in the first two examples above. Catherine Walker lenites some names and fails to lenite others: i Farged 'to Margaret'; i Domos 'to Thomas'; i Dafydd 'to David'; i Gwen 'to Gwen'. Non-Welsh place-names also tend to resist lenition, though Welsh ones (including Welsh equivalents of foreign names, such as Lloegr 'England') are lenitable. However, the distinction is not absolute. Mrs. Walker does lenite some foreign place-names (i Ganada 'to Canada') and fails to lenite some native ones (i Gwent 'to Gwent').

Powkes (1949) cites examples of nasal mutation of foreign place-names: ym Mharis 'in Paris'. Nasalization of place-names is still usual, though there are dialects in which it is becoming less regular (see 4.3.2).

The situation seems to vary from idiolect to idiolect. For Mrs. Walker, each individual name immune to lenition would have to be marked as such in the grammar. (However, she apparently never lenites names beginning with /g/; in these cases there might be some kind of redundancy rule.)

7.17 In dialects or idiolects (if any exist) in which all names are immune to lenition, there are two possible ways of accounting for the immunity. One would be to specify that if a noun is marked [+Personal name] or [+Place name] in the lexicon, it is redundantly marked [-Lenitable].

The other solution is more radical, and would require that names be immune to other mutations as well: we might propose that names cannot enter into a phonological-word relationship with another morpheme. (Names are often an exceptional category in human languages.) If, for example,

i Dafydd 'to David' is not a phonological word, but a phrase, then the environment for a phonological-word mutation is not present.

This analysis would require the extreme case of total immunity to any kind of mutation, and therefore would apply, if at all, to a few dialects or idiolects of Welsh. However, there are some cases in Breton in which a structure that seems to meet the conditions for a phonological word apparently cannot be analyzed as such.

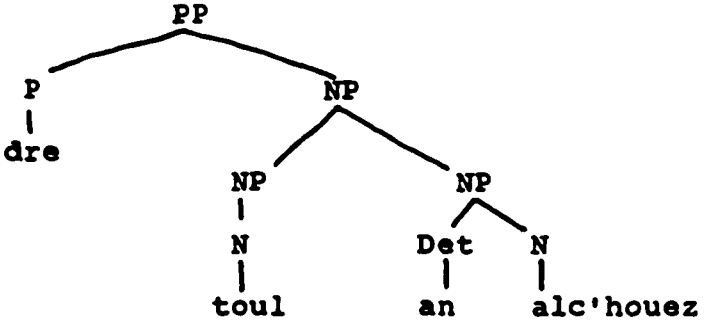
One interesting example is an emphatic possessive construction in some Breton dialects. Le Roux (1896) cites, from the Pleubian dialect of Trégorrois, [park] 'field' : [i dow v̌ark] 'her two fields'. Here, [i] 'her' spirantizes [park] in spite of the fact that [dow] 'two', which is unmarked, immediately precedes the noun. The non-emphatic equivalent, [i dow bark], is ambiguous from the point of view of gender: 'his/her two fields'. In this construction, all three morphemes are part of a single phonological word. In [i dow v̌ark], however, it seems that only [i] and [v̌ark] comprise a phonological word; [dow] is somehow extraneous to the structure. This is strange, but not necessarily impossible; cf. the humorous use of 'infixes' in English words such as 'absogoddamnlutely' (which is also a type of emphatic expression).[9]

If the entire construction is not a phonological word, then the spirant mutation of [park] would have to be effected by a transformational rule--a unique example of a non-soft mutation of this type.

Also in Breton, note constructions of the type dre toul an alc'houez 'through (the) hole (of) the key = through the keyhole' and war moriou ar C'hreisteiz 'on (the) seas (of) the South'. The prepositions dre 'through' and war 'on' are unmarked, but in the above examples the nouns following them remain unlenited. (Lenition is optional in these sequences. Contrast dre doullou 'through holes' and war voriou 'on seas', in which lenition is obligatory.)

In cases where speakers do lenite these nouns, the whole orthographic phrase apparently constitutes a phonological word. However, where lenition does not occur, it is probable that the sequence is being analyzed as a true phrase:

(22)



The complex noun phrase toul an alc'houez is a phrase rather than a word; toul has a closer syntactic relationship to an alc'houez than to dre; hence the preposition cannot belong to the same phonological word as toul.

Another example of a construction in which this approach is necessary is da lâred pe da skrivañ 'to say or to write'. Pe 'or' is unmarked (daou pe dri 'two or three'), yet da 'to' is not lenited here. In this case, too, we must treat pe and da skrivañ as separate phrases. (On the other hand, da plus the verbal noun do constitute a phonological word: da vont (←mont) pe da zont (←dont) 'to go or to come'.)[10]

7.18 To summarize, a certain number of apparent counter-examples to lenition as the unmarked case inside the phonological word can be accounted for by showing that, in fact, the sequence of elements involved is not a phonological word after all. Other, true exceptions to mutation inside the phonological word can be accounted for by means of assigning exception features to either the left-hand or right-hand element in the sequence.

Once these exceptions have been accounted for--and thus excluded from the 'regular' mutation system--we can

set up morpho-phonological rules to deal with the latter. In chapter III, I posited rules for the mutations which expressed distinctive feature changes but left out the environment. Now I will propose the following complete rules for Welsh and Breton:

(23) In both languages, the radical is preserved in the environment:

$$\left[\left[\underline{\quad}\right]_{/+R/} + \underline{\quad}\right]_{+\text{ Phonological word}}$$

(24) Spirant mutation (both languages)

$$\begin{bmatrix}\text{-del rel}\\ \text{-voice}\end{bmatrix} \longrightarrow [\text{+cont}] \;/\; \left[\left[\underline{\quad}\right]_{/+S/} + \underline{\quad}\right]_{\text{+Phonological word}}$$

(25) Nasal mutation (Welsh)

$$[\text{-del rel}] \longrightarrow [\text{+nasal}] \;/\; \left[\left[\underline{\quad}\right]_{/+N/} + \underline{\quad}\right]_{\text{+Phonological word}}$$

(26) Provection (Breton)[11]

$$\begin{bmatrix}\text{-cont}\\ \text{+voice}\end{bmatrix} \longrightarrow [\text{-voice}] \;/\; \left[\left[\underline{\quad}\right]_{/+P/} + \underline{\quad}\right]_{+\text{ Phonological word}}$$

(27) Lenition-and-provection (Breton)[12]

$$\begin{bmatrix}\text{-cont}\\ \text{-cor}\\ \text{+voice}\end{bmatrix} \longrightarrow \begin{bmatrix}\text{-voice}\\ \text{+cont}\end{bmatrix} \;/\; \left[\left[\underline{\quad}\right]_{/+Lp/} + \underline{\quad}\right]_{+\text{ Phonological word}}$$

(28) Aspiration (both languages)[13]

$$\emptyset \rightarrow h \;/\; \left[\left[\overline{}_{/+A/}\right] + \underline{} \begin{Bmatrix} V \\ G \end{Bmatrix}\right]_{+\text{ Phonological word}}$$

(29) Lenition (Welsh)

$$\left\{\begin{array}{l} \left[\begin{array}{l} -\text{son} \\ -\text{del rel} \\ \langle +\text{voice}\rangle_a \end{array}\right] \rightarrow \left[\begin{array}{l} +\text{voice} \\ \langle +\text{cont}\rangle_b \end{array}\right] \\ \left[\begin{array}{l} +\text{nas} \\ +\text{ant} \\ -\text{cor} \end{array}\right] \rightarrow [+\text{cont}] \\ \left[\begin{array}{l} +\text{liq} \\ -\text{voice} \end{array}\right] \rightarrow [+\text{voice}] \end{array}\right\} \Big/ \left[\left[\underline{}\right]^{+} \underline{}\right]_{+\text{Phonological word}}$$

Condition: if a then b

(30) Lenition (Breton)[14]

$$\left\{\begin{array}{l} \left[\begin{array}{l} -\text{son} \\ -\text{del rel} \\ \langle +\text{voice}\rangle_a \end{array}\right] \rightarrow \left[\begin{array}{l} +\text{voice} \\ \langle +\text{cont}\rangle_b \end{array}\right] \\ \left[\begin{array}{l} +\text{nas} \\ +\text{ant} \\ -\text{cor} \end{array}\right] \rightarrow [+\text{cont}] \end{array}\right\} \Big/ \left[\left[\underline{}\right]^{+} \underline{}\right]_{+\text{Phonological word}}$$

Condition: if a then b

Rules (29) and (30) could be regarded as 'elsewhere' rules, ordered after the others, though this is probably not necessary. The non-leniting mutations, and preservation of the radical, are not crucially ordered with respect to each other. Note that since triggering morphemes can be assigned multiple features (context-sensitive or not), one morpheme can trigger several different mutation rules.

7.19 There are cases of resistance to lenition which cannot

be accounted for in formal terms, and which must probably be considered true counterexamples to lenition as the unmarked case. When the mutational characteristics of a triggering morpheme change, the expected--and usual--situation is that a feature will be dropped in favor of an absence of marking: i.e., a marked mutation, or the radical, will be abandoned in favor of lenition, as in the case of the negative particles in Welsh (see 7.9.1). However, this does not always happen. Sometimes an extra feature will be added: in some Breton dialects he 'her' causes provection as well as spirantization and aspiration. Also in Breton, several so-called 'infixed' object pronouns (see 4.2.9) which used to preserve the radical of the verb forms that follow them now spirantize verbs beginning with voiceless stops. Loth (1896) cites the following examples:

(31) a. kar '(you) love' : c'hui a'm c'har 'you me love = you love me'
b. karo '(I) will love' : m'i c'haro 'I her will love = I will love her'; m'o c'haro 'I them will love = I will love them'

Idiolectal errors usually involve over-lenition, but Catherine Walker gave some surprising examples of over-spirantization in constructions involving numerals: e.g. pedair chath 'four cat(s)' rather than the expected pedair cath, with the radical. (She did over-lenite also, giving pedwar gi as a translation of 'four dogs', rather than pedwar ci.)[15]

In some cases a feature is replaced by another instead of being lost altogether; often preservation of the radical will be substituted for a marked mutation such as spirantization or nasalization. In Welsh, most morphemes which trigger the spirant mutation in the literary standard maintain the radical in the spoken language. There are some dialects in which tri 'three' causes lenition ([tri gi:] 'three dog(s)'), but the majority usage is [tri ki:], with

the radical, rather than lenition or the standard [tri xi:].

In the dialect of Llansamlet, South Wales, Watkins (1967) reports that /in/ 'my' lenites voiceless stops rather than nasalizing them: [imbɛni] 'my head (of me)'. Here we do have loss of a feature in favor of the unmarked case; however, /in/ also maintains the radical of voiced stops: [indru:si] 'my door (of me)'. (See also 4.3.1.)

Finally, there are even cases in which lenition seems to have been abandoned in favor of the radical, or another mutation. In Breton, the word for '100' is kant; '200' is daou c'hant in Léonais, with the spirant mutation, though daou 'two' is an unmarked trigger and the form should be daou gant (which it is, indeed, in other dialects). Most Breton scholars attribute the Léonais form to analogy with tric'hant '300'. If so, it is odd that the analogy should have gone in this direction; *trigant would have been more expected. (However, see chapter IV, note 16, for another possible explanation of daou c'hant.) Also in Breton, the spirant mutation after tri has generally been replaced by lenition; however, in the most innovative dialects the radical now occurs, as in Welsh.

7.20 Some of these true counterexamples can be at least partly explained in informal terms. Spirantizing morphemes have at least two feature markings, /+S/ (preceding voiceless stops) and /+R/ (everywhere else). In order to become unmarked, thus causing lenition, these morphemes would have to lose both features. Since /+S/ operates before only three segments, and /+R/ operates in all other environments, if a feature is lost it will be /+S/.

Dressler (1977), in discussing the effects of aphasia on the mutations in Breton, notes the interesting fact that over-lenition occurs more often when the radical is a voiceless stop than when it is a voiced one, or [m]. Dressler suggests that the voicing subrule of lenition is 'more plausible' than the spirantizing subrule. Falc'hun (1956a) reports that in his dialect of Breton, the older generation

says tri benn (←penn) 'three head(s)', with lenition, and tri breur 'three brother(s)', with the radical. (In standard Breton, voiceless stops are spirantized by tri; voiced ones remain in the radical.) The younger generation, however, says tri vreur, so that lenition has been extended to include spirantization of voiced stops. In this dialect, tri has in two steps become entirely unmarked: first the feature /+S/ was lost, then the feature /+R/.

The usage of the older generation in the above example is similar to the situation in Llansamlet Welsh, in which lenition of voiceless stops and preservation of the radical of voiced stops has replaced the nasal mutation after 'my'. Perhaps a future generation of speakers of this dialect will extend lenition to voiced stops as well.

In Breton, the 'infixed' object pronouns illustrated in (31) cause the spirant mutation by analogy to the possessive pronouns, which spirantize verbal nouns (see 4.2.8).

Some counterexamples, however, cannot be explained even in informal terms. There seems no good reason why, in the most innovative dialects of Breton, tri 'three' should have reacquired the feature /+R/ when it was previously unmarked. Perhaps--in these dialects at any rate--lenition as the unmarked case is beginning to disappear. (It would be interesting to find out if such dialects have a heavier than average influence from French, which of course does not have a mutation system.)

It does seem, at least in some dialects and idiolects, that the radical is, if not altogether unmarked, then somehow less marked than the non-soft mutations. However, I do not see how such a three-level hierarchy of markedness would be expressed formally in terms of morphological features, and I suspect that such a system would not have much descriptive value. The counterexamples discussed above are definitely loose ends in the theory.

7.21 Nevertheless, I do not think that they are irretrieva-

bly damaging to my theory. They are--at least so far--quite small in number; in contrast, there is a vast bulk of evidence, which I have examined in this chapter, pointing toward lenition as the unmarked condition in the phonological word.

A crucial question which no one seems to have investigated yet is the acquisition of the mutations by children learning Welsh or Breton as their native language. If my theory is correct, then we would expect such children--at least those who live in solidly Welsh- or Breton-speaking environments without overwhelming influence from bilingualism--to acquire lenition first and relatively easily, to overgeneralize it at the expense of other mutations and the radical (at least in phonological words), and to take longer to learn where not to lenite. If, however, these children are found to expend equal time and effort in acquiring all the mutations, and to overgeneralize the radical, then my theory would be disproved. Obviously, I believe that the former situation is what will be found to occur, but the final judgment must wait for field work.

Knudsen (1973:165) says, 'Speakers of Welsh are quick to assure the investigator that the initial mutations require many years to learn'. I do not consider this a valid scientific statement. Non-standard dialect speakers tend to downgrade their dialects, and Celtic speakers are no exception; many no doubt believe erroneously that their version of the mutations is incorrect. Knudsen's informants may be saying that the literary mutations are difficult to learn (since a nonstandard dialect speaker would have to unlearn his own naturally acquired system as well as learning the standard system), or they may simply not be correct about their own competence in this regard.

7.21 Not very surprisingly, lenition has retreated somewhat in non-phonological-word environments. Until about the 18th century in Welsh, according to Evans (1909), subjects could be lenited after certain verb forms; today, subjects

are not lenited directly after verbs. In many Breton dialects, lenition of adjectives after nouns is now quite restricted; in the Ile de Groix dialect of Vannetais, about twenty high-frequency adjectives are lenited after feminine singular nouns, and still fewer after masculine plural nouns. There is also idiolectal under-lenition. Catherine Walker gave mae ganddo fe gardd as a translation of 'he has a garden' (literally '(there) is with him a garden'); the standard has mae ganddo fe ardd (see 4.1.2). This construction is not Mrs. Walker's natural usage, however. Many speakers will over-generalize lenition when in doubt, but this is obviously not always the case, at least in non-phonological-word environments.

7.22 However, there are also cases of extension of lenition, even where it is marked. Lenition of direct objects after a verb in Welsh originally occurred only if the verb form ended in a vowel; now it is general, and a subject must intervene, at least in deep structure.[16] Although subjects directly following a verb are no longer supposed to be lenited, it does happen in some cases: Catherine Walker's normal usage for 'he has a garden' is mae ardd idde '(there) is a garden to him', rather than the expected mae gardd idde.

Fowkes (1954:69) states:

(32) It is...certainly no accident that in Modern English loanwords in Welsh the masculines overwhelmingly outnumber the feminines. And there is some connection between this and the fact that masculines are more numerous than feminines in the Welsh vocabulary as a whole. This entails avoidance of much of the operation of lenition and indicates a 'preference' (not consciously, perhaps) for the easier category.

Fowkes presumably means to argue that all mutation is marked and that the radical is always unmarked. However, only three cases of non-lenition are attributable to masculine gender, and one of these is preservation of the radical in

adjectives following the noun, which is to be expected if this construction is not a phonological word. It is true that masculine nouns are also not lenited after the article and un 'one', but they are lenited after all other morphemes that cause this mutation. Furthermore, all plurals, including feminines, share the mutational characteristics of masculine singular nouns. Thus noun gender in itself does not make as critical a difference in the occurrence of lenition as Fowkes seems to believe.

Furthermore, many borrowed nouns are indeed feminine, some nouns (both native and borrowed) may be treated as of either gender even in the standard, and some nouns which are masculine or variable in the standard are feminine in some dialects. The word lot, quite recently borrowed from English (as the voiced initial [l] indicates) is feminine: lot fawr (←mawr) o bobl 'a great lot of people'. Tipyn 'a bit' is masculine in the standard, but Catherine Walker says tipyn fach (←bach) 'a little bit'.

As in the case of unmarked lenition, there are idiosyncratic exceptions to marked lenition which must be noted separately (see also example (18) above):

(33) a. Cymraeg 'Welsh (language)' + byw 'living' → Cymraeg byw 'living Welsh' (not *Cymraeg fyw, though the noun is feminine)

b. yr 'the' + geneth 'girl' + bach 'little' → North Welsh yr eneth bach 'the little girl' (South Welsh yr eneth fach)

c. buwch 'cow' + go 'rather' + mawr 'large' → buwch go fawr 'a rather large cow'

The persistence, and occasional extension, of marked lenition may be considered further evidence in support of my theory; the tendency toward lenition in Celtic is so strong that it will sometimes spill over into environments in which the radical should be the easy choice. Celtic speakers seem to have an attitude: when in doubt, either

lenite or interpret a form as lenited.

7.23 In this chapter, I have demonstrated--at least according to all available evidence--that within the phonological word, lenition is the unmarked case. The question remains to be posed: why? Why should lenition be different from the other mutations at all? Why should changing a sound be 'easier' than maintaining the original sound?

History (see chapter I and Appendix A) may provide a partial explanation. The non-soft mutations were all straightforward assimilation processes, unusual only in that they occurred across what in most Indo-European languages would be considered word-boundaries. Lenition was also a type of assimilation, but even historically, it was in a different category, resulting from an opposition between fortis and lenis consonants that certainly existed in British, and must have been present in Proto-Celtic (or at least in Proto-Insular-Celtic), since the Goidelic languages also have lenition. The other mutations, though somewhat affected by this system, did not occur as a result of it.

The distinction between lenition and the other mutations in the modern Brythonic languages may be a synchronic reflection of this historical circumstance. However, this does not explain why lenition should be more expected than the radical in the phonological word. There are any number of 'crazy' rules in human languages, resulting from historical accidents such as the Celtic loss of final syllables,[17] but as I have shown in this and the preceding chapters, the bias toward lenition continues in the modern languages. Even Breton fricative voicing seems to reflect a productive tendency toward lenition.

'Why?' is a notoriously difficult question for a linguist to answer; it is difficult enough to answer 'how?' in an adequate fashion. I have, at least, demonstrated both that the Brythonic initial mutations are not the unanalyzable chaos that they have so often been considered in the

past, and that systematic analysis must be more complicated than it has been in previous attempts at description.

NOTES

[1]In standard Breton, according to Le Gléau (1973), 84% of cases of mutation involve lenition; 10% involve the spirant mutation, and 6% involve provection. In speech, the incidence of lenition would be still higher.

[2]See 7.4 for a discussion of projected mutations (or, as I will come to call them, 'phonological-word mutations').

[3]There is also some extension of lenition in dying Goidelic dialects. Dorian (1973:420), writing on E. Sutherland Gaelic, says, 'Younger speakers tend to generalize lenition, the common mutation required by three of the possessives...throughout all persons.'

[4]This word must have been pronounced [kolxət] in Old Breton; the mutations were not usually spelled at this time (9th to 11th centuries A.D.). This example was cited by Parry-Williams (1923); most of the examples cited in the text are from this source, from Evans (1909), or from Jackson (1967).

[5]For a more detailed discussion of phonological-word theory, see Greenberg (1957).

[6]The Welsh intensifier go 'rather' is usually immune to lenition after feminine singular nouns. In all three languages, certain nouns or adjectives do not behave in accordance with rules (5) and (6); see 4.1.25 and 7.13. Note that the sequence intensifier + adjective is a phonological word; the intensifier, not the noun, determines the mutational status of the adjective.

[7]In addition to the article, the numeral un 'one', the predicate particle yn, the equative particles cyn and mor, and the intensifier rhy 'too' do not cause lenition of voiceless liquids. Historically, [n] or [r] did cause delenition of liquids. However, in the modern language there are morphemes ending in these segments which do cause lenition (e.g. ar long (←llong) 'on a ship') and there is no evidence that rhy ends in anything but a vowel.

[8]Most unlenitable Welsh words begin with /b/ or /g/; many immune Breton words begin with /p/ or /t/. However, there is no real regularity here; most words beginning with these segments are lenitable.

It has been suggested that such words as go 'rather' and gau 'false' are immune to lenition because they are so short; not enough of them would be left if /g/ were deleted. However, most monosyllables beginning with /g/ are lenitable (in fact, even go is sometimes lenited), and some polysyllables (such as gini) are not. As for immune words with

initial /b/, some scholars have suggested that this consonant is 'stronger' than the others and therefore more resistant, but since immunity is much the exception here, this is not a very useful observation. Finally, there are also words with other initials which are unlenitable.

[9]Kervella (1947:97) also cites some examples from his dialect of Léonais, including va holl zud (←tud) 'all my people'. Va 'my' spirantizes tud despite the intervention of the unmarked adjective holl 'all'. The other spirantizing possessives (he 'her' and o 'their') behave the same way. Kervella does not say specifically that this construction is emphatic; however, he does mention that it occurs most often with he 'her', as a means of distinguishing gender. It is probable, then, that there is either some emphatic content in phrases with va and o, or that the latter exist by analogy to phrases with he.

[10]Prof. Eric Hamp (personal communication) points out that grammatical morphemes are often immune to mutation in any case.

[11]This is the rule for the literary standard; in speech the feature change is

$$\begin{bmatrix} -\text{son} \\ +\text{voice} \end{bmatrix} \rightarrow [-\text{voice}]$$

since fricatives are also provected.

[12]Note that only devoicing and spirantization of /m b g/ are involved in this rule; devoicing of /d/ is part of the provection rule. Rule (27) expresses the complete type of lenition-and-provection; in the incomplete type, the left-hand side of the arrow would read

$$\begin{bmatrix} -\text{cont} \\ +\text{ant} \\ -\text{cor} \\ +\text{voice} \end{bmatrix}$$

[13]This is the rule in the standard languages. In non-standard Welsh and Breton dialects which have post-aspiration of nasals and liquids, the rule would have [+son] in the place of {V G}. A subsequent metathesis rule would cause [h] + {N L} → {N L} [h].

[14]Again, the feature changes are those which occur in the standard. There are a number of dialectal variations; see 3.13.1.

[15]This use of numerals is not normal for Mrs. Walker. In most contemporary Welsh speech, numbers above three are

not generally followed directly by the noun; instead of saying pedwar ci (literally 'four dog'), speakers will say pedwar o gŵn (literally 'four of dogs'), with the preposition o leniting the plural form of the noun. See also chapter V, note 15.

[16]Analogical extension of lenition has also occurred in Irish, according to Kuryłowicz (1961). Lenition occurs as a mark of the genitive case. Originally, only a noun in this case was lenited; an adjective following the noun was left in the radical. However, in modern Irish lenition has been extended to the adjective as well: an buachaill maith [ənbuəxəl' mɔ:] 'a good boy' : an bhuachaill mhaith [ənwuəxəl' wɔ:] 'of a good boy, a good boy's'.

[17]Knudsen (1973:164) suggests that the mutations continue to exist in Celtic because '...these are dying languages with unique sociological situations, and perhaps the grammar of a language suffering from linguistic senility differs in some qualitative sense from a more vibrant linguistic specimen.' This statement ignores the fact that the morphologization of the initial mutations coincides with the birth of the separate Insular Celtic languages some 1400 or so years ago (see Appendix A). Obviously, these languages did not begin to die immediately, and their sociological situations were perfectly normal until a few hundred years ago. It does, on the other hand, seem to be true that lenition increases its scope as a language or dialect is dying; see 7.2.2 and note 3 above.

CONCLUSION

As I stated in chapter I, the main purpose of this study has been to describe an interesting and peculiar phenomenon in a specific language group. I have demonstrated the defects in previous attempts to describe this phenomenon, and have proposed an analysis which I believe comes closer to descriptive adequacy. I have made no revolutionary theoretical claims. The concept of context-sensitive morphological features may, perhaps, be mildly heterodox, but it is only a small variation on the general themes developed by generativist theory.

It is to be hoped that this dissertation has provided some insights into the possibilities of human language, but it also raises several questions for future investigation:

1. What is the nature of syntactically-governed initial segment changes in other languages, such as the Goidelic branch of Celtic, the West Atlantic languages, and Italian? Will parallels to the Brythonic situation be found?
2. What can the Celtic mutations tell us about morphological operations? The phonological word is determined and morphological features are assigned somewhere between the syntactic surface structure and the phonemic level; what is the nature of this region? Is there a distinct morphological component, as essential to a grammar as the syntactic and phonological components?
3. To what other linguistic processes is the phonological word essential? How many languages--especially the frequently studied Indo-European ones--have been inadequately described because of orthographic separations between morphemes which do not reflect the true situation?
4. In Appendix B I examine the phonemic status of the so-called 'voiceless' nasals in Welsh, and conclude that while true voiceless nasals do exist at an abstract subsurface level, these cannot be analyzed as phonemes according to generative phonological theory. They would no doubt be so

regarded under the old autonomous phonemic theory; generative phonology has no name for them. Do these orphan sounds pose a challenge to the generativist concept of the phoneme? 5. Last--but by no means least--is the question of whether present linguistic theory is, in fact, adequate to describe the mutations formally. Context-sensitive morphological features appear to be the only reasonable way to describe the mutations, and their messiness may be an accurate reflection of the complexity of the mutation phenomenon. Yet perhaps some future linguistic Copernicus--discovering some entirely new way of looking at human language--may someday be able to simplify this rather Ptolemaic situation.

The theory of lenition as the unmarked case in the phonological word is falsifiable. No one has yet made a study of the acquisition of the initial mutations by children for whom Welsh or Breton is a first language. As I have indicated in chapter VII, such a study is crucial: it should either disprove my theory altogether, or provide additional evidence that it is true.

If this dissertation does no more than inspire the investigation of these questions--whatever the consequences for my theory--it will have been worth writing.

APPENDIX A

HISTORICAL BACKGROUND OF THE BRYTHONIC MUTATIONS

The historical development of the initial mutations has little if any relevance to the synchronic description which is the purpose of this study. However, some general knowledge of it is worthwhile, if only to give an example of how the conditioning for some grammatical rules can change as a result of changes in other parts of a grammar.

The following survey of the British mutations is meant to present such a general summary of the facts; it is not intended as a serious study of Celtic historical linguistics. Readers who wish to make such a study are urged to consult Jackson (1953, 1967), Lewis-Pedersen (1937), and Pedersen (1909-1913), as well as various works by Sommerfelt, Hamp, Loth, and other expert Celticists. Jackson is my principal source for the facts and examples presented in the following survey. Because of its limited scope, I have eliminated some of the more complex subtleties of his etymological derivations; I have also changed some phonetic symbols. As far as I know, none of these alterations has resulted in inaccuracies with respect to the mutations themselves, though there may be some in other respects.

1. Lenition

The first of the British mutations to occur was lenition, or the soft mutation, around 450 A.D. in Jackson's view (1967:308). The same mutation occurred independently in Goidelic, at more or less the same time. Jackson and Sommerfelt (1954) attribute this to a similarity of consonant systems dating from Proto-Celtic and still reflected in at least some dialects of modern Breton (see 3.12) and in dialects of Irish and Scots Gaelic. Jackson and Sommerfelt suggest that in Proto-Celtic there was complementary distribution of fortis (tense, long) and lenis (lax, short) consonants and glides. The fortes occurred in absolute initial position (i.e., with no proclitic preceding) and in

obstruent clusters (including those in which the first segment was a proclitic-final consonant). The lenes occurred intervocalically or in clusters with sonorants. Geminate consonants were fortis.

In British, between a vowel and a sonorant, lenis voiceless stops were voiced (*[p t k] > *[b d g]), lenis voiced stops were spirantized (*[b d g] > *[β ð γ]), and lenis *[m] became a strongly nasalized bilabial fricative (*[β̃]). In Goidelic, both voiced and voiceless stops, as well as *[m], were spirantized.

As indicated in 2.1.2, the fricatives underwent subsequent changes in one or more of the daughter languages of British.

Lenition affected both native words and Latin loanwords dating from the Roman occupation (first to fourth centuries A.D.). The following examples are taken from Jackson (1953:394ff; 1967:310ff):

(1) a. British-Latin *pop'lus 'people' > Welsh/Breton pobl
b. British *petwares 'four' > W. pedwar
c. Br. *etno- 'bird' > W. edn
d. Br.-Lat. *cocīna 'kitchen' > W. cegin, B. kegin, Cornish kegen
e. Br. *gabros 'goat' > W. gafr [gavr], B. gavr, C. gaver
f. Br. *bedos 'grave' > W. bedd [be:ð], B. bez, C. bedh
g. Br. *dago- 'good' > *daγ > W.B.C. da
h. Br. *esyo gabros 'his goat' > W. ei afr, B. e c'havr, C. y aver
i. Br. *to tatos 'thy father' > W. dy dad, B. da dad, C. dhe dâs
j. Br. *oinā mammā 'one mother' > W. un fam (but *oinos tatos 'one father' > un tad)

While medial stops preceding nasals and liquids were lenited, those following nasals and liquids had different

outcomes. Stops following nasals underwent the nasal mutation (see section 2 below). Both voiced and voiceless stops following liquids were spirantized (the clusters *[ld] and *[lt], however, remained intact, later undergoing other changes in the daughter languages). Some scholars regard the spirantization of voiced stops here (as in Br. *bardos → W. bardd [barð] 'poet') as part of lenition, and that of voiceless stops (as in Lat. serpens → W. sarff 'snake') as part of the spirant mutation (see section 3).

Modern lenition of liquids in Welsh, and of [l r n] in some Breton dialects, did not arise from British sound changes. In British, there was allophonic variation between fortis and lenis *[l r n], but the lenis variants did not change when historical lenition took place (lenis *[m], on the other hand, became *[β̃]).

In Welsh, the fortis liquids evidently remained voiced, though tense, until about the 10th century. (Before this period, Welsh loanwords and names in Old English were spelled with initial l and r; afterward they were spelled with fl, thl, hr, etc. Cf. the doublets Lloyd and Floyd ← W. llwyd 'gray'.) Fortis *[n] unconditionally became lenis at some point, so that there is no lenition of [n] in modern Welsh. In most dialects of Breton, fortis *[l r n] also became lenis, and there is no synchronic alternation. In some dialects, however, the original fortes seem to have been preserved, and from a synchronic point of view there is indeed a subrule of lenition affecting liquids and [n] (see 2.1.5 and 3.13.1).

The [gw]:[w] alternation also does not date from British. In the parent language, as I observed in 2.1.3, there was no *[g^{w}]; there were, rather, fortis and lenis *[w], whose distribution remained the same when historical lenition occurred. Later, and independently, in all three daughter languages initial fortis *[W] became *[gw], while lenis *[w] remained the same:

(2) a. Br. *markos Windos > W. marc'h gwyn 'white horse'
b. Br. *castică windă > W. caseg wen 'white mare'

The above example was taken from Jackson (1967:311). Once this late sound change was completed, the [gw]:[w] alternation became a subset of the lenition of /g/ in all three Brythonic languages.

2. Nasal mutation

According to Jackson (1953), the nasal mutation of voiced stops began during the late fifth century and continued through the sixth. In both dialects of British--West British, which gave rise to Welsh, and Southwest British, the parent of Breton and Cornish--word-medial *[mb nd ŋg] > *[mm nn ŋŋ]. The following examples are from Jackson (1953:640; 1967:788-90):

(3) a. Br. *komber- 'taking' > W. cymer [kə́mmɛr], B. kemer
b. Br.-Lat. ponderis > W. pynner 'load', B. ponner 'heavy'
c. Lat. angelus > W. angel [áŋŋɛl] 'angel'

Word-initially, nasal mutation occurred only in West British. In practice, the conditioning segment was *[n], since final *[m] and *[ŋ] did not occur in British. This final *[n] must have become something else in Southwest British--Jackson (1967:318) suggests a glottal stop--since morphemes which cause the nasal mutation in Welsh either trigger the spirant mutation or preserve the radical in Breton and Cornish. The following examples are from Jackson (1953):

(4) a. West Br. *min-donyəs > early W. *vĩ-nɨn > Mod. W. fy nyn [vənɨn] 'my man'
b. Southwest Br. *mi-ddunyəs > B. va/ma den, C. ow den 'my man'

The nasal mutation of voiceless stops--both word-medial and word-initial--took place in Welsh only, around the ninth century: *[mp nt ŋg] > *[mmh nnh ŋŋh].

(5) a. Br.-Lat. fontānā > Old Welsh *fynnhon > Mod. W. ffynnon [fə́nnɔn] 'well' (but B. feunteun)
b. Late West Br. *min-tiɣəs > early W. *ṽi-nhəɣ > Mod. W. fy nhŷ [vənhə:] 'my house'
c. Late Southwest Br. *mi-ttiɣə(s) > early B. *ma/va θi > Mod. B. va zi, C. ow thi 'my house'

Final *[n] in British monosyllables survived the loss of final syllables and consonants in the last stages of British (see section 4). It was this old final *[n], which had caused the nasal mutation of voiced stops, that now caused the nasal mutation of voiceless stops. New final nasals did not do so: thus there are many words ending in nasals in modern Welsh which either preserve the radical or trigger lenition (see 5.2.1). In British these words had ended either in a vowel, thereby causing lenition--in which case there was no initial voiceless stop left to nasalize--or in a non-mutating consonant--in which case voiceless stops probably remained in the radical by analogy to the voiced stops. Thus, only those nasal-final proclitics which had already nasalized voiced stops (namely, yn 'in', fy(n) 'my', and the prefixes cyn- 'together' and an- 'un-') could also nasalize voiceless stops. Even historically, then, the word-initial voiceless nasal mutation did not have perfect phonological conditioning.

Several numerals ended in *[n] in British: *sextan 'seven' > W. saith; *nawan 'nine' > W. naw; possibly an analogical form *oxtan (< *oktō) 'eight' > W. wyth; *dekan 'ten' > W. deg; *kanton '100' > W. can(t). These no doubt regularly nasalized voiced stops in West British, and perhaps still in early Welsh. However, they did not nasalize voiceless stops, since they had lost their final syllables

long before the voiceless nasal mutation occurred. Probably because of this asymmetry, nasal mutation after numerals became restricted to a list of several common words; in modern standard Welsh only three words are still nasalized, and in the spoken language only two are (see 4.3.5). Several numerals which had not ended in *[n] in British later became triggers of this restricted nasal mutation; see 5.2.1.

3. Spirant mutation and Aspiration

According to Jackson, the spirant mutation probably occurred about the middle of the sixth century. Word-medially, voiceless geminate stops were spirantized: *[pp tt kk] > *[f θ x]. Again, both Latin loanwords and native words were affected. Examples are from Jackson (1953:635ff; 1967:317ff):

(6) a. Lat. cippus > W. cyff, B. kef 'trunk, chest'
b. Br. *kattos > W.C. cath [ka:θ], B. kazh [ka:s] 'cat'
c. Br. *merkkess > W. merch, B. merc'h [mɛrx] 'girl'

Jackson (1967:320) suggests that medial voiceless stops had been geminated after liquids--as in example (6c) above--and that this is the origin of the spirantization of voiceless stops after liquids mentioned in section 1.

Voiced geminates were simplified at about the same time; this must have taken place after lenition had been completed, since the resulting single voiced stops were not lenited.

Earlier in the century, word-initial stops had become geminated after proclitics ending in *[x], *[k], or *[h] from an earlier *[s]. These final segments were totally assimilated to the initial stop of the following word. The resulting geminate stops behaved exactly like the word-medial ones: the voiceless stops were spirantized, the voiced ones simplified.

(7) a. Br. *trīs pettās > *trih pettas > *tri ppettas >
W. tri pheth [trifɛθ], B. tri fezh 'three things'

b. Br. *nak tī > *na ttī > W. na thi 'than thou'
c. Br. *esyās kattos > *esyāh kattos > *esya kkattos > W. ei chath [ixa:θ], B. he c'hazh 'her cat'

As I mentioned in section 2, some proclitics which ended in *[n] in West British apparently ended in Southwest British in a segment which could cause gemination and spirantization. See example (5c).

When proclitics ending in *[h] (< *[s]) preceded a word beginning with a vowel, the *[h] became prefixed to the following word:

(8) Br. *esyās ognos > *esyāh oynos > *i-hoyn > W. ei hoen 'her lamb'

Originally, then, the aspirating mutation was part of the spirant mutation. Today, however, the two processes are separate. Most morphemes which were *[h]-final in late British do not cause aspiration in the modern languages: Br. *trīs ognos > *trih oynos > W. tri oen 'three lambs', not *tri hoen. There are also morphemes which aspirate but do not spirantize.(see 5.2.3). In Welsh, only ei 'her' (< *esyah < *esyās) continues to trigger both mutations. Standard Breton does not recognize aspiration at all, though it does have this mutation; see 2.6.2.

Both spirantization and preaspiration have undergone considerable erosion; in all three languages they have a quite small distribution. Even in British, they were interfered with by the fall of the final syllables, which must have been occurring at about the same time. Apparently, different words were involved at different times, because not all words originally ending in *[s] are spirantizing triggers: cf. example (1), which gives *oinos tatos > W. un tad 'one father', not *un thad. *Oinos 'one' must have lost its final syllable, or at least its final consonant, before it could condition the spirant mutation.

There also must have been dialectal differences on

this score between West British and Southwest British. Standard Breton pevar 'four' (< Br. *petwares) causes the spirant mutation, but Welsh pedwar does not; the British word apparently lost its final consonant early in West British but kept it in Southwest British long enough for it to cause spirantization. On the other hand, *esyās 'her' must have kept its final consonant until quite late in both dialects, since its reflex in all three daughter languages causes the spirant mutation.

4. Fall of the British final syllables; Provection

Around the middle of the sixth century (more or less at the same time as the spirant mutation) the final syllable of polysyllabic words and--except before vowels--final obstruents of monosyllables dropped out. A few of the original final segments did survive, since there were monosyllabic proclitics in British, but these remnants can no longer be regarded as phonological conditioning for the modern mutations (see 5.2).

At about the same time, medial unstressed vowels were also deleted in polysyllables.

Both these changes often created consonant clusters which were inadmissible in British. The result was devoicing, gemination, spirantization, despirantization, or some combination of these processes, depending on the cluster. These changes are collectively known as provection. Many different types of clusters were involved, and they were often treated differently in late West British/early Welsh and late Southwest British/early Breton and Cornish. (For a detailed presentation, see Jackson (1967:325ff), from which the examples given below have been taken.) Word-medial provection occurred in all three languages:

(9) a. Br. *wliposamo- 'wettest' > *wlib'haδ̃ > W. gwlypaf [gʷlɔppa(v)], B. glepan [glɛppa]

b. Br.-Lat. benedictio 'blessing' > *benedixt- > *benδiθ > W. bendith, B. bennozh, C. benneth

c. Br. *sextadekan 'seventeen' > *seiθðeg > early B. *seitteg > mod. B. seitek; C. seitag

Provection across word-boundaries occurred quite systematically in late Southwest British/early Breton and Cornish, and in these languages phonological conditioning for provective sandhi still exists (see 5.1.3). External provection also happened in late West British/early Welsh, though evidently as a free variation, according to Jackson (1967:330). Today, there are a few expressions in standard Welsh in which provective sandhi occurs (e.g. nos da 'good night' instead of *nos dda), and some dialects have a fairly extensive system.

In late Southwest British/early Breton-Cornish, other developments occurred which were to create the provective mutations. (Jackson regards the 'mixed' mutation/lenition-and-provection as a subtype of provection.) After proclitics ending in certain new final consonants--in practice, according to Jackson (1967:331), *[θ], *[ð], and *[d]--the following developments took place:

1. Initial voiced stops were devoiced: *[b d g] > *[p t k]. This change affected both radical voiced stops and lenited voiced stops (i.e., those preceded by proclitics which had ended in a vowel in earlier British). In the latter case, the stop returned to its original state; in the modern 'mixed' mutation/lenition-and-provection, these voiceless stops must be regarded synchronically as remaining in the radical.

2. Initial voiced fricatives resulting from the lenition of voiced stops were also devoiced: Br. *[b m g] > *[β̃ ɣ] > *[f f x]. However, *[ð] from *[d] became *[t] rather than *[θ], because the clusters *[θð], *[ðð], and *[dð] were devoiced and geminated; the resulting *[tt] was later simplified.

According to Jackson, lenition-and-provection either did not operate completely or has not survived intact in

most modern Breton dialects, including the standard. In these dialects, voiced fricatives derived by lenition either remained voiced (i.e., were not provected) or reverted to their lenited state, with the exception of *[d] > *[ð] > *[t]. The result was the standard 'mixed' mutation.

Following the provection of voiced obstruents, final *[θ], *[ð], or *[d] merged with the initial voiceless obstruent of the next word to produce a geminate of the latter. This must have affected original voiceless obstruents as well as those derived by provection. Later, these geminates were simplified, so that in the modern languages radical voiceless stops and fricatives are not affected by provection.

The following examples are taken from Jackson (1967: 332ff):

(10) a. Early Breton *hwoθ barβ 'your beard' > *hwo pparβ > Mod. B. ho parv

b. E.B. *ha-θ brɔr 'and thy brother' > *ha pprɔr
Mod. B. (dialectal) ha preur [aprör]

c. Late British *iðe ðɔ 'prt.--he comes' > E.B. *xððɔ > *x ttɔ > Mod. B. e teu

d. Late Br. *iðe βiθ 'prt.--he is' > E.B. *xð βxð > *x ffxð > Mod. B. (standard) e vez, (dialectal) e fez

In the case of (10b), standard KLT has ha'z preur [asprör], which may be a case of provective sandhi exceptionally recognized in spelling. Jackson speculates that in some dialects of early Breton, including those that gave rise to the standard, provection by the second person singular morpheme did not occur at the period discussed above, but rather at a later time, when final consonants of provecting proclitics were not absorbed into the initial consonant of the following word. Jackson calls the type of provection illustrated in (10) 'primary provection', and cases such as

[asprör] 'secondary provection' (see 5.2.2).

There were no radical voiced fricatives in early Breton; later, /v/, /z/, and /ž/ were borrowed from French. Today, in most spoken Breton these voiced fricatives are devoiced by provecting triggers, by analogy to the stops. In some dialects, liquids and nasals are also provected (see 2.4.3). Jackson (1967:347) regards this too as a late, analogical phenomenon, not dating from the same period as the cases illustrated in (10).

5. Conclusion

All the external mutations were originally 'projected' in the Oftedalian sense: i.e., they occurred if the preceding word or morpheme ended in the proper segment. Most Celticists add that there was also considerable restriction on the syntactic environment: the mutations occurred where there was a 'close syntactic relationship' between a proclitic and the following word. However, there are some problems with this analysis. First, not all triggers of mutation were proclitics even in British: obviously, nouns which lenited adjectives could not be considered as such. Secondly, there is no adequate definition of 'close syntactic relationship'. Usually, the same syntactic phrase node is implied. However, if Welsh direct-object lenition dates from the British period, and occurred in objects directly following verbs which ended in vowels, it is a counterexample to the same-phrase-node definition. It is possible that British--which is almost entirely unattested --had SVO word order at the time lenition took place; the separation of British into Welsh, Cornish, and Breton (each of which has--or had--VSO as normal word order) occurred more than a century later, and a shift from SVO to VSO might conceivably have taken place during this period. If so, then direct-object lenition would indeed have occurred inside the same phrase node.

However, Evans (1909) notes that some subjects were

lenited in Welsh even as late as the 18th century. If this type of mutation also dates from the British period, then we would have to conclude that British had either VSO order or (since it had cases) a fluid word-order. In either case, the same phrase node would not be the domain of the mutations. If British word-order was fluid, then perhaps lenition originally occurred only when a subject or object directly followed a vowel-final verb form; later, the mutation could have been extended by analogy to all objects and perhaps subjects. (On the other hand, subject-lenition could have been a later, analogical development.)

All of these possibilities are in the realm of speculation; the best that can be said is that there are problems in determining if there is syntactic as well as phonological conditioning for the historical mutations, or if there was a distinction between 'unmarked' and 'marked' types of lenition in British as there is in the modern Brythonic languages. The determination of the environment for 'unmarked' lenition and the non-leniting mutations as being across morpheme boundaries inside a phonological word may apply only to the modern languages.

APPENDIX B

THE PHONEMIC STATUS OF THE VOICELESS SONORANTS IN WELSH

Welsh has five voiceless sonorants, spelled ll, rh, mh, nh, and ngh. The first, /l̥/, presents no problem from the point of view of phonemic analysis: all Celticists agree that it is a phoneme contrasting with /l/. The phonemic status of the others, however, is in dispute. For one thing, their voicelessness is phonetically a function of their aspiration; dialects which lack /h/ also lack these sounds (see 3.2). In these dialects there is no radical [rh] to be lenited to [r], and the nasal mutation of /p t k/ yields ordinary voiced nasals. A number of scholars, including Davies (1935), Sommerfelt (1925), and C. Thomas (1975), have remarked that normally the 'voiceless' nasals are realized phonetically as sequences of voiced nasal + [h] (or even [ɦ], according to Davies).

Orthographic rh is traditionally considered a cluster, and in most cases it does appear to be one. (Unlike ll, it is not a separate letter of the Welsh alphabet.) However, there are some facts which have often been overlooked. In morpheme-initial position, rh is certainly a single segment, an aspirated (if not actually voiceless) r: rhôdd [r̥^{h}o:ð̥] 'gift' : ei rhôdd [i-r̥^{h}o:ð̥] 'her gift'; penrhyn [pɛn-r̥^{h}ɨn] 'promontory'. Note that [r̥^{h}] is syllable-initial in these examples. In morpheme-medial position, on the other hand, rh is just as surely a cluster: syllable division occurs between [r] and [h], as in arhosol [ar-hɔ́sɔl] 'lasting'.

Rh does not occur morpheme-finally as either a segment or a cluster; it does not, apparently, occur morpheme-medially as a segment. When it represents a segment, is it a phoneme? Originally it was predictable, the result of a rule which devoiced liquids in morpheme-initial position. In earlier times, initial [l] and [r] in English words were devoiced when borrowed into Welsh: rake → rhaca; lappet → llabed. Today, however, loanwords retain initial voiced liquids: racquet → raced; labourer → labrwr. There are

near-minimal pairs, such as the above-cited examples. Although rh has sometimes been considered a cluster in all cases--for example by John Morris-Jones (1913) and even by some modern Celticists such as R. Jones (1969)--others have disagreed. The Breton scholar J. Loth (1915:126) criticized Morris-Jones on this point, insisting that rh represents 'a single sound, a sort of spirant r' (translation mine). C. Thomas (1975:353) regards rh as a phoneme, 'a voiceless alveolar trill', which she writes as /r̥/. In the contemporary language, at least, segmental rh should no doubt be considered a phoneme, in spite of its limited distribution.

The so-called voiceless nasals are more problematical. Orthographic mh, nh, and ngh may occur across morpheme boundaries, as in anhapus 'unhappy' (← an- 'not' + hapus), morpheme-medially, as in brenhinoedd 'kings', or morpheme-initially as a result of the nasal mutation, as in amhriodol 'improper' (an- + priodol) or yn nhŷ fy nhad 'in (the) house (of) my father' (← yn + tŷ + fy + tad). In all these cases, including those of nasal mutation, syllable division occurs between the nasal and [h]: [an-hápɬs], [brɛn-hínɔɬð], [am-hriɔ́dɔl], [ən-hə́:(v)ən-há:d]. Furthermore, in spoken Welsh there are often examples of metathesis such as ym mlhant 'my children' for ym mhlant (← yn 'my' + plant), which show that phonetically the nasal and the [h] are independent from each other, even when [Nh] has resulted from nasal mutation. At phonetic surface level, then, these sounds are almost always clusters.

There are some cases in which voiceless nasals occur in absolute initial position. A very common expression in spoken Welsh is a vocative 'Nhad! 'Father!' ← yn nhad [ən-há:d] 'my father'. Here nh is a true aspirated nasal segment [n̥ʰ]; C. Thomas (1975) says that the nasal component is truly voiceless. Pilch (1975:84) cites spoken Welsh [m̥atri] 'undress' (vs. literary ymhatru [əm-hatrɨ]). Nasal mutation is not involved in this example.

Few scholars have claimed phonemic status for the

'voiceless' nasals. One is R. Jones (1969), who considers them to be aspirated nasals--/m^h/, /n^h/, and /$ŋ^h$/--occurring in contrastive distribution with /m/, /n/, and /ŋ/ in instances such as the following:

(1) a. pryd 'mind' : ym mhryd [əm-hrɨd] 'my mind'
    b. bryd 'time' : ym mryd 'my time'

(The above examples are my own; Jones uses similar but less clear ones.)

This analysis is surely incorrect. The true phonemic opposition in (1) is /p/:/b/; both nasals are predictable, since they have been derived by the nasal mutation rule.

Oddly, Jones regards rh as a cluster /h + r/, and lenition of rh as a rule [h] → ∅ / ____ [r]. His reasoning is that [h] occurs syllable-initially in Welsh, but not post-consonantally. The voiceless nasals could not be treated similarly, or [əmhrɨd], for example, would have to be analyzed as /əm + hrɨd/. However, if Jones considers the voiceless nasals as aspirated segments rather than /N + h/, why is rh not analyzable as an aspirated segment?

Another anomaly in Jones's analysis is that he considers the aspiration of the voiceless nasals as stemming from that of the voiceless stops. If anything, this is (and has been used as) an argument against the phonemic status of the voiceless nasals, since aspiration of the stops is predictable by a rule similar if not identical to the English one; no one to my knowledge has ever suggested that /p^h/, /t^h/, and /k^h/ are phonemes of Welsh contrasting with /p/, /t/, and /k/. Furthermore, the aspiration of the nasals is much stronger than that of the stops, and is clearly perceptible to the native speaker.

A solution to the problem of the voiceless nasals is, however, suggested by some of Jones's work, and is based on the following notion: those sequences of phonetic [Nh] which are synchronically derivable by nasal mutation are true voiceless, unaspirated nasal segments at a subsurface

level, but those not so derived from a synchronic point of view--whether or not they originated historically as a result of nasal mutation--are phonemically clusters of /N/ + /h/. The true voiceless nasals are subject to low-level rules changing them to [Nh] at the phonetic level (or [N^h] in absolute initial position).

This proposal is based on the fact that [Nh] derived by nasal mutation and [Nh] derived from /Nh/ are subject to different rules. In the dialect that Jones (1969) is describing--that of Dyffryn Nantlle (North Welsh)--there is a rule deleting [h] after a consonant if an unstressed syllable follows:

(2) $[h] \rightarrow \emptyset \; / \; C \; (+) \; \_\_\_\_ \; \begin{bmatrix} +syll \\ -stress \end{bmatrix}$

This rule applies both to underlying /h/ and to [h] resulting from the aspirating mutation:

(3) a. [mám] 'mother' : [imhámi] 'her mother of her' (not *[imhámhi])
b. [ával] 'apple' : [ihávoli] 'her apple of her' (not *[ihávolhi])
c. [mɛðə́lya] 'thoughts' : [imɛðə́lyahi] 'her thoughts of her' (not *[imhɛðə́lyahi])

The above examples were taken from Jones (1969:105).

[Nh] sequences resulting from the nasal mutation, however, are not subject to rule (2):

(4) [pɛntrɛ́vi] 'villages' : [ə-m-hɛntrɛ́vivi] 'my villages of me' (not *[əmɛntrɛ́vivi])

This indicates that the voiceless nasals are single segments, with no [h], at the stage at which rule (2) operates.

Standard Welsh also has some morphophonemic alternations which reflect a distinction between the two types of [Nh] sequence:

(5) a. <u>cenau</u> [kɛ́naɨ̯] 'cub' : <u>cenawon</u> [kɛnáwɔn] 'cubs'
b. <u>cynnig</u> [kə́nnig] 'attempt' : <u>cyniqion</u> [kəníɡyɔn] 'attempts'
c. <u>brenin</u> [brɛ́nin] 'king' : <u>brenhinoedd</u> [brɛn-hínɔɨ̯ð] 'kings'
d. <u>cennad</u> [kɛ́nnad] 'messenger' : <u>cenhadau</u> [kɛn-hádaɨ̯] 'messengers'

In the above examples, [h] and the geminate nasals are underlying. (Historically, morpheme-medial [NN(h)] is the result of nasal mutation, but synchronically this sequence can no longer be derived in this way. See Appendix A.)

There are three relevant rules:

(6) Stress placement:

$$[+\text{syll}] \longrightarrow [+\text{stress}] \; / \; \_\_\_\_ \; (C_0V) \; \#$$

(7) Consonant degemination:

$$C_iC_i \longrightarrow C_i \; / \; \begin{bmatrix} +\text{syll} \\ -\text{stress} \end{bmatrix} \; \_\_\_\_$$

(8) [h]-deletion:

$$[h] \longrightarrow \emptyset \; / \; \begin{bmatrix} +\text{syll} \\ +\text{stress} \end{bmatrix} \; C \; \_\_\_\_$$

Derivations for the forms listed in (5) follow:

(9)	/kɛnnhad/	/kɛnnhad+aɨ̯/	/brɛnhin/	/brɛnhin+ɔɨ̯ð/
Stress	kɛ́nnhad	kɛnnhádaɨ̯	brɛ́nhin	brɛnhínɔɨ̯ð
Degem.	---	kɛnhádaɨ̯	---	---
h-del.	kɛ́nnad	---	brɛ́nin	---
	[kɛ́nnad]	[kɛnhádaɨ̯]	[brɛ́nin]	[brɛnhínɔɨ̯ð]

	/kənnig/	/kənnig + yɔn/
Stress	kə́nnig	kənnígyɔn
Degem.	---	kənígyɔn
	[kə́nnig]	[kənígyɔn]

These rules also work across morpheme boundaries:

(10)	/an + hapṡ/ 'unhappy'	/an + hap/ 'misadventure'
Stress	anhápṡ	ánhap
h-del.	---	ánap
	[anhápṡ]	[ánap]

However, rule (8) does not work in cases where synchronic nasal mutation is involved:

(11) a. pur 'pure' : amhur [ámm-hɨr] 'impure' (not *[ámmɨr])
b. teg 'fair' : annheg [ánn-heg] 'unfair' (not *[ánneg])

There are some apparent counterexamples, such as the following:

(12) a. cofio 'remembering' : anghofio [aŋ-hóvyo] 'disremembering = forgetting' : angof [áŋŋov] 'forgetfulness'
b. cerdd [kɛrð] 'music' : cyngerdd [kə́ŋŋɛrð] 'together music = concert' : cyngherddau [kəŋhɛ́rðaṡ] 'concerts'

If angof and cyngerdd are synchronically derivable by nasal mutation, they should be *anghof and *cyngherdd. However, it is possible--almost certain in the case of cyngerdd--that restructuring has occurred in these forms and that non-

learned native speakers no longer associate them with the nasal mutation.

At the point in the derivations at which rule (8) applies, the voiceless nasals must be segments. Because of the nasal assimilation rule that follows the nasal mutation (yn + Bangor → ym Mangor; see 2.3.1) and the degemination rule (7), it is simpler to regard these segments as voiceless unaspirated nasals rather than as aspirated nasals.

At a lower level, the following rules would operate:

(13) [h]-insertion:

$$\emptyset \rightarrow [h] \Big/ \begin{bmatrix} +son \\ -lat \\ -voice \end{bmatrix} \quad \_\_\_\_$$

(14) Aspiration:

S	$\begin{bmatrix} +son \\ -lat \\ -voice \end{bmatrix}$	[h]	V	
1	2	3	4	
1	$\begin{bmatrix} 2 \\ +asp \end{bmatrix}$	∅	4	⇒

(15) Nasal voicing:

$$\begin{bmatrix} +nasal \\ -asp \end{bmatrix} \longrightarrow [+voice]$$

Note that rules (13) and (14) also apply to /r̥/. Rule (14) accounts for phonetic voiceless aspirated nasals such as [n̥^{h}] in 'Nhad! 'Father!', and for the aspiration of /r̥/ in rhôdd [r̥^{h}o:ð] 'gift'.

Thus we have the following derivations, demonstrating the distinction between phonetic [Nh] derived by nasal mutation and phonetic [Nh] not so derived:

(16)	/an + teg/ 'unfair'	/an + p̥ɨr/ 'impure'
Nasal mutation	anneg	anmɨ̥r
Nasal assim.	(vacuous)	ammɨ̥r
Stress placement	ánneg	ámmɨ̥r
Degemination	---	---
h-deletion	---	---
h-insertion	ánneg	ámmhɨ̥r
Aspiration	---	---
Nasal voicing	ánneg	ámmhɨ̥r
	[ánneg]	[ámmhɨ̥r]

(17)	/kɛnnhad/ 'messenger'	/kɛnnhad+aɨ̯/ 'messengers'
NM	---	---
NA	---	---
Str.	kɛ́nnhad	kɛnnhádaɨ̯
Degem.	---	kɛnhádaɨ̯
h-del.	kɛ́nnad	---
h-ins.	---	---
Asp.	---	---
NV	(vacuous)	(vacuous)
	[kɛ́nnad]	[kɛnhádaɨ̯]

Note also the distinction between /rh/ and /r̥/:

(18)	/arhos/ 'waiting'	/arhos+ol/ 'lasting'	/r̥o:ð/ 'gift'
Str.	árhos	arhósol	r̥ó:ð
h-del.	áros	---	---
h-ins.	---	---	r̥hó:ð
Asp.	---	---	r̥ʰó:ð
	[áros]	[arhósol]	[r̥ʰó:ð]

Rules (13) and (14) would not exist in dialects lacking /h/. Presumably these dialects would have a redundancy rule voicing all non-lateral consonantal sonorants.

As for the phonemic status of the voiceless nasals, if the standard generative theory is accepted we would have to say that they are not phonemes, since the sound-changing operation of nasal mutation takes place between the phonemic and phonetic levels of representation; the voiceless stop is what exists in the underlying representation. The only way to claim phonemic status for these sounds is to return to the autonomous phonemic model, setting up voiceless stops at the morphophonological level (e.g. |p|) and voiceless nasals at the autonomous phonemic level (e.g. /m̥/). It would be interesting, but beyond the scope of this discussion, to examine the possibility that the Welsh voiceless nasals pose a challenge to generative phonology.

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