Lenition, weakening and consonantal strength: tracing concepts through the history of phonology

1. Tracing the history of an idea

When does an idea start? This article investigates the ideas behind what phonologists now refer to as 'lenition', with the conviction that we can understand concepts better if we know where they came from, how they developed and how they have been used by theorists in the past. In doing this we will need to pick apart several concepts that are sometimes otherwise blurred together. We will see that some of these ideas can be traced back almost as far as it is possible to go in the history of phonology. Others are more recent, of course, and the particular constellation of ideas that make up the modern meaning (or meaning*s*) of 'lenition' is arguably quite recent.[1]

It is common to claim that 'lenition' is a synonym of 'weakening' in phonology, and this clearly implies a notion of consonantal 'strength'. These terms have long been connected, but the relationship between them is not straightforward – by investigating their shared and separate histories at least certain aspects of their interrelationship will become clear below. The *focus* here, though, is on 'lenition' (more narrowly, on 'consonant lenition'), as it is in the volume that this article appears in. This focus on 'lenition' and 'weakening' will also mean that I largely ignore their uncommoner cousins 'fortition' and 'strengthening'. While we lack the space to discuss this here, it seems to me exactly right to play them down, as cases of real fortition are vanishingly rare, and it is by no means obvious that they really are the literal 'opposite' of lenition.

The importance accorded to lenition varies among phonologists. It played a major role in the development of some phonological theories (such as Natural, Dependency and Government Phonologies), but has been almost

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absent from the discourse of other frameworks (Standard Generative Phonology, for example, and Lexical Phonology). However, the consonantal changes or processes[2] that the term refers to are widespread, and are regularly perceived to have something in common. Quite what they are perceived to have in common differs from framework to framework, as we shall see below. Some authors take these consonantal phenomena to be parallel to cases of (what they see as) lenition in vowels (for example, Donegan & Stampe 1979, Dressler 1985, Bauer 1988), but I only consider consonant lenition here, in keeping with the bias of a fair amount of previous work.

It will not be simple to trace the history of 'lenition', or to say quite when or where the idea originated, for the different components of its current meaning originated at different places and times. Furthermore, tracing the origin of a word is not the same as tracing the history of the concepts that it refers to – the same concept could just as well have previously existed as the referent of a different word (or 'signifier'). Indeed, as we will see, something along these lines was the case for the concepts considered below. Words and concepts can also diverge, with a word being used to describe different things than what it originally referred to, and the 'original meaning' of a particular term has no primacy in debates on its current meaning.

This will necessarily be a selective trip through the history of phonology. In some cases, I can only cherry pick some choice discussion of the issues, when other work from the same period would be just as relevant. I consider work from both historical phonology and theoretical phonological, but our focus, to the extent that the two can be separated (for much of their history the two were pursued jointly), is on theoretical work. The discussion will require direct quotation from the work considered because the words used in these quotations are our actual data. Most of the discussion occurs in §3, which traces the notions of consonantal strength, weakening and lenition through the history of phonology. Before that, in §2, I make some necessary basic points that will guide the later discussion. §4 concludes.

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[2] It is probably true to say that most discussion of lenition is historical, comparing segments across chronological stages, but a large amount of work assumes that the segments involved are synchronically related by rule (or 'process'). There is much to be said about the differences and similarities between synchronic processes and diachronic changes, but this is not the place to say it. I simply assume here that there is enough similarity between the two to for us not to be knocked too far off course if we ignore any differences between them here. For a more detailed consideration of the issues involved, see Honeybone (to appear).

2.   Starting points for a history of lenition and consonantal strength

Before we consider the history of 'lenition' (and related terms), we need a preliminary definition of what they currently mean. This is provided in §2.1. In §2.2, I tease apart the conceivable varieties of phonological 'strength' that will be relevant below. §2.3 introduces the history of phonology, and §2.4 gives a framework to cope with the fact that the concepts of interest here have been discussed in several languages. §2.5 concludes this section with a fast-forward to the first time that the term 'lenition' was used in phonology. I consider it here to get it out of the way: a major contention of this article is that the event described in §2.5 was not *that* important for the history of phonology, or of lenition theory as it is currently pursued, because the basic concepts involved have been around in phonology practically from the start.

2.1. A first starting point: current definitions of 'lenition'

The term 'lenition' can currently mean quite different things. Theory-specific definitions model lenition differently (for example: as feature spreading in Mascaró 1984, as the loss of privative features in Harris 1990, as the reranking of LAZY and faithfulness constraints in Kirchner 1998), and phonologists sometimes even disagree about which types of segmental change or process instantiate the concept (for example, the affrication of plosives is counted as lenition in Lass 1984 and Honeybone 2002, but not by Foley 1977 and Kirchner 1998). There is at least a 'core' concept of lenition that most phonologists accept, however, involving a relatively simple set of segmental changes. This section considers such basic definitions − on the basis firstly of prose discussions and secondly of lenition trajectories, which are the simplest way of summing up the current common core lenition concept.

2.1.1. Current definitions of 'lenition'

One reasonable place to look for definitions of 'lenition' is second-order texts such as textbooks and dictionaries. This kind of work is intended to summarise the basic knowledge of the field, and therefore typically aims at the 'core' of complicated concepts. Two recent textbooks make at least one thing clear − 'lenition' and 'weakening' are synonyms:

Outside the domain of assimilation in place of articulation, the most common segmental interaction between consonants and vowels (or, sometimes, other sonorants) is **lenition** or **weakening**. Typical examples of lenition involve either the voicing of voiceless stops, or the voicing and spirantisation of stops...

<div align="center">Odden (2005, 239)</div>

lenition (also called weakening): consonants can be arranged on scales of strength.... The scales can be summed-up by saying that a consonant is stronger the more is differs from vowels; a consonant becomes weaker the more it comes to resemble a vowel.

<div align="center">Ashby & Maidment (2005, 141)</div>

A number of other issues also arise here: Odden links lenition to an inter-sonorant context, and Ashby & Maidment raise the notion of strength scales. Particular types of lenition are mentioned (change of manner in spirantisation and change of segments' laryngeal state in voicing), as is the notion that lenition is connected with the degree of 'strength' that a consonant possesses, and that this is a relative relation, with some consonants possessing more strength than others. The idea that 'lenition' and 'weakening' are synonymous is almost universal in current work, as in the definitions in textbooks for synchronic theoretical phonology, such as Carr (1993, 24), Kenstowicz (1994, 35), Ewen & van der Hulst (2001, 13) and Gussmann (2002, 137), and for historical linguistics, such as Hock (1991), Trask (1996), Hock & Joseph (1996) and Campbell (1998). Trask's *Dictionary of Historical and Comparative Linguistics* states

lenition (also **weakening**) Any phonological change in which a segment becomes less consonant-like than previously. A shift in character from left to right along any of the scales in Table 5 [omitted here, but see the next section – PH] may be regarded as a lenition...

<div align="center">Trask (2000, 190)</div>

In §3, we will see that 'lenition', 'weakening' and 'strength' have not always been conflated, but the above shows that we need to trace the history of all three of them in order to get to the bottom of any one.

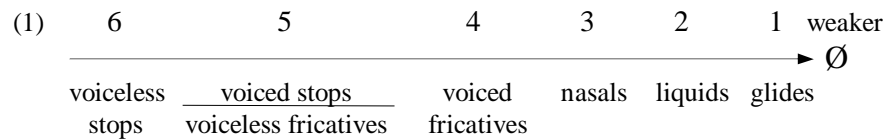### 2.1.2. Lenition trajectories, scales and hierarchies

As Ashby & Maidment's and Trask's definitions above show, it is common to connect lenition with phonological *scales* or *hierarchies* which rank con-

sonants in order of their strength. Szigetvári (this volume), and others have argued that, by themselves, these scales are of limited explanatory value, as they sometimes simply encode the observations that they are claimed to explain. They are still often presented as a way of defining what lenition is, though, both by illustrating the types of processes that count as lenition, and by trying to show what they have in common. Some theorists also use the scales set up for lenition to make predictions in other, not-obviously-related areas of phonology, or seek to derive the scales from independent argument, and then apply them to lenition. A link is often made between strength scales and the sonority hierarchy (see Cser 2003 for a detailed discussion of this point, but also much other work, such as Harris 1985 and Szigetvári, this volume). While connected, I do not further consider the notion that strength is related to sonority and phonotactics here, for lack of space.

My focus in this section is only on the notion that such strength scales represent *lenition trajectories*, that is, they show the route that a segment will take if it lenites. As Lass & Anderson (1975) say, after having given a couple of trajectories, "lenition may (broadly) be defined as descent down either of the scales" (1975, 150). This idea is clear in the section on "Consonant Strengthening and Weakening" in Hyman's (1975) phonology textbook. This is one of the classical textbook discussions of strength and weakening. It gives a set of strength scales and also includes the now-hallowed definition of weakening that Hyman took from a personal communication from Theo Vennemann: "a segment X is said to be weaker than a segment Y is Y goes through an X stage on its way to zero" (Hyman 1975, 165). As I mention in Honeybone (2002, to appear), this definition is quite probably the most cited personal communication in the history of linguistics, as it crops up with astonishing regularity in initial discussions of what lenition is. It has a couple of notable characteristics: it assumes that deletion is the 'final stage' of lenition and it essentially, although not overtly, relies on the notion of lenition trajectories: weakening/lenition is defined thanks to the observations that historical phonologists have made about the possible changes that might, spontaneously, affect a segment.

Some of the most frequently cited trajectories are those from Escure (1977), where several such hierarchies are proposed, connected with various aspects of weakening. The most relevant to our purposes here is Escure's hierarchy (B), which "illustrates the relative strength of consonants with respect to their major-class features and manner of articulation features ... [and] ... has another property: it specifies the directionality of change of a given consonant, by representing the actual stages of the weakening proc-

ess...." I reproduce it in (1), changed to reverse the direction of presentation to make it compatible with the majority decision, which represents lenition from left to right (as in the quotation from Trask 2000, above).

(1)

6	5	4	3	2	1	weaker

→ Ø

voiceless	voiced stops	voiced	nasals	liquids	glides
stops	voiceless fricatives	fricatives			

Escure's trajectory has several notable points: voiced stops and voiceless fricatives are seen as two alternative routes in lenition for a voiceless stop (from strength 6 to 5), and nasals and liquids appear as stages 3 and 2. The former is not unusual, but the latter is untenable, as has widely been pointed out since, because voiced fricatives do not change spontaneously into nasals, for example. The inclusion of stages 3 and 2 are likely due to the frequent conflation of lenition trajectories with sonority hierarchies, as mentioned above (for a detailed debunking of this idea, see Szigetvári, this volume).

Another highly influential trajectory, from Lass (1984) – the other classic textbook discussion of lenition beside Hyman (1975) – is given in (2). This is a summary of Lass' research in this area, including joint work with John Anderson, which has figured prominently in the development of others' views. It complicates things by including aspiration and affrication (from 5a to 4a and 5b to 4b) as cases of lenition, but also represents a mainstream position by including debuccalisation to [h] (3a to 2a), and neatly combines the two often-recognised types of lenition (change in manner and change in laryngeal state) while still indicating that they are separate dimensions.

(2)
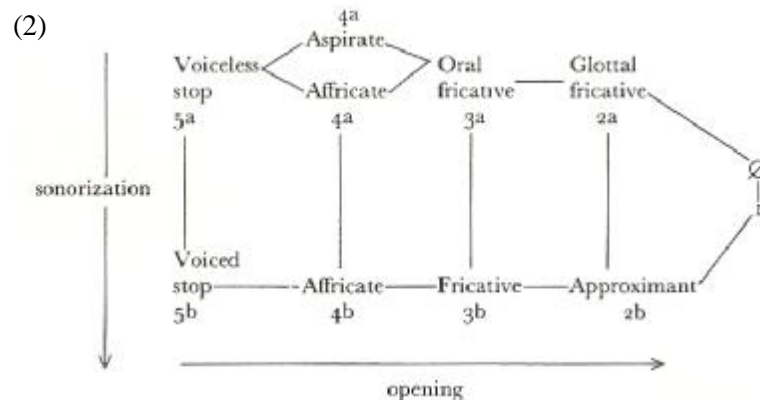
If we take the common core of these two trajectories, we arrive at something like that in (3), which is the trajectory proposed in Ewen & van der Hulst (2001, 14, with arrowheads added to show directionality), and is also much like the trajectories in Anderson & Ewen (1987).

(3)

voiceless
fricatives

voiceless
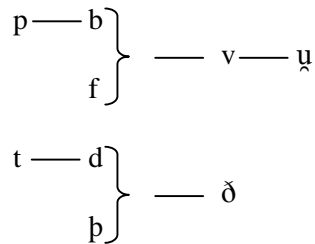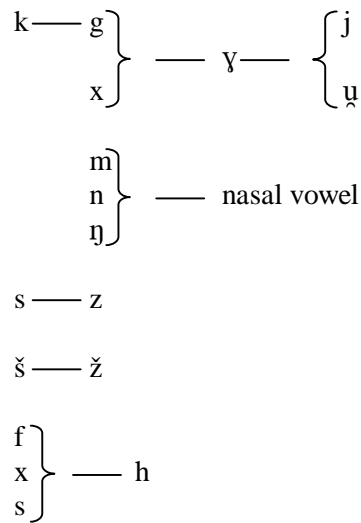stops → voiced
fricatives → liquids
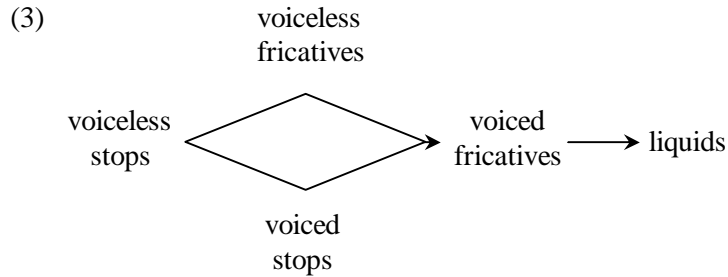
voiced
stops

This misses debuccalisation, but if we include the additional trajectory from Ewen & van der Hulst (2001, 106), as in (4), as an alternative route for voiceless fricatives, then we have a fair representation of the main types of change (or synchronic process) that lenition is typically taken to involve.

(4) (voiceless fricative) > [h] > Ø
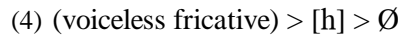
Although not strictly necessary here, it s perhaps appropriate (given that the primary interest in this article is in the history of phonology) to consider what is likely the earliest such trajectory. It shows how little things change. The trajectory is found in the set of scales set out in a piece by Bredsdorff (1821) that Andersen (1982) has shown to be well ahead of its time. The scales are reproduced in (5), along with Bredsdorff's introduction (translated from the Danish by Andersen, 1982).

(5)   When consonants are pronounced with less effort or more weakly, they commonly change into other consonants, usually as follows:

p —— b ⎫
         ⎬ —— v —— u̯
     f ⎭

t —— d ⎫
         ⎬ —— ð
     þ ⎭

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k ——— g ⎫
           ⎬ —— ɣ —— ⎧ j
       x ⎭            ⎩ u̯

       m ⎫
       n ⎬ —— nasal vowel
       ŋ ⎭

s —— z

š —— ž

f ⎫
x ⎬ —— h
s ⎭
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Bredsdorff (1821, 14-15)

Although not the first recognition of these types of change (as we shall see in §3), this is unusually early in grouping together all the changes that we now expect to find in discussions of lenition: spirantisation, approximantisation, voicing, debuccalisation (although the inclusion of the development of nasal vowels is surprising on current phonological views). As Andersen (1982) writes, this trajectory went beyond the state of the art in the work of others at this time, such as Rask (1818) – who simply stated achronic correspondences – to present "an understanding of the typical results of the universal tendency to consonant weakening" (1982, 21) in unidirectional diachronic change. These two quotations, from Bredsdorff and Andersen, show both authors' assumption that the changes outlined in (5) are cases of 'weakening'. This is argued to be due to the tendency in change to diminish the effort involved in articulation, and if those segments which involve more effort are stronger, those which involve less must be weaker.

We can safely conclude from all the definitions and trajectories above, that 'lenition' is now standardly assumed to be the same thing as phonological 'weakening',[3] and that the concept groups together a smallish set of

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[3] Bredsdorff does not use the term 'lenition' at all in his discussion, however, and this provides our first clue that the term is not as old as the concept that it now represents.

processes: spirantisation, approximantisation, gliding, debuccalisation, voicing and vocalisation. We have already seen that the idea of grouping this set of processes together is not new, although there is nothing pre-theoretical that forces us to assume this grouping of processes. We don't *need* to have a concept or word that links them, but we do. They are linked in most people's minds through the notion of consonantal strength.

2.2. A second starting point: what do we mean by 'consonantal strength'?

As we have seen, it is common to link 'lenition' with some kind of consonantal *strength*. This is expressed in the other name commonly given to lenition trajectories: 'strength scales'. This section aims to tease apart some of the several most important ways that phonologists have used the concept 'strength'. This will allow us to recognise the (related) set of concepts to which the term, and thus ultimately also its partners 'weakening' and 'lenition', have been linked.

   We cannot consider *all* the ways in which 'strength' has been used in phonology, and in keeping with the purely consonantal focus of this piece, I set aside the idea that vowel reduction involves a loss of vocalic strength. I also ignore the idea that the stress or prosodic prominence of syllables illustrates their strength (as discussed in Ladd 1996, for example). Furthermore, I do not engage with the idea that consonants might differ in terms of strength as a function of their place of articulation (as in the α strength scale of Foley 1977, for example) – I consider only relations between the manner of articulation and 'voicing' (that is, segments' laryngeal specifications). Finally, and this will exclude a significant strand of work in this area, I do not consider argumentation for segmental strength that derives purely from phonotactics or the ability of certain positions to host more or less segmental contrasts (as in some of the argumentation in Sievers 1876, Jespersen 1913, Vennemann 1972 and Hooper 1976, for example). The types of argumentation used in these areas are conceptually separable from those that we focus on here (the last of them is not always labelled 'strength' at all, for example – often it is simply called 'sonority'). They must be ignored here, to give us enough space to deal with other issues which we cannot ignore.

   If we focus on the concept of strength as applied to consonants, we can distinguish between the types of strength set out in (6). The three pairs (a) *vs* (b), (i) *vs* (ii) and (x) *vs* (y) are different dimensions of meaning of the term 'strength', and can be quite freely combined.

(6) Conceivable types of 'consonantal strength'
    (a)   inherent strength
    (b)   positionally-endowed strength

    (i)   static comparative strength
    (ii)   strength shown through dynamic spontaneous change

    (y)   simple non-inhibitory relative strength
    (z)   strength to inhibit process-innovation

To explain: the distinction between (a) and (b) is a fundamental one, as it has to do with how a segment obtains its strength; the difference between (i) and (ii) has to do with how we know what strength a segment has; and the two options in (y) and (z) express the effect (if any) that a segment's strength has. The options given here do not exhaust all the conceivable types of phonological strength that have ever been proposed – especially the sources of evidence (here only (i) and (ii)) and the effects of strength (here only (y) and (z)) could be multiplied – but they will suffice to both illustrate the kind of diversity that exists, and to allow us to discuss most of the main notions of strength that will crop up in our historical survey, in §3. In the rest of this section, I consider the types of strength recognised in (6) in a little more detail.[4]

The kind of strength in (a) assumes that different types of segment are of different strengths by their very nature – typically, for example, voiced segments are claimed to simply *be* weaker than voiceless segments. This need not imply anything more than that, as the terms 'strong' and 'weak' could simply be a comparative pair, and need not entail that segments described in these ways will have different phonological behaviour. It could also be that these inherent differences in segments' strength are assumed to derive from something else, for example, from their subsegmental make-up, as in classical Dependency Phonology and Government Phonology (as we shall see in §3.5.5, below), but this need not necessarily be the case.

Strength of type (b) proposes that certain phonological *environments* are strong and some are weak, and that a segment will be strong if it is in a strong position, and will be weak if in a weak environment. In principle, (a)

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[4] For an insightful discussion of the issues which differs in certain details to that presented here, see Harris (1985, chapter 2).

and (b) are not mutually exclusive, and a theorist could propose that an inherently strong segment would be extra strong in a strong position.

The idea in (i) is that the relative strength and weakness of consonants is simply an abstract phonological property of segments. It can be seen in some of the scales that have been set up by phonologists, but not where they are viewed as *trajectories*, because it relies on the simple comparison of segments and what are perceived by the phonologist to be their relative (articulatory, acoustic, phonaesthetic, phonosemantic, kinaesthetic, or even metaphorical or intuitive) properties. This type of approach can be subjective, especially when based on phonaesthetic reasoning, but it has been adopted by some writers, especially in early phonological periods. In principle, (i) could combine with (z), perhaps as a subsequent observation by phonologists, once a strength scale had been established by other means, but in practice it is more likely to combine with (y). It may also be that the correlation of strength scales with sonority hierarchies belongs here, especially if consonantal strength is assumed to be 'read off' a sonority hierarchy (whether established by segmental sequencing in syllabic constituents or not).

The idea expressed in (ii) is that segments are stronger than those they change into − typically in diachronic change (and then usually in spontaneous changes), but in principle the same could also apply for synchronic phonological processes. This is the basic idea behind the lenition trajectories of §2.1.2. On this idea, the relative strength of segments is revealed by the phonologist observing their behaviour; for example, if plosives spontaneously change into fricatives, as is often claimed, then fricatives are claimed to be weaker than plosives.

The use of 'strength' and related terms to describe the idea behind (y) is rather metaphorical. The idea here is that a strength scale simply indicates the degrees of what is assumed to be a relative property of consonants − a feature of which one type of segment (such as a plosive) might have more of than another (a fricative), which might have more of it than another type of segment (an approximant). To talk about this type of 'strength' is largely descriptive − it is simply an observation about segments' properties.

Strength of type (z) is conceptually quite different from that of (y), although the two are perhaps not entirely distinct. (z) encapsulates the claim that segments can intrinsically have, as in (a), or can be given, as in (b), the ability to resist the innovation of a lenition process, so that stronger segments are less likely to change; they are less likely to lose strength or generally be affected by phonological processes than weaker segments. This is seen in the definition "**weak** More liable to change (contrasts with **strong**)",

in the glossary in Asher (1994). It is demonstrated in the Romance idea of strong and weak positions, which instantiate a (bz) type of strength, indeed (b) is only functionally coherent when linked to (z), while (a) could straightforwardly combine with either type (y) or (z).

These types of strength allow in principle for eight main types of combination.[5] I give them shortened descriptive labels in (7).

(7) (a,i,y)   inherent comparative non-inhibitory strength
       (a,i,z)   inherent comparative inhibitory strength
       (a,ii,y) inherent dynamically-demonstrated non-inhibitory strength
       (a,ii,z) inherent dynamically-demonstrated inhibitory strength

       (b,i,y)   positional comparative non-inhibitory strength
       (b,i,z)   positional comparative inhibitory strength
       (b,ii,y) positional dynamically-demonstrated non-inhibitory strength
       (b,ii,z) positional dynamically-demonstrated inhibitory strength

It is perhaps difficult to see a difference between (b,i,z) and (b,ii,z), but there is one, at least conceptually: (b,i,z) would occur if a phonologist simply compared lexico-syllabic environments, without reference to the type of change or synchronic process that occur in them, and decided strength relations on that basis, whereas (b,ii,z) crucially relies on diachronically of synchronically 'dynamic' data. Some of the options in (7) may be functionally impossible; for example, (b,ii,y) is dubious because I cannot see how it would be possible to satisfy the demands of (b,ii) − that the strength of positions be demonstrated through the innovation of processes − if this is not shown through the assumption that some positions can inhibit the innovation of a process. Thus strength of type (b,ii,y) may be allowed by the theory, but is forbidden by practical considerations of its implementation. Certainly (b,ii,z) is the most common of those types of strength that include (b), but (b,i,y) may also be attested, as we shall see in §3.

Of these combinations, (a,i,z), (a,ii,z), (b,i,z) and (b,ii,z) make clear predictions about the effect that a consonant's strength should have: it should inhibit the innovation of a process, so that, for example, if a language introduces a process such as spirantisation or voicing, it should only affect those

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[5] There are, in fact, more than just these, because the members of the pairs of terms − (a) and (b), (i) and (ii), (y) and (z) − are not necessarily mutually exclusive, but the other possible types are derivative of those discussed here.

segments which have been identified as weak and spare those which have been identified as strong, although there is a danger of circularity in argumentation between (ii) and (z). Also, types involving (y) may be thought to be quite metaphorical in their usage of 'strength' (and hence also of 'weakening'). Especially in (a,i,y), for example, 'strength' would be a simply a taxonomic description of the inherent properties of segments which could essentially be replaced by any other metaphor, such as colour or sweetness, so that /v, ð, ɣ/ might just as well be *sweeter* or *redder* than /b, d, ɡ/, rather than *weaker*.

Strength-types not involving (ii) are not obviously connected with lenition, as they are not revealed through changes (or synchronic alternations) of lenitional types. They play a part in the historical development of the lenition concept, however, because, I argue, it was only possible to elaborate a notion of *weakening* once there already was a notion of which segments are *weaker* than others. Type (ii) strength was important at those stages in the history of phonology when linguists were not aware of the facts of phonological change, for example.

That is our survey of types of phonological strength. We will return to them in the historical survey below. Our survey is not primarily intended to consider what phonologists take consonantal strength to really *be*. It merely aims to establish that it exists in phonologists' minds as a relative phonological property. There is certainly a range of opinions concerning the actual referent of this strength. Is it, for example, a phonetically grounded object, based on concrete, E-linguistic factors, as Lass & Anderson (1975) propose?

> ...strength is equated with resistance to airflow through the vocal tract, and weakness with lack of such resistance.
>
> Lass & Anderson (1975, 151)

Or is it an entirely phonological, I-linguistic and abstract entity, as Foley (1977) asserts?

> *phonological strength*: reflects the unequal relation among phonological elements. It does not refer to the phonetic strength of the phonetic manifestation of the phonological element, but rather simply to their abstract relation.
>
> Foley (1977, 144)

Or is it somewhere in between having a basis in phonetics and being purely phonological, as Hooper (1976) claims?

> I am viewing the syllable, and for that matter the cover feature strength, as theoretical constructs, not entirely divorced from physical reality, but ab-

stract in that their importance is seen only in their function in a linguistic system.

<div align="center">Hooper (1976, 198)</div>

Or is it purely phonological, but derivable from other, independently-motivated phonological factors, such as the number of privative features ('elements') in a segment, as Harris & Lindsey (1995) believe?

> Treating all types of lenition as segmental decomposition implies that movement along any of the trajectories ... takes the form of decomplexifi-cation – a progressive depletion of the stock of elements contained in a segment.

<div align="center">Harris & Lindsey (1995, 71)</div>

However they may interpret it, it is clear that many phonologists believe, and have believed, that consonantal strength *exists* – that it is a concept that phonologists should entertain.

2.3. A third starting point: how long is phonological history?

When did phonology start? 1993? 1968? 1939? 1876? As with most things, it is not really possible to date the phonology's beginning. It may not be old in its fully-fledged modern form, but work on many of the basic concerns of phonologists goes way back. Linguists were aware of the similarity and differences among (sets of) segments, of issues in inventories, of some basic properties of phonological change, and of the importance of contrast and minimal pairs as a basis for recognising the segments of a language for many centuries before phonology was officially born in the twentieth century. This work was not carried out by people who considered themselves 'phonologists', but it is possible to investigate this work for the attitudes that it expresses to what we would now see as phonology.

I take a broad view of what constitutes the history of phonology here. I restrict myself to 'western' phonology, in part because the 'eastern' traditions (such as the Sanskrit and early Chinese and Arabic traditions), did not influence the development of what has become current phonological theory much until quite recently. One principle for the selection of material that I discuss in §3 is that it at least potentially represents a cumulative chronology: those who came later could have known of and developed the ideas of what came before, and those who came earlier were (or at least could have been) known about in the intellectual milieu of later writers.

As Robins (1990) says, "in the European tradition we are in a position to follow a continuous line of development from the origins of the subject in ancient Greece" (1990, 6). Our history of lenition thus begins with comments from classical scholars of the Greek and Roman periods, to which certain basic ideas connected with lenition can be traced. Phonology only really became a discrete discipline during the twentieth century, and the word 'phonology' is appropriated for it then. Before then, an undifferentiated phonetics-and-phonology had emerged in the nineteenth century to focus on the study of sounds and sound systems and their history. This area of study was often called 'phonetics', but if we are to view it from a 21st century perspective, it should really be called phonetics-phonology, and that is what I do here below (and see also Bermúdez-Otero & Honeybone 2006).

2.4. An fourth starting point: multilingual phonology and metaphors

One further preliminary point needs to be considered: phonology is not just conducted in one language. This was even more clearly the case in previous eras than it is now, with many fundamental works written in languages other than English, and while the concepts used in phonological writing are typically shared across languages, the words are not necessarily so simply shared. We can translate the word 'lenition' into French as *lénition*, into German as *Lenierung* or Italian as *lenizione* (as Marouzeau 1951 does), but which language should we trace its history in? As we shall see below, this particular word was consciously borrowed into one of these languages from a Latin base, at a precisely dateable point, and was then borrowed from that language into the others, so we must engage with this multilingualism.

The concept behind 'lenition' was easily able to be shared across languages because the linguists involved typically read and wrote in several languages. In this sense, there has thus arguably only ever been one word in phonology for 'lenition' – it's just that it has been pronounced differently in different languages. The same holds for 'weakening' – the obvious difference between the two is that 'lenition' is a learned Latinate borrowing, while 'weakening' involves the adoption and adaptation of already existing vocabulary for technical use. As a way of coping with this, I will take the terms in the columns in (8) to be equivalent, and, henceforth I use the English form in small capitals to refer to the words involved, no matter which language the original text was written in (up till now in this article, I have mostly marked off such words through the use of single quotation marks).

Where I need to refer to a usage of one of the words in a particular language, I give it in italics. The languages listed in the first column in (8) are probably the main languages used to write about lenition,[6] and the rationale for the addition of Latin in the second row will become clear in §3. I have added HARD, SOFT and SOFTENING to the set of three basic terms that we have considered thus far for reasons which I discuss briefly just below the table, and which will become further apparent in §3 (a few other related terms are also briefly discussed in §3 where this proves necessary).

(8)	STRENGTH	WEAKENING	LENITION	SOFTENING
English	*strength*	*weakening*	*lenition*	*softening*
German	*Stärke*	*Schwächung*	*Lenierung*	*Erweichung*
French	*force*	*affaiblissement*	*lenition*	*adoucissement*
	STRONG	WEAK	HARD	SOFT
English	*strong*	*weak*	*hard*	*soft*
German	*stark*	*schwach*	*hart*	*weich*
French	*fort*	*faible*	*dur*	*doux*
Latin	*fortis*	*debilis*	*durus*	*lenis*

The relationship between the pairs STRONG~WEAK and HARD~SOFT is difficult to pin down. We have seen that discussions of LENITION tend to consider STRONG and WEAK, but we will also come across HARD and SOFT in our historical survey. In fact, SOFT, in the form of *lenis* will play an important role in the history of the term LENITION itself. We will be faced below with the idea that some usages of the terms in (8) are based on phonosemantics, on intuition, and on metaphor. The classic work on the use of metaphor in phonological description is Fónagy (1963, also printed in an extended and redeveloped translation into French in Fónagy 1979). Fónagy writes

Scientific metaphors are, in contrast to poetic metaphors, only rarely a product of the moment, the creation on an individual; they are usually anchored in the traditions of the discipline. The older a grammar is, the more

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[6] Cases could surely be made for including other languages here, but such a short piece as this cannot be completely comprehensive. Certain languages can be excluded from the list on relatively principled grounds – as Kristo (this volume) explains, for example, there is relatively little lenition in the Slavic languages, and it is likely because of this that the concept of LENITION has not been much discussed in the linguistics of such languages.

common its tropes will be. According to Cardinal Pietro Bembo – one of the first Romanists from the 16th century – all speech sounds are "**heavy** or **light**, **hard** or **soft**" ['*schwer oder leicht, hart oder weich*'] .... We can still find similar metaphors in work on phonetics and phonology from the 20th century, however...   Fónagy (1963, 11$^\text{T}$)[7]

Perhaps the terms that we are considering here started out as vague and metaphorical usages and have since been reinterpreted to refer to precise theoretical concepts, but this is not necessarily the case. When early phonologists used STRONG, WEAK, HARD and SOFT it is not clear that they are necessarily meant as metaphors – that the authors perceived the segments as truly having some connection with the natural meaning of WEAK, for example. Perhaps they are dead metaphors, and this is what Fónagy means by saying they are "anchored in the traditions of the discipline", but the distinction between that and becoming a technical term is small. It is possible to interpret such descriptions as the beginnings of a theory of subsegmental features: some segments have strength, which others lack.

Fónagy (1963) discusses the pairs STRONG~WEAK and HARD~SOFT in the same undifferentiated section, indicating that he feels that they are essentially the same metaphors (and this seems reasonable: strong, unbreakable things are typically hard, and weak, pliable things are often soft). Indeed, this is arguably also shown in the traditional usage (reinforced in such recent work as Kohler 1984) of the pair *fortis~lenis* to describe the opposition between such segments as /p, t, k/ and /b, d, g/ (which we investigate in more detail in §3.4.3). Although the pair are often imperfectly translated as 'strong'~'weak' (as in Kirchner 1998, 1: "L. *lenis,* 'weak'") it is actually closer to 'strong'~'soft', taking one term from each of the two natural pairs.[8]

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[7] Due to space constraints, it is not possible to include here the original version of quotations which were written in a language other than English. Quotations which I have translated into English are marked with a superscript $^\text{T}$. Where it is straightforward or appropriate to do this, I include the relevant original words in square brackets and italics directly following the English translation, unless they are discussed elsewhere in the text. (I intend to include the full original versions of these quotations, along with many others, in Honeybone, in preparation.) A superscript $^\text{O}$ means that a quotation was translated by the author of the secondary source that I have taken the quotation from.

[8] While the many Latin-English dictionaries that I have consulted give a range of possible translations for *lenis* (such as 'soft', 'smooth', 'mild', 'gentle', 'easy', 'calm', 'moderate', 'lenient' in the comprehensive Lewis & Short, 1879), none of them mention 'weak' as a possibility.

For such reasons as this, while I mostly deal with the pair STRONG~WEAK in detail below, I also include discussion of cases where authors have used the terms HARD~SOFT. There will be slight but important differences in the use of the STRENGTH and SOFTNESS terminology.

There are doubtless physiological, phonosemantic and kinaesthetic rationales for the spontaneous use of STRONG~WEAK (or HARD~SOFT) as terms to describe or compare segments, but I leave them aside here – all that we really need to know is that linguists use the terms.[9] We could also note that other terms, such as *reduction*, *aspiration, mutation* and *gradation* have also been used to describe the types of processes involved here. Although each of these has its own beguiling history, I largely ignore the complications that they raise (although some of them crop up below), due to the constraints of space.

2.5. A final starting point: the first usage of the word LENITION

To avoid suspense, and because a simple answer can be given, I turn now to the history and first usage of LENITION. We cannot give a date for the introduction of the other terms of interest here (such as STRENGTH and WEAKENING) into the relevant languages, because the ultimate origins of such native vocabulary items are lost in the mists of time. We can, on the other hand, consider the first, or at least early, occasions on which these terms were used in the metalanguage of linguistics, and I do this in §3.

We can distinguish between the *first occurrence* of a technical term and its *introductory context*, or *locus classicus* (see, for example, Grotsch 1989). The first occurrence is just what it says – the earliest occasion on which a term was used in writing by someone (typically its inventor). This is not always the place where a term became influential, however – that is its locus classicus. Sometimes other scholars do not notice the first usage of a term, and the first occurrence and locus classicus can be separated; on other occasions, the two can be the same. In the case of LENITION, I argue that they can be separated. The first occurrence of LENITION was not unnoticed,

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[9] Fónagy (1963) concludes, in part on the basis of experiments with deaf children, who show the same judgements as hearing subjects (and linguists, both ancient and modern), that kinaesthesia – the perception of body position and movement and muscular tensions – must play a substantial role in this.

and did influence the usage of certain others, but the true introduction of the term to a wide audience came 11 years after its first occurrence.

The story of the word LENITION finds its start in late 19th century Germany (as does so much of linguistics). In 1898, the Celticist Rudolf Thurneysen published a review of Pederson's (1897) *Aspirationen i Irsk* (a volume on what we might today call 'initial mutation' in Irish) in the *Anzeiger für indogermanische Sprach- und Altertunskunde*. This publication was the reviews supplement to the influential journal *Indogermanische Forschungen*, and Thurneysen's review would certainly have been read by others interested in Celtic linguistics. Although quite impressed with the book, Thurneysen explains that he does not think that the term typically used then to describe the phenomenon − 'aspiration' − is a happy one, given that it "does not only involve the change of a plosive to a fricative"[10] (Thurneysen 1898, 43[T]). Referring to all the types of change that Pedersen deals with, Thurneysen writes that

> Because it seems to me that **every** case fundamentally involves a decrease in the intensity of articulation, and because the current state of Celtic studies requires international (and hence Latin) terms, I would like to suggest **lenition** (from *lenire*), for Irish 'aspiration' as well as for British 'destitution' or 'vocalic mutation', and thus to speak of 'leniting final position' and 'lenition in initial position'.
>
> Thurneysen (1898, 43[T])[11]

This is the first occurrence of LENITION. It is actually impossible to translate this passage perfectly − in the original, Thurneysen suggests two alternative forms for his new word: *Lenierung* and *Lenition*, illustrating varying degrees of adaptation of the word that he created from the 'international' Latin base into German. While we can bear this in mind, it is not crucial for our purposes because the two do not split apart in German. Some scholars have used one and some the other, or both. The crucial points are that this is a new word for this set of processes, including change in manner and change

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[10] The types of Irish initial mutation in question here includes a wide range of processes (which, in their synchronic form, are triggered by a complex set of morpho-syntactic conditions) affecting plosives, fricatives, liquids and nasals and involving change in laryngeal state, spirantisation and debuccalisation to [h]. Some further detail is given in §3.4.3.

[11] The reference to "British 'destitution' or 'vocalic mutation'" is to what is now in English most commonly called 'soft mutation', as Morris Jones (1913) explains. Further detail on this phenomenon is given in §3.4.3.

in laryngeal state, which are all seen as 'the same kind of thing', and that either of the German forms would be adapted into English as *lenition* (with *-ung* mapping onto the *-tion* type suffixes, as in *Latinisierung* 'latinisation', *Liquidierung* 'liquidation').

Thurneysen uses the term and its morphologically related forms freely in the review to describe cases of mutation in Irish, and it is likely that some picked up the term directly from here (the review is cited in Vendryes 1908 and Martinet 1952, 1955, for example). Its locus classicus, however, is probably another of Thurneysen's publications, his *Handbuch des Alt-Irischen* ('Handbook of Old Irish') from 1909, where he uses LENITION (in the form *Lenierung*) throughout. The year 1909 surely *is* the date when the term started to be widespreadedly known, for it is also the date of publication of Pedersen's *Vergleichende Grammatik der keltischen Sprachen* ('Comparative Grammar of the Celtic Languages'), in which Pedersen accepts Thurneysen's terminological suggestion, using LENITION to describe cases of mutation throughout Celtic, typically in the form *Lenition*, rather that *Lenierung* (although he uses the latter at least once, on page 122). The fact that both books are monumental works of Celtic linguistics perhaps makes them joint candidates as the locus classicus of LENITION.

A few other points arise in connection with Thurneysen's first usage. One is that he has not invented the concept that he uses LENITION to describe. He is simply suggesting that LENITION should be used to replace the existing terms 'aspiration' and 'destitution,' which already group together the set of processes that we are concerned with here (spirantisations, debuccalisation to [h] and change in laryngeal state), at least with reference to their occurrence in the Celtic languages. It may be that it is novel to use the same term to describe (some of) the mutations of Irish and British Celtic, but these were surely seen as essentially the same kind of thing previously (for example, in Zeuss 1853). It is also not completely clear whether or not Thurneysen means for LENITION to be restricted to the Celtic phenomena. He proposes to use it to describe mutations in Irish and British Celtic languages, but the definition that he gives simply describes changes which involve "a decrease in the intensity of articulation", and there is no reason why it should not be used to describe the same type of change in different languages.

Finally in this section, we should note that Thurneysen does not equate LENITION with STRENGTH or WEAKNESS. He explains that he has derived LENITION from the Latin *lenire* ('to soften'), and he explicitly links the word with already existing phonological terms: he writes that it seems to him when comparing the pre-lenition and post-lenition segments that "we have in front

of us the difference between ... *fortes* and *lenes*" (1898, 42^T). Thurneysen implies that LENITION involves a segment becoming *lenis*, that is, becoming SOFT, leaving LENITION linked to SOFTENING, rather than WEAKENING. As we have seen, the connection is *now* made between LENITION and a segment becoming WEAK, but we can see here that etymologically it is linked to a segment become SOFT. This is why we need to consider SOFTENING as well as WEAKENING below.

Despite the above, we must not fall for the etymological fallacy: the fact the Thurneysen gave the concept a particular kind of characterisation does not mean that modern definitions which see things that way are necessarily 'right', or the best way to describe the relevant phenomena. In the next section, I set out the full history of the concepts behind the term LENITION, and how they have become related to STRENGTH and WEAKENING (despite the fact that Thurneysen did not relate them in this way).

3. A history of LENITION, WEAKENING and STRENGTH in phonology

Consonants have long been compared with one another. Since long before Thurneysen, linguists have pondered the kinds of changes between consonant types that he called LENITION, often linked to consonantal WEAKENING. And STRENGTH has also been considered simply in its own right, as a way of ranking consonants on scales, or as a way of comparing two consonants, or natural classes of consonants. The section is split into a number of subsections which deal with successive time periods in the history of phonology. These periods are of unequal length and the divisions are made on a purely practical basis, to fit in with the amount of material to be covered. From the late 19th century onwards, I have sought to consider the major texts or writers who either (i) are known to be important in the development of ideas relating to STRENGTH-cum-WEAKENING-cum-LENITION, or (ii) who were highly influential phonologists (even if they did *not* really write on the topic – sometimes the absence of something can be just as interesting as its presence). Of course, sometimes the writers fit into both categories (i) and (ii). Let us now commence our history of the term-and-concept network LENITION-WEAKENING-STRENGTH and see where it leads.

3.1. Phonology in classical antiquity

As among others Arens (1955), Robins (1967), Allen (1981) and Zwirner & Zwirner (1982) show, there was considerable work on language in ancient Greece and Rome, mostly in the form of grammars describing Greek and Latin. Greek and Roman linguistics, although spreading over several centuries, can be taken here together, partly because there is only little to say, but also because, as Robins (1990) writes, "Roman linguistics was largely the application of Greek thought, Greek controversies, and Greek categories to the Latin language" (1990, 55). The main focus of the linguistics of antiquity is on the discussion of lexical categories and morphology. There is some overt commentary on the languages' phonology, in the form of comments on the pronunciation of the letters of the alphabet (Robins 1990, 29). This means that, with no recognition of phonological change, and very little of phonological alternations, there is little scope for the expression of forerunners of STRENGTH of LENITION. However, the terms used to describe the letters/phonemes of Ancient Greek and Latin give us something to start with.

Ancient Greek had three laryngeally contrasting series of plosives, and Latin had two. These are uncontroversially reconstructed as /p^h, t^h, k^h/ : /p, t, k/ : /b, d, g/ for Greek and as /p, t, k/ : /b, d, g/ for Latin. The standard terms used to describe these segments in Greek grammars, as in the *Tékhnē Grammatiké* of (or attributed to) Dionysius Thrax (c100BC), were the inherently relative terms in (9), taken from Allen (1981), with all forms feminine as they are inflected as if they were agreeing with *grammatica* or *littera* 'letter'. (9) also gives the Latin equivalents, with all three used to describe Greek, and the latter two to describe Latin.

(9)   /p^h, t^h, k^h/ = *dasea* 'rough'   *aspirata* 'rough'
      /b, d, g/   = *mesa* 'intermediate'   *media* 'middle'
      /p, t, k/   = *psila* 'smooth'   *tenuis* 'thin'

Manner of articulation was described by recognising classes of segments (which we might now still group in this way on the basis of little, medium and most sonority), such as the three found in Aristotle's *Poetics*, as in (10), also taken from Allen (1981).

(10) plosives   = *aphona* 'without voice'
      l, r, m, n, s = *hemiphona* 'half-voiced'
      vowels   = *phoneenta* 'possessing voice'

While not making any real claim about strength, these terms seem arranged to *compare* the sets of segments, in hierarchies, showing the relative degree to which they possess a particular property. Although certainly not trajectories, the comparison of 'rough' *vs* 'smooth', with the voiced plosives in between, implies a scale of roughness~smoothness, and, although the terms are not synonymous with STRENGTH~WEAKNESS, they are nonetheless similar 'scientific metaphors' (in the sense of Fónagy 1963), to those that we are searching for. In the same way the scale in (10) implies three degrees of 'voice'.

It can be argued that such scales are strength scales of type (a,i,y). It is in this combination of the points from (6) that STRENGTH is most metaphorical. Arguably STRENGTH in this form is simply a name for a relation between consonants, and we therefore have here, if not a fully fledged strength scale, a precursor of the idea that consonants can be lined up on relative positions on a scale, and this is the idea that is crucial in setting up the 'true' strength-scales-cum-lenition-trajectories that were to come later.

In fact, the terms in (9) can just about be linked with the set of terms that we are searching for from (8). In a phonologically insightful move, Ancient Greek, *dasea* 'rough', and *psila* 'smooth' were also used to describe the presence *vs* absence of [h] at the start of a word. As Allen (1981) explains, these terms were conventionally translated into Latin in this connection as *asper* 'rough' and *lenis* 'soft'. Here we have a relative pair of terms used to describe consonantal phonology which give us the first use of SOFT in phonology, in a nearly related way to the concepts that we are considering here (to describe the absence of aspiration/[spread glottis] in comparison with its presence – and indeed, the loss of aspiration is not uncommonly seen as a case of lenition today, as in Harris, 1997).

Finally for this period, we can note that Allen (1953), Fónagy (1963) and Braun (1988) all report that the fourth century Roman linguist Marius Victorinus writes that /g/ sounds WEAKER or more likely SOFTER (as the word he uses in *lenius*, the comparative of *lenis*) than /k/, which looks like a case of the application of strength of type (a,i,y). Although perhaps an isolated use of the term WEAK/SOFT, and hardly compelling evidence for a theory of phonological strength just by itself, this shows that the terms that we are tracing here were used in a not unrelated way a long time ago.

3.2. Phonology in the mediaeval period

Because comparatively little was written in or has survived from the long period from the fall of the Roman Empire to the rediscovery of classical learning in the Renaissance (perhaps from the end of sixth century to the end of fourteenth), we have little knowledge of the way that people thought about language in the early part of the mediaeval period. This changes during the later mediaeval period (the flowering of which Robins 1967 dates from around 1100), but, even so, most of the linguistics that we have records of was essentially a continuation of Latin grammar. For such a long period, there is little phonology, apart from in lone work such as that on English from the late twelfth century by Orm (see, for example Holt 1878 and Anderson & Britton 1999) and on Icelandic from the unknown author of the 'First Grammatical Treatise' (see, for example, Haugen 1972). I do not discuss this work here because it was sadly uninfluential in its own age (although the authors have since been recognised as skilled phonologists, in the case of the 'First Grammarian' since at least Rask, as Vineis 1994 explains).

One noteworthy discussion from this period is in Roger Bacon's description of Greek, which makes use of several of the terms that we are tracing here to describe the three sets of plosives described above:

> Of such plosives, then, one should know that 3 are soft [*lenes*] and weak [*debilis*] sounds, three rough [*aspirate*] and strong [*fortis*] sounds, and 3 middling. Pi, beta and phi are related, though, and on account of this are often confused. They sound between the lips but pi is soft [*lene*], beta middling [*mediocre*] and phi rough [*aspiratum*]...
>
> Bacon (13th century, in Braun 1988, 24[O+T])

As well as expressing a simple assumption of comparative strength of type (a,i,y), as in classical grammars, this commentary overtly equates WEAK and SOFT in what is one of the oldest attestations of three of the terms that we are searching for. Braun (1988) sees this passage as the first occurrence of the pair *fortis~lenis*.

There was also work on languages other than Latin in this period, and it is mostly here that potentially interesting phonological observations and discussions occurred. In descriptions of languages other than Latin, or the late forms of Latin that were spoken in this period, we come across what are likely to be the first cases so the usage of the term and concept complex STRENGTH-WEAKENING-LENITION. It will be clear that such usages will not involve LENITION itself, as that term was not introduced until much later. The native-vocabulary items were always available for use to describe lan-

guages, however. Thus, for example, the anonymous twelfth century author of *Opusculum de accentibus* writes

> The sound t at the end of words is weakened, like amat, docet...
> Anon (12th century, in Vineis 1994, 263[O])

And, similarly, de Altedo (1297) gives the two following descriptions of the Latin that he speaks.

> This letter [i.e. *D*] sounds more at the beginning, like *dominus*, weaker in the middle and at the end, like *adheret*, *id*, *istud* and *quod...*
> de Altedo (1297, in Vineis 1994, 193[O])

> *T* is a mute letter which when placed at the beginning of a word has loud sound, like *tibi*, a middle sound when placed in the middle, like *retuli*, unless it is doubled, because then it sounds clearly, but at the end it has a weak sound like *legit, docet...*
> de Altedo (1297, in Vineis 1994, 264[O+T])

The anonymous author here seems to be describing the Romance lenition of t > d, or, rather, describing a language in which is has occurred, as in the first quotation from de Altedo (1297); in the second, de Altedo is describing the Romance lenition of /d/. Both authors essentially describe a synchronic realisation analysis. Thus, for de Altedo, the letter <d> (which we can read as the underlying segment /d/) is realised as [d] word-initially, but as, probably, [ð] elsewhere. Important for our purposes is that he describes the medial and final [ð] as WEAKER than the initial [d] (comparing consonants in terms of their manner of articulation), just as non-initial [d] is WEAKER than [t] (comparing consonants in terms of their laryngeal state). The authors use forms of *debilis* 'frail, weak' in the original Latin. As the quotations do not imply an understanding of the diachronic relationship between the segments (consistent with the general state of linguistic knowledge at this time), it seems that this, too, are cases of strength of type (a,i,y). It could be that they are cases of (b,i,y) because the phonological environment (position in the word) is considered, but it is not obvious that the strength is attributed to or caused by the environment that the segment finds itself in.

It would be rash to claim these as the first occurrences of the concept and term WEAKENING in phonological writing (excepting such cases as Marius Victorinus, discussed in the last section), although it is not impossible that they are. It is entirely possible that a more detailed search would find more examples of such usages, or indeed that other texts with such usages have been lost. What is important for our purposes is that linguists at this time are

using WEAK and related terms to describe what we would now call LENI-TION, and they have a concept of the relative strength of segments. It is difficult or maybe impossible to tell if such usages are a creative employment of a metaphor by the authors − rediscovered every time anew − or if the term is a scientific dead metaphor, bordering on being a technical term. The more cases that are found, the more likely the latter option is, and as we saw in §3.1, terminology which implies basic STRENGTH relations has existed practically since the start of recorded reflection on language in the West.

At some point, of course, someone used WEAK and WEAKENING for consonants in this way for the first time, and it is likely that this was triggered by a phonosemantic or kinaesthetic interpretation of the segments. If this can occur once, it could spontaneously occur to phonologists on multiple occasions. To the extent that phonology is cumulative, and authors read each others' work, this lessens, but it is likely that there were multiple inventions of the technical terms in hand here. What is clear is that WEAK, at least (and presumably thus its conceptual twin STRONG), and the relative relation between consonants that they imply (just like SOFT, as we saw above), have been in use in phonology for a very long time. It will be worth noting, for the discussion that is to come, that these usages of the term WEAK, and hence of the concept of WEAKENING are used in the Romance tradition − describing the phonology of late Latin/Romance and written in Latin, too.

3.3. Phonology in the Renaissance and Early Modern period

Although the periods grouped together here (in the same way as in Lepschy 1998) cover quite some time (from the fifteenth to the end of the eighteenth century), and a range of approaches to the study of language, there is little more to say for our purposes than in §3.2. That is not to say that there was no more linguistics in this period than in the Middle Ages − there were great flowerings of linguistic work, including some highly sophisticated phonological and phonetic descriptions of languages of many parts of Europe and, especially towards the end of the period, some complex and intricate work on the nature of language. But there was not much development in what we might see as the precursors or prerequisites of 'lenition theory'.

As Tavoni (1998) shows, Latin grammars still held sway in the early part of these centuries, but, as Tavoni (1998) further writes, the period later saw the "emancipation of the vernacular languages" − around and during the sixteenth century, a range of grammars emerged of a number of the vernacu-

lar languages of Europe for the first time, linked in part to the drive to standardise them. Connected with this was work on the languages' orthographies, which had to focus on their phonologies in order to be able to propose better ways of spelling them (see, for example, Danielsson 1963, McLelland 2006). This led to considerable overt comment on the segments of the language concerned, and terms such as STRONG~WEAK and HARD~SOFT are not rare in such descriptions. For example, Hart (1569) describes the series /p, t, k/ as 'breathed', 'unsounded' or 'hard' and the series /b, d, g/ as 'inward', 'sounded' or 'soft' (Danielsson 1963), and Mulcaster, also writing on English, says

> G, is allwaie strong before a, o, u... It is sometime strong, sometime weak before i and e...
>
> <div align="right">Mulcaster (1582, 133, in Fónagy 1963, 26)</div>

In discussing the multiple pronunciations of the letter <g>, this comment places the plosive /g/ as STRONGER than the affricate /dʒ/, which would fit in terms of manner of articulation on certain strength scales, although the complication of the difference of place would typically not. From Fónagy's (1963) discussion, it seems that HARD~SOFT is a more common comparison than STRONG~WEAK in the grammars and commentaries of the period, although there has been no systematic study of this. In any case, such usages are not uncommon:

> /d/ and /t/ are made with a touch of the tongue on the palate above, only /t/ is harder [*herter*] that /d/...
>
> <div align="right">Ickelsamer (1534, 19, in Fónagy 1963, 24[T])</div>

> The *h* added to a letter makes it softer...
>
> <div align="right">Smith (1568, 32, in Fónagy 1963, 26[O])</div>

Quite what Smith means by this is made clear by the fact that he refers to *dh* and *th*, and "thereby compares the interdental fricatives /θ/ and /ð/ with /t/ and /d/" (Fónagy 1963, 26[T]). Fónagy (1979) also describes how Schottel recognises the "close relationship" between /d/ and /t/

> only the *d* sounds a little more soft...
>
> <div align="right">Schottel (1663, 207, in Fónagy 1979, 14[T])</div>

Braun (1988) reports what she takes to be the first explicit Modern discussion of the physiological correlate of STRENGTH:

> THE LABIALS are pronounced through simple pressure of the lips, a strong [*forte*] pressure produces the intonation P, a light one the intonation B.   Gébelin (1775-1781, 138, in Braun 1988, 31[T])

Fónagy (1963, 1979) further lists a number of such descriptions of a range of languages (English, German, Hungarian, Italian, French) from this period, all of which compare consonants and pronounce various members of the set /p, t, k, f, s, ʃ/ to be HARD and those of the set /b, d, ɡ, v, z, ʒ/ to be SOFT, and, as Braun (1988) reports, at the end of the eighteenth century, von Kempelen (1791) wrote that, although he himself did differently,

> ...everyone who has written about language up till now [has given] us no other difference between B and P ... than one in which the former has a **milder** or **softer** [*gelinder oder weicher*] pronunciation and the latter a **stronger** or **harder** [*sta^e rker oder ha^e rter*] one. Because of this, we speak of a **soft** B and a **hard** P [*ein weiches B und ein hartes P*].
>   von Kempelen (1791, 237, in Braun 1988, 31[T])

Some of these usages (that of Gébelin and Ickelsamer, for example) aim to describe the action of the articulators: one of a pair or natural class of segments is actually pronounced with a STRONGER or HARDER movement of the tongue or lips than the other, and such usages are not entirely metaphorical. It is likely reasonable to claim these as precursors for the idea that we saw Thurneysen (1898) refer to above, that the "intensity of articulation" diminishes in cases of LENITION (it is notable, though, given their later frequency, that there is no expectation that the Latin terms *fortis~lenis* should be used during this period). Other usages (such as that from Smith and Schottel) seem to be more 'abstract' usages of the terms. Most of the discussion here has concerned laryngeal states such as voicing, but some concerns relations between manner of articulation, too. The types of STRENGTH illustrated here (including those that might be seen as commensurable cases of SOFTNESS) are all of type (a,i,y), as in previous ages.

3.4. Phonology in the nineteenth century

The nineteenth century was surely the century of historical linguistics, and of the emergence of what Arens (1955) declares the start of linguistics proper, whereas everything up till then had been the "ascent towards linguistics" (Arens 1955, VII-VIII[T]). As well as the period when 'linguistics' emerged as a recognisable entity, it is during the nineteenth century that phonology, or,

rather, an undifferentiated phonetics-phonology, developed as a branch of study. This is shown by the publication of manuals and textbooks to teach phonetics-phonology as a university subject for the first time, such as Sweet (1877) and Sievers (1876), and by overt research into phonological issues, although most of the work in this area, was still carried out during most of the century by people who thought of themselves as general linguists.

As soon as phonetics-phonology becomes 'self-aware' in this way and people even start to identify themselves as specialists in the field, it becomes more important to consider where usages of STRENGTH and WEAKENING (and, later on, LENITION) do *not* appear, as well as where they do, and I do this below. The state of linguistic study at the start of the nineteenth century was quite different from the rigorous, scientific enterprise it had become by the end of the century. I have thus split my discussion of this period into the early, mid and late nineteenth century.

3.4.1. The early nineteenth century

The early nineteenth century is the start of serious work on historical (and comparative) phonology. It is the time of Rasmus Rask and Jacob Grimm, who contributed to the foundation of comparative and historical linguistics with works such as Rask (1818) and Grimm (1819-1837). Among work on all areas of language, such authors wrote on comparative and historical phonology, and had a substantial influence on the subsequent development of historical phonology, which, in turn, was one of the main streams that merged to form the independent discipline of phonetics-phonology, which was eventually to give birth to phonology in the twentieth century.

As Andersen (1982) explains, although he was surely aware of their historical relation, Rask does not really discuss the correspondences of 'letters' that he describes in terms of their historical directionality, so we can hardly look for ideas of WEAKENING there. And the concepts that we are concerned with here do not seem to be important for Grimm, either. If Andresen's (1865) index to the whole *Deutsche Grammatik* can be trusted, for example, the terms STRONG and WEAK only occur with reference to morphology, and WEAKENING is only used with reference to vowels (and the terms *fortis* and *lenis* do not crop up at all). Grimm typically uses the Latin terms in (9) to refer to obstruents, and, even though he may have used our terms on occasion, did not exploit them to any great degree. Indeed, his usage often refers to letters, rather that sounds, as is common in the work of this period, and

while this should not be simply taken literally, to imply that Grimm and his contemporaries were ignorant of phonological factors, it does show that phonetics-phonology had not yet taken an important role in linguistics.

Other early work on historical linguistics from this period does make use of our terms, as in Bosworth (1823) (which features "remarks on the history and use of the Anglo-Saxon"). This has a short section on the 'change of consonants', although 'change' here largely really means synchronic change in morpho-phonology). In a similar way to Mulcaster's discussion of <g>, above, in (a,i,y) Bosworth writes

> The Saxons originally expressed the sound of the modern K by C. As C also stood for a soft sound, it was difficult to know when it was to be sounded hard, and when soft.
>
> Bosworth (1823, 49)

Otherwise, however, he talks simply about consonant 'interchange', as in "B, F, or U, are often interchanged" Bosworth (1823, 47) – there is no mention of WEAKENING or SOFTENING, or even of spirantisation or similar names for processes which indicate the directionality of change. Bosworth does, however, also write the following, which shows both an awareness of phonological change and of some of its typical patterns. It seems clear from such work as this that the types of changes or processes that we are considering are not always described using the terms that are our focus.

> T in Dan. Sax. occasionally changes into D and Ð ... The letter T has a tendency in all languages to degenerate into S
>
> Bosworth (1823, 50)

It is also here that Bredsdorff's (1821) trajectory, discussed in §2.1.2, fits into the chronology. Sadly, as Andersen (1982) reports, Bredsdorff's ahead-of-its-time work was "fated not to have any influence on the development of historical linguistics. Published in Danish in the Examination Program of the Cathedral School of Roskilde in 1821 – in the wrong language and the wrong place, and at the wrong time, one might say – there was no chance of Bredsdorff's views contributing to the scholarly dialogue" (1982, 24). Still here, then, while there is some understanding of segmental change, and some usages of the terms that we are tracing (and we can reasonably assume that these are not unconnected with the usages of previous periods, as these scholars were aware of the their predecessors' work), there are no signs of anything that we might label a developed lenition theory.

3.4.2. The mid- nineteenth century

A large amount of linguistic work was published during the nineteenth century, both historical and descriptive, and while little of it in the mid-century period dealt exclusively with phonetic-phonological factors, it was standard to describe them as part of more comprehensive works.

In one such text, Zeuss (1853) discussed the Celtic mutations that we encountered in §2.5, in work that was to be highly influential in Celtic linguistics. Writing in Latin, he compares the unmutated form with the mutated forms of the consonants and uses *status durus* 'HARD state' to describe the former and *status mollis* 'SOFT state' for the latter, implicitly assuming something like (a,i,y). Thurneysen (1898) refers to Zeuss' distinction, and it may be that it influenced his perception of LENITION as SOFTENING.

Another such text, Corssen's (1858) description of Latin, expresses the basic ideas that we are searching for in its treatment of the directionality of the changes in the laryngeal state of the plosives of late Latin:

> ...at that time the **voiceless plosives** softened [*erweichte*] in their pronunciation so much that they sounded **similar to the voiced plosives**.
>
> Corssen (1858, 39$^\text{T}$)

This implies a dynamically-demonstrated notion of softening which, on the assumptions made above, we can interpret as a strength relation of type (a,ii,y), although it is notable that the term that Corssen used for the process (writing in German) relates to SOFTENING, not WEAKENING. It is clear from such usages that the ideas that held previously that certain consonants were STRONG or HARD and others WEAK or SOFT has been fully extended to imply that change from one to the other illustrates the relation, illustrating a firm movement from a simple comparative approach to strength, which we saw was common in previous ages, to the dynamically-demonstrated type, which, while not unknown previously, was not common.

A couple of decades later, a remarkable volume, Peile (1869 - citations here from the second edition of 1875), is practically entirely based around the notion of WEAKENING. The volume is devoted to phonological change ("[t]he chief subject of this book will be the Laws of Phonetic Change in Greek and Latin" Peile 1875, 1), and Peile is clear about the role of WEAKENING, which appears all through the volume:

> The general effect of phonetic change is to substitute a weaker for a stronger sound...
>
> Peile (1875, 7)

Peile explains his understanding of the concept thus, when discussing one particular change, showing an articulatory basis of his thoughts on the matter, as is typical at this period:

> ...the general effect of this law of change was to *weaken* the older form; that is, to change it to something which required less effort to produce.
>
> Peile (1875, 3)

Peile also uses HARD and SOFT, to describe the laryngeal opposition among series of obstruents, but he does not build anything on these terms:

> ... *p* and the other similarly produced sounds are called hard, or surd, or voiceless, and *b* is called soft, or sonant, or voiced. None of theses terms are quite unassailable ... But the names matter little if we understand the idea.... I shall retain the names hard and soft, as being well known...
>
> Peile (1875, 64)

Indeed, he does not really use SOFTENING as a technical term, even when discussing a change from a HARD to a SOFT consonant − rather, he calls it WEAKENING, talking of "this weakening of *p* into *b*" (Peile 1875, 338). For Peile, the term of choice is STRENGTH, and although he does not set out a strength scale (which could then be interpreted as a lenition trajectory), he does explain the relations of strength that he assumes:

> ...we may assert with confidence that a momentary sound is stronger than a continuous one, and therefore we may expect to find, as we actually do, that a momentary sound passes into a continuous one, but not vice versa, except from some assimilating influence which is sufficient to explain the apparent irregularity ...
>
> Peile (1875, 81)[12]

He also writes that "[h]ard sounds [are] apparently stronger than soft, each in their own class", bringing changes in laryngeal state into his model of WEAKENING, but is somewhat less sure of this.[13] This is a clear precursor of contemporary ideas of consonantal strength (Peile also discusses vocalic strength in similar detail), on both dimensions − manner of articulation and laryngeal state. To complete the picture, Peile further writes that

---

[12] 'Momentary sounds' are what we would now call plosives and 'continuous' sounds are continuants (fricatives, liquids, glides) and nasals.

[13] Interestingly, Peile also writes "the aspirate is weaker than the corresponding unaspirated letter ... the breath heard in each case follows upon less permanent, that is, less strong, contact" (1875, 84), thus agreeing with the controversial 5a → 4a part of the trajectory in Lass (1984) given in (2), above.

...the greater strength of the Latin consonants is shewn in their comparative freedom from assimilation...

<div align="center">Peile (1875, 334)</div>

All this is practically a complete exposition of a lenition theory before the term LENITION existed − it is certainly a theory of phonological STRENGTH, assuming a type of strength of the inherent comparative inhibitory (a,i,z) type. In all its discussions of these issues, the volume seems remarkably ahead of its time, discussing ideas that crop up again in the phonological literature a hundred years later. For example, Peile discusses and argues against the importance of the perceived mismatch between his strength scale and the patterns found in the acquisition of phonology, in which plosives are acquired before fricatives, so can hardly be thought of as stronger (= more difficult to articulate).

The notions and usages that Peile adopts at this time are far from universal however. They do not proliferate in the work of the influential William Dwight Whitney, for example, who began to publish in the mid-century period and continued well into the late nineteenth century. Thus, in lectures specifically on linguistic change, he writes:

Ofer ... has become *over* with us, by the conversion of a surd into its corresponding sonant sound, a phenomenon of very wide range and great frequency in language...

<div align="center">Whitney (1875, 57)</div>

Sounds of the same series, but of different classes, easily pass into one another: thus, the spirants (*f*, *th*, and so on) are almost universally derived from the full mutes, by a substitution of a close approximation (usually accompanied, it is true, by a slight shifting of position) for the full mute contact; and they come especially from such mutes as were originally aspirated... Whitney (1884, 92)

It is here that the *absence* of our set of terms starts to become interesting. Whitney is very well aware of both spirantisation and of changes in the laryngeal state of obstruents, as we would expect from a scholar at this point in the history of phonology. Indeed, he is also aware of the importance of aspiration in plosive spirantisation, showing a grasp of the facts of historical phonology. At this point in the history of phonology, there is a well developed and wide-spread body of knowledge, as is clear from the quotations above. If authorities explicitly deny that there is such a thing as consonantal strength and hence no such thing as weakening, this will naturally have an effect on the development of lenition theory, by actively suppressing it. It is

difficult to argue this from their absence in the above passages, but Whitney (1875) also writes, when comparing segments like /p, t, k/ ('surds') with those like /b, d, g/ ('sonants') that

> In the latter there is, even while the closure lasts, a tone produced by the vibration of the vocal chords, a stream of air sufficient to support vibration for a very brief time being forced up from the lungs into the closed cavity or receiving-box of the pharynx and mouth. This is the fundamental distinction of "surd" and "sonant" sounds; anything else is merely a consequence of this and subordinate to it; the names strong and weak, hard and soft, sharp and flat, and so on, founded (with more or less of misapprehension added) upon these subordinate characteristics, are to be rejected.
>
> Whitney (1875, 63)

Thus we see that, while many linguists are happy to use the terms we are considering here, Whitney explicitly rejects them. His alternative, to see the contrast /p, t, k/ : /b, d, g/ as purely based on voicing, would be rejected by many in turn, but it could also be influential on linguists, perhaps especially in Whitney's country, the USA.

3.4.3. The late nineteenth century

The late nineteenth century was the time of the historically-minded neogrammarians. We can date this period from 1876, when a number of their crucial ideas were first expressed (see Hoenigswald 1978). A distinct linguistic subfield of phonetics-phonology was also developing in this period, however, as witnessed by the influential Sievers (1876) and Sweet (1877) (see Jankowsky 1999, for example). Although also fed by work on orthography and physiology (see Morpurgo Davies 1998, §7.1.3), the key influence on such ideas was naturally from historical work. Sievers was one of the neogrammarian group and Sweet also largely worked on historical issues. This was a fundamental period in the development of phonology – the neogrammarians' 'exceptionlessness' hypothesis was the first explanatory phonological principle: sound laws could be shown to be right or wrong because they made predictions about which segments in which environments would change, and this type of argumentation has been passed on (in part through Bloomfield, who studied with the neogrammarian Karl Brugmann, and who influenced Chomsky and Halle – see Honeybone 2005) to feature crucially in formal theoretical phonology. As we saw in §2.5, the period was

fundamental in the development of LENITION. This section, then, provides the closest consideration of the context that the term was born into.

Brugmann was the great organiser and networker of the neogrammarians, and he wrote immensely influential work. This included the section on phonetics-phonology in the *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*. In this he discusses the

> ...voicing of voiceless sounds, so-called **softening** [*Erweichung*]...
> Brugmann (1897, 51[T])

From this we can see that Brugmann perceives SOFTENING as a common term for one of the process types that we are focusing on: change in laryngeal state. Brugmann does not seem to be influenced by Peile (1875) or other work which talks of WEAKENING, however, and I return to this theme below. We might think that if the term SOFTENING is good enough for Brugmann, then it will be good enough for others writing either in German or in the German-neogrammarian-influenced style around this period, and indeed this is what we find in such passages as:

> ...the softening [*Erweichung*] of medial hard t and p to d and b...
> Jellinghaus (1877, 41[T])

> ...softenings [*Erweichungen*] of τ zu δ are very isolated...
> Blass (1890, 71[T])

Although Brugmann talks of SOFTENING, he does not use HARD and SOFT to refer to the laryngeal state of obstruents. Rather, he uses the terms *Tenues* and *Mediae*, *stimmlos* and *stimmhaft* ('voiced' and 'voiceless'), and *fortis* and *lenis* (and their derived nouns *fortes* and *lenes*). The latter pair, while often used to describe the opposition in such contrasts as /p, t, k/ : /b, d, g/, actually refer to more than laryngeal factors, but I retain that formulation here for the sake of consistency. Brugmann describes this distinction as one of the STRENGTH of expiration, and this links the terms to the main ones that we are tracing. As we saw above, *fortis~lenis* is the Latin for 'strong'~'soft', although the words are not used as technical terms before this period, despite the frequent use of Latin in scholarly works in earlier periods. In fact, the terms *fortis~lenis* deserve their own detailed treatment along the lines developed here. Fortunately, they already have one in the form of section A of Braun (1988), which provides a detailed investigation of the interpretations and meanings of the terms and concepts related to the pair from an early period until contemporary work, and also considers the

seriousness with which we can interpret the claims that they describe differences in the intensity of articulation.

As Braun (1988) shows, the commonly assumed idea that Winteler (1876) invented the terms (or 'reintroduced' them into phonological discussion of the period) is false. It is possible that Winteler's influential usage is their locus classicus, persuading many of their importance, but others had used them before him. Winteler's work was influential, at least in part because Sievers (1876) discussed it in some detail in his treatment of the *fortis~lenis* pair. It may even be that these volumes could be seen as the shared locus classicus of *fortis~lenis* in terms of their introduction into phonological discussion as 'authorised' terms. Braun (1988) cites Rumpelt (1869) using the terms conspicuously, although he does feel the need to gloss them with the standard, traditional terms *tenuis* and *media*, and in doing this he is arguably using them in a somewhat different way to what they were come to mean after Winteler and Sievers' discussion of them, where these pairs of terms are *not* entirely synonymous, as we shall see:

> It may surprise some readers to hear that the generally known and seemingly theoretically obvious difference between Fortis and Lenis (Tenuis and Media), that is between p and b, t and d, k and g, f and w etc. is one of the toughest problems in phonetics.
>
> <div align="right">Rumpelt (1869, 14, in Braun 1988, 1[T])</div>

Eduard Sievers' detailed manual of phonetics-phonology, which went through five editions from 1876 until 1901, talks of *tenues* and *media* and of voiced and voiceless consonants, and he also places some considerable emphasis on the difference *fortis~lenis*, like Brugmann (who was likely influenced by Sievers in this regard). Sievers' definition of *fortis~lenis* does talk of STRENGTH − specifically of the strength or intensity of expiration. The main difference between the two terms is in the "**lower energy** and **shorter duration**" (1876, 66[T]) of *lenes* in comparison to *fortes*. Definitions of *fortis~lenis* often have an articulatory, kinaesthetic basis, as we saw already in Thurneysen (1898) in §2.5.

The details of the discussion differ quite considerably from edition to edition of Sievers' book, but in all of them it is clear that the *fortis~lenis* difference, although often correlated with the *tenues~media* and voiced~voiceless differences, is not the same. Again basing himself on Winteler's (1876) description of forms of Swiss German, he writes in the third edition that

> The Swiss, for example, differentiate between *pa* and *ba*, *ta* and *da* through stronger pressure in *p*, *t* and weaker pressure in *b*, *d*, but both sounds are

voiceless.... Here the only remaining tangible differentiating feature is the difference in strength [*Stärkeuntershied*], and here we **have to** use the expressions **Fortis** and **Lenis**...

<div align="center">Sievers (1885, 67 [T])</div>

This notion of *fortis~lenis*, which becomes widespread in work influenced by such neogrammarian texts, incorporate within itself a kind of strength relation of the type (a,i,y), both in the articulatory descriptions given to them and in the terms themselves: Latin for STRONG and SOFT. Winteler (1876) actually compares *fortes* and *lenes* with the HARD and SOFT sounds of neighbouring languages:

> The names that are best suited to describe the two sides of this Swiss opposition of homorganic sounds are probably **Fortis** and **Lenis**. Thus, for example, in contrast to the terminology for the surrounding speech varieties, which differentiate a soft [*weiches*] *b* from a hard [*harten*] *p*, a soft *s* from a hard *s* etc., in Swiss German we should speak of a Lenis *b* beside a Fortis *p*, a Lenis *s* beside a Fortis *ss* etc.

<div align="center">Winteler (1876, 23[T])</div>

As I argued above, HARD~SOFT can be seen as playing the same role as STRONG~WEAK in a (a,i,y) sense, and, as we saw in the quotations from Brugmann and others, these terms can support a (a,ii,y) type of relation.

As Murray (1988) discusses in some detail, Sievers considers the notion of *Schallstärke* ('acoustic strength') at some length in his chapter on suprasegmental issues. This is clearly a type of phonological strength, but it is not really the type that we need to consider here – it largely deals with phonotactics and stress (types of argumentation explicitly excluded in §2.2). The discussion of intensity, *fortis~lenis* and expiratory strength is in a different chapter from the discussion of the other parts of 'acoustic strength'. These other aspects are *Schallfülle* which Murray (1988) translates as 'resonance', and which is essentially sonority, linked explicitly to phonotactics, and *Silbenstärke* ('syllable strength'), which is dependent on stress. They are not our concern here, and there is hardly any overt linkage of the ideas to patterns in phonological change.

Although the terms HARD and SOFT are in use at this time to describe laryngeal oppositions, Sievers does not mention SOFTENING in his discussion of the relevant type of changes (at least not in the editions that I was able to consult), and, although he discusses various types of STRENGTH, he does not talk of WEAKENING when segments of a *fortis* articulation change into *lenes*. Sievers does not much discuss WEAKENING as a type of diachronic process, apart from in a few places which do not imply acceptance of the term:

It is still today a well received idea that all sound change results from a desire to **make pronunciation easier**, in other words, that it is always based on a reduction of energy ('sound-weakening' [*Lautschwächung*]), and never on an increase of energy ('sound-strengthening' [*Lautverstärkung*]) .... The error in this becomes clear when we take just a very quick look at the different historically attested directions that sounds develop in.

Sievers (1901, 168[T])

It is not unusual for work in German of this period to avoid the use of WEAKENING to describe spirantisations and similar lenitional changes. Indeed, it may be that, because of its authority, Sievers (1876-1901) was influential in *not* discussing the notion so that others, who took what they knew at least in part from Sievers, would not discuss it either. Rather, it is common to simply describe relevant changes as 'changes' or 'transitions', as in Sievers (1885, 231[T]) who talks of "the exchange [*Wechsel*] of stops and fricatives" and Paul ([1880], cited from the 1920 edition, 54[T]) who talks of the "transition [*Übergang*] from stop to fricative". WEAKENING certainly exists in such work, but it does not seem to be a standard technical term to describe changes in the manner of articulation of segments, nor changes in laryngeal state (which, as we have seen, are often called SOFTENINGS). One usage of WEAKENING in Sievers volume is perhaps interesting, however – in a section on 'reduction' as a type of change, Sievers writes that "...not all weakenings [*Swächungen*], shortenings etc. of sounds are labelled reductions [*Reduction*] ..." (1885, 169[T]). This is not as interesting for our purposes as it sounds, however. Although the definition of 'reduction' is intriguing (sounds lose "significant properties which were decisive in their definition" 1885, 169[T]), the concept does not include most of the types of change that we are focusing on as cases of lenition. It does include debuccalisation of fricatives to [h], approximantisation of fricatives, gliding, and the loss of voicing in sonorants and obstruents, but it does not include spirantisation or 'voicing', which are fundamental to modern definitions of LENITION. Sievers' idea of 'reduction' is interesting, as it shows that the notion of grouping unconditioned processes together as a 'type' of change exists (and so may even have fed into the idea that LENITION~WEAKENING exists as an overarching process-type) but it is not connected with phonological STRENGTH and it does not include the main types of process that we are focusing on here. Furthermore, the static comparative descriptive opposition *fortis~lenis*, which is so common in work of this period, is by no means necessarily linked to dynamic WEAKENING or even to SOFTENING (indeed, the connection is hardly mentioned at all in Braun's 1988 detailed consideration of the

notion). Other authors of texts on phonetics-phonology from the German tradition (for example, Trautmann 1884-86 and Viëtor 1898) do discuss laryngeal oppositions explicitly in terms of STRONG and WEAK, but do not talk of WEAKENING.

One of the other most influential authors of manuals of phonetics-phonology of the period is Henry Sweet. He was an admirer of much of the German neogrammarian-style work, including Sievers (1876), but also drew on Bell (1867) and Ellis (1869-99). Sweet (1877) does not make much of the STRENGTH of consonants, nor does it discuss a *fortis~lenis*-type opposition, using voiced~voiceless, instead. Sweet has a concept of WEAKENING, however, both in his descriptive and historical work:

> By weakening the different point and blade consonants a variety of vowels may be found... By weakening (dh) a sound is produced which has quite the effect of a dental (r)-vowel.
>
> Sweet (1877, 53)

> Open *ġ* was generally weakened to *i* after consonants...
>
> Sweet (1900, 263)

> The voicing of weak (tʃ) into (dʒ) in *knowledge* = ME *knǫwlę̄che* is quite parallel to the voicing of weak (s) in *stones*.
>
> Sweet (1900, 279)

His clearest statement on the issue is perhaps from Sweet (1888), which includes a general introduction to 'Sound-Change'. He writes

> ... voiceless stops are sometimes weakened into open breaths between vowels, as in the regular changes of *c* and *t* into *ch* and *th* in Old Irish, as in *athir*... Side-consonants are capable of a further weakening into open consonants, as in French *fille*, *milieu* ... The change of an open consonant into a vowel is, in the case of *j* and *w*, often almost entirely dependent on stress-shifting and synthesis.... If the configurative passage of an open breath consonant is progressively enlarged, the acoustic effect of its position becomes more and more indistinct, till at last we hear nothing but mere breath. In modern Irish the old *th*, 'aspirated' *s*, etc., are weakened in this way to mere *h*s ... All these changes are weakenings. ... All the weakening processes ... begin in unstrest syllables.
>
> Sweet (1888, 23-24, 31)

This passage shows that Sweet has an articulated theory of WEAKENING – essentially a type of lenition theory before the term LENITION existed – which includes voicing, spirantisation, gliding, vocalisation, debuccalisation

of fricatives ('open breath consonants') to [h]. It is also linked to particular environments, specifically those in prosodically weak syllables. There is no indication that Sweet is inventing the idea in this passage, indeed, he seems to take it quite for granted, so we can assume that, perhaps outside of the German tradition just described, the notion of WEAKENING was common in historical phonology. Indeed, there is at least one tradition of terminology and concepts where this is clearly the case.

Perhaps equivalent in influence to Sievers and Sweet is Paul Passy, whose (1890) *Étude sur les Changements Phonétiques* ('A Study on Phonetic Changes') refers to both Sievers and Sweet, and includes a substantial preliminary part focusing on general descriptive phonetics-phonology. Passy is writing in French, and he discuss a good number of examples from French and its close relations such as Latin and Spanish, but this is alongside considerable discussion of phenomena from other languages. In the description of phonological entities, Passy discusses strength only in relation to syllable stress. He talks of 'voice' for segments like /b, d, g/ and describes /p, t, k/ as 'breathed sounds' ("sons soufflés").

He is writing from within a tradition where WEAKENING is a common term and concept, however – he devotes a separate section in his chapter on 'spontaneous sound changes' to *affaiblissement* (WEAKENING). It is clear from the way that he writes about the term that it is one which he feels readers will be familiar with, just as we saw for Sweet. He writes

Fricatives and other prolongable consonants are often formed with an incomplete narrowing; this is a true weakening [*affaiblissement*], even if the basic cause is often assimilation. And thus, if these consonants are voiceless, nothing remains but the breath, a weak [*faible*] (h); if they are voiced, a consonantal vowel remains, which forms a diphthongs with the neighbouring vowel.... In Spanish and Portuguese, *b, d, g* are like intermediate forms between plosives and fricatives, being formed with an incomplete closure.... The devoicing of liquids is almost always a weakening.... Plosives at the end of words are exposed to a distinctive weakening, which consists in missing out the release....

Passy (1890, 163-164[T])

This list of processes includes many that would now be counted as lenitions, including debuccalisation to [h], gliding, (some cases of) spirantisation and even the loss of release in plosives. The inclusion of sonorant devoicing is surprising for contemporary eyes, but it is clear that Passy has an explicit concept of weakening which groups a range of essentially spontaneous

changes together. Voicing is not one of them, however – he treats that purely as an assimilation and, notably, thinks of it as SOFTENING:

> In the Romance languages, intervocalic consonants have often been generally softened [*adoucies*]: French *abeille* from *apiculam*, *rose* from *rosam*....
>
> Passy (1890, 169[T])

Passy therefore clearly has something like the modern notion of WEAKENING in terms of the process-types that it involves, but he also has the same notion of SOFTENING that we saw in Brugmann. The former is no surprise, however, because a concept of WEAKENING is common in work on Romance historical phonology. Nyrop (1899), for example, after an introduction to consonant description which does not mention strength, or *fortis~lenis*, simply states that

> Simple intervocalic consonants ... weaken [*s'affaiblissent*] in different ways: ripa > *rive*, faba > *fève*, causa > *chose* [šo:z]...
>
> Nyrop (1899, 253[T])

This standard Romanist use of WEAKENING is typically explicitly tied to positional concerns, to an extent that we have not thus far seen. For example, Nyrop writes that

> A consonant is in a **strong position** [*position forte*] when it is at the start of a word: **b**onum, **d**entem, **f**errum, or at the start of a syllable after a consonant car**b**onem, ar**d**entem, in**f**ernum, cal**c**are. A consonant in a strong position normally remains as it is.... A consonant is in a **weak position** [*position faible*] when it is between two vowels: ba**c**a, ne**g**at, lau**d**at, ra**s**a, ri**p**a, or when it is at the end of a syllable in front of another syllable which starts with a consonant: fa**c**tum, scri**p**tum, ca**p**ra, a**l**ter, ca**n**tant, etc. A consonant in a weak position will change almost always through weakening....
>
> Nyrop (1899, 253[T])

This positional concept is entirely standard in historical work on French, and is revived in such work as Ségéral & Scheer (2001, this volume). It instantiates strength of type (b,ii,z) as the consonants involved are not thought to possess inherent strength of their own, and this fits in with the fact that Passy and Nyrop do not discuss any such thing in their treatment of the synchronic description of consonants. Rather, consonants can be *given* strength by being in a particular phonological environment, and this positional strength is inhibitory, as it protects them when processes are innovated, as they only affect consonants in weak positions. It is not clear that Sweet fully has this understanding of strength because he does not much

discuss the role of environment, apart from to say that weakening processes begin in unstressed syllables; it seems more likely that Sweet's strength is of type (a,ii,y), modified by positional effects. The typical notion of weakening that goes in hand with the Romance positional interpretation of strength is not quite that of Passy (1890), although it can probably be assumed that Passy was influenced by it. As can be seen from the first quotation from Nyrop, it groups together voicing and spirantisation, perhaps the two main types of process that now feature in lenition trajectories, and it is likely linked to the notion of WEAKENING that we saw in Peile (1875) above, who was writing about Latin (and Greek), after all. It also seems probable that it is linked more distantly to the discussion of WEAKENING in Latin/Romance that we saw enunciated in work such as de Altedo (1297) in §3.2, and it is thus no surprise that all of this involves work on Romance.

We have now reached the point at which Thurneysen introduced the term LENITION. The context in which this happened should be much clearer than it was in §2.5, and it is worth briefly considering it again here. As we saw in §2.5, Thurneysen links LENITION with *fortis~lenis*, and through *lenis*, indirectly to SOFTENING. He does not link it to WEAKENING (and he does not mention WEAKENING in Thurneysen 1909, either). We can perhaps understand this better now – Thurneysen was closely associated with the Leipzig group of neogrammarians which were largely led by Brugmann (see Morpurgo Davies 1998). He is writing in German, and in the German tradition of scholarship, doubtless aware of and likely influenced by Sievers in his understanding of phonetics-phonology and his use of terminology. As we have seen, there is no real convention of talking of WEAKENING in this tradition and there is no obvious linking between spirantisation and voicing (and debuccalisation). There is some sort of notion of process types being grouped as 'reduction', but this does not include all or only the processes which Thurneysen labelled LENITION (or which we might call LENITION today). There is, however a distinct place in this phonological world for *fortis~lenis*, and as we have seen, Thurneysen explicitly appeals to the idea that the unmutated ('radical') and mutated segments are related to each other in this way, through the intensity of articulation.

The idea that SOFTENING is involved is also unsurprising now, as we have also seen that this metaphor is common in German phonological discourse of the period, and the fact that some of the changes that Thurneysen groups as LENITION look like voicing, as shown below in (11), may have influenced him. The concept of weakening is present in the period, but mainly in Romance linguistics (although not restricted to that field: Sweet

has a theory of WEAKENING, applied to the history of English). The Romance concept of WEAKENING is practically necessary, given the developments in what were labelled WEAK positions: the connection between spirantisation and voicing was unavoidable, as was a positional interest. But none of this applied to a Celticist who was writing in the German tradition.

The idea of STRENGTH behind Thurneysen's notion of LENITION seems to be (a,ii,y) − it is the segments' inherent properties that make them *fortis* or *lenis*, as we saw above − but the relationship between segments in the Celtic processes is also clearly demonstrated diachronically. And there is no notion that being *fortis* allows a segment to escape the innovation of a process.

The processes that Thurneysen suggests using the term to describe are what had previously been called 'aspiration' in Irish, and 'destitution' or the 'vocalic mutation' in British Celtic. These changes/processes are thought to be connected both temporally and phonologically, as essentially 'the same thing', but their results in the historic languages are rather different. The phenomena generally recognised as part of their contemporary reflexes are shown in (11), which sets out the mutation relationships that currently exist among segments in Irish and Welsh (as examples of the two main branches of Celtic) for this specific mutation, where the 'radical' segments are the historical antecedents and current correspondents of the mutated segments.[14]

(11) radical   p t k b d g f s m L N R
        mutation f h x v ɣ ɣ Ø h v̌ l n r   Irish 'lenition'

        radical   p t k b d g ļ ṛ m
        mutation b d g v ð Ø l r v   Welsh 'soft mutation'

Thurneysen is explicit (as are others, such as Pedersen 1909) that the term LENITION is only used for these particular mutations (other Celtic mutations are discussed under names other than LENITION, such as *Nasalierung* 'nasalisation' in Thurneysen 1909). There are in fact two related but different phenomena involved here, as Martinet (1952, 1955) stresses. The contemporary mutations are lexically and morphosyntactically conditioned; they are the current reflex of phonological changes that were regular and phonol-

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[14] See also Jaskuła, this volume, for details of this; the Irish segments /L, N, R/ are sonorants with additional secondary places of articulation, which are lost in the mutated forms − see, for example, Ó Dochartaigh (1980)

ogically conditioned when they were first innovated, but have since lost that conditioning, and the segments involved have, in phonemicist terms, become separate phonemes. This means that LENITION can be used, and *is* used, in two ways in Celticist writing: either (I) to refer to the diachronic phonological process which was innovated into Proto- or Pan-Celtic, affecting the original 'radical' segments and deriving the mutated forms shown in (11) – or forms which have since changed further to give the currently existing mutated reflexes of the radicals – and (II) the current morphosyntacticolexicophonological relationships that exist between the radicals and their mutated reflexes. The intricacies of the relation between (I) and (II) and their precise historical and current patterning are important for Celtic historical phonology, but we cannot consider them all here, and we will take the type (II) forms in (11) as broadly indicative of the type (I) changes that occurred.

The processes involved in (11) have a similar kind of 'obvious' unity to Celticists that WEAKENING processes do for Romanists, because they occurred at a similar time and in similar environments, so it is no surprise that a term such as LENITION is needed to group them. Thurneysen simply chose an international one based on Latin, and based on the concept *fortis~lenis*. If we take the material in (11) as reasonably indicative of the processes that Thurneysen described as LENITION, we can see that, for him, the term described at least spirantisation, debuccalisation to [h] and loss (in Irish), and change in laryngeal state ('voicing'), spirantisation and loss (in Welsh). As mentioned in §2.5, it is by no means clear that Thurneysen intends the term to be restricted to the Celtic data. Indeed, the general articulatory definition that he gives the term implies that he intends it as a general term for the 'lenisisation' of consonants.

Now that the term LENITION has been introduced, right at the end of the nineteenth century, the scene is set for the flowering of the term, to take its current position as a commonplace in phonological discussion, and for the linkage with WEAKENING and phonological STRENGTH that it now has. This will all still take a while, however.

3.5. Phonology in the twentieth century

The twentieth century is the century of synchronic linguistics (although historical work has never ceased, of course), and it is the century in which phonology emerge as a discrete, independent discipline. This section follows phonology from its beginnings as an independent discipline in the 1930s,

through its explosion in the 1960s and 70s, to the middle of the 1990s, with its variety of phonological frameworks in which LENITION has blossomed, in several ways and at several times, into full-blown phonological theories.

3.5.1. The early twentieth century

The early part of the twentieth century was still dominated by historical work, and a continuation of the discussions of the late nineteenth century. Little happens in terms of our interests here, apart from the institutionalisation of LENITION in Celtic linguistics through Thurneysen (1909) and Pedersen (1909), as we have already seen. The term was not immediately accepted by other scholars, and some argued against it. Despite the fact that he dedicated his volume to Thurneysen, Vendryes (1908) for example, writing after 1898, but before 1909, rejects Thurneysen's term:

> ... the consonants *c t p g d b s f l r m n* are all liable to have a double value in terms of breath (openness). Zeuss gave these two values the names *status durus* and *status mollis*, which mean nothing. In order to characterise the status mollis, Mr Thurneysen (*IF Anz*, IX 42) has proposed the word *softening* (lenition) [*adoucissement (Lenierung)*], which is scarcely more satisfying. People have since used the word *Aspiration*.... We return here to the vague term *aspiration*...
>
> Vendryes (1908, 23[T])

It is notable here that Vendryes loan-translates the term for LENITION that Thurneysen uses (*Lenierung*), literally, as *adoucissement* (SOFTENING). Perhaps LENITION fared better because it is Latinate, and therefore not semantically transparent, so that linguists could project their own interpretations onto it, unlike SOFTENING (which is obviously linked to the hard~soft terminology for a laryngeal contrast in obstruents). In any case, Vendryes rejection of LENITION was doomed, given the appearance in the following year of Thurneysen (1909) and Pedersen (1909), which cemented LENITION into Celticist discourse. At least, they did into the linguistics of Irish − still after 1909, Morris Jones (1913) does not accept LENITION as a technical term for Welsh, preferring "soft mutation", but he is aware of it, having doubtless read Pederson (1909) and Thurneysen (1909), too. He writes

> Continental scholars use "Lenition" as a term embracing the Welsh "soft mutation" and the corresponding Irish "aspiration".
>
> Morris Jones (1913, 162)

At this point, then, soon after its invention, LENITION is widespread in Celtic linguistics. Even if not all linguists adopt the term, they are aware of it. The undoubtable influence of Thurneysen and Pederson were to mean that the term found a definite place in this area of linguistics. It took quite a while to spread out of the world of Celtic studies, however. Romance linguists, such as Berthon & Starkey (1908) and von Wartburg (1934), writing in and on French, for example, still only talk of *affaiblissement* (WEAKENING).

The concept and term WEAKENING is not entirely limited to Romance linguistics, however (as the discussion of Sweet's work above also showed for previous periods). Lessiak (1933), writing in German, on German and squarely in the 'Germanic' tradition, is happy to write about the *Binnenhochdeutsche Konsonantenschwächung* ('Inner-German Consonant WEAKENING'), and to use *Schwächung* (WEAKENING) freely to describe the loss of *fortis*-ness in plosives. In fact, Lessiak also describes this as SOFTENING and, in fact, as LENITION (*Lenierung*), using Thurneysen's term, but not with as broad a definition as Thurneysen gave it – it only refers to changes which are clearly cases of *fortis* become *lenis*, as in "lenition of the Gmc. medial (and partly also initial) fortes *þ, f, s* ... to *đ, v, z*..." (Lessiak 1933, 24[T]). Lessiak does not use the term for spirantisations or any of the other processes found in Celtic. The term is thus finding some use in 'Germanic' linguistics, but in a way that explicitly links it to *fortis~lenis*, to the extent that it is really 'lenisation', not LENITION as we now know it. While Thurneysen certainly made this link, he needed to argue for an extension of the reference of the *fortis~lenis* opposition, and it will require a conceptual split of LENITION from *fortis~lenis* for us to reach the modern understanding of the term.

There is at least one developed theory of phonological STRENGTH during this period – that of Maurice Grammont. This had been discussed since Grammont (1895), but it is probably best known from the exposition in his general (1933) introduction to phonetics-phonology. This is STRENGTH of a (a+b,i+ii,z) type – it is partially inherent, partially inherited from a segment's environment, and it is determined by the comparison of segments *and* by considering which segments are affected by phonological processes (although, as we shall see, *not* spontaneous processes). It also gives a segment the ability to resist the innovation of processes. The approach is rather complicated (as Posner 1961 implies, perhaps too complicated for its own good, as few have followed Grammont's ideas), and it is founded on the idea of a *loi du plus fort* ('law of the most strong') which dictates that if segments affect each other, the properties of the stronger consonant will win out over those of the weaker. As Grammont says

... it governs not only assimilation and dissimilation but all phenomena in which the alteration of one phoneme is provoked by another phoneme.

Grammont (1950, 186[T])

What this means is that it is not really relevant to our concerns here − the principle deals exclusively with conditioned processes, which are caused by the juxtaposition of two segments, whereas the types of lenition processes that we are considering are meant to be potentially spontaneous (as discussed in §2.1 and §2.2). Grammont discusses *fortis~lenis* ('fort~doux') and the notion of strong positions, and so is plugged in to the types of discourse on STRENGTH that were established in the late nineteenth century (of both 'German' and 'Romance' types), but his STRENGTH of type (a+b,i+ii,z) is not tied to WEAKENING, and certainly not to LENITION, so we shall not consider it further. Notably, for Grammont, the term LENITION itself is restricted in reference to the mutation phenomena from the Celtic languages that were described at the end of §3.4.3 (see Grammont 1950, 200). This last point will be something of a refrain in what follows.

3.5.2. The mid-twentieth century

The middle of the twentieth century − from the 1930s (or even 1920s), through to the 1950s − is the period when phonology really found its feet. Work by Trubetzkoy, Jakobson, Firth and Bloomfield, and their associates and contemporaries gradually created the discipline as we know it today. There is, however, little new work in this period that connects with the issues that are our focus here. The interesting work is being done on other issues.

Bloomfield's (1933) widely-read *Language* describes several types of phonological change as WEAKENINGS, including spirantisation, voicing, loss and the flapping of /t/ in American English, but it does not feature an articulated theory of STRENGTH or WEAKENING, and the concept of WEAKENING is essentially to that found in the historical work discussed in the previous section. None of the terms we are dealing with (STRENGTH, WEAKENING or LENITION) appear in the contents or index of Firth's (1957) collected papers, nor do they feature in his argumentation. They also do not feature in the contents or index of Pike's (1943) *Phonetics*, nor in Hockett's (1955) *Manual of Phonology*. Pike does mention *fortis~lenis* as "strong ... and [w]eak articulation" (Pike 1943, 128) and once equates them to 'loud' and 'soft', but little importance is placed on the terms, and his normal name for this

opposition among obstruents is voiced~voiceless. This is part of a pattern: *fortis* and *lenis* are not much used in phonological literature in English.

Trubetzkoy (1939), writing in German, does discuss *fortis~lenis*, labelling it the 'Correlation of Tension'[O]. This is one of a set of oppositions which characterise the difference between obstruent series; the others are the Correlation of Voice, the Correlation of Intensity and the Correlation of Aspiration.[O] All of these correlations involve the opposition of a STRONGER and WEAKER consonant, implying a generalisation of the relation of STRENGTH of the simple descriptive type (a,i,y). Either because the book deals only with synchronic phonology or out of principle, this is not linked to directionality in change, nor to the ability to inhibit the innovation of processes.

Roman Jakobson, who made significant contributions to phonological thought from the start of the this section's period until the end of the 1970s (see, for example, Götzsche 2005), similarly focus on other issues, and saw no need to develop a lenition theory. Indeed, if the detailed indices of his multi-volume *Selected Writings* are to be believed, the only time that Jakobson ever discussed notions of STRENGTH and WEAKNESS in detail is (1949):

> The consonantal opposition of strong and weak is achieved by varying degrees of air output.... Speech sounds present an ample progression in output: the latter is higher in aspirated than in non-aspirated consonants, in fortes than in lenes, in voiced than in unvoiced, in stops than in corresponding spirants. In different positions the relation strong/weak can be implemented by different variants: for instance, in a strong (stressed, initial, etc.) position, by an aspirated fortis stop vs. a lenis stops (voiced or unvoiced), and in a weak position by matching two non-aspirated stops – a fortis one and a lenis one, or two spirants – an unvoiced and a voiced one. In Danish this opposition strong/weak is implemented, for example, by *t* vs. *d* in a strong position, and by *d* vs. *ð* in weak position, so that the weak phoneme in the strong position materially coincides with the strong phoneme in the weak position. The relation strong/weak in any position is perfectly measurable both physically and physiologically, as in general every phonemic opposition presents, in all it manifestations, a common denominator both on the acoustic and the articulatory level.
>
> Jakobson ([1949], 425)

This expounds a notion of STRENGTH which is clearly influenced by some of the ideas that we have previously encountered: *fortis~lenis*, strong and weak positions, degree of air output (= 'expiration'), a clear articulatorily measurable basis of STRENGTH (perhaps overoptimistically clear, and here matched with acoustics, too). It also brings in the Prague School notion

of relative opposition, however, and a strength relation between plosives and fricatives and between aspirated and unaspirated segments. There is no evidence that it is different in principle from the (a,i,y) type of strength, apart from the inclusion of positional factors, which may make it (b,i,y).

The ideas discussed here are not important for Jakobson, however, as he did not pick up on them again, and the opposition strong/weak does not feature in his other work. What takes its place does become quite influential in this area, though. Referring explicitly to the correlations that Trubetzkoy used, he writes in a later (1956) publication which was co-written with Morris Halle, and was much more influential than the (1949) passage:

> Four consonantal features listed by Trubetzkoy ... – the tension feature, the intensity or pressure feature, the aspiration feature and the pre-aspiration feature – also turn out to be complementary variants of one and the same opposition which by virtue of its common detonator may be termed tense/lax.
>
> Jakobson & Halle (1956, 28)

This tense~lax feature is the version of or replacement for *fortis~lenis* that feeds into generative phonology, and while it does some of the same work as *fortis~lenis*, and is independent of voice~voiceless, it is not so clearly linked to LENITION, or even to WEAKENING, through its name. It may be that this replacement of *fortis~lenis* with tense~lax helped to play down the position of LENITION and WEAKENING in American phonology.

Writing maybe just still within this period, but certainly discussing work from the middle of the century, we find the following intriguing description by Waterman (1963) of the work of Jean Fourquet (especially Fourquet 1948) on the Germanic sound shifts, which Fourquet calls 'mutations'.

> The Germanic mutation was triggered by a weakening of articulation, which in turn brought about a lenition that eventually affected almost the entire consonantism.
>
> Waterman (1963, 80)

From Waterman's discussion, this looks like it is a very early usage of LENITION to describe non-Celtic phenomena. However, Fourquet (1948) himself actually talks of 'mutation' [*mutation*] in this connection, not LENITION, and this can hardly be Fourquet's own term for LENITION – he cites Thurneysen (1909) and Pedersen (1909), so would know both Thurneysen's German *Lenierung* and the Latinate *Lenition*, which would fit into French without adaptation (only requiring the addition of an accent). This would surely be the term that Fourquet would use if that was what he meant.

'Mutation' is itself an old term for particular types of phonological change, only partly linked to the modern use of the term to describe the Celtic phenomena that we have discussed at several points above. Fourquet defines it this way: "a consonant mutation is a general change in the form of articulation, affecting the consonants of one regular system and leading to a new regular system" (1948, 4[T]), and "mutations correspond to privileged periods when consonants develop in the same way at all places of articulation" (1948, 114[T]). He equates *mutation* simply with the German *Lautverschiebung* ('sound shift') both on page 1 of his book, and also in his translation of Hirt's (1928) usage "Irische Lautverschibung" (Hirt 1928, 224) as "mutation irlandaise" (Fourquet 1948, 117). The Irish phenomenon in question here is, of course, our frequently recurring Celtic data, and it is here that the only usage of LENITION in Fourquet's volume actually occurs (1948, 93 and 117). He gives the term as another name for precisely and only these Celtic changes that inspired Thurneysen to invent the term. It is clear from Fourquet's usage that LENITION is a technical term of Celtic linguistics only.

Fourquet does describe the loss of occlusion as WEAKENING (*affaiblissement*), as in the change from aspirated voiceless plosives to fricatives, and sees the spirantisation of the Germanic Consonant Shift as a "drop in articulatory energy" (1948, 56[T]), and this seems likely related to the Romance usage of WEAKENING identified above. It is an interesting case of the usage, however, as the data discussed is Germanic. The phonological tradition and metalanguage are Romance, though, maintaining, in a sense, the Germanic/Romance asymmetry in terms of frequency of usage of WEAKENING that was identified above. Fourquet's theory of WEAKENING is quite detailed:

> ... plosives in syllable-final position [l'implosive] ... lost occlusion because they are weak [*faible*] through their position, while voiced and aspirated segments lost occlusion because they were weak [*faibles*] by nature.
> Fourquet (1948, 53[T])

This shows Fourquet's sophisticated theory of STRENGTH, which we might describe as type (a+b,ii,z) because it combines inherent and positionally-endowed strength, is evidenced by diachronic events and also describes the relevant segments' ability to resist the innovation of processes.

We are left, then, around the end of the 1940s, with STRENGTH and WEAKENING used primarily (but not exclusively) in 'Romance' work (by which I mean work either on or in a Romance language). And SOFTENING is common as a technical term in 'Germanic' work (by which I mean work either on or in German, and to a lesser extent other Germanic languages), perhaps related to the pair *fortis~lenis*. And, finally, the term LENITION has

existed for around half a century, sometimes overtly related to the pair *for-tis~lenis*. Doubtless due to this latter relation, LENITION is occasionally used to describe non-Celtic languages, as we saw in Lessiak (1933), but there is a general convention in theoretical and historical phonology that the term LENITION is only used to refer to the Celtic phenomena that it was invented to describe. This is clear in the definitions in Lázaro Carreter's (1953) and Pei & Gayner's (1954) linguistic dictionaries, which both describe the term only as referring to a "phenomenon ... in the Celtic languages" (1953, 211^T) or as a change that occurred "[i]n Celtic Languages" (1954, 121). Water-man's (1963) use of LENITION to describe Fourquet's ideas must have been enabled by later developments (and we shall see what these were below).

Marouzeau's (1933 and 1951) treatment is intriguing: the headword *léni-tion* simply refers the reader to *adoucissement*, the French form of SOFTEN-ING (and as the dictionary is a multilingual one, it offers translations into other languages: *adoucissement* is equated to *Erweichung* and *softening*, and *lénition* as *Lenierung* and *lenition*). SOFTENING is essentially 'voicing', and is tied in to (Marouzeau's translations of) *fortis* and *lenis*:

> **Adoucissement** (*Erweichung*...)
> For a consonant, change from a *fortis* series to a *lenis* series, which is nor-mally equivalent to a sonorisation; thus the change from *s* to *z*.
>
> Marouzeau (1933, 18 & 1951, 10^T)[15]

Marouzeau continues this definition (in both editions in the same way) to say that the "lenition [*Lenierung* ‖ *Lenition* ‖ *Lenizione*] of the Celtic lan-guages"^{T} is sometimes seen as SOFTENING, but I believe that this is largely due to his impetus to translate all terms into French using native wordstock, which leads him to see LENITION as entirely equivalent to SOFTENING. This is not unreasonable, and is clearly connected with Thurneysen's original derivation, but it misses the idea that seems implicit in Thurneysen's usage that, while related to the *fortis~lenis* distinction, LENITION is something more than simple common-or-garden SOFTENING. Although doubtless familiar with the term, Thurneysen chose precisely not to use SOFTENING to describe the Celtic phenomenon, but to create his new term. Marouzeau thus equates LENITION and with SOFTENING, a term commonly applied to describe the phenomena of other languages, but this is likely due to a desire to translate technical terms, rather than a principled description of 'standard' SOFTEN-

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[15] The entries for *consonnes fortes* and *doux* give as the German translations *fortis* and *lenis*, so it is clear that Marouzeau is working with the terms/concepts *for-tis~lenis* here, but translates them into French, rather than simply borrow them.

INGS as cases of LENITION (indeed, in Marouzeau's discussion, purely Celtic LENITION is implied to be a case of SOFTENING), thus, even here, the convention is upheld that LENITION is only used to refer to Celtic phenomena. It is also notable that Marouzeau also has an entry for *affablissement*, the French form of WEAKENING

Affaiblissement (*Schwächung…*)
For a consonant, change to an articulation which involves less effort, e.g., from the *fortis* (voiceless) *p* to the weak (voiced) *v* in Latin *lupam* > French *louve*.

<div align="right">Marouzeau (1933, 18 & 1951, 10[T])</div>

Despite the apparent similarity of the two definitions, neither entry is cross-referenced with the other (nor with *lénition*) at all, indicating that the concepts of WEAKENING and LENITION are not connected for Marouzeau or, we might presume, in the kind of linguistics that he wrote his dictionary for. WEAKENING, SOFTENING and LENITION are established concepts at this point, but they are not linked. WEAKENING is mostly a 'Romance' concept and LENITION describes Celtic mutations and their historical antecedents.

This was all about to change. The latter position *is* still found in some work from much later periods (thus Jeffers & Lehiste's (1979, 179) glossary simply states "**lenition**: Term used to refer to a sound change in Pre-Irish whereby voiceless stops become fricatives", and the Oxford English Dictionary still (in the internet version accessed in 2006) only defines phonological LENITION thus: "In Celtic languages, the process or result of making or becoming lenis; softening of articulation." But, as we saw in §2.1, standard practice in historical and theoretical phonology now is to simply equate LENITION and WEAKENING as synonyms.

A crucial step towards this current situation was taken right in the middle of the twentieth century, in the work of André Martinet. Martinet was an important figure in this, as he was employed and influential in both the US and France and published in both American and European venues, in both English and French. In 1952, Martinet published an article in *Language*, which was to reappear in 1955, translated into French, as chapter 11 of his influential *Économie des Changements Phonétiques*. This article considers and compares the Celtic lenitions discussed (many times) above and the Western Romance weakenings, also discussed as several points above. Although Martinet does not straightforwardly describe both sets of phenomena as cases of LENITION, he nearly does. Crucially, he hammers home the point that the phenomena can be seen as essentially the same kind of thing. He writes, in English, and in 1955 translated into French

Although many Celticists and Romanists have long been aware that the Brythonic lenition of occlusives is in general similar to the consonant shift of Western Romance, they have accorded this similarity, as a rule, scarcely more than passing mention. The later morphological use of Celtic lenition called attention from the start to its basic unity; but the Western Romance changes did not result in any such parallel morphophonological alternations, and have therefore been treated by most Romance scholars as if each phoneme had followed its own path... [W]e assume here [that] early western Romance consonantal changes in the occlusive domain are all outcomes of one and the same trend, which does not differ essentially from the one which produced Celtic lenition ...

<div align="center">Martinet (1952, 202-3)</div>

Martinet is making many points here, including an advocation of the Structuralist position, and we need not consider them all (nor one of Martinet's other main points, which concerns sonorants). What is important is that the piece links LENITION and WEAKENING overtly and describes them as essentially the same process (and indeed that it confirms that this connection has not been properly made before Martinet insisted on it). Martinet (1955) is full of talk of the *affaiblissement* of consonants, as we would expect from a volume on historical phonology from the 'Romance' tradition, and such STRENGTH-and-WEAKENING-type terminology is scattered through the piece in focus here (the 1952 article and chapter 11 of 1955), showing that it was an entirely normal way to discuss the diachronic phenomena that affected especially intervocalic Romance consonants.

Martinet is unusual in his discussion of lenition for his time – he is "concerned with the phenomenon of lenition in general" (1952, 192), rather than the specific details of a (set of) changes that affected Celtic languages. In this, he discusses LENITION as a *type* of process, which has language-universal applicability, rather than just being a technical term of Celtic linguistics (and as we saw in §3.4.3, this is quite possibly true to Thurneysen's intentions when he invented the term). Martinet does discuss the Celtic changes, but his general perspective is that the process "whose outcome Celticists describe as lenition is not so exceptional as we might be tempted to believe" (1952, 214). In linking the Celtic case to general phonological issues, Martinet adopts Fourquet's notion of WEAKENING, discussed above, and writes that "early Celtic went through a process of GENERAL articulatory weakening" (1952, 213, emphasis in the original). It is thus *here* that Martinet brings together the concept of WEAKENING (from the 'Romance' tradition) with LENITION (which had sprung from ideas of *fortis~lenis* and softening in the 'Germanic' tradition). Indeed, although he never explicitly

states that 'lenition is weakening' or vice versa, he does write that "the initial *t* in the prehistoric ancestor of OIr. *túath* was weakened (lenited) to a spirant" (1952, 193), and here we have perhaps the first point at which the two concepts are linked, effectively as synonyms.

In considering possible substrate effects, Martinet applies the term LENITION to the phenomena of a non-Celtic language – German: "certain features of the Old High German consonant shift might well be interpreted as reflexes of the type of contrast which we have found to be characteristic of 'lenition'.... But if Old High German was really affected by Celtic articulatory habits the 'leniting' tendency must have worked at a time when, in High German, the correlation of voice was passing to one of aspiration..." (1952, 214-5; the French version is even clearer: "la tendance à la lénition" 1955, 293).

At this point, then, we can start to see the shape of the modern conception of LENITION. There is still a way to go before the definitions and type of discussion in §2.1 become possible, but Martinet's work seems to have been a crucial part of the story: it spread the use of LENITION to the world outside Celtic linguistics, to general universalist (historical) phonology. Martinet was influential both to those who read the pieces themselves on both sides of the Atlantic, and also to those who worked in the general post-Martinet world, which picked up some of his ideas and incorporated them into general phonological discourse (see, for example, Koerner 2002, 289, on Martinet's role in the recognition of chain shifts). While it is likely that others independently 'discovered' the generalisability of the Celtic phenomenon of LENITION to the phenomena that have occurred in other languages, too, Martinet's work was influential and widely-read enough to take a special place in our story. On reading it, it is easy to get the impression that it is 'obvious' that LENITION and WEAKENING are the same thing, and this may be what some phonologists took from it. It does not seem, however, that the two terms were thought to be the same before Martinet.

3.5.3. The 1960s – Standard Generative Phonology

Many would trace the beginning of the modern period of phonology to the 1960s. Although this misses the many continuities between current (and 1960s) phonology and ideas from previous periods, there is no doubt that the explosion of phonological theorising that occurred under the banner of Generative Phonology was quite unprecedented and that it kick-started the pho-

nological theory machine that we now have. This section focuses on work in Standard Generative Phonology (SGP, or *SPE* phonology, as it is also known, after Chomsky & Halle 1968), and is the first of three sections which deal with much shorter periods than those covered in sections above. This move is justified by the rapid movement in phonological theory from the 60s onwards and it will allow us to identify two further periods in phonological history which are crucial to our story. Other work in phonology continued outside of that which I focus on here, of course, but for the 1960s, our focus has to be on US-based SGP, because most later phonological work is a reaction to it.

Although the link between LENITION and WEAKENING, with its associated notions of phonological strength, had just been made before the 1960s, it could hardly be expected that this would spread immediately, or even quickly, through the phonological world. And indeed, the theoretical work that started in the 60s, following the establishment of the generative paradigm, did not involve an explosion of interest in LENITION or WEAKENING. Attention was elsewhere in *SPE* phonology – it was not on the analysis of taxonomies of process-types or on attempts to understand their motivation, but rather on rule formulation and interaction, in largely synchronic work. In early generative work, there was little if any discussion of notions of phonological STRENGTH or WEAKENING, let alone LENITION, and here, again, we can see the *absence* of any discussion of the issues as a part of the story, as in the work of Whitney and Jakobson, above. This absence of anything resembling a lenition theory is hardly surprising as the two originators of generative phonology were not educated in traditions where the concepts were important (see Goldsmith & Laks, to appear). Morris Halle had been a student of Jakobson, who had no real interest in these ideas, as we saw above, and Noam Chomsky had been a student of Zellig Harris, immersed in American Structuralism, and as we saw above for Bloomfield, WEAKENING was a concept there, but not one which was particularly elaborated on. It is no surprise, then, that their phonological masterwork, Chomsky & Halle (1968) does not feature STRENGTH, WEAKENING or LENITION in the detailed contents or index, and, while there are 'laxing rules' (following Jakobson's terminology), these typically refer to vowel-laxing. The notions of WEAK and STRONG are only used in connection with stress, except for one case where Chomsky & Halle refer to "strengthening" (with scare quotes of their own) as a process-type in Tswana, linking ejectivisation, occlusivisation and affrication. This is, however, only so that they can admit that, in their framework "there is no device available that would allow us to bring out formally that

these three processes are related" (1968, 401). We can see here that, although they acknowledge that processes might be grouped under headings of the type we are focusing on in this article, this is not a focus of interest in *SPE* phonology.[16] The perception of at least some writers who later focused on LENITION in their writing was that the idea was not prominent in early generative phonology (John Anderson, personal communication, 2006), and our three key terms and concepts do not play any role in other major early generative texts such as Halle (1959) and Schane (1968).

In the theoretical phonological literature of this period, then, our concepts are not important. They are still common elsewhere during the 1960s, especially in historical phonology, where we would expect the notion of WEAKENING to retain its position. But the equation of WEAKENING with LENITION that Martinet seems to have initiated does not yet seem widespread. The fields of theoretical and historical phonology were never entirely discrete, however, and there has always been a free-flow of ideas between them, especially concerning shared concepts. Martinet's influence in historical phonology was considerable, and his usage of LENITION could be followed by many working on historical issues, quite likely often without being aware that the equation of the two terms was novel, once Martinet had used it so authoritatively. In this way, the use of LENITION to describe what might previously have been called WEAKENING could easily spread through historical phonology (as in the historically-based discussion in Andersen 1969, for example) and from there could permeate on occasion into theoretical phonology, at least when it is used to describe phenomena that are clearly related to what are standardly described as WEAKENINGS in historical work. Indeed, there is at least one partial exception to the absence of LENITION from early generative period – James Harris' (1969) *Spanish Phonology*.

This is quite an exception, as it is the foundational volume for the generative phonology of Spanish, and it mentions LENITION in several places. It is perhaps relevant here that this is a text on Romance phonology and it may just be that Harris picked up the term directly from Martinet (he lists Martinet 1949 in his references and, although this text does not discuss LENITION,

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[16] One case where something like relevant terminology does arise in Chomsky & Halle (1968) is the case of 'Velar Softening'. This is in interesting term, given that it is commonly employed to describe a process of the type k → s in various languages. Perhaps recognising the oddness of the term in the SGP tradition, Halle (2005) describes these phenomena mostly as the more transparent 'palatalisation'. The phenomenon is not a standard case of LENITION in any case, as it involves both a change of manner and of place, and so is not really relevant here.

as it is pre-1952, it shows that Harris was aware of Martinet's work), but it is also possible, in line with the ideas expressed above, that the term had acquired a certain generality by this stage in historical discourse, especially in the 'Romance' tradition, where Martinet's influence might be greatest. This could have incorporated the generalising notion of LENITION as simply a 'type of process' into this tradition of literature, which Harris' references show he was familiar with.

Harris' usage of LENITION is unusual, however. The term is only used a couple of times in the text itself. It mostly occurs in the index (fourteen times), referring to places in the main text of the volume where rules of the following type are discussed:

$$[\text{+obstr}] \rightarrow [\text{−tense}] \; / \; V \underline{\quad} [\text{−obstr}] \quad (\textit{under certain conditions})$$
$$\text{Harris (1969, 73)}$$

These are all rules which change [+tense] to [−tense] in consonants and which are elsewhere referred to as cases of 'laxing' (indeed the index reads "Laxing, *see* Lenition" 1969, 215), which is more in line with generative terminology elsewhere, and is inherited from the discussions of Jakobson that we considered in §3.5.2. For Harris, then, only obstruent laxing, similar in conception to 'voicing', is LENITION. He never describes the well-known Spanish spirantisations/approximantisations as cases of LENITION, however (nor really even as WEAKENINGS) − they are simply 'spirantisations', so Harris' use of LENITION is neither frequent, nor does it really express the modern LENITION concept that we encountered in §2.1.

At this stage in the history of phonology (despite the partial exception of Harris 1969), then, none of our core lenition concepts are discussed in detail in the leading phonological framework − American-based generative phonology − and such work does not show anything like a 'lenition theory'. This is further shown by the fact that STRENGTH, WEAKENING and LENITION and related terms do not feature in the contents or index of such influential, US-published textbooks as Ladefoged (1975) or Kenstowicz & Kisseberth's (1979). This maintains a pattern of placing little importance on these notions in American texts, from Whitney onwards.

There were two fields of phonology where our ideas were to flourish, however. Both fields grew up in the context of and as reactions to SGP, but they developed quite different approaches to phonological questions. I deal with them separately in the next two sections, the last in §3.

3.5.4. The 1970s − Natural Phonologies

Many reactions to SGP played out in the US (and elsewhere, as we shall see below). Some of them developed particular SGP characteristics and they can be seen as a gradual extension of the approach. This includes the focus on morphophonological interactions that formed the basis for Lexical Phonology. Other reactions, while accepting the basic vocabulary and evidence-base of *SPE* phonology (eg, its rules and representations), sought to remedy what were perceived as major faults in its approach. The main thrust of these reactions was the idea that, although the standard generative approach might be able to characterise what was *possible* in phonology, it could not properly represent what was *natural* in phonological systems. They are thus often grouped together as varieties of 'natural phonology'.[17]

The frameworks grouped under this heading all tried to tie phonology overtly to the types of processes that typically occur in languages. They shared little of their specific theoretical machinery in common, however. It is common to group the 'Natural Generative Phonology' (NGP) ideas of Theo Vennemann and Joan Hooper/Bybee and the 'Natural Phonology' (NP) framework developed originally by David Stampe as reactions of this type. The basic assumptions of these approaches were quite different − Anderson (1985) describes them as, respectively, attempts to constrain representations and to constrain rules. NGP attempted to reduce the abstractness of representations by tying them to a phonetically occurring form, and NP tried to differentiate between 'natural processes' which languages typically possess (as they are innate) and learned ad hoc 'rules', which may have exceptions or be morphologically conditioned and motivated. It is less common to group these approaches with the 'Theoretical Phonology' (TP) approach of James Foley (developed since at least Foley 1970 and most explicit in 1977), no doubt because Foley eschews any notion that phonetics should play a role in phonological analysis, whereas NGP relies on phonetics to constrain phonology and NP expects that natural processes should be have an obvious phonetic motivation, but there are ways in which the approaches are similar −

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[17] Chomsky & Halle (1968) were aware of problems in this regard in *SPE* phonology. Greek-letter variables for feature values in rules, were introduced, for instance, on the grounds that they make it simpler (by the feature-counting metric) to express a cross-linguistically widespread phenomenon than to express an unattested or rare phenomenon that, without the new notation, would appear equally simple (thanks to Kie Zuraw for this point). The perception among Natural Phonologists was that *SPE*'s attempts to rectify these issues were flawed, however.

they all sought to explain why certain types of phonological phenomenon (representations or processes) were common, or 'natural'. For our purposes, all three played a similar role in (re)focusing phonologists attention, or at least part of it, on phonological processes themselves (rather than on process interaction) and on bringing notions of WEAKENING, STRENGTH and indeed LENITION into the discourse and thought-frame of theoretical phonology.

Given that all of these approaches focused in their own ways on the types of processes that commonly occur in, or are commonly innovated into, languages, and that all the authors involved were historical phonologists as well as theoretical phonologists, it is not surprising that they all ended up grouping these processes under the terms that had been used so frequently in historical work. It is in part through the fact that they did this, and that their work was widely read, that the current concept of LENITION exists and that it and its associated notions of STRENGTH and WEAKENING are now commonplace in phonology (the material discussed in the next section was the other crucial factor in this). Others writing at this time also used some of these terms. For example, Brown (1972) and Schane (1973) both use the terms WEAKENING and STRENGTHENING or HARDENING in what was more-or-less standard generative work, doubtless also taken from an awareness of their use in historical phonology, but for Brown the terms are simply the names given to rules and Schane lists only vocalic processes and does not develop a theory of strength. The three main frameworks discussed here, on the contrary, place considerable importance on these processes, on the relationships between them, and on the relationships between segments that they might be seen to imply. They all emerged at around the same time, with their first publications or presentations around the beginnings of the 1970s, so it would not be easy to establish which had historical precedence. I discuss them here, then, simply in a way that makes sense for presentational purposes.

Vennemann and Hooper placed some considerable importance on the establishment of hierarchies of phonological STRENGTH. This was linked to NGP's impetus to minimise abstractness through the idea that once such hierarchies are built into phonological theory, they allow for a simpler, less complicated expression of phonological generalisations, reducing the amount of abstractness and rules. Part of the evidence used to establish these hierarchies came from syllabic positioning, one of the things that I do not consider in detail here. Interestingly, however, in one of the pieces that he wrote on these issues, Vennemann compares his notion of strength with an early version of Foley's (from 1970) and that of Sigurd (1955). He writes that

> A superficial difference between these concepts is that Foley bases his strength scales on sound changes and Sigurd his rank orders on clustering behaviour, while I base my strength hierarchies on synchronic phonological rules, including syllabification rules. It is, of course, to be expected that these concepts merge into a single concept of a partly universal, partly language-specific relation hierarchy of segments.
>
> Vennemann (1972, 7)

Vennemann thus does acknowledge the connection between STRENGTH and the innovation of phonological processes, linking his notion to phonological WEAKENING. He writes further that "my concept of a strength hierarchy is a traditional one" (1972, 7), which likely means that it is taken from the traditional work in historical phonology, of the type discussed above, with which Vennemann is very familiar. Indeed, it was Vennemann who provided Hyman's classic (1975) textbook definition of STRENGTH and WEAKENING that we encountered in §2.1.2, which is exclusively diachronic.

Hooper follows Vennemann in working with syllabic position, but also includes evidence from the innovation of processes in her strength calculations, rendering it similar to the ideas from the previous largely historical work that we saw above, and to many current definitions. She writes that

> ... syllables have inherently weak and strong positions. ... changes suggest that voiceless obstruents are stronger than voiced, that geminate stops are stronger than simple stops, and the stops are stronger than fricatives. ... Synchronic rules of assimilation give indications about relative strength of consonants for a particular language. If all C's assimilate in a certain position, then we can attribute the assimilation to the particular position, which would be considered a weak position.
>
> Hooper (1976, 201-203)

This shows that Hooper's "cover feature strength" (1976, 198) in NGP is partly off our scale (as some evidence is used that we do not consider here), but also that it has characteristics of (a+b,ii,z). Processes are primarily expected to be innovated in weak segments, which can be weak because they are in weak positions, but the 'lenition trajectory' idea is also present because stops are inherently stronger than fricatives and voiceless segments stronger than voiced ones. Indeed, Vennemann (1972) sets up a detailed strength hierarchy (which refers explicitly to Icelandic – as some cross-linguistic variation is allowed in strength relations – but is also in part applicable to other languages) which is followed by Hooper, and which is not dissimilar to those from Escure (1977) and Lass (1984), discussed in §2.1.2.

Hooper thus follows Vennemann in discussing phonological STRENGTH, both in Spanish and in certain other languages, and it is this, along with the use of the notion of WEAKENING, that is important for our purposes because it brings it into theoretical phonological debate (along with the work of Foley, which they both cite, and certain other writers). NGP, although not explicitly adopted by many others, was discussed in other phonological circles and the work was widely read, thus the major focus on STRENGTH and WEAKENING in this work was likely of real importance in bringing the notions into the discourse of theoretical phonology.

Notably, however, both writers do not mention LENITION. The talk in NGP is all of WEAKENING. This is also the case in Hyman's (1975) textbook (mentioned in §2.1.2), which, through its popularity, was surely also important in popularising the ideas discussed (along with their treatment in other textbooks, such as Sommerstein 1977). Although Hyman now sees WEAKENING and LENITION as synonymous (personal communication, 2006), his discussion in 1975 mentions only WEAKENING (and STRENGTHENING), and it is clear that LENITION has not yet triumphed as a term in phonology. Hyman took the terms from Vennemann and from Foley (pc, 2006) and discusses them in some detail in a central chapter to the volume.

The work of Foley, although often dismissed (for example in Cohen 1971 and Harris 1985) was also quite often discussed. For our purposes, it is perhaps even more important than that of NGP because, while it is similar to NGP in setting up strength hierarchies which are also intended as lenition trajectories, Foley not only discusses STRENGTH and WEAKENING, but also mentions LENITION, as in the following passage.

> The traditional interpretation of the spirantization of g to γ is that it is a lenition, or weakening. The concept of lenition does not refer to phonetic terms such as 'occlusive' or 'spirant' but to nonphonetic terms such as 'strength' or 'weakness'. Theoretical phonology allows a formalization of the traditional conception of lenition, as
>
> $$\alpha_1 \beta_2 \rightarrow \alpha_1 \beta_1$$
>
> which captures the characterization of lenition as a weakening (reducing β strength from 2 to 1), while the transformational phonetic formulation
>
> $$\begin{bmatrix} + \text{voice} \\ - \text{cont} \\ - \text{ant} \\ - \text{cor} \end{bmatrix} \rightarrow [\, + \text{cont} \,]$$

makes no reference to weakening, thus failing properly to characterize the process.

> Since lenition applies preferentially to weak elements ... the lenition of *g* in preference to *d* reveals that *g* is phonological weaker than *d*.
>
> Foley (1977, 29)

This passage shows all sorts of things: Foley makes use of multiple strength scales (such as the α and *β* scales), dealing with both properties discussed above (manner of articulation and laryngeal state), and also with the place of articulation. He rejects phonetic reductionism or any phonetic explanation for LENITION, and he uses LENITION freely and as a simple synonym for WEAKENING, in the contemporary manner. It is telling that he refers to a "traditional conception of lenition" as this shows that, for Foley, LENITION really just is another name for WEAKENING – as we saw above, it is WEAK-ENING that is the 'traditional' term. LENITION, although already in existence as a term for over 70 years by the time that Foley was writing, had for most of that time been restricted to Celtic linguistics. It is clear from Foley's usage, though, that in the twenty years since Martinet's work, LENITION had spread in *some* spheres of phonological work – no doubt largely in the historical work that, from his references, Foley is familiar with. By using the term in his TP framework, Foley likely helped bring it into general phonological consciousness. He used it in his early work on such issues from 1970 (which discusses Romance data of the type that Martinet considered) and it is picked up from this by Cohen (1971), for example, but Foley's work was not taken as seriously as work in NGP by most other phonologists and thus was not as influential. This is clear from Hyman's usage, mentioned above – although he discusses both NGP and Foley's work, he adopts the purely WEAKENING terminology of NGP.

Foley stands out from most other work of this period for several reasons, rather like Peile (1875), as he builds up a whole lenition theory which predicts possible patterns in process-innovation. More than this, observations of how and where processes of the type identified in §2.1 are taken as the foundation on which central aspects of his whole theory of phonology are based.

Foley's model of phonological strength also brings in positional concerns:

> ... strong elements strengthen first and most extensively and preferentially in strong environments, and ... weak elements waken first and most extensively and preferentially in weak environments.
>
> For example, in North German, the weakest voiced stop *g* weakens further (spirantizes) in weak (intervocalic) position, but the stronger elements

d and *b* remain unaffected.

<div align="center">Foley (1977, 29)</div>

Foley's notion of STRENGTH is thus of the type (a+b,ii,z), as it combines positional and inherent factors, it is demonstrated through diachronic change, and, if a segment ('element') has enough of it, phonological strength can inhibit the innovation of a process.

Foley's work was not unique in its focus on these ideas. This is also the period of Escure (1977), discussed above in §2.1.2, who also places spirantisations and changes in laryngeal state at the centre of her work. Escure was well-read, given its subsequent citation record, and therefore influential in the hierarchies-cum-trajectories that it includes, but here, as in NGP, the discussion is only of WEAKENING − there is no mention of LENITION at all, although Escure, like Hyman, Vennemann and Hooper, has read Foley's work. Clearly, although notions of STRENGTH and WEAKENING are making their way into phonological theory in a substantial way at this period from various angles, the term LENITION is only doing so at a much slower pace. The fact that Foley used it would surely have helped it spread.

The final phonological angle that I discuss in this section is Natural Phonology, originated by David Stampe, and subsequently developed by several others. This will have a non-negligible role to play in our story.

As part of its impetus to identify the types of processes that might be thought to be general and innate, NP distinguishes between different types of processes, based on their perceived motivation. It is important in the model that 'natural' processes can be claimed to have a phonetic motivation, and two basic types are recognised: those which derive from a perceived impetus to increase the ease of articulation for the speaker and those which derive from the impetus to increase the clarity of the signal for the hearer. Although not really present in the earliest detailed exposition of NP (Stampe 1973/1979), by the time of Donegan & Stampe (1979), the former type of process are grouped together and called LENITIONS (this is in partial accordance with Thurneysen's original definition of the term, which saw the processes as effecting a decrease in the intensity of articulation, rather than an increase in the ease of articulation), and the latter are called FORTITIONS.

It is not entirely clear where their term FORTITION comes from − it is possible that Donegan and Stampe invented it themselves for their own discussion, but it is equally clear that it had been invented beforehand, and it is likely that it has been reinvented again and again − once LENITION exists, with its quite transparent relationship to *lenis*, it is natural that its opposite should be FORTITION, given the common opposition of *lenis* to *fortis*. Al-

though *fortis~lenis* has never been a major player in English-language phonological terminology, it has always been in the background, thanks to many phonologists' awareness of German-language work (as we saw above for Pike 1943). Once LENITION had become a synonym of WEAKENING (as we saw begin in §3.5.2), STRENGTHENING can become the opposite of LENITION, and can easily become called FORTITION. Donegan & Stampe say

> *Fortition processes* (also called centrifugal, strengthening, paradigmatic) intensify the salient features of individual segments and/or their contrast with adjacent segments ... *Lenition processes* (also called centripetal, weakening, syntagmatic) have an exclusively articulatory teleology, making segments and sequences of segments easier to pronounce by decreasing the articulatory "distance" between features of the segment itself or its adjacent segments. Assimilation, monophthongizations, desyllabification, reductions, and deletions are lenition processes. Lenition processes tend to be context-sensitive and/or prosody-sensitive, applying especially in 'weak' positions.   Donegan & Stampe (1979, 142-143)

I do not pursue the history of FORTITION here, apart from to note that it crops up in such work from the 1970s onwards, and thus seems much younger than LENITION. It is clear from Donegan & Stampe's words, and from similar usage in the continuing work in NP from Europe (such as Dressler 1985 and Hurch & Rhodes 1996), that by this point, the awareness of the term LENITION, and its identification with WEAKENING, in the mould of Martinet, had properly begun to percolate into work in theoretical phonology from historical work. Donegan & Stampe are aware of their historical forerunners. They write: "[t]he fortition/lenition distinction, under various names, is a traditional one in diachronic phonetics" (1979, 143).

NP has always been a minority framework, but as both Anderson (1985) and Fudge (1994) point out, work in NP was widely read in the 1970s (and is still appearing). The basic principles of the framework have been influential (for example, on the basic ideas of Optimality Theory, as many have argued, including Kenstowicz 2005). This would bring NP's terminology to the attention of others and, even if the whole framework was not adopted, the description of certain types of processes as LENITIONS (or indeed as WEAKENINGS), could easily be adopted. The precise inventory of process-types that NP described as lenitions is unusual, however, and has not been widely accepted (and thus it is clear that NP practitioners took the *concept* of LENITION – as an increase in the ease of articulation – from previous literature, rather than a taxonomy of process-types). As well as applying the term to vocalic processes, such as monophthongisations and vowel reductions, NP

also sees assimilations and velar palatalisations (and 'softenings') as LENI-TIONS, in addition to more standard lenition process types, such as spiranti-sations and 'voicings'. The fact that most contemporary definitions of leni-tion do not include assimilations (see Szigetvàri, this volume, for a discussion of this point) or many of the other types of processes that are seen as LENITIONS in NP shows that, while the NP work, along with Foley's and that in NGP (and some other work of the period) contributed to the adoption of LENITION into phonological terminology, it was not the main source of ideas for contemporary notions of LENITION, or indeed, the only conduit for LENITION and its associated ideas into the phonological mainstream.

There is little discussion of phonological STRENGTH in NP, and conse-quently not much of a lenition theory, and it may be that this is because the framework shuns anything that might smack of abstractness – this distin-guishes NP from NGP and Foley's TP in their discussion of issues relevant to our concerns. The three assume different theoretical foundations in their search for an explanation of what is perceived to be phonological natural: NP builds its phonology on phonetics, NGP sticks close to the phonetic ground in derivations, but allows abstract phonological properties, such as STRENGTH to plan a role in analyses, and TP shuns phonetics in an attempt to build an entirely abstract phonology. All of them are minority approaches in phonology, but they are quite well-known, and are responsible, along with the work discussed in the next section for reinstating this kind of idea into theoretical phonological discussion after its absence in the SGP period.

3.5.5. The 1970s (again), 1980s and early 1990s – Dependency and Government Phonologies

As we saw in §2.1, in current work LENITION is well-and-truly equated with WEAKENING, in theoretical and historical phonology. It is a major concern of phonologists in certain frameworks (currently perhaps mostly in work asso-ciated with Government Phonology). Although the 'natural phonology' movement helped to reinstate WEAKENING into phonology, and picked up the term LENITION, following Martinet's lead, the work discussed in this section also contributed to this process and shares the credit with NP for giving lenition the status and meanings it now has. The situation as we find it today would not be as it is without the work that I discuss here.

Probably the single most important strand of work on these issues, which firmly positioned lenition as a central phonological concern, is that which

grew out of work done in the Dependency Phonology (DP) framework, which also subsequently fed into work in the quite compatible Government Phonology (GP). It also exists in work which mixes aspects of the two and been called the Dependency/Government approach (see, for example, Carr, Durand & Ewen 2005). The foundational work for DP was either done at the University of Edinburgh, or by phonologists who had worked been exposed to the ideas there. This line of work started at around the same time as the 'natural' work discussed in the last section and was influenced by it, as well as by SGP, but it developed into something quite distinctive and novel. The key figures involved are Roger Lass, John Anderson and John Harris.

The first major work in this line was Lass & Anderson (1975), first drafted in 1969-70 and finished after 1972, when both authors were at Edinburgh (Roger Lass, pc, 2006).[18] It is essentially written in the SGP framework, but does not follow the SGP pattern of ignoring LENITION, STRENGTH and WEAKENING. Indeed a whole chapter is devoted to the "Strengthening and weakening of obstruents". The term most frequently used is WEAKENING, which Lass attributes at least in part to the discussion of strength hierarchies in NGP and TP (pc, 2006). Although LENITION is less common in the book, both terms are to refer to the range of processes discussed (which come from a wide range of languages). This may be due to the general equation of the terms in some historical work by this time – both writers being well-versed in things historical. Lass affirms that "as far as I can remember I 'always' knew the word lenition" and Anderson writes that the concept "was familiar to me already as an undergraduate, either as 'lenition' or 'weakening' from the teaching of traditional English and Germanic philology, and particularly in my small acquaintance with Celtic" (both pc, 2006).

This chimes well with our discussion above – WEAKENING is certainly found in English philological work, such as that by Sweet discussed in §3.4.3, and it links back directly to work on Celtic, where LENITION had been a standard term since 1909. Anderson had discussed Celtic issues with specialists at some length and Lass also reckons to have come across the word first in material on Celtic (both pc, 2006). This shows a conspiracy of factors which coalesced to focus their attention on the concept, including the

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[18] Other noteworthy work on lenition from around this time includes Lass (1971) and (1976), showing further Lass' keen interest in the phenomenon. Lass (1976) includes the first characterisation of debuccalisation to [h] as the loss of subsegmental material, an analysis that was to influence DP ideas, and which was picked up by Harris (1990) in his GP analysis (see also Carr & Honeybone, 2007).

possibly independent transfer of the term to general phonology from Celtic studies, but certainly with a historical phonological background in which WEAKENING was a common concept in some terminological traditions, and in which that transfer had been made previously and was thus floating in the phonological aether. However, Anderson explains that in the early 1970s, regardless of whether the connection had been made before, there was not a *widespread* feeling that the practice of using LENITION as a general, non Celtic-specific term was standard. He writes

> ... it was only later that I (at least – Roger may have been more knowledge-able earlier) became aware that there was a general tradition recognizing the term 'lenition'; I think at the time I wasn't aware of it as an accepted general notion, though we started from the assumption that it was general...   John Anderson (pc, 2006)

Clearly, the tradition of recognising LENITION as a general (non-Celtic-specific) process-type, although essentially begun by Martinet, had not been much developed since the 1950s, at least, not in theoretical phonology. The generalisability existed, and was picked up by some (likely by Foley, and James Harris, for example), but it had not become common knowledge. Lass & Anderson were to change this, at least for those familiar with European phonological traditions, with more force than even in the writings of NP. After a consideration of background issues, of the types of processes involved in their broad LENITION/WEAKENING concept (and of case studies from Hungarian, Finnish, Spanish, English, German, Kannada and other languages), they write that

> ... in lenition processes there are two basic options (assuming a hierarchical ranking where we start with a voiceless stop as the strongest type): opening, i.e. progressive continuantization without change of glottal attitude, and sonorization, i.e. voicing and then progressive opening, with increasing output of acoustic energy. The last stage of any lenition is deletion: though this is not to say that all deletion is the result of lenition.
>   Lass & Anderson (1975, 159)

 This is the pretty much the 'contemporary' definition of LENITION that we saw in §2.1. It ties in with the notion of lenition trajectory, and Lass & Anderson consider several of these. For the first time, Lass & Anderson clearly group together a distinct set of processes from a wide range of languages with the claim that they are 'the same' in some sense, in that they are all instantiations of LENITION/WEAKENING. They go on to discuss the role of "[p]referential environments for weakening and strengthening: the concept of
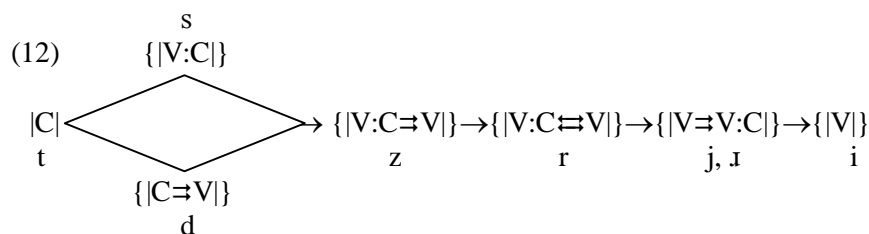
'protection'" (1975, 159) and thus develop a model of strength of type (b,ii,z), tied to lenition trajectories and phonological environments. The trajectories also express strength of type (a,ii,y), because the inherent strength of a stop (which weakens to a fricative, for example) does not provide it with the strength to inhibit the innovation of a process itself.

The discussion in Lass & Anderson (1975) formed the basis of the refined lenition theories presented in Lass (1984) and Anderson & Ewen (1987). By these points, WEAKENING is taking a back seat as a term (although it is certainly still common in the discussion) and LENITION is simply the standard term. A crucial feature of the analyses of lenition presented in these two volumes is that they are articulated in the framework of Dependency Phonology. DP was developed principally by John Anderson at Edinburgh (and also in work by Charles Jones, Colin Ewen, Jacques Durand and Roger Lass). It aimed, since Anderson & Jones (1972), to give a larger role to phonological representation than was foreseen in SGP – syllabic and other prosodic structure is central, as is a sophisticated model of subsegmental structure. This uses privative 'components' to represent the segmental features, and assumes that certain segmental characteristics are the result of the relationships that components can contract, such as a head-dependent relation (where one component governs another) or mutual government.

LENITION does not feature in early discussions of DP (not even in Anderson & Jones 1977), but by 1984 and 1987 the observations on lenition published in 1975 had been built into the theory, as the basis on which a key part of the theory was built – the representation of manner and laryngeal specifications. In this way DP provides a real lenition theory which explains why certain types of process or change are cases of LENITION, and which unifies lenition processes as phonologically the 'same kind of thing'. While there is still talk of the phonetics of LENITION, and reduction in the impedance of airflow through the vocal tract, the outstanding innovation in DP is the way in which LENITION is mirrored in phonological representation.

In DP treatments of LENITION, the same types of data and hierarchies/trajectories as in Anderson & Lass (1975) are assumed. The most intricate of these is that from Lass 1984, which has already been reproduced here as (2), above. Essentially the same type of strength is assumed in DP work as was assumed in 1975, with positional factors, inhibition and diachronic evidence, but, because the analyses are in DP, a different interpretation and analysis is given. We need not investigate all the details of DP representations here, but we must get a flavour of the argumentation and type of analysis offered for LENITION in DP.

Some aspects of the general theory of DP are necessary in order to be able to interpret the DP lenition position. These are that the components |C| and |V| determine both the manner and voicing of segments, that {|C|} is essentially the full representation for 'voiceless plosive', that {|V|} is the full representation for 'vowel' and that {|V:C|}, with mutual dependency between the two components in the segment is the full representation for 'voiceless fricative' (two-headed arrows also show mutual dependency). The relation of dependency further allows for {|C⇛V|} as the representation for 'voiced plosive', where |C| governs |V|, and {|V:C⇛V|} as the representation for 'voiced fricative', where |V:C| governs a further |V|. This allows Anderson & Ewen (1987, 176) to characterise many of the steps down lenition trajectories as shown in (12). This gives the DP representation for the *types* of segments involved, to which I have added an example of such segments at coronal place of articulation (which would be represented in DP using further components in a separate 'gesture').

(12)

$$\begin{array}{c} \text{s} \\ \{|V{:}C|\} \\ |C| \underset{\{|C{\Rrightarrow}V|\}}{\overset{}{\diamondsuit}} \rightarrow \{|V{:}C{\Rrightarrow}V|\} \rightarrow \{|V{:}C{\leftrightarrows}V|\} \rightarrow \{|V{\Rrightarrow}V{:}C|\} \rightarrow \{|V|\} \\ \text{t} \qquad\quad\ \ \text{z} \qquad\quad\ \text{r} \qquad\quad \text{j, ɹ} \qquad\quad \text{i} \\ \text{d} \end{array}$$

The crucial point here is that these types of representations allow an "interpretation of lenition as a shift towards |V|" (Anderson & Ewen 1987, 176). What this means is that every type of lenition considered involves the increase in the importance of the |V| component in the structure of the segment (from being entirely absent, to dependent status, to increased preponderance as a dependent, to head of a segment, to being the only component in the relevant gesture). Or, as Lass (1984) puts in:

> ... these characterizations give us a ways of explicating lenition in terms of something rather more precise (if at the same time more complex and abstract than the 'resistance to airflow' criterion suggested earlier. The two end-points of the scale are maximal |V|, |C|; and lenition is the increase in |V|-prominence (whether as periodic vocal-fold output or turbulence with some degree of formant structure) – as well as the demotion und ultimate deletion of |C|.

<div align="center">Lass (1984, 283)</div>

This characterisation does not quite characterise all types of LENITION. Perhaps most notably, it omits debuccalisation to [h]. Lass (1984, 291, slightly adapted) proposes the characterisation for debuccalisation given in (13), as part of an aspiration/spirantisation trajectory (which forms the top line of the trajectory in (2)).

(13)   k   →   kʰ   →   x   →   h
     {|C⇉O|}   {|O⇉C|}   {|O⇉V:C|}   {|O⇉V|}

This mixes |V|-increase and |C|-decrease with a rise to dominance of |O|. This component represents 'glottal opening' and, on its own, represents /h/, when only accompanied by a dependent |V| (on the understanding that "every [oral] segment has a |C| component; |V| is articulated only if it governs |O|" (Lass 1984, 292) so that all of the forms in (12) would actually also have |O| in their makeup). Although the introduction of |O| complicates matters, the change from /x/ to /h/ is still represented as an increase in the prominence of |V| and a decrease in the prominence of |C|, just with |O| as a governor.

While this is novel work in the area of phonological representation, the importance for our purposes is that it seeks to link the different types of 'lenition processes', as being the 'same kind of thing'. The kind of STRENGTH involved here is type (a,ii,y), and this strength can be defined as 'the prominence of |C|' in a segment's phonological makeup. Also, as positional factors are considered in the model, strength of type (b,ii,z) features in DP discussions of LENITION. The DP work on the issue is this highly likely to influence those who read it to recognise LENITION as a real phenomenon, whether they accept the DP representations or not. Lass (1984) is a textbook on phonology, and a widely-read one at that, and LENITION crops up in several places, so the influence of the types of ideas discussed here, developed in a DP-atmosphere in the 1970s and 80s was able to be quite considerable.

At this point in the history of phonological theory, then, the concept (or set of concepts) that had long been recognised as WEAKENING in certain traditions of historical phonology, and that had previously (and partially concurrently) been merged with LENITION in some work, such as that of Martinet, Donegan & Stampe and Foley, has been taken and turned into a central aspect of phonological theory, which everyone should at least know about. By the end of the 'classic' DP period, LENITION has become a standard term in the discourse of theoretical phonology; it includes the standard set of processes that have been part of our basis of definition of the term throughout this article. The work discussed in this and the previous section

cemented the notion as a standard phonological concept on both sides of the Atlantic. We have thus practically reached the present, with the current context almost established for both the casual use of the term to describe certain types of processes and for the type of 'lenition studies' that exists today, where lenition or weakening can be the central focus of detailed studies (such as Kirchner 1998, Szigetvàri 1999, Lavoie 2000, Honeybone 2002).

One phonologist who was familiar with DP, as he had studied at Edinburgh when these ideas were being developed, is John Harris. His work is the last to be considered here, and will leave us in the mid-nineties, the start of the phonological present. Harris' work has a role in our discussion because it is the conduit for DP ideas on lenition into a strand of current work on lenition, through a radical revision of the theoretical understanding of lenition, in work which presents what is probably the first fully articulated lenition theory, because it tries to link both the segmental modelling of lenition processes and the phonological environments in which they occur.

Harris (1985), a revised form of his PhD, which had been supervised by Roger Lass (who had also taught Harris phonology at an undergraduate level, John Harris, pc, 2006), is essentially a historical and variationist study, written in a largely standard rule-orientated approach. A whole chapter, however, focuses on issues of STRENGTH, WEAKENING and LENITION, providing a detailed discussion of fundamental issues. Harris adopts certain ideas from Lass & Anderson (1975), but the data discussed in most of the volume is rather different to what they consider to be lenition. Nonetheless, Harris does write that, for example, "/t/ is spirantised in word-final position, a process that would in phonetic terms be regarded as lenition" (1985, 78-79). It is clear that he is already influenced by the DP line of work on lenition, and the idea, so prevalent in it, that LENITION / WEAKENING 'exists' as a standard facet of phonology with a unity among its diverse process types.

The most influential work by Harris in this area is the lenition theory developed in Harris (1990, 1994, 1997) and Harris & Lindsey (1995), couched in the Government Phonology framework. The early work of the originators of GP, such as Kaye, Lowenstamm & Vergnaud (1985, 1990) did not feature discussion of lenition, but since Harris' work, lenition phenomena have become one of the most commonly considered phenomena in GP.

Harris (1990) uses LENITION as the standard term to describe the processes that he deals with (which include spirantisation, approximantisation and debuccalisation, and in later work also a range of others, such as depalatalisation and deaspiration), although this is freely mixed with descriptions of the processes as WEAKENING and 'reduction'. Although his analysis is

quite different, Harris cites Anderson & Ewen (1987) and Lass & Anderson (1975) at several points, for example writing that

> The analysis of spirantisation being proposed here is thus very much in the spirit of Lass & Anderson's (1975: 154) treatment of the phenomenon. They characterise spirantisation as the extension of the fricative release phase into the closure phase of a plosive.
>
> <div align="center">Harris (1990, 269)</div>

In general, though, Harris' model is quite different from that of DP (apart from the lead that it received from Lass 1976, described in note 19, above). Harris developed a generalised characterisation of LENITION as the loss of subsegmental material. Harris' model relies on the GP theory of segmental phonology, which is constructed around 'elements'. These are privative, like DP's components, but are 'larger' than the latter, and are interpretable by themselves, such that segments may consist of only one element (or may be made up of two, three or more elements). He writes that

> ...under an element-based analysis, lenition is defined quite simply as any process which involves a reduction in the complexity of a segment. Complexity is directly calculable in terms of the number of elements of which a segment is composed.
>
> <div align="center">Harris (1990, 265)</div>

Again, we cannot consider all the details of Harris' theory (or its development in subsequent publications), but the basics of his approach are shown in (14), from Harris (1990, 269, slightly adapted). This gives the subsegmental representations for /t/, /s/ and /h/ and shows how a minimal lenition trajectory featuring spirantisation, debuccalisation and deletion is represented as multiple occurrences of the same type of process – element loss (or 'element suppression'). In these representations, the element (h) represents 'noise' and hence is present in all obstruents; by itself, it is interpreted as [h]. The element (ʔ) is interpreted as 'occlusion', and by itself is interpreted as [ʔ]. The element (R) represents 'coronality' (other elements provide other places of articulation).[19] When all three occur together, they are interpreted as /t/, and, naturally enough, (R) and (h) make up /s/.

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[19] The element (R) by itself is interpreted by Harris as [ɾ], and this allows him to characterise the tapping of /t/ as element loss, too, (where (h) and (ʔ) are lost) and hence, as lenition, on an alternative lenition trajectory for /t/ (and /d/). Equally, glottalling of /t/ to [ʔ] is also assumed by Harris to be element loss, where /t/ loses (h) and (R), providing a third trajectory from /t/ (see especially Harris 1994).

```
(14)   t  →  s  →  h  →  ø
       x     x     x      (x)
       |     |     |
       h     h     h
       |     |
       R     R
       |
       ?
```
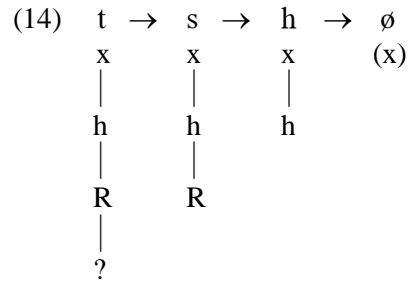
In Harris' model of lenition, phonological STRENGTH is thus interpreted simply as the number of elements that a segment has (its 'complexity'). Like the DP conception, this is strength of type (a,ii,y) – there is no notion that a lack of elements makes a segment more likely to lenite. Harris also develops a theory of positional strength of type (b,ii,z), which, at its most developed form, in Harris (1997), is called 'licensing inheritance'. We lack the space to focus on this here, but the idea is neatly integrated with his theory of inherent segmental strength, seeking to explain in which environments lenition is predicted and where it is inhibited, by providing a reason for the loss of segmental material. With this, Harris offers the first comprehensive model of lenition in theoretical phonology, providing both a non-arbitrary characterisation of what lenition processes have in common and a causal link between this characterisation and the environments in which lenition is often found.

Harris does not deal with 'voicing', however. Indeed, true voicing cannot be modelled as element loss Harris' model of element theory. Nonetheless, his work has been highly influential in GP and GP-related work, and has placed the study of LENITION at the centre of much such work (also in alternative GP-based lenition theories, as represented in this volume).

With this discussion of Harris' work, we have now reached the mid-1990s, the end point of our survey of phonological history. It is a convenient cut-off point, as it has allowed us to consider the DP and GP work discussed in this section, which leaves us with LENITION firmly established as the standard term of choice to describe a certain set of processes. It has become entirely synonymous with WEAKENING, and is thus freely combined with the discussion of segments' STRENGTH, even if this 'strength' is really just a label given to a particular property of segments, defined by their subsegmental makeup. It is also a convenient point to stop as we have essentially reached the beginning of the phonological present, and the goal of this article is to discuss the usage of LENITION and the concept of lenition in the past.

3.6. Summary: the history of LENITION, WEAKENING and STRENGTH

This section has seen a long journey through the history of phonological theory. We have seen that, while the first occurrence of LENITION came at the end of the 19th century, its contemporary usage and meaning only came into being in the middle of the twentieth century. Furthermore, it relied then on the concepts of WEAKENING and STRENGTH, and also of SOFTENING and *fortis~lenis*, which have much longer roots. These, in turn, grew out of earlier (and *much* earlier) descriptions and comparisons of segments as STRONG and WEAK, or HARD and SOFT, or simply as sets of segments which can be arranged in orders or hierarchies. The placing of segment types in relative positions on a scale in terms of some phonological property goes back to the start of western phonological description, and lives on in the lenition trajectories which are still standardly used in attempts to define the concept.

There is no pre-theoretical *need* to have a concept or word that links spirantisation, approximantisation, changes in laryngeal state and debuccalisation. Indeed, writers such as Whitney do without one, as saw above. The early usages of pairs or sets of comparative terminology that we saw in §3.1, 3.2 and 3.3 does not imply that those authors had a concept of lenition – before historical phonology introduced the notion of the phonological change or process, such writers could not be expected to perceive a unity among lenition processes, of course. Their usages represent only the terminological preliminaries to a theory of lenition (although, as we have seen, they can be interpreted as forming basic theories of phonological strength).

Only once phonologists had reason to perceive a unity among these processes is there any need (or possibility) to have terms which link them, as LENITION now does. Important sets of changes in both Romance and Celtic provided that reason, with sets of changes occurring in the same phonological environments, at around the same time (affecting the same set of consonants). This gave Romance historical phonology the concept of WEAKENING and Celtic historical phonology the concept of LENITION (although this had originally been described using other terms, such as 'aspiration'). As soon as the data from Celtic and Romance were clearly brought together, however, the term LENITION could be transferred from work on Celtic to general phonology. Once LENITION was equated with WEAKENING, the notion of consonantal STRENGTH came with it, and this opened the possibility of theorising over the strength scales which double as lenition trajectories.

All through the life of LENITION, its conceptual cousins STRENGTH and WEAKNESS have remained in use, sometimes in complementary distribution

with LENITION, and, especially latterly, as synonyms. And we should also finally note that although Thurneysen's word has had great success in phonology, in another sense, it has not quite succeeded in what he originally intended for it (at least not in English usage). Thurneysen intended for the term to be used to describe related phenomena in all the Celtic languages. There is another use of LENITION, outside of the usages in phonological theory proper that we considered above – the term is used in Celtic linguistics to refer to their contemporary morpho-syntactico-phonological initial mutations, but not in the terminological traditions of all the Celtic languages. According to the detailed survey in Macaulay (1992), for example, the term is used to describe some of the mutations in Irish, Manx, Scottish Gaelic and Breton, but is not used to describe those of Welsh, even though this was one of the languages ('British') that Thurneysen expressly hoped to be included in the concept when he originally proposed it.

4. Conclusions

If this article is on the right lines, we have seen that it is possible to trace concepts and their related terminology through the history of a discipline such as phonology for quite some time. We cannot expect obvious echoes of contemporary ideas, already linking all the aspects of a concept that we would now connect with it, but we can make out the start of, or the early usage of ideas that would later develop and cohere into what we would now recognise as phonological theory. When the early comparative terminological sets were used there was, obviously, no notion that they would morph into the contemporary concepts that we call LENITION, and we should not read into them more than their authors intended, but we may consider their unintended subsequent developments. Equally, we can recognise where early, only vaguely enunciated ideas provide forerunners of contemporary heavily theorised concepts.

It is perhaps not straightforward to trace concepts and the words used to express them through history, and it is quite possible that claims made here will be disproven, as the approach does make predictions: for example it is predicted that no general reference to LENITION should be found with reference to non-Celtic languages before around the 1950s.

Given all this, though, when did the idea start that there is such a thing as lenition? Among other things, §2 shows that the concept of lenition is a complex one: while at heart it simply links certain types of processes, per-

haps with certain types of environments, it is now inextricably linked with notions of phonological strength. As §2.2 shows, there are several ways of interpreting that notion. §3 makes clear that there are several points that could be seen as the 'start' of lenition as a phonological concept, and this is related to fact that the notion is now made up of a constellation of several ideas.

To recapitulate: the first usage of the term LENITION was in 1898 and its locus classicus can probably be safely assigned to 1909. The term and concept are, however, related to the ideas that consonants can be compared in terms of their relative STRENGTH (or 'softness'), an idea that goes back practically as far as it is possible to go in phonology. The notion that some segments are weaker than others was quite probably invented as a technical term on several occasions independently, on phonosemantic grounds, but it is likely that there was cumulativity of a sort, even at early stages in the history of phonology, to the extent that authors knew previous work. This assumption of relative degrees of STRENGTH or softness, in turn, has been related to the idea that consonants can change from stronger to weaker consonants (and indeed, that this is the normal direction of change). And this has often been related to the idea that certain types of consonantal STRENGTH, be it inherent in the segments themselves or inherited from its environment, can inhibit the types of change that are thought to be cases of WEAKENING from affecting the segment in question. When LENITION was born, it covered some of these concepts, but not all of them, and indeed, for about the first half of its life thus far, it was very largely limited in usage to the field of Celtic linguistics. Since the 1950s, and especially since the 1970s, LENITION has spread to take over all of these ideas, and in some phonological frameworks it has become a central and crucial part of the theory. If we so chose, we could probably argue that any of these points represented the start of lenition as an idea in phonology. A more reasonable claim is that all of these points contributed to the development of the concept – some were more important than others, but all can be seen to have played a part.

We have seen that the roots of LENITION run deep. I hope that they will be better understood on the basis of this investigation of where they came from and how they developed.

References

Allen, W.S.
    1953   *Phonetics in Ancient India*. London: Oxford University Press.
    1981   The Greek contribution to the history of phonetics. In *Towards a History of Phonetics*; R.E. Asher and J.A. Henderson (eds.), 115-122. Edinburgh: Edinburgh University Press.
Altedo, Parisius de
    1297   *Tractatus Orthographie*.
Andersen, Henning
    1969   Lenition in Common Slavic. *Language* 45: 553-574.
    1982   Jakob Hornemann Bredsdorff, 'On the Causes of Linguistic Change'. English translation with commentary and an essay on J. H. Bredsdorff. *Historiographia Linguistica* 9: 1-41.
Anderson, John and Derek Britton
    1999   The orthography and phonology of the Ormulum. *English Language and Linguistics* 3: 299-334.
Anderson, John and Colin Ewen
    1987   *Principles of Dependency Phonology*. Cambridge: Cambridge University Press.
Anderson, John and Charles Jones
    1972   Three theses concerning phonological representations. *Edinburgh Working Papers in Linguistics* 1: 92-115.
    1977   *Phonological Structure and the History of English*. Amsterdam: North-Holland.
Anderson, Stephen
    1985   *Phonology in the Twentieth Century: Theories of Rules and Theories of Representations*. Chicago: University of Chicago Press.
Andresen, Karl
    1865   *Register zu Jacob Grimms Deutscher Grammatik*. Göttingen: Dieterichsche Buchhandlung.
Arens, Hans
    1955   *Sprachwissenschaft: der Gang ihrer Entwicklung von der Antike bis zur Gegenwart*. Freiburg and Munich: Karl Alber.
Ashby, Michael and John Maidment
    2005   *Introducing Phonetic Science*. Cambridge: Cambridge University Press.
Asher, R.E. (ed.)
    1994   *The Encyclopedia of Language and Linguistics*. Oxford and New York: Pergamon Press.
Bacon, Roger

13thC   *Greek Grammar.*

Bauer, Laurie
1988   What is lenition? *Journal of Linguistics* 24: 381-392.

Bell, Alexander Melville
1867   *Visible Speech: the Science of Universal Alphabetics*. London: Simpkin, Marshall and Co.

Bermúdez-Otero, Ricardo and Patrick Honeybone
2006   Phonology and syntax: a shifting relationship. *Lingua* 116: 543-561.

Berthon, Henry and Vivian Starkey
1908   *Tables synoptiques de phonologie de l'ancien français*. Oxford : Clarendon Press

Blass, Friedrich
1890   *Ausführliche Grammatik der griechischen Sprache. Volume 1: Elementar- und Formenlehr*e. Third, revised edition, original edition by Raphael Kühner (1834-35). Hannover: Hahnsche Buchhandlung.

Bloomfield, Leonard
1933   *Language*. New York: Holt.

Bosworth, Joseph
1823   *Elements of Anglo-Saxon Grammar*. London: Harding, Mavor and Lepard.

Braun, Angelika
1988   *Zum Merkmal "Fortis/Lenis": phonologische Betrachtungen und instrumentalphonetische Untersuchungen an einem mittelhessichen Dialekt*. Zeitschrift für Dialektologie und Linguistik Beiheft 55. Stuttgart: Franz Steiner.

Bredsdorff, Jakob
1821   *On the Causes of Linguistic Change*. Copenhagen. English translation in Andersen (1982).

Brown, Gillian
1972   *Phonological Rules and Dialect Variation: a Study of the Phonology of Lumasaaba*. Cambridge: Cambridge University Press.

Brugmann, Karl
1897   *Einleitung und Lautlehre*. First volume of the *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen* (Brugmann, Karl and Delbrück, Berthold). Second edition. Straßburg: Karl Trübner.

Campbell, Lyle
1998   *Historical Linguistics: an Introduction*. Edinburgh: Edinburgh University Press.

Carr, Philip
1993   *Phonology*. London: Macmillan.

Carr, Philip, Jacques Durand and Colin Ewen

2005   Introduction: the Structure of Phonological Representations. In *Headhood, Elements, Specification and Contrastivity: Phonological Papers in Honour of John Anderson*; Philip Carr, Jacques Durand and Colin Ewen (eds.), 1-13. Amsterdam: John Benjamins,

Carr, Philip and Patrick Honeybone

2007   English phonology and linguistic theory: an introduction to issues, and to Issues in English Phonology. *Language Sciences* 29: 117-153.

Chomsky, Noam and Morris Halle

1968   *The Sound Pattern of English*. New York: Harper and Row.

Cohen, V.B.

1971   Foleyology. *Chicago Linguistic Society* 7: 316-322.

Corssen, Wilhelm

1858   *Über Aussprache, Vokalismus und Betonung der lateinischen Sprache*. Leipzig: B.G. Teubner.

Crystal, David

2003   *A Dictionary of Linguistics and Phonetics*. Fifth edition. Oxford: Blackwell.

Cser, András

2003   *The Typology and Modelling of Obstruent Lenition and Fortition Processes*. Budapest: Akadémiai Kiadó.

Danielsson, Bror

1963   *John Hart's works on English orthography and pronunciation, 1551, 1569, 1570: Part II, phonology*. Uppsala: Almqvist and Wiksell.

Donegan, Patricia and David Stampe

1979   The study of Natural Phonology. In *Current Approaches to Phonological Theory*; Daniel Dinnsen (ed.), 126-173. Bloomington: Indiana University Press.

Dressler, Wolfgang

1985   *Morphonology: the Dynamics of Derivation*. Ann Arbor: Karoma.

Ellis, Alexander John

1869-99   *On Early English Pronunciation, with Especial Reference to Shakspere and Chaucer*. Five volumes. London: Trübner.

Escure, Geneviève

1977   Hierarchies and phonological weakening. *Lingua* 43: 55-64.

Ewen, Colin and Harry van der Hulst

2001   *The Phonological Structure of Words: an Introduction*. Cambridge: Cambridge University Press.

Foley, James

1970   Phonological distinctive features. *Folia Linguistica* 4: 87‐92.

1977   *Foundations of Theoretical Phonology*. Cambridge: Cambridge University Press.

Fónagy, Ivan

1963   *Die Metaphern in der Phonetik*. The Hague: Mouton.

1979   *La métaphore en phonétique*. Ottawa: Didier.

Fourquet, Jean

1948   *Les mutations consonantiques du Germanique: essai de position des pròblemes*. Paris: Belles Lettres.

Fromkin, Victoria and Peter Ladefoged

1981   Early views of distinctive features. In *Towards a History of Phonetics*; R.E. Asher and J.A. Henderson (eds.), 3-8. Edinburgh: Edinburgh University Press.

Fudge, Erik

1994   Natural Phonology. In *Encyclopedia of Language and Linguistics*; R.E. Asher (ed.), 2761-2763. Oxford: Pergamon Press.

Gébelin, Antione Court de

1775-81   *Monde primitif, analysé et comparé avec le monde moderne consideré dans l'histoire naturelle del la parole, our origine du langage et de l'écriture*. Paris.

Goldsmith, John and Bernard Laks

to appear   Generative phonology: its origins, its principles, and its successors. In *The Cambridge History of Linguistics*; Linda Waugh and John Joseph (eds), 21pp. Cambridge: Cambridge University Press.

Götzsche, Hans

2005   Roman Jakobson. In *Key Thinkers in Linguistics and the Philosophy of Language*; Siobhan Chapman and Christopher Routledge (eds.), 139-147. Edinburgh: Edinburgh University Press.

Grammont, Maurice

1895   *La dissimilation consonantique dans les langues indo-européennes et dans les langues romanes*. Dijon: Darrantière.

1933   *Traité de phonetique*. Paris: Delagrave.

1950   *Traité de phonetique*. Fourth Edition. Paris: Delagrave.

Grimm, Jacob

1819-37   *Deutsche Grammatik*. 4 volumes. Göttingen: Dieterichsche Buchhandlung.

Grotsch, Klaus

1989   Some Remarks on the Origin of 'Assimilation' and 'Dissimilation' in Linguistic Terminology. *Historiographia Linguistica* 16: 49-60.

Gussmann, Edmund

2002   *Phonology: Analysis and Theory*. Cambridge: Cambridge University Press.

Halle, Morris

1959   *The Sound Pattern of Russian*. The Hague: Mouton.

2005   Palatalization/Velar Softening: what it is and what it tells us about the nature of language. *Linguistic Inquiry* 36: 23-41.

Harris, James
  1969   *Spanish Phonology*. Cambridge, Mass: MIT Press.
Harris, John
  1985   *Phonological Variation and Change*. Cambridge: Cambridge University Press.
  1990   Segmental complexity and phonological government. *Phonology* 7: 255-300.
  1994   *English Sound Structure*. Oxford: Blackwell.
  1997   Licensing Inheritance: an integrated theory of neutralisation. *Phonology* 14: 315-370.
Harris, John and Geoff Lindsey
  1995   The elements of phonological representation. In *Frontiers in Phonology*, Jacques Durand and Francis Katamba (eds.), 34-79. London: Longman.
Hart, John
  1569   *An Orthographie: Conteyning the Due Order and Reason, howe to Write or Paint Thimage of Mannes Voice, Most Like to the Life or Nature*. London: William Seres.
Haugen, Einar
  1972   *First Grammatical Treatise: the Earliest Germanic Phonology. An Edition, Translation and Commentary*. Second edition. London: Longman.
Hirt, Herman
  1928   *Indogermanische Grammatik. Part Four: Doppelung, Zusammensetzung, Verbum*. Heidelberg: Winter.
Hock, Hans Henrich
  1991   *Principles of Historical Linguistics*. Second edition. Berlin: Mouton de Gruyter.
Hock, Hans Henrich and Brian Joseph
  1996   *Language History, Language Change and Language Relationship*. Berlin: Mouton de Gruyter.
Hockett Charles
  1955   *A Manual of Phonology*. Baltimore: Waverley Press.
Hoenigswald, Henry
  1978   The annus mirabilis 1876 and posterity. *Transactions of the Philological Society* 1978: 17-35.
Holt, Robert
  1878   *The Ormulum*. Oxford: Clarendon Press.
Honeybone, Patrick
  2002   Germanic Obstruent Lenition: some mutual implications of theoretical and historical phonology. Ph.D dissertation, University of Newcastle upon Tyne.

2005   Karl Brugmann. In *Key Thinkers in Linguistics and the Philosophy of Language*; Siobhan Chapman and Christopher Routledge (eds.), 45-48. Edinburgh: Edinburgh University Press.

to appear   *Sound Change in Germanic: Lenition and Laryngeal Realism.* Oxford: Oxford University Press.

in prep.   *Lenition and Phonological Strength: a History.*

Hooper, Joan

1976   *An Introduction to Natural Generative Phonology.* New York: Academic Press.

Hurch, Bernhard and Richard Rhodes

1996   *Natural Phonology: the State of the Art.* Berlin: Mouton de Gruyter.

Hyman, Larry

1975   *Phonology: Theory and Analysis.* New York: Holt, Rinehart and Winston.

Ickelsamer, Valentin

1534   *Ein Teütsche Grammatica.* Edition of 1534 reproduced in *Vier seltene Schriften des sechzehnten Jahrhundert*; Fechner, Heinrich (ed.) 1882. Berlin: Wiegandt und Grieben.

Jakobson, Roman.

1949.   On the identification of phonemic entities. *Travaux du Cercle Linguistique de Copenhague* 5: 205-213. Reprinted in *Roman Jakobson, Selected writings I*, 418-425. Mouton 1962.

Jakobson, Roman and Morris Halle

1956   *Fundamentals of Language.* The Hague: Mouton

Jankowsky, Kurt

1999   Sound physiology in the making: on the role of Henry Sweet (1845–1912) and Eduard Sievers (1850–1932) in the development of linguistic science. In *The Emergence of the Modern Language Sciences*; Embleton, Sheila, John Joseph and Hans-Josef Niederehe (eds.), 77-91. Amsterdam: Benjamins.

Jaskuła, Krzysztof

this volume   The origins of Celtic lenition. In *Lenition and Fortition*, Joaquim Brandão de Carvalho, Tobias Scheer & Philippe Ségéral (eds). Berlin: Mouton de Gruyter.

Jeffers, Robert and Ilse Lehiste

1979   *Principles and Methods for Historical Linguistics.* Cambridge, Mass: MIT Press.

Jellinghaus, Hermann

1877   *Westfälische Grammatik: die Laute und Flexionen der ravensbergischen Mundart.* Bremen: Kühtmann.

Jespersen, Otto

1913   *Lehrbuch der Phonetik.* Leipzig/Berlin: Teubner.

Kaye, Jonathan, Jean Lowenstamm and Jean-Roger Vergnaud
  1985   The internal structure of phonological representations: a theory of charm and government. *Phonology Yearbook* 2: 305-328.
  1990   Constituent structure and government in phonology. *Phonology* 7: 193-231.
Kempelen, Wolfgang von
  1791   *Mechanismus der menschlichen Sprache nebst Beschreibung einer sprechenden Maschine.* Vienna: Degen.
Kenstowicz, Michael
  1994   Phonology in Generative Grammar. Cambridge, MA: Blackwell.
  2006   Generative Phonology. In *The Encyclopedia of Language and Linguistics.* Second edition; Keith Brown (ed.), volume 5, 1-9. Amsterdam and Boston: Elsevier.
Kenstowicz, Michael and Charles Kisseberth
  1979   *Generative Phonology.* San Diego: Academic Press.
Kirchner, Robert
  1998   An Effort-Based Approach to Consonant Lenition. Ph.D dissertation, University of California, Los Angeles.
Koerner, E.F.K.
  2002   *Toward a History of American linguistics.* London: Routledge.
Kohler, Klaus
  1984   Phonetic explanation in phonology: the feature fortis/lenis. *Phonetica* 41: 150-174.
Kristo, Laszlo
  this volume   Slavonic. In *Lenition and Fortition,* Joaquim Brandão de Carvalho, Tobias Scheer & Philippe Ségéral (eds). Berlin: Mouton de Gruyter.
Ladd, D. Robert
  1996   *Intonational Phonology.* Cambridge: Cambridge University Press.
Ladefoged, Peter
  1975   *A Course in Phonetics.* New York: Harcourt, Brace and Jovanovich.
Lass, Roger
  1971   Boundaries as obstruents: Old English voicing assimilation and universal strength hierarchies. *Journal of Linguistics* 7: 15-30.
  1976   *English Phonology and Phonological Theory.* Cambridge: Cambridge University Press.
  1984   *Phonology: an Introduction to Basic Concepts.* Cambridge: Cambridge University Press.
Lass, Roger and John Anderson
  1975   *Old English Phonology.* Cambridge: Cambridge University Press.
Lavoie, Lisa
  2000   Phonological Patterns and Phonetic Manifestations of Consonantal Weakening. Ph.D dissertation, Cornell University. Published in 2001 as

   Consonantal Strength: Phonological Patterns and Phonetic Manifesta-tions. New York: Garland.

Lázaro Carreter, Fernando
  1953 *Diccionario de Terminos Filologicos*. Madrid: Editorial Gredos.

Lepschy, Giulio (ed.)
  1998 *History of Linguistics, volume three: Renaissance and Early Modern Linguistics*. London: Longman.

Lessiak, Primus
  1933 *Beiträge zur Geschichte des deutschen Konsonantismus*. Brünn: Rohrer.

Lewis, Charlton and Charles Short
  1879 *A Latin Dictionary*. Oxford : Clarendon Press

Marouzeau, Jules
  1933 *Lexique de la terminologie linguistique*. Paris: Geuthner.
  1951 *Lexique de la terminologie linguistique: français, allemand, anglais, italien*. Paris: Geuthner.

Martinet, André
  1949 Occlusives and affricates, with reference to some problems in Romance phonology. *Word* 5: 116-22.
  1952 Celtic lenition and Western Romance consonants. *Language* 28: 192-217.
  1955 *Économie des changements phonétiques*. Berne: Francke.

Mascaró, Joan
  1984 Continuant spreading in Basque, Catalan, and Spanish. In *Language Sound Structure*; Mark Aronoff and Richard Oehrle (eds.), 287-98. Cambridge, Mass: MIT Press.

McLelland, Nicola
  2006 Letters, sounds and shapes: reflections on the sounds of German in Early Modern linguistic awareness. *Transactions of the Philological Society* 104: 229-258.

Morpurgo Davies, Anna
  1998 *History of Linguistics, volume four: Nineteenth-Century Linguistics*. London: Longman.

Morris Jones, John
  1913 *A Welsh Grammar, Historical and Comparative: Phonology and Accidence*. Oxford: Clarendon Press.

Mulcaster, Richard
  1582 *The First Part of the Elementarie Which Entreateth Chieflie of the Right Writing of our English Tung*. London: Vautroullier.

Murray, Robert.
  1988 *Phonological Strength and Early Germanic Syllable Structure*. Munich: Fink.

Nyrop, Kristoffer

1899   *Grammaire historique de la langue française*. Copenhagen: Bojesen.

Ó Dochartaigh, Cathair

1980   Aspects of Celtic lenition. In *Studies in dependency phonology*: *Ludwigsburg Studies in Language and Linguistics* 4; John Anderson and Colin Ewen (eds.), 103-37. Ludwigsburg: Ludwigsburg Studies in Language and Linguistics

Odden, David

2005   *Introducing Phonology*. Cambridge: Cambridge University Press.

Oxford English Dictionary

2006 (accessed) www.oed.com. Oxford: Oxford University Press.

Passy Paul

1890   *Étude sur les changements phonétiques*. Paris: Firmin-Didot.

Paul, Hermann

[1880]   *Prinzipien der Sprachgeschichte*. Fifth edition, 1920. Tübingen: Niemeyer.

Pedersen, Holger

1897   *Aspirationen i irsk: en sproghistorisk undersøgelse*. Leipzig: Spirgatis.

1909   *Vergleichende Grammatik der keltischen Sprachen*. Göttingen: Vandenhoeck and Ruprecht.

Pei, Mario and Frank Gayner

1954   *A Dictionary of Linguistics*. New York: Philosophical Library.

Peile, John

1875   *An Introduction to Greek and Latin Etymology*. Second edition (first edition 1869). London: Macmillan.

Pike, Kenneth

1943   *Phonetics: a Critical Analysis of Phonetic Theory and a Technic for the Practical Description of Sounds*. Ann Arbor: University of Michigan Press

Posner, Rebecca

1961   *Consonantal Dissimilation in the Romance Languages*. Oxford: Blackwell for the Philological Society.

Rask, Rasmus

1818   *Undersøgelse om det gamle Nordiske eller Islandske Sprogs Oprindelse*. Copenhagen: Gyldendal.

Robins, R.H.

1967   *A Short History of Linguistics*. London: Longman.

1990   *A Short History of Linguistics*. Third edition. London: Longman.

Rumpelt, H.B.

1869   *Das natürliche System der Sprachlaute und sein Verhältnis zu den wichtigsten Cultursprachen, mit besonderer Rücksicht auf deutsche Grammatik und Ortographie*. Halle: Buchhandlung des Waisenhauses.

Schane, Sanford

1968 *French Phonology and Morphology*. Cambridge, Mass: MIT Press.

1973 *Generative phonology*. Englewood Cliffs: Prentice-Hall.

Schottel, J. G.

1663 *Ausführliche Arbeit von der Teutschen Haubt-Sprache*. Braunschweig.

Ségéral, Philippe and Tobias Scheer

2001 La Coda-Miroir. *Bulletin de la Société de Linguistique de Paris* 96: 107-152. English version 'The Coda Mirror' available at www.unice.fr/dsl/tobweb/papers.htm. See also Ségéral, Philippe and Tobias Scheer (this volume) The Coda Mirror completed.

this volume Positional factors in Lenition and Fortition. In *Lenition and Fortition,* Joaquim Brandão de Carvalho, Tobias Scheer & Philippe Ségéral (eds). Berlin: Mouton de Gruyter.

Sievers, Eduard

1876 *Grundzüge der Lautphysiologie zur Einführung in das Studium der Lautlehre der indogermanischen Sprachen*. Leipzig: Beitkopf und Härtel.

1885 *Grundzüge der phonetik zur Einführung in das Studium der Lautlehre der indogermanischen Sprachen*. Third edition. Leipzig: Beitkopf und Härtel.

1901 *Grundzüge der phonetik zur Einführung in das Studium der Lautlehre der indogermanischen Sprachen*. Fifth edition. Leipzig: Beitkopf und Härtel.

Sigurd, Bengt

1955 Rank order of consonants established by distributional criteria. *Studia Linguistica* 9: 8-20.

Smith, Thomas

1568 *De recta et emendata linguæ Anglicæ scriptione, dialogus*. Paris.

Sommerstein, Alan

1977 *Modern Phonology*. London: Arnold.

Stampe, David

1973 A dissertation on natural phonology. Ph.D dissertation, University of Chicago.

1979 A dissertation on natural phonology. New York: Garland.

Sweet, Henry

1877 *A Handbook of Phonetics: Including a Popular Exposition of the Principles of Spelling Reform*. Oxford: Clarendon Press.

1888 *A History of English Sounds from the Earliest Period*. Oxford: Clarendon Press.

1900 *A New English Grammar: Logical and Historical*. Part one. Oxford: Clarendon Press.

Tavoni, Mirko

1998 Western Europe. In *History of Linguistics: volume III, Renaissance and Early Modern Linguistics*; Giulio Lepschy (ed.), 2-108. English translation of 1992 original. London: Longman.

Thurneysen, Rudolf

1898 Review of Pedersen (1897). *Anzeiger für indogermanische Sprach- und Altertumskunde. Beiblatt zu den Indogermanischen Forschungen* 9: 42-48.

1909 *Handbuch des Alt-Irischen*. Part 1: Grammar. Hedelberg: Winter.

Trask, R.L.

1996 *A Dictionary of Phonetics and Phonology*. London: Routledge.

2000 *The Dictionary of Historical and Comparative Linguistics*. Edinburgh: Edinburgh University Press.

Trautmann, Moritz

1884-86 *Die Sprachlaute im Allegmeinen und die Laute des Englischen, Französischen und Deutschen im Besonderen*. Leipzig: Fock.

Trubetzkoy, N.S.

1939 *Grundzüge der Phonologie*. Travaux du cercle linguistique de Prague 7. English translation by Christiane Baltaxe, 1969, *Principles of Phonology*. Berkeley: University of California Press.

Vendryes, Joseph

1908 *Grammaire du vieil-irlandais: phonétique-morphologie-syntaxe*. Paris: Guilmoto.

Vennemann, Theo

1972 On the theory of syllabic phonology. *Linguistische Berichte* 18: 1-18.

Viëtor, Wilhelm

1898 *Elemente der Phonetik des Deutschen, Englischen und Französischen*. Fourth edition. Leipzig: Reisland.

Vineis, Edoardo

1994 Linguistics and Grammar. In *History of Linguistics: volume II, Classical and Medieval Linguistics*, Giulio Lepschy (ed.), 136-272. English translation of 1990 original. London: Longman.

Wartburg, Walther von,

1934 *Evolution et structure de la langue française*. Leipzig: Teubner.

Waterman, John

1963 *Perspectives in Linguistics*. Chicago: University of Chicago Press.

Whitney, William

1875 *The Life and Growth of Language*. New York and London: Appleton.

1884 *Language and the Study of Language: Twelve Lectures on the Principles of Linguistic Science*. London: Trübner.

Winteler, Jost

1876 *Die Kerenzer Mundart des Kantons Glarus in ihren Grundzügen dargestellt*. Leipzig: Winter.

Zeuss, Johann Kaspar

    1853   *Grammatica Celtica*. Leipzig

Zwirner, Eberhard and Kurt Zwirner

    1982   Grundfragen der phonometrischen Linguistik. Third edition. Basel: Karger.