Chapter 4: Sound change

> Etymology is a science in which consonants count for little,
> and vowels, for nothing at all.
> (Statement attributed to Voltaire, probably apocryphal.)

> Sound change, in so far as it takes place mechanically, takes place
> according to laws that admit no exceptions.
> (Osthoff and Brugmann, 1878)

1 Introduction

The early days of comparative Indo-European linguistics concentrated heavily on studying the similarities and differences in word structure in the Indo-European languages. This line of investigation was a continuation of earlier scholarship which predated comparative Indo-European linguistics. Special attention was given to attempts to derive all noun and verb endings from earlier independent words which were said to have fused with the preceding noun and verb stems. For instance, the *-s-* appearing in forms like Gk. *lū́-s-ō* 'I will loosen', a marker of future tense, was claimed to be related to the *s* of the root *es-* 'be'. Similarly, the *-dēdun* of the Gothic past tense (as in *nasidēdun* 'they saved') was considered to derive from the root underlying modern Engl. *do*. Some of the proposed ideas have some merit, such as the derivation of *-dēdun;* but even this is still controversial. Many other ideas turned out to be premature and, in hindsight, naive.

They were naive especially because they were proposed without a proper understanding of linguistic change, particularly of the way in which sound change operates.

2 Grimm's Law

A major breakthrough in comparative Indo-European linguistics came when the Danish scholar Rasmus Rask and, following him, the German linguist Jacob Grimm, began to take a closer look at the relationship between the Germanic languages and the rest of Indo-European. Recall that William Jones, in his famous pronouncement of 1786, had hedged his bets as to whether Germanic (designated by the term Gothick) was related to Sanskrit or not:

https://doi.org/10.1515/9783110613285-004

> ... there is a similar reason, though not quite so forcible, for supposing that ... the Gothick ..., though blended with a very different idiom, had the same origin with the Sanscrit ...

Jones's reason was that Germanic looked very different from the classical languages, Greek, Latin, and Sanskrit, especially in the way it was pronounced. For instance, where the classical languages had voiced stops, as in Gk. *é**d**omai*, Lat. *e**d**ō*, Skt. *á**d**mi* 'eat', the Germanic languages had voiceless ones, as in Engl. *ea**t***, Goth. *i**t**an*, or even sibilants, as in Germ. *e**ss**en*. At the same time, some Germanic words seemed to preserve the voiced stops of the other Indo-European languages, such as Engl. ***d**ay*, corresponding to Lat. ***d**ies* 'day'; but again, German differed by offering a voiceless stop in its cognate, ***T**ag* 'day'. It was perhaps this inconsistency in the way Germanic corresponded to the classical Indo-European languages that led Jones to talk about Germanic being "blended with a very different idiom".

The purpose of Rask's and Grimm's work was to elucidate more clearly the relationship between Germanic and the classical Indo-European languages and to show that Germanic was in fact part of the Indo-European language family. To this end, Rask and Grimm conducted thorough investigations into the nature of precisely those aspects which appeared to make Germanic quite "alien", namely the differences in pronunciation.

The result of the work, published in 1818 and 1819, was twofold. First, the work succeeded in establishing once and for all that the Germanic languages are part of Indo-European. Secondly, it did so by providing a brilliant account for the differences between Germanic and the classical languages in terms of a set of amazingly systematic SOUND CHANGES, and a similar set of sound changes differentiating German from the rest of Germanic.

To simplify matters, let us concentrate on the sound changes differentiating all of Germanic from the rest of Indo-European. The discovery of this set of systematic changes has been so influential in the development of historical linguistics that the name soon attached to it, GRIMM'S LAW, has become a stock expression for everyone interested in language change and linguistic relationship. The name actually is a misnomer. The credit for discovering the systematic correspondences between Germanic and the classical languages must go to Rask. However, Grimm was so successful in formulating the changes – and in marketing them – that he received the recognition of having the "law" named after him, at least outside the German-speaking countries. (Note expressions like *Grimm's Law*, Fr. *le loi de Grimm*.) In German, the law is more commonly known as the (First) Germanic Sound Shift to distinguish it from a similar wholesale remaking of the Germanic stop system in Old High German, often referred to as the Second or High German Sound Shift (for which see Chapter 11, § 5).

Having talked so much about Grimm's Law, let us see how it operates. Let us begin with a brief look at the differences between Germanic, represented here by Gothic and Old English, and the classical Indo-European languages, concentrating on the initial consonants; see example (1). (In some cases, the initial consonant is preceded by a prefixed element. Such elements are put in parentheses.)

(1)

	Classical Indo-European languages			Germanic languages		
	Greek	**Latin**	**Sanskrit**	**Gothic**	**Old English**	
a.	***p***atḗr	***p***ater	***p***itā́	***f***adar	***f***æder	'father'
	treîs	***t***rēs	***t***rayas	***þ***reis	***þ***rī	'three'
	(he-)***k***atón	***c***entum [*k*-]	***ś***atám	***h***und	***h***und	'hundred'
b.	***d***éka	***d***ecem	***d***áśa	***t***aihun	***t***ēon	'ten'
	geúomai	***g***ustus	***ǰ***ōṣ-	***k***iusan	***c***ēosan	'taste, test, choose'
c.	***ph***érō	***f***erō	***bh***arāmi	***b***aira	***b***eoru	'I carry'
	(é-)***th***ē-ka	***f***ē-c-ī	(a-)***dh***ā-m	(ga-)***d***ē-þ-s	***d***ǣd	'put/do; deed'
	kheúō	***f***u-n-d-ō	***h***o-tar-	***g***iutan	***g***ēotan	'pour'

As these examples show, change is not limited to Germanic. Especially in the last three items (set (c)) we notice some major differences between the initial consonants of Greek, Latin, and Sanskrit. Still, the greatest differences separate Germanic from the rest of Indo-European.

Starting with a reconstruction of Proto-Indo-European (PIE) that postulated voiceless stops for set (a), voiced ones for set (b), and voiced aspirated ones for set (c), Grimm accounted for the different look of Germanic by postulating three sweeping and highly systematic sound changes, affecting whole classes of sounds at the same time:

(2) Grimm's Law:
- i. PIE voiceless stops become voiceless fricatives;
- ii. PIE voiced stops become voiceless stops;
- iii PIE voiced aspirates become voiced stops or fricatives (depending on the context in which they occur).

Change (i) accounts for the differences in set (a) of (1) above, e. g. Gk *treîs*, Lat. *trēs*, Skt. *trayas* corresponding to Goth. *þreis*, OE *þrī* 'three'. Change (ii) explains correspondences like Gk. *déka*, Lat. *decem*, Skt. *dáśa* : Goth *taihun*, OE *tēon* 'ten'. And change (iii) derives Goth. *(ga-)dē-þ-s*, OE *dǣd* 'deed' from the PIE root **dhē* 'put, make' underlying Gk. *(é-)thē-ka*, Lat. *fē-c-ī*, Skt. *(a-)dhā-m*.

What is especially remarkable is that these changes apply not just to a few words. Their effects recur in hundreds of other words. Grimm's Law, thus, is not only phonetically highly systematic, by affecting all classes of stop consonants, but it also is lexically systematic, by applying to so many words.

This dual systematicity greatly impressed other Indo-Europeanists and inspired a massive outburst of research on sound change, compensating for its neglect in earlier Indo-Europeanist studies.

Since Rask's and Grimm's times, many similar systematic sound changes have been found in many other areas of the world. For instance, among the early Indo-European languages, Armenian had a similar sweeping sound shift; see the initial consonants in the examples in (3) below. (Some of the Armenian consonants underwent further changes, such as original **p* > *h*.)

(3) Armenian sound shift

	Greek	**Latin**	**Sanskrit**	**Armenian**	
a.	***p***atḗr	***p***ater	***p***itā́	***h***ayr	'father'
	tó	(is-)***t***ud	***t***ad	***th***ē	'that'
	téttares	***qu***attuor	***č***atvāri	***čh***orkh	'four'
b.	***d***éka	***d***ecem	***d***áśa	***t***asn	'ten'
	gunḗ		***ǰ***ani/***g***nā-	***k***in	'woman'
c.	***ph***érō	***f***erō	***bh***arāmi	***b***erem	'I carry'
	(é-)***th***ē-ka	***f***ē-c-ī	(a-)***dh***ā-m	***d***ir	'put, place; make, do'
	thermós	***f***ornax	***gh***arma-	***ǰ***erm	'hot, heat; oven'

A similar change, but restricted to the voiceless stops, differentiated Southern Bantu languages from the other Bantu languages; see example (4). In this case, different languages exhibit different outcomes, but they share the fact that they systematically change all voiceless stops of the ancestral Proto-Bantu language. Moreover, the fricative outcomes of **p* and **k* in Sotho can easily be related to the aspirates of Xhosa; see § 5.4 below. (The development of **t* to Sotho *r* is more difficult to explain and therefore is not discussed here.)

(4) Southern Bantu sound shift

Proto-Bantu	**Xhosa**	**Sotho**	
kama	***kh***ama	***x***ama	'wring'
ta***t***u	***th***a***th***u	***r***a***r***u	'three'
pa	***ph***a	***Φ***a	'give'

Another parallel to Grimm's Law, affecting voiceless stops, has been observed in the "Chipewyan consonant shift" of Athapaskan. That such changes need not

be limited to ancient and/or "exotic" languages is shown by the British English dialect of Liverpool, in which voiceless stops are shifting toward fricatives, as in *lock* which, via [lɔkh] with heavily aspirated velar stop, is changing to [lɔx] with velar fricative.

Though clearly interesting and impressive, changes such as those in (3) and (4) were discovered much later, too late to create the same excitement as Grimm's Law. But the very fact that they were discovered is ultimately the result of the interest in sound change generated by Rask's and Grimm's discoveries.

In recent times, doubts have been voiced about both Grimm's Law and the Armenian consonant shift. Some scholars have claimed that the Armenian and Proto-Germanic consonant systems are archaic, close to the one of Proto-Indo-European, and that the systems of the other Indo-European languages are the result of innovating changes. This is the so-called "glottalic" view of Proto-Indo-European mentioned in the discussion of Armenian and Iranian (Ossetic) in Chapter 2. As noted in that discussion, the glottalic view is highly controversial. Many linguists are not convinced by the cogency of the arguments and evidence marshalled in its support. Even if the theory should eventually prevail, this does not diminish the importance of the work of Rask, Grimm, and their successors and its significance for the development of historical linguistic thinking and methodology. For ease of exposition, the subsequent discussion ignores the glottalic theory and proceeds under the assumption that the traditional, Grimm's Law, view is correct. (The issue is taken up again in Chapter 16.)

3 From Grimm's Law to Verner's Law

While Rask and Grimm, as well as their contemporaries, were highly impressed by the systematicity of the sound changes they had discovered, they did not expect the changes to be absolutely regular. They were too much influenced by the idealism of the Romantic movement to believe that human beings were capable of behaving with complete, exceptionless regularity, as if they were automata or machines.

In fact, correspondences such as Lat. ***d****ies* 'day' : Engl. ***d****ay* suggested that Grimm's Law did not apply in all words. Even more examples could be found in which Grimm's Law and other changes separating Germanic from the rest of Indo-European applied inconsistently, affecting most sounds, but leaving one or two sounds unaffected. Some examples of such apparent exceptions to Grimm's Law are given in (5), where Latin represents the classical Indo-European languages, and Old English, Germanic. (Note that Lat. *c* designates the sound [k].) The first two examples are especially interesting, since here [k] and [p] have

undergone Grimm's Law in the early part of the words, changing to the voiceless fricatives *h* [x] and [f]; but voiceless stops occurring toward the end of the word, marked in boldface, do not exhibit the change. One might toy with the idea that, having applied Grimm's Law once or twice within a given word, the speakers of early Germanic got tired and therefore did not change voiceless stops occurring later in the word. But the other two examples show that even voiceless stops not preceded by other Indo-European voiceless stops in the same word may fail to undergo the change. That is, the exceptions seem to be completely random.

(5)

Latin	**Old English**	
*cap**t**us*	*hæf**t***	'captured, prisoner'
*pis**c**is*	*fis**c***	'fish'
*s**p**uō*	*s**p**īwan*	'spew, spit'
*s**t**ō*	*s**t**andan*	'stand'

In addition to such words in which Grimm's Law failed to apply (or applied only partially), there were a number of other words in which there was a change, but the outcome of the change was different from the one predicted by Grimm's Law. Instead of being reflected by the expected voiceless fricatives, Indo-European voiceless stops came out as voiced. Compare the examples in (6). Here again, it seemed impossible to come up with any generalization about the words in which such exceptional outcomes are found. True, the examples in (6a) all refer to close family relatives; but so does (6b). More than that, within one and the same PARADIGM (= the set of inflected forms of a given word) we find some forms exhibiting outcomes conforming to Grimm's Law, whereas others have exceptional voiced outcomes. Compare examples (7a) vs. (7b), where the classical Indo-European languages and Germanic are respectively represented by Sanskrit and English. Such alternations within the same paradigm are now commonly called PARADIGMATIC ALTERNATIONS.

(6)

	Latin	**Sanskrit**	**Gothic**	**Old English**	
a.	*pa**t**er*	*pi**t**ā́*	*fa**d**ar*	*fæ**d**er*	'father'
	*mā**t**er*	*mā**t**ā́*		*mō**d**or*	'mother'
b.	*frā**t**er*	*bhrā́**t**ā*	*brō**þ**ar*	*brō**þ**or*	'brother'

(7)

	Sanskrit	**OEngl.**	
a.	*vár**t**ate*	*weor**þ**an*	'turn, become' (pres.)
	*vavár**t**a*	*wear**þ***	(past sing.)
b.	*vav**r̥t**úr*	*wur**d**on*	(past plur.)
	*v**r̥t**aná-*	*(ge)wor**d**en*	(past participle)

As time progressed, scholars discovered that some forms originally considered exceptional were simply irrelevant. For instance, closer examination of the evidence and of the regular sound correspondences between the Indo-European languages showed that the similarities between Engl. *day* and Lat. *dies* are accidental. The two forms are not really cognate. A genuine English cognate of the root in Lat. *dies* is, believe it or not, the first element in the word *Tuesday*. The root underlying both of these is PIE **dy(e)u-*, originally meaning 'sky, light, day'. The Latin word represents a fairly straightforward outcome. The Germanic word presents no difficulties from the perspective of sound change either, since its initial *t* is precisely what we would expect by Grimm's Law. The meaning of the word represents a more special development, but that development has parallels elsewhere in Indo-European. In the meaning 'sky', **dy(e)u-* became the name of the God of the sky, often with the addition of the word 'father'; compare Skt. *dyaúṣ pitā́*, Gk. *Zeús Patḗr*, Lat. *Juppiter*. It is this name of the Sky God that underlies the *Tues* of Engl. *Tuesday*. (See also Chapter 18, § 4.3.)

In addition, scholars realized that some apparent exceptions to Grimm's Law are in reality borrowings. Thus, Latin has a word *pondus* 'weight' which in pronunciation and meaning is close to Engl. *pound*, OE *pund*. If the two words were inherited from Proto-Indo-European, the English word would be a double exception to Grimm's Law, since neither the voiceless stop nor the voiced one would have changed. In fact, however, OE *pund* is an early borrowing from Latin, made at a time when Grimm's Law had run its course and therefore did not affect any new words. Other borrowings from that early period include *street*, OE *strǣt*, from Lat. *(via) strāta* 'a prepared road', and *cheap*, OE *cēap* 'bargain, purchase', from Latin *caupō* 'merchant'. These are part of a large amount of vocabulary exchanged between Latin and Germanic during the time of the Roman expansion into Germanic territory and the slightly later "return visits" of the Germanic tribes. Among the words going from Germanic to Latin and its descendants is the word for 'soap': PGmc. **saipōn-*, hence Engl. *soap*, Germ. *Seife* : Fr. *savon*, Span. *jabon*, etc. (See Chapter 2.)

A better understanding of etymological relationships and of borrowings thus managed to clear away some of the apparent exceptions to Grimm's Law. But by its very nature, this approach produced only piecemeal solutions. A much more sweeping solution, which has not received the recognition it deserves, is C. Lottner's discovery in 1862 that exceptions of the type (5) above, far from being totally random, exhibit an amazing degree of regularity: The unshifted voiceless stops all occur after a voiceless fricative, whether that fricative is the original PIE sibilant *s* or the result of Grimm's Law (such as the *f* of OE *hæft*).

Lottner's insight suggests that part one of Grimm's Law as originally stated needs to be revised, so as to systematically exempt voiceless stops after Germanic voiceless fricatives (or after their equally voiceless PIE sources).

This still left the exceptions in (6) and (7), and these were much more difficult to explain. It was only in 1877 that the Danish linguist Karl Verner found a solution which showed that these, too, were not really irregular but exhibited a regularity of their own. The reason for the long wait was that the regularity of these forms could not be accounted for by modifying Grimm's Law; it required a law of its own. Moreover, the conditions under which the law applied were far from obvious if one restricted one's horizon to Germanic. Rather, it was necessary to look to other languages, mainly Greek and Sanskrit, for an explanation. And if that were not enough, one had to attribute the change at least in part to a conditioning factor considered quite unlikely to bring about voicing, namely the location of the Indo-European stress or accent. Once all of these elements were brought together, however, the solution was so clear, so obvious, and so "neat" that no doubt many scholars asked themselves, "Why couldn't I have thought of that?" But they didn't, and the change responsible for the voiced outcomes came to be called Verner's Law.

To see how Verner's Law works, consider again the forms in (6) and (7) and note that the voiced outcomes are found only in those forms in which the PIE voiceless stops occur between vowels or between *r* and vowel, and where the syllable preceding the stop is not accented in Sanskrit (which preserves the PIE accent placement). Elsewhere, the voiceless stop occurs.

Now, as example (8) shows, this distinction between voiced and voiceless outcomes is not restricted to PIE voiceless stops; it is also found in the reflexes of PIE **s*. (The *r* found in Old English goes back to an earlier **z*.) Verner's Law, thus, can be said to affect all Germanic fricatives, whether they reflect original **s* or result from PIE voiceless stops by Grimm's Law.

(8)	**Sanskrit**	**Old English**	
	ǰṓṣate	*cēo**s**an*	'taste, choose' (pres.)
	ǰuǰṓṣa	*cēa**s***	(past sg.)
	ǰuǰuṣúr	*cu**r**on*	(past pl.)
	ǰuṣaná-	*(ge)co**r**en*	(past participle)

Keeping in mind these various factors, as well as some others which it would take too long to exemplify, Verner's Law can be formulated as follows:

(9) Verner's Law:
Proto-Germanic fricatives (including sibilant *s*) become voiced if the following three conditions are met:
i. They are not initial
ii. What precedes and follows them is voiced, and
iii. The PIE accent is not on the immediately preceding syllable.

Before we can proceed to show how Verner's Law operated in relation to Grimm's Law, we need to mention one other change. After Verner's Law ceased to operate, the accent shifted to the root syllable of the word which, in most cases, coincides with the initial syllable. It was this change that obscured the accentual condition of Verner's Law and, consequently, made it so difficult to recognize.

If we let GL stand for Grimm's Law, VL for Verner's Law, and AS for the early accent shift to the initial or root syllable, we can illustrate the way these three processes interacted. As example (10) shows, only the order GL before VL before AS will yield the right results. Other sequences fail to do so. See the unsuccessful derivations in (10') and (10''), where the incorrect forms are marked by a following asterisk.

(10)	PIE	*pətḗr*	*bhrā́tēr*
	GL	*faþér*	*bróþer*
	VL	*faðér*	INAPPLICABLE
	AS	*fáðer*	*bróþer*
	Old English outcomes	*fæder*	*brōþor*
(10')	PIE	*pətḗr*	*bhrā́tēr*
	VL	INAPPLICABLE	INAPPLICABLE
	GL	*faþér*	*bróþer*
	AS	*fáþer*	*bróþer*
	Old English outcomes	*fæþer**	*brōþor*
(10'')	PIE	*pətḗr*	*bhrā́tēr*
	AS	*pátēr*	*(bhrā́tēr)*
	GL	*fáþer*	*bróþer*
	VL	INAPPLICABLE	INAPPLICABLE
	Old English outcomes	*fæþer**	*brōþor*

Situations like these, where only one sequence of changes will yield the correct results establish what linguists call a RELATIVE CHRONOLOGY: Even when we cannot be sure about the "absolute" chronology (i. e. when the changes took place in historical time), we are at least able to demonstrate their relative ordering. When looking at demonstrations of the type (10)–(10''), non-linguists often get

the feeling that linguists are just playing a shell game, imposing their own view on history. In fact, however, it is the history of the language that imposes the solution on linguists. If history had been different, the outcomes would be different, and a different relative chronology would suggest itself.

The influence of Verner's Law on historical linguistics was profound. The fact that the law was conditioned by phonetic factors previously not considered even remotely relevant stimulated the linguistic community to pay much greater attention to fine phonetic details that had not been examined in earlier studies. And this closer look at the factors that condition sound change has greatly enriched our understanding of language history. This is not to say that all the after-effects of Verner's Law were beneficial. There was, as in many other cases, a certain bandwagon effect that resulted in a large variety of attempts at explaining historical developments in terms of accentual differences – even in cases where there simply was no evidence for such differences. But these misuses of accentual explanations do not diminish the significance – and correctness – of Verner's Law.

4 The regularity hypothesis and the neogrammarians

In addition to stimulating greater attention to the phonetic conditions of sound change, Verner's Law provided the final stepping stone toward solving the apparent exceptions to Grimm's Law. If allowances were made for the operation of certain additional changes, such as analogy (see Chapter 5), it appeared that the nearly sixty years of scholarly endeavor since Rask and Grimm published their findings had succeeded in establishing that Grimm's Law was not just amazingly sweeping and systematic. It seemed to have, in fact, operated with COMPLETE regularity, affecting every single word it could affect at the time that it took place.

Developments like these suggested a very different meaning for the slogan "Sound change is regular", which had been voiced by a number of earlier scholars. Now a group of young linguists working at the University of Leipzig (Germany) felt justified in raising this slogan to an axiom of historical linguistics, with the assumption that "regular" meant not just "overwhelmingly regular", but ABSOLUTELY REGULAR. (See the second motto at the beginning of this chapter.) Another way of putting it was to say that sound change "operates blindly". Because this new view on the nature of sound change had been proposed by a group of YOUNG LINGUISTS at Leipzig, the group and its later followers came to be known as the NEOGRAMMARIANS ("Junggrammatiker" in German). Their claim, in turn, has been labeled the REGULARITY HYPOTHESIS.

To understand what is meant by the claim that sound change is absolutely regular, it is necessary to understand what is meant by the term sound change. Several other factors also need to be taken into consideration in order to interpret the claim. Without these modifications, the claim is meaningless.

Sound change, in the sense that the term is used here, refers to change in sounds conditioned only by phonetic factors or, more accurately, but less elegantly, change in sounds not conditioned by non-phonetic factors. Clearly there are all kinds of changes that could affect the pronunciation of words, but were not conditioned just by phonetic facts. For instance, as mentioned in Chapter 1, the early Modern English plural of *cow*, *kine*, changed to *cows* on the analogy of other, more regular plurals, such as *pig : pig-s, horse : horse-s*. Changes of this type were known to be quite irregular. For instance, *swine* did not change to *swows**, or *wine* to *wows**.

Similarly, we find that tabooed words often are deliberately distorted in polite company, making it possible to use the tabooed word without "actually saying it". Examples in English are expressions like *gosh, darn, doggone ...; blasted, blessed, bleeding ...; shoot; friggin'* instead of well-known taboo words which are better left unprinted. Here again, it is quite clear that the changes in question affect the pronunciation of the words, but that they are by no means regular. Thus, *rod* is not replaced by *rosh*, *ham* by *harn*, *muddy* by *masted*, *hit* by *hoot*, or *tucking* by *triggin'*. (On taboo distortion see also Chapter 7.)

It was believed that processes like analogy and taboo distortion do not take place with the regularity of, say, Grimm's Law because they heavily depend on the mental association of forms with each other or on meaning, whereas sound change, properly understood, operates without any regard to such mental associations or meanings – or even the effect that it might have on our ability to communicate such mental associations or meanings.

There is a lot of empirical evidence that sound change does, in fact, take place "blindly", without consideration of the havoc it may create on our ability to communicate. Thus, in Southern U.S. English, *pen* and *pin* have come to be pronounced identically, by a process that regularly changed [ɛ] to [ɪ] before nasal. As a consequence it is now necessary in these dialects to resort to circumlocutions like *writing* [pɪn] vs. *needle* or *stick* [pɪn] in order to properly distinguish the two words. Similarly, in many varieties of American English, *can* and *can't* are not distinguished, except in very slow, deliberate speech, necessitating speakers to ask things like *Do you mean you are able to or not?* In New York English, the vowel of words like *can* and *man* has changed to such an extent that the common woman's name *Ann* sounds like the relatively rare man's name *Ian*. It is reported that children, being more familiar with the name *Ann*, asked their parents why they gave their baby brother, *Ian*, a girl's name. Similarly, in some varieties of the English

in and around Chicago, *John* has acquired a pronunciation that outsiders hear as *Jan*, again resulting in all kinds of confusion. (More on the New York and Chicago changes in § 5.4 below.)

Changes of this sort are not restricted to modern English; they have taken place at all stages of the language. Compare for instance *cleave* 'stick to' and *cleave* 'chop, split'. The second of these two words goes back to OE *cleofan*, is related to regional Germ. *klieben* 'chop, split', and derives from a PIE root **glewbh-*, while the first reflects OE *cleofian*, is related to Germ. *kleben* 'stick', and goes back to PIE **gleybh-*. Since 'stick to' and 'chop, split' convey meanings that are just about diametrically opposed, the use of the two words must have led to a lot of confusion. In modern English, this confusion is to a large extent resolved by avoiding the use of *cleave* in the meaning 'stick to'. But this change took place only after sound change made it impossible to distinguish the two words. As in all the other examples above, there is no evidence that speakers tried to block the changes in mid-stream, in order to avoid possible confusion.

In addition to understanding properly what is meant by the term sound change, it is further necessary to be aware of a lot of "fine print". For instance, in the natural sciences the expression "absolutely regular" would mean that a particular change takes place under the same conditions, anywhere, and at any time that it has a chance to do so. In the regularity hypothesis, this can hardly be the intended meaning. For even a moment's reflection will tell us that Grimm's Law took place at some point between Proto-Indo-European and Germanic, and that it took place only at that point, and only in Germanic (although some other languages, such as Armenian, may have had similar changes). If Grimm's Law were not restricted this way, we should expect all the other Indo-European languages – in fact, all the languages of the world – to have had the same change. The change also should have applied again and again, so that a *d* going back to earlier **dh* by part (iii) of Grimm's Law, would next undergo part (ii) of the same law and become *t*, only to undergo part (i) and turn into *þ*. As a consequence, PIE **dhē-* should not have stopped at the stage represented by Mod. Engl. *deed*, but should have changed further to *teet**, and then to *theeth**. The regularity hypothesis, therefore, is a statement about particular sound changes as historical events, limited by place, time, as well as language (or even dialect).

One final restriction on the regularity hypothesis must be mentioned: The neogrammarians were keenly aware that certain types of change which do not easily qualify as analogy or the like, nevertheless are notoriously irregular. These prominently include the following two processes: (i) "metathesis", the transposition of sounds, as in OE *þrit(t)ig* > Mod. Engl. *thirty*; and (ii) "dissimilation", as in Engl. *col(o)nel* > [kərnəl], where the first of two [l] sounds has changed to [r] so as to become "dissimilar" to the second. The neogrammarians made several

attempts to account for the irregularity of these changes. Perhaps the best among these is the claim that dissimilation and metathesis are similar to speech errors, a lapse in some special control faculty, perhaps the same faculty that we put to the test in tongue twisters. (See also § 5.5 below.)

From the time it was formulated, the neogrammarian regularity hypothesis ran into strong opposition. Even so, the hypothesis was widely accepted by most historical linguists. Recent research has raised questions about many of the neogrammarians' assumptions and has suggested that sound change is not always regular. But even this research confirms that much of sound change is so close to regular that the neogrammarian hypothesis can still be accepted as a general guideline.

Even if we may have to give up the notion that sound change is absolutely regular, in favor of the more modest proposition that it is overwhelmingly regular, the regularity hypothesis has proved enormously fruitful in historical linguistics. It challenges linguists to look more carefully at linguistic change in order to explain apparent irregularities. And any closer investigation is bound to yield new and interesting results – in any field of inquiry. In the field of historical linguistics, the regularity hypothesis certainly has done just that. (For further discussion, including the importance of the regularity hypothesis for comparative-historical linguistics, see § 7 at the end of this chapter.)

5 Some types of sound change

Except for the restriction discovered by Lottner, Grimm's Law is a set of changes that take place across the board, and no special phonetic conditions are discernible that might motivate them. Verner's Law, by contrast, depends on a lot of conditions. Why the most celebrated of these, the accentual one, should have induced voicing of original voiceless fricatives is still open to question. However, the fact that the voicing takes place in a medial voiced environment seems to make intuitive sense. The fricative "assimilates" to the voicing of its surroundings. Here, then, we have a perfect case of the context in which the change takes place in some way triggering the change. Processes of this sort can be called CONDITIONED changes.

5.1. Assimilation, weakening, loss. Over the 200-odd years that modern historical linguistics has been practiced, a large number of conditioned types of changes have been observed. By far the most common of these are changes which in some ways ease the process of pronunciation. This, however, should not be taken to

suggest that all sound change leads to phonetic simplification. Some changes consist of the addition of new sounds, a phenomenon that could hardly be considered simplification; see § 5.2 below. Others appear to be neutral as regards simplicity; see § 5.3. Moreover, there clearly must be limits on the extent to which simplification can progress. If phonetic simplicity were permitted to run its full course, it would change all words to something like [ə], a simple central vowel without any complex distinctions of vowel position (high, mid, low; front, central, back; etc.), to say nothing of the effort of producing a large variety of different consonants. But how would we convey with this one, maximally simple utterance the plethora of different meanings that we are able to express through our more "complicated" words? Human language requires a certain degree of complexity to successfully communicate meaning, variation, and creativeness. (See also § 6 below.)

Nevertheless, it is true that changes which seem to ease pronunciation make up the bulk of regular sound change. That these changes have not, over the long history of human language, led to the ultimate stage of simplification, [ə], suggests that language has enough resilience, as it were, to counteract the ravages of simplificatory change and to keep reintroducing enough "complications", whether by sound change or other changes, to retain its functionality.

5.1.1. Assimilation. One type of simplificatory change, briefly mentioned in the preceding section, is ASSIMILATION. As the name suggests, the process consists of making the pronunciation of a given sound more similar to that of another sound, thus simplifying the articulatory gestures required to pronounce the word. The sound triggering the change may precede or follow, but usually it is an immediate neighbor of the sound that is changing.

The word *assimilation* itself provides a perfect illustration of the process it designates. It is derived from the Latin elements *ad-* 'to' and *similis* 'similar', which combined to form the basis of Lat. *assimilare* 'to make similar to', in which the *d* of *ad* so successfully assimilated to the following *s* that it acquired the same articulation. A less radical example of assimilation is found in the formation of English plurals. Although we write the plural ending as *-s*, no matter where it occurs, in pronunciation it assimilates to preceding voiced sounds by becoming voiced; compare *bed-s* [bedz] vs. *bets* [bets].

Several subtypes of assimilation occur frequently enough, with interesting results, to have been given special names. One of these is UMLAUT, a process common in early Germanic; see example (11). Umlaut typically involves the assimilation of a root vowel to a vowel occurring in a suffix; see Stage II in example (11). Moreover, typically some of the suffix vowels triggering the change are subsequently lost, so that the conditions for the vowel change are no longer fully recov-

erable; see Stage III. The example in (11) further illustrates a common outcome of umlaut. If the entire suffix is lost, the vowel change produced by umlaut may take over the function of the original suffix, in this case, the function of indicating plurality. Many of the "irregular" plurals of Modern English owe their origin to umlaut; compare *foot : feet, tooth : teeth, mouse : mice, louse : lice, man : men, woman : women*.

(11)	**Stage I**	**Stage II**	**Stage III**	
	(= pre-Old Engl. I)	(= pre-Old Engl. II)	(= Old English)	
	kū-z	*kū-z*	*cū* [kū]	'cow'
	kū-iz	*kū̄-iz*	*cȳ* [kṻ]	'cows'

A process in some ways similar to umlaut is PALATALIZATION. Like umlaut, the change typically proceeds in three stages: A stage without assimilation is followed by a stage in which a class of consonants, mainly the dentals or velars, assimilates to following front vowels producing a palatalized consonant (indicated by a superscript *y*), and a final stage at which some of the triggers for the change are lost. At that point, the palatalized consonant tends to become a palatal which, in turn, has a strong tendency to change into a sibilant or fricative. Compare the example in (12). Traces of the palatalization in (12) are found in many English borrowings from French. And because French palatalization was a conditioned process, which took place only before front vowel, many of the words borrowed from French alternate between the original velar and the sibilant reflex of palatalization, depending on the vowel that originally followed. Compare alternations of the type *electri**c*** [-k] : *electri**c**ity* [-s-]. As noted in § 3 above, such systematic changes in the pronunciation of words, depending on the context in which they occur, are commonly referred to as paradigmatic alternations.

(12)	**Stage I** (= Latin)	**Stage II** (= Proto-Romance I)	**Stage III** (= Proto-Romance II)	**Further changes**
	faciat [fakiat]	*fak^{y}ya*	*fak^{y}a* > *fačə*	> Mod. Fr. *fasse* [fas(ə)] 'would make'

Many words borrowed with *s* resulting from French palatalization underwent another process of English palatalization, if the *s* was followed by a suffix-initial front vowel, as in *electri**c**ian*. (The vowel triggering this second round of palatalization has since ceased to be pronounced.)

Before turning our attention to other simplificatory processes, let us briefly mention a type of change which often is considered assimilatory, namely FINAL

DEVOICING. As the name suggests, this process involves the devoicing of final consonants. The starting point for the change seems to lie in utterance-final position where even languages like standard English, not otherwise known to have final devoicing, exhibit a slight degree of devoicing. In many other languages, such as German and Russian, the change goes farther and leads to a complete "merger" of voiced stops and fricatives with their voiceless counterparts. Moreover, the change is not confined to utterance-final position but applies word-finally, as well. Compare the example in (13).

(13)

	OHG	**Mod. Germ** (**NHG**)	
	tag	*Tag* [tā**k**]	'day'
vs.	*taga*	*Tage* [tā**g**ə]	'days'
	stab	*Stab* [štā**p**]	'staff, stick'
vs.	*staba*	*Stäbe* [štɛ̄**b**ə]	'staffs, sticks'
	etc.		

Assimilatory changes can also be observed in sign languages. A type of assimilation that is very common in American Sign Language has come to be known as SYMMETRY. For instance, the sign for 'angry' once consisted of one hand moving away from the waist; now it is articulated instead with both hands moving in symmetry. A slightly different example of the change is found in the development of the sign for 'final'. This sign used to involve the index finger of one hand striking the little finger of the other; now, however, little finger strikes against little finger.

5.1.2. Weakening. A process that even more clearly simplifies pronunciation is WEAKENING (also referred to as LENITION), a relaxation, reduction, or even total omission of the articulatory gestures required to make particular speech sounds. Weakening occurs most commonly in a medial voiced environment (just like Verner's Law), but may be found in other contexts as well. In modern English it is especially the voiceless dental stop [t] that is liable to be weakened. In American English, for instance, we find *better* pronounced as [beɾər] (with an *r*-like flap), [bedər] (with voicing), or in some areas apparently even [beØər] (with loss of the *t* indicated by the symbol Ø). Many varieties of British English have the pronunciation [beʔə(r)] (with glottal stop). What is common to all of these pronunciations is a relaxation in the gestures required to make a voiceless [t] in intervocalic voiced environment. In the case of [ɾ], contact is made less firmly, resulting in a flap; in [d], the switch from voicing to voicelessness and back to voicing has been eliminated; [ʔ] omits the oral closure required to make a [t], but leaves something like an "echo" of that closure in the shape of the glottal stop; and the most radical solution is represented by Ø – a complete omission of all gestures required to articulate [t].

Alert readers may have noticed that the voicing in [bedər] could also be interpreted as a simple case of assimilation of voiceless [t] to its voiced surroundings. Intervocalic voicing is an area in which the two processes, assimilation and weakening, overlap. But perhaps there is more to it. One could argue that assimilation in general is simply a special case of weakening, in that the articulatory gestures required to pronounce sounds differently are relaxed, leading to more similar pronunciations.

In some languages, weakening can be quite sweeping, affecting all intervocalic stops. This is the case in the western Romance languages. See for instance the Spanish examples in (14), where intervocalic Latin [p, t, k] become voiced fricatives and where [d, g] are lost altogether.

(14)

Latin	**Spanish**	
lupus	*lobo* [β]	'wolf'
status	*estado* [ð]	'state'
locus	*luego* [ɣ]	'place'
habere	*haber* [β]	'have'
videre	*ve(e)r* [Ø]	'see'
legere	*leer* [Ø]	'read'

5.1.3. Loss. The LOSS of speech sounds is not limited to the contexts that typically exhibit weakening, but occurs frequently in other environments as well. As we already have seen in Chapter 1, English lost initial [k] before nasal, as in OE *cnyht* > Mod. Engl. *knight* [Øn-]. A context especially liable to undergo loss is the end of words; compare (15). The reason for this presumably is the fact that our voice often "trails off" at the end of utterances, both in intonation (which goes down to a fairly low pitch) and in the precise articulation of speech sounds. Like final devoicing, the results may subsequently be generalized to all word-final positions.

(15)

Old English	**Mod. English**
singan	*singØØ*
stānas	*stones* [-nØz]

A repeated process of loss in final syllables is responsible for the fact that English has lost most of the inflectional endings of Old English. Old English had endings to differentiate four different noun cases (nominative, genitive, dative, and accusative) and to distinguish these cases in two different numbers (e. g. dative sg. *stān-e* 'to the stone' : dative pl. *stān-um* 'to the stones'). Of these different endings, only two have remained in Modern English, both sounding identical: the plural marker *-s* and the genitive marker *-s*. Here, then, loss may be said to have simpli-

fied not only pronunciation but the whole inflectional system of English. (Note, however, that analogy played a role, too, in this development. See Chapter 5, § 4, as well as the brief discussion in Chapter 1.)

Sometimes, loss of a sound is compensated for by lengthening of the preceding vowel, where lengthening maintains the timing of the structure from which the sound is lost. For example, Engl. *tooth* derives from PIE **dont-* (as in Gk. *o-dónt-*), via PGmc. **tanþ-* which changed into OE *tōþ* with loss of the nasal *n* and with COMPENSATORY LENGTHENING of the preceding vowel, hence OE *ō*. There is an interesting parallel in sign languages. When an original compound symbol of American Sign Language is reduced through loss of one of the component signs, the remaining sign is lengthened through repetition. For instance, 'orange', originally a compound of 'slice' and 'yellow', now is formed without the element 'yellow' and with repetition of the sign for 'slice'.

5.2. Epenthesis, the gain or insertion of speech sounds. Although loss is a very widespread phenomenon and, as we have just seen, can have far-reaching effects on the structure of languages, some sound changes have the opposite phonetic effect – they introduce speech sounds. This type of change is generally referred to as EPENTHESIS.

A common subtype of epenthesis consists of the insertion of vowels before word-initial consonant groups or into such groups elsewhere. A well-known example is the process of PROTHESIS in early Spanish and French, which inserted an [e] in front of *s* + stop clusters. Compare Lat. *spata* 'sword' : Span. *espada*, Fr. *épée*. As these two words show, epenthesis in one context of a given word does not prevent weakening or even loss in others. Note especially the French word in which the *s* which had triggered the prothesis of *e* was lost by a later weakening change.

Not only vowels may be inserted, but consonants as well. This is an especially common phenomenon between nasals and following liquids, as in OE *þunØrian* 'to thunder' > *þun**d**rian,* whence Mod. Engl. *thunder*. The motivation for this change seems to be as follows. Nasals are pronounced with the same articulation as voiced stops, except that the passage to the nose is left open, permitting nasal resonance to be audible. Switching from the nasal to the following non-nasal liquid requires a delicate timing in the adjustment of articulatory gestures. Ideally, the change from stop to liquid should take place at the same time as the change from nasal to non-nasal. Epenthetic developments as in *þunrian* > *þun**d**rian* result if the two gestures are not properly timed, i. e., if speakers switch too early from nasal to non-nasal, producing a stretch of oral stop articulation. Compare the schematic presentation in Illustration 1. Here a solid horizontal line indicates the presence of a particular articulation, a broken line, its absence. If in

the original sequence *n* + *r* the stop articulation is held out longer than the nasal articulation (see the circled part of on the right hand of Illustration 1), the result is an interval of a non-nasal – i. e., oral – stop *d*. (The vertical lines in Illustration 1 indicate the boundaries between the sounds.)

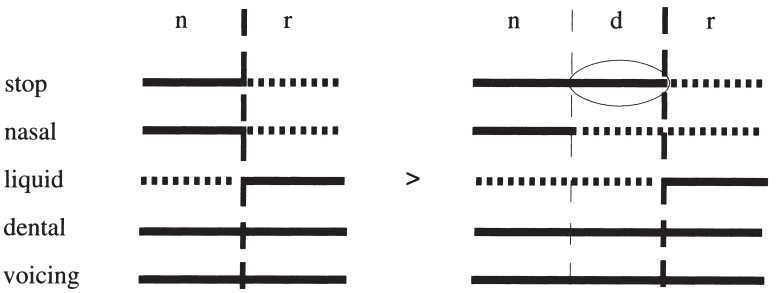

Illustration 1: Consonant epenthesis as the result of wrong timing

The very common phenomenon of aspiration, as in the change from Proto-Bantu ***tat****u* 'three' to Xhosa ***th****a****th****u* (example (4) above), can likewise be considered an example of wrong timing; see Illustration 2. If the switch from voiceless (stop) to voiced (vowel) is not timed correctly, an interval of voiceless articulation results, without the stop to "support" it; and the [h]-like hissing noise of that interval is what we call aspiration.

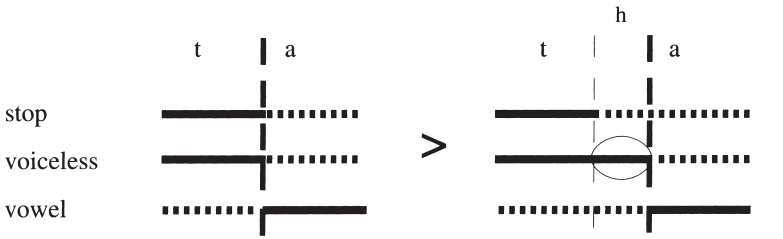

Illustration 2: Aspiration as the result of wrong timing

5.3. Acoustically or auditorily conditioned changes. The types of sound change we have looked at so far are best explained as being triggered by articulatory factors. However, when we learn our first language, no one tells us how to articulate. No one says, "Now, in order to make a [t] you press your tongue tip firmly against the back of the teeth, make sure not to let your glottis vibrate, and then release the closure." We have to find out for ourselves how to articulate the

sounds we hear. And in the process we may make mistakes. Glaring mistakes are usually corrected over time. But less obvious deviations may persist. Moreover, misunderstanding the phonetic output of others is not limited to children. Adults, too, may mis-hear and consequently mispronounce words they are not familiar with. Many speakers of American English, for instance, pronounce the abbreviation *etc.* as [ekseterə], instead of the correct form [etseterə]; another common example is *aestetic* for *aesthetic*.

It is therefore not surprising that we can find occasional examples of sound changes which appear to result from such misunderstandings. An example is the substitution of uvular [ʀ] for trilled (post-)dental [r]. The substitution has been reported to be frequent among Spanish children; but in most Spanish dialects, children are corrected and told to use [r]. In rural dialects of Puerto-Rican Spanish, [ʀ] has caught on; and the second part of the name *Puerto Rico* is now pronounced [Riko]. In French, a similar substitution has become effectively the norm, except in theatrical stage pronunciation, where [r] is still preferred. Note however that [ʀ] has a strong tendency to weaken toward a voiced or voiceless velar (or uvular) fricative or "scrape". The usual Modern French pronunciation of a word like *rouge* has an initial voiced velar fricative [ɣ]. And the rural pronunciation of *Puerto Rico* commonly is [puelto **x**iko], with voiceless velar fricative.

5.4. Structurally conditioned changes, "chain shifts". Although the neogrammarians firmly believed that sound change is conditioned only by purely phonetic factors, research in the latter part of this century, especially by the French scholar André Martinet, has shown that changes may to some extent be triggered by more abstract considerations, such as the STRUCTURE of phonetic SYSTEMS. The most famous examples of this type are represented by so-called CHAIN SHIFTS in vowel systems. To illustrate the structural motivation of such chain shifts, let us look at two concrete examples of change in present-day American English. (Similar changes are found in many other languages and dialects.)

Certain lower middle-class dialects in New York, Chicago, and many other large urban areas of the northeastern part of the United States, exhibit the diphthongization of [æ] to something like [æə] under certain conditions (which need not detain us here). The diphthong tends to be strongly nasalized, and its initial element, [æ], tends to rise to mid-vowel or even high-vowel position, yielding something like [eə] or [iə]. As a consequence, words like *Ann* tend to be pronounced [æən], [eən], or even [iən] sounding just like *Ian* (as noted in § 4, this is another example the "blind" application of sound change).

Now, as long as nothing else happens, the changes in question may not appear particularly remarkable. But something else did happen, both in New York and in Chicago, even if that "something else" was different in the two cities. In

both cities, there was a system-based reaction to the fact that old [æ] was vacating its position as a low front vowel and thus introducing a certain imbalance in the vowel system. In Chicago, the old central vowel [a] began to shift to the position vacated by [æ], thus rebalancing the system. Hence the pronunciation of words like *John* [ǰan] becomes sufficiently similar to that of words like *Jan* [ǰæn] in other dialects to confuse people not familiar with this dialect. In New York, on the other hand, the imbalance is redressed by the fact that the vowel [a] begins to follow the example of old [æ], by diphthongizing and moving up toward the position of [u], as in the change of *coffee* [k**a**fi] to [k**oə**fi] or even [k**uə**fi]. Both of these chain shifts are outlined in Illustration 3, where the arrows marked with the numeral 1 indicate the initial change, the raising of old [æ] toward the position of [i] in [iə]; and the arrows marked by 2 represent the follow-up changes, of old [a] toward [æ] in Chicago and toward the position of [u] in [uə] in New York.

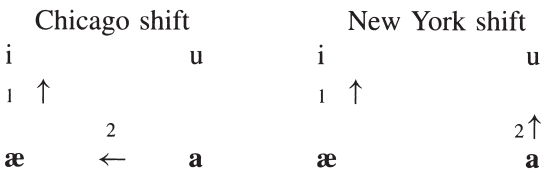

Illustration 3: Chicago and New York chain shifts

Chain shifts can lead to major rearrangements of phonetic systems. For instance, the change in New York, if carried to its logical conclusion, would eliminate the low vowels [æ] and [a] from the system. The capacity of chain shifts to bring about such major rearrangements has led scholars to suspect that similar sweeping rearrangements of phonetic systems in earlier or even prehistoric times, such as Grimm's Law, may likewise have resulted from chain shifts, even if the details of these shifts may escape us. For Grimm's Law, for instance, it is possible to cook up three or four different scenarios, all of them chain shifts. (Some of them may be more likely than others, but which of them actually took place remains anybody's guess.)

The traditional interpretation, going back in spirit to the time of Grimm and Rask, assumes that the voiceless stops changed first by becoming aspirates (see the Xhosa example in (4) above and also Illustration 4 below). Under this view, the aspirates further changed into fricatives by the following steps. In aspirates with turbulent aspiration, the [h]-like hissing noise of aspiration may assimilate to the position of the preceding stop, producing affricates, so that [th] > [ts], [ph] > [pΦ], etc. Thus in many varieties of modern Indo-Aryan, words like *phūl* 'flower' are pronounced [pΦūl]. Affricates, in turn, may be simplified, losing their stop

element. This is found in other varieties of the same Indo-Aryan languages, where [pΦūl] 'flower' is realized as [Φūl] or with further change as [fūl]. At this point, then, the fricative stage attested in Proto-Germanic (as well as Sotho) has been reached. Changes of voiceless stops to voiceless fricatives are also observed in Northern Dravidian languages (in Central India and present-day Pakistan), and in Hungarian and other members of the Uralic family (in Eastern Europe and adjacent parts of Asia). The whole series of developments, from (aspirated) voiceless stop through affricate to fricative, has been observed in a change that is still unfolding in the British English dialect of Liverpool, with words like *lock* changing to [lɔkh] > [lɔkx] > [lɔx]; see § 2 above.

Once this complex set of developments has been set in motion, the position of plain voiceless stops has been vacated. And just as old [a] started to fill the position vacated by the diphthongization and raising of old [æ] in Chicago, so – it is claimed – the voiced stops begin to move into the position of the old voiceless stops in early Germanic. But this change leaves the position of the old voiced stops empty, and so the old aspirates move to fill that position. Compare Illustration 4, which ignores the further development of the voiceless aspirates *ph, th, kh* toward *f, þ, x*. This kind of shift, where sounds are "dragged" into a vacated position is commonly referred to as a DRAG CHAIN.

	ph	th	kh
		1 ↑	
voiceless:	p	t	k
		2 ↑	
voiced:	(b)	d	g
		3 ↑	
voiced aspirate:	bh	dh	gh

Illustration 4: Grimm's Law as a chain shift

One of the other proposed chain-shift explanations is very similar, except that it reverses the order of events: The voiced aspirates are considered to shift first, toward the position of the voiced stops. To avoid merging with the voiced aspirates, the voiced stops move toward the voiceless stops. And these change their articulation to voiceless aspirate to escape merger with the old voiced stops. For obvious reasons, this type of shift is called a PUSH CHAIN.

In the absence of relevant historical evidence, these scenarios must remain speculative, and a choice between them is not possible on purely empirical grounds. At the same time, some kind of chain-shift no doubt is responsible for Grimm's Law. It is hardly conceivable that some speakers of Proto-Indo-European woke up one fine morning to discover that their entire stop system had mysteri-

ously changed over night, making their speech radically different from that of their fellow Indo-Europeans and branding them as Germanic "oddballs".

As something like a postscript to this section, it might be mentioned that the Great English Vowel Shift, too, resulted from some kind of chain shift. This change radically transformed the English vowel system and is largely responsible for the multiple phonetic values attached to English vowel letters. As a consequence *i* can denote both [i] and [ay], depending on whether it originally designated a short or long vowel, and the vowel letters *a, e,* and *i* are pronounced [ey], [ī], and [ay], in contrast to most other European languages which have [a], [e], and [i] (long or short, depending on the language). Examples are given in Illustration 5.

Old Engl.	Mid. Engl.	Mod. Engl.		Old Engl.	Mid. Engl.	Mod.Engl.
bītan	*bīten*	*bite* [ay]	vs.	*biten*	*biten*	*bitten* [i]
hūs	*hūs*	*house* [aw]		*sungen*	*sungen*	*sung* [ə]
hē	*hē*	*he* [ī]		*better*	*better*	*better* [e]
dōm	*dōm*	*doom* [ū]			etc.	
dǣd	*dǣd*	*deed* [ī]				
stān	*stɔ̄n*	*stone* [ow]				
nama	*nāme*	*name* [ey]				

Illustration 5: The Great English Vowel Shift

As in the case of Grimm's Law, opinions differ as to how the change unfolded. The most widely accepted hypothesis assumes a drag chain, with the high long vowels *ī* and *ū* changing first, becoming diphthongs – most likely [əy] and [əw] respectively. The high-vowel positions vacated in this way then were filled by the long mid vowels, whose emptied positions, in turn, attracted the long low vowels, and so on. Compare the simplified presentation in Illustration 5a, which distinguishes two phases, one prior to Shakespeare, the second post-Shakespearean and affecting the outputs *ē* and *ǣ* of the pre-Shakespearean phase.

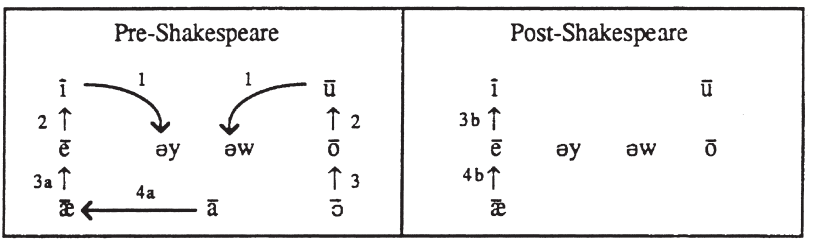

Illustration 5a: The Great English Vowel Shift as a chain shift

Instead of a drag chain, some linguists postulate a push chain, where the change was initiated by a general raising of the vowels putting pressure on the highest vowels. Since these could not be raised any further, they diphthongized instead.

In this case, empirical evidence makes it possible to decide in favor of the drag chain. Spelling variation and testimony by contemporary observers show that only the shifts on the left side of Illustration 5a had been completed by the time of Shakespeare. Old *ǣ* and *ā*, which by now had become *ē* and *ǣ* respectively, lagged behind and reached their modern positions only in the post-Shakespeare period; compare the right side of Illustration 5a. The fact that these two low vowels lagged behind is precisely what we would expect in a drag chain. If the shift had been a push chain, one would expect them to have been in the vanguard of the change.

5.5. Fast, furious, and faulty speech: Typically sporadic changes. While the types of sound change examined in the preceding sections by and large exhibit the regularity postulated by the neogrammarians, a few changes are notoriously irregular or SPORADIC.

Consider for instance words like Engl. *ma'am* or *bye*. The first of these is patently derived from *madam*; but just as patently, the change involved is not a regular change. For instance, we do not say *A'am* for *Adam*. Moreover, *madam* still coexists with *ma'am*. Regular sound change supposedly does not leave such unchanged residue. The expression *bye* is derivable from *good bye*, which itself is derived from *God be with ye* (with *good* substituted for *God* for taboo reasons). And again, the changes that link *God* or *good be with ye* to *good bye* and *bye* are isolated, limited to just this expression.

Irregular shortening developments of this type are rather frequent in forms of address and formulas of greeting and leave-taking, i. e., in expressions of verbal POLITENESS. Compare further It. *mona* (as in *Mona Lisa*) < *Madon(n)a* 'my lady'; the polite second-person address forms Skt. *bhavat* < *bhagavat* '(your) lordship' and Span. *usted* < *vuestra merced* 'your grace'; and the German greeting *Mo(ə)ŋ* < *Morgen* < *Guten Morgen* 'good morning'. While developments like *Morgen* < *Guten Morgen* may be considered something like ellipsis (see Chapter 5), reductions like *Mo(ə)ŋ* < *Morgen* cannot be explained in this manner. Like *ma'am* they seem to be clear examples of sporadic sound change, and thus an acute embarrassment to the regularity hypothesis.

Note however that reduced pronunciations of the type *Mo(ə)ŋ* are not limited to politeness expressions. They are a common phenomenon in FAST or ALLEGRO SPEECH and other forms of less than carefully monitored speech. In fast speech, German speakers are just as likely to say *mo(ə)ŋ* for the adverb *morgen* 'tomorrow'

as for the expression *(Guten) Morgen*. In fact, fast speech is notorious for its extensive and pervasive reduction of phonological structure. Even sound sequences that would not be permissible in careful or LENTO speech occur quite freely in fast speech, as in English [ŋaygow], with initial velar nasal, for careful *Can I go?*

In general, we filter out such highly reduced forms and pretend that only the lento forms exist. And because we, as speakers, filter out allegro forms, linguistic change generally operates on these, and not on allegro forms. The fact that politeness expressions are frequent exceptions can be explained as follows. While society expects us to be polite, we may not necessarily want to lose too much time over it. Even sticklers for etiquette may find excessively lengthy politeness expressions in bad taste. As a consequence we tend to use the shorter forms furnished by fast speech (as well as ellipsis).

Similar extensive, even excessive, reductions are commonly found in expressions like *you know* when we use them – much to the dismay of self-anointed critics – as speech fillers or in order to reassure ourselves that the addressee is still listening. Reductions of *you know* may range from the fairly innocuous [y(ə)now] to things like [nyə] or even [yow]. Here it is the relatively subordinate semantic or communicative value of the expression that is responsible for the phonological reduction.

One suspects that similar factors are responsible for the very common phonological reduction of CLITICS. These are a special class of words with the following characteristics. They are typically function words and thus, like the type *you know*, of reduced communicative significance. Probably as a consequence, they do not bear an accent of their own. As a result, they differ from "well-behaved", "normal" words which do bear accent. Furthermore, unlike normal words they cannot occur by themselves, and must therefore "lean on" another word, called the HOST. (The name clitic is derived from the Greek root *kli-* 'to lean on'.)

Elements of this type take something of an intermediate position between full words and affixes. Examples of English clitics are the *'ve* of forms like *I've, you've* and the *'s* of forms like *John's got the flu, Mary's at work*. As can be readily seen, these elements cannot be pronounced by themselves (except by linguists who have learned to pronounce all kinds of things that ordinary speakers don't). They have to lean on a preceding host. In fact, if there is a slight break in the utterance, separating the host from the element in question, the clitic cannot occur and the full form must be used instead. Compare unacceptable *Mary – 's at work** with acceptable *Mary – is at work*.

What is relevant in the present context is that all of these English clitics have undergone a large variety of weakenings or reductions. Compare the reduced forms *'ve* and *'s* with their corresponding full, non-clitic forms *have*, and *has* or *is*. Phonological reductions of this type are very common in clitics.

If we try to generalize, we may say that the different forms of irregular reduction and weakening processes we have examined above originate in speech that is "downgraded", either because it is less than carefully monitored, or because it is communicatively of minor importance.

In addition to downgrading, we may also "upgrade" our speech. For instance, although glottal stops do not occur in the lento speech of most varieties of English, they are not uncommon in speech that expresses anger or other forms of strong psychological affect. While in examples like *shut* [ʔ]*up already*, such glottal stops are a rather transitory phenomenon, in some expressions they have become institutionalized. In the U.S. military, for instance, the command *attention* usually is pronounced with a glottal stop instead of the final *n*. In the absence of a conventional spelling for glottal stops, this variant pronunciation is commonly spelled *(at)ten(s)hu**t***. The spelling *nope* may hide a similar glottal-stop pronunciation [noʔ]. (Spelling and/or the absence of [ʔ] from the inventory of "normal" English speech sounds may be responsible for the fact that some speakers may actually pronounce *attenshut* and *nope* with a final dental or labial stop.)

Upgrading is not limited to angry speech. In English, expressions like [**mm**a(r)vələs] or [b**iyū**tiful] for normal *marvel(l)ous* [**m**a(r)vələs] or *beautiful* [b**yū**tiful] serve to express the fact that the speaker feels that something is especially 'marvelous' or 'beautiful'.

In Modern English, the expressive consonant doubling, or GEMINATION, in expressions like [**mm**a(r)veləs] is a fairly transitory phenomenon, presumably because the normal language does not have phonetic geminates. (Written double consonants, as in *lass*, are pronounced the same as single consonants, as in *gas*.) Modern Italian, however, has geminates and, interestingly, expressive gemination appears in *mammà*, a word for 'mother' which like its cousins in other European languages (Fr. *maman*, Germ. *Mama*, or Engl. *mama*) belongs to the affective vocabulary of nursery talk, the form of language used by adults with very young children and modeled on the babbling of early childhood.

Like the reductions of "downgraded" speech, expressive gemination or glottal-stop insertion affects only individual words and leaves most words unaffected. Thus, while there is an English *nope*, there is no *gope** for *go*. Moreover, changed *nope* coexists with unchanged *no*, just as *ma'am* coexists with *madam*. Affective changes, thus, are just as irregular or sporadic as the effects of downgrading. Moreover, both types of sporadic change play a marginal role in language change.

A much more significant role is played by a group of sporadic changes that were recognized by the neogrammarians as systematic exceptions to their regularity hypothesis. The two most prominent of these changes are known by the names dissimilation and metathesis. Before trying to explain their irregularity, it is useful to take a closer look at the changes.

Dissimilation is the logical opposite of assimilation. Where assimilation makes different sounds more similar to each other, dissimilation makes similar sounds more different. An English example, cited earlier in this chapter, is *colonel* pronounced as if it were written *cornel*, where the first of the two [l]-sounds dissimilates to [r]. An even more radical dissimilatory step is found in the common non-standard pronunciation of *library* as if it were written *libary*. Here the first of two [r]-sounds dissimilates by simply disappearing. Examples like *contrary*, with both [r]-sounds retained, show that the change is in fact sporadic, not regular.

Note however that some instances of dissimilation have all the appearance of having once been completely regular. For instance, in the early history of Sanskrit, all but the last of several aspirated stops in a given word lost their aspiration by dissimilation; see example (16). Like Grimm's and Verner's Laws, this change has received a great amount of attention in historical linguistics; and like these changes it was named after its discoverer – Grassmann's Law.

(16)	**Proto-Indo-European**	**Sanskrit**	
	***bh**u**dh**-ye-toy*	***b**u**dh**-ya-tē*	'is awake'
	***bh**e-**bh**ow**dh**-e*	***b**u-**b**ō**dh**-a*	'was awake'
	***dh**i-**dh**ē-ti*	***d**a-**dh**ā-ti*	'puts, places'

Metathesis consists of the transposition of sounds within a given word. An example in modern non-standard English is the pronunciation of *ask* as [æks] or [aks]. This pronunciation, actually, has hoary antecedents. Already in Old English we find the ancestor of this word spelled both as *ascian* and as *acsian*. Metathesis has been quite frequent in English vowel + liquid or liquid + vowel combinations. But the examples in (17) show that the process was far from regular: Many words that might have qualified did not undergo the change. Note that English seems to have been especially "metathesis-happy" in vowel + liquid combinations. Some of the changes, such as *brid* > *bird*, took place already in Old English dialects, and metatheses occurred even in the perhistory of Old English, as in PGmc. **brestan-* > OE *berstan* 'burst' (which, to make things interesting, fluctuated between *bersten* and *bresten* in Middle English).

(17)					
a.	OE	*brid*	NE	*bird*
		þrit(t)ig		*thirty*
	vs.	*þrysce*		*thrush*
b.		*beorht*		*bright*
	vs.	*word*		*word*

Metathesis frequently goes beyond individual words and affects whole utterances. In such cases it has received a special name, SPOONERISM, after an English cleric who was famous for his often amusing transpositions, such as *Let me sew you to your sheets* instead of the intended *Let me show you to your seats*.

Spoonerisms suggest that dissimilation and metathesis have a great affinity to SPEECH ERRORS, in the sense of "faulty" phonetic production. This impression is reinforced by incidents such as the following. In the early seventies, an announcer on a radio station in Champaign (Illinois) attempted to say ... *in rural areas*. What actually came out was something like ... *in* [rūəl], *uh*, [rūləl], *uh*, [rūrəl] *areas – I always have problems with that word*. Evidently, the sequence of three liquids, [r ... r ... l], caused the announcer considerable difficulties and resulted in two different dissimilations. Difficult sequences of this type, of course, are the foundation for tongue twisters, such as *Peter Piper picked a peck of pickled peppers*. Dissimilations and metatheses are especially frequent when people are tired or drunk (or both), i. e., when their ability for monitoring their speech production is diminished. (In addition, of course, tired and drunk speech also is full of reductions comparable to those of fast speech.)

It may very well be that the only thing distinguishing speech errors like these from historically attested dissimilations and metatheses is that they remain temporary mistakes, while changes as in *bryde* > *bird*, for some reason, caught on and became a permanent feature of the language.

In addition to dissimilations and metatheses, "faulty speech" abounds in distant assimilations, such as *heroic pouplets* for *heroic couplets*. In fact, tongue twisters like *Peter Piper picked a peck of pickled peppers* normally are cleverly constructed such that our choice of dissimilating the repeated [p]s in sequences like ***P**eter **P**i**p**er* is balanced by the assimilative influence of the [k]s of words like *pe**ck*** and *pi**ck**le*.

Like dissimilation and metathesis, distant assimilation frequently catches on in the historical development of languages. For instance, Old French had the verb *cercher* [serčer] 'search, look for', from which Engl. *search* was borrowed. The expected Modern French outcome is [serše]. Instead we find *chercher* [šerše] with distant assimilation of the initial [s] to the later [š], as in the famous expression *cherchez la femme*. But again, like dissimilation and metathesis, distant assimilation normally is a sporadic phenomenon.

6 Why sound change?

6.1. Early views. Ordinary human beings, not influenced by what linguists think on this matter, generally view all linguistic change, including sound change, as a matter of decay. This view, in fact, was shared by many of the pioneers of historical linguistics. Only occasionally do we find a dissenting voice, such as that of Grimm, who attributed his famous sound shift, not to decay, but to an equally dubious idea – the Germanic people's "drive for freedom". (If a "drive for freedom" were a meaningful factor, we would expect Americans – and others – to fall all over themselves trying to implement Grimm's Law.)

Since early Indo-Europeanists came to historical linguistics from a background in – and great love for – classical languages, it is understandable why they reacted the way they did. As already noted in Chapter 1, the great classical languages had five noun cases (Greek), six cases (Latin), or even eight (Sanskrit), whereas the number of different case endings is vastly reduced in the modern languages. The majority of Romance languages have no case distinctions whatsoever in their nouns, English only marks genitives by separate endings, and even a language like German, which nominally preserves four cases, does not distinguish the different cases as clearly as the classical languages. If you have grown up loving rich case systems, the modern languages do indeed look as if they had undergone massive decay. Of course, the premise here is that you love cases. Some linguists have claimed that those many different case endings of the classical languages are a useless burden on people's memory and that languages like English have improved by getting rid of this unnecessary baggage. This view, again, rests on an a priori assumption, namely that case endings somehow are bad for you. Linguists nowadays find it difficult to be comfortable with either view, considering that the speakers of languages such as English are quite happy without all those case endings, while speakers of modern "case-rich" languages such as Finnish or Turkish are just as happy with them. This insight, incidentally, goes back to the neogrammarians and is one of their many great contributions to linguistics.

Decay and progress are not the only motivations proposed for linguistic change. As noted above, Grimm attributed his famous changes to the Germanic people's "drive for freedom" which supposedly led to a more energetic pronunciation. As a consequence, the voiceless stops became heavily aspirated stops which, by later changes, turned into fricatives. Other scholars operated with the same idea of more energetic pronunciation, but attributed it to factors such as a move to higher elevations which made it necessary to breathe more vigorously, or a change in diet which required more energetic chewing. These explanations and many others like them failed just as much as the notions decay and progress.

First, we have no evidence suggesting that the Germanic people lived in a relatively mountainous area at the time of Grimm's Law, or that they changed to a different diet. Secondly, given our much broader knowledge of linguistic change, we can say for certain that there is no correlation whatsoever between climate or diet and linguistic change. (For instance, we don't find people in mountainous areas embracing Grimm's Law; in fact, Liverpool, where a similar change is taking place, is not known for mountainous terrain.)

6.2. Neogrammarian explanations. Although many individual neogrammarians continued to cling to such older ideas about the reasons for linguistic change, their major theorists attempted to give different explanations. In these they were strongly influenced by the work of contemporary phoneticians. Relying on vastly improved instruments, the phoneticians had come to realize that all human speech is full of low-level deviations from an idealized norm. No two utterances are ever completely alike; there is no such thing as an exact repetition (except by mechanical means). The feeling that there is a norm results only from the fact that variation follows the classical bell-shaped curve pattern (see the top part of Illustration 6), with most of the deviations staying fairly close to the norm, so close in fact that only a trained phonetician can observe them. Building on this empirically well-established foundation, the neogrammarians proposed that sound change results from a SHIFT OF THE IDEALIZED "TARGET" within the area of variation; see the lower part of Illustration 6.

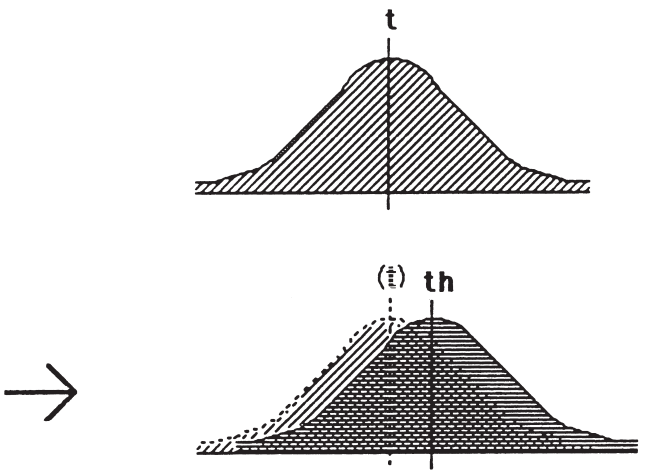

Illustration 6: Sound change as deviation from an idealized norm

While at first quite appealing, this explanation runs into serious difficulties once we examine it more closely. The very idea expressed by a bell-shaped curve is that the deviations from the norm cancel each other out and thereby confirm the idea of the norm. Why, then, are we to assume that all of a sudden the rules of the game no longer apply and there is a cumulative deviation in the direction of a new target?

One might suppose that a certain direction is built into linguistic change in so far as it leads to SIMPLIFICATION. Assimilation, weakening, and loss, the three most common types of change, certainly can be argued to reduce the amount of effort required to speak. And the fact that speakers of English find it very difficult to pronounce the word-initial [kn-] in foreign words like *knish* or names like *Knut* might be considered to corroborate the view that the change of earlier initial [kn-] to [n-] was a genuine simplification. Similarly, speakers of English, German, and many other languages find initial [sr-] difficult to pronounce, as in *Srinagar*, the name of the capital of Kashmir (in northern India). And lo and behold, PIE **sr-* was eliminated in Germanic by changing to **str-*, as in Engl. *stream*, Germ. *strömen* 'to stream' vs. Skt. *sravati* 'flows', all containing the PIE root **sr(e)u-* 'to stream, to flow'. So again, sound change simplified matters, didn't it? It even has been claimed that the replacement of trilled [r] by [ʀ] (see § 5.3 above) was a simplification, not just an acoustically based misidentification. And from the perspective of those who have it, [ʀ] is in fact simpler than [r].

But, those who have trilled [r] find [ʀ] difficult. And those who have neither find both sounds difficult. Similarly, speakers of languages that tolerate initial *sr-* (Kashmiris, for instance) have no difficulties with this combination and might consider *str-* more "complex". In fact, for cases like [r] vs. [R], or *sr-* vs. *str-* it is difficult to come up with any objective evidence that supports the view that the new pronunciation is any easier than the old one – except the circular argument that otherwise the change would not have taken place. For [kn-] vs. [n-] it is much easier to consider [n-] a simpler structure. Nevertheless, speakers of languages that tolerate initial *kn-*, such as German, have no difficulties at all. Here as elsewhere, the maxim holds that "even the children speak the language" which has the supposedly more difficult sounds or combinations of sounds. (See also Chapter 1, § 1.)

Even if we dismiss the notion of simplification, it might be claimed that processes like assimilation have a built-in directionality and thus would motivate a cumulative deviation from the norm, as in Illustration 6. After all, one sound assimilates in the direction of another.

But assimilation comes in many different degrees and varieties. For instance, if we are given a sequence *tm* and told to assimilate, we can a priori go into at least the following different directions: *pm, bm, mm* with various degrees of assimilation of the first sound to the second; *tn, dn, nn* with a similar variety in assimi-

lation of the second to the first; or even *tp, db, tt, dd, pp, bb* with both sounds assimilating to each other. Even closely related languages may choose different paths. For instance, some of the early descendants of Sanskrit changed *tm* to *tp*, others to *tt*, and yet others to *pp*, as in. Skt. *ātman-* 'self' : *atpan-*, *attan-*, *appan-*.

Realizing the difficulties with this approach, the neogrammarians came up with a second explanation. CHILDREN learn the basics of their first language without any instruction, simply by imitating the speech of their elders. In the process, they may misperceive the norms of their elders and come up with different norms of their own.

This explanation, too, seems plausible at first. In fact, even today it can claim many adherents. But the same problem arises as in the case of the first explanation: Why should the deviations be cumulative, in one direction? In fact, when we examine early stages of child language we find a great degree of variation, both for individual children and across different children. Recent research shows that although early child language deviations and linguistic change show certain similarities, there are also considerable differences. We only need to look at what commonly happens to the children of immigrants to convince ourselves that the effect of parents' input and of deviations in early language learning are minimal at best. No matter what the original language of the parents, or the children's early attempts to learn it, once children are socialized into peer groups, they quickly adopt the speech of their peer group. As a consequence, British parents who proudly maintain their accent for the rest of their lives in America, find – much to their horror – that their children speak with a "broad midwestern accent", a "Southern twang", or what not, depending on the speech of their peers.

Sensing that this explanation does not provide satisfactory answers either, some of the neogrammarians proposed that sound change originates as deviations in the IDIOLECT, or individual speech variety, of a prestigious person. Here, of course, we must again ask why the deviations of such a speaker should be consistent. Now, in some cases, they might result from a speech defect. For instance, it has been claimed that the French change of trilled [r] to uvular [ʀ] originated with Louis XIV, who could not articulate [r]. His great prestige supposedly was responsible for the adoption of the change by other speakers. This claim receives some support in the fact that the change apparently spread to many urban speakers of German, along with many patterns of behavior that emanated from the court of Louis XIV. However, the change [r] > [ʀ] has been observed in many other areas of the world, including isolated rural areas of northern Germany which hardly were influenced by the court of Louis XIV. In fact, in Germany, the uvular pronunciation has been observed as early as about 1600, well before Louis XIV. Most important, the idea that change might originate with some prestigious person is just a thought experiment. There is no empirical evidence whatsoever that behind

every one of the thousands and thousands of sound changes that have occurred in human language there has been a famous person.

6.3. Labov and the social motivation of change. The fundamental difficulty with all three of the explanations proposed by the neogrammarians is that they are based on thought experiments, not on the observation of changes as they actually take place. The reason is that the neogrammarians firmly believed that sound change is unobservable. They came to this conclusion by the following line of reasoning. Sound change takes place "blindly", without regard for its effects on the structure of words or our ability to communicate; the fact that speakers make no attempts to remedy these effects until the change has run its course indicates that sound change is unobservable to them.

So far, so good. But then the neogrammarians made a grave mistake: They assumed that sound change is unobservable not only to speakers, but to linguists as well. For some reason the neogrammarians failed to realize that the phoneticians had no difficulties in observing the low-level variation in human speech which ordinary speakers were not aware of. As a consequence, the neogrammarians made no attempts to observe sound change in progress.

Meanwhile, a number of linguists had serious reservations about many of the neogrammarians' views, including the belief that sound change and analogy differ fundamentally from each other, one being "mechanical" and regular, the other, based on mental associations and irregular. They argued that instead, the two types of change were fundamentally the same and differed from each other only in degree. In the hope of finding empirical evidence for this view, they began to investigate sound changes in progress. By hindsight, some of their results were quite revealing and would at least have required some serious rethinking about the nature of change. However, the number of scholars pursuing this "unorthodox" line of inquiry was small, much smaller than the orthodox followers of the neogrammarians.

It was not before the mid-1960s that a major change took place, in response to a series of detailed empirical investigations by the American scholar William Labov which were presented clearly and forcefully enough to catch the attention of most historical linguists.

Like his "unorthodox" predecessors, Labov found that the neogrammarians' views on sound change were in serious need of revision. Sound change is observable, at least by trained linguists. As sound change takes place, it may be conditioned not just by phonetic factors, but also by such factors as word structure and meaning. Even more significant, during its propagation, sound change exhibits a lot of irregularity. It is only in its final outcome that sound change is overwhelmingly regular.

Interesting as these findings may be, Labov came up with an even more radical proposal. Sound change and, in fact, all linguistic change is ultimately motivated not by purely linguistic factors, but by SOCIAL considerations.

This claim is most strikingly supported by Labov's study of a recent sound change on Martha's Vineyard, an island off the coast of Massachusetts. If we simply consider the "input" and "output" of the change, there is nothing much remarkable about it: The vowel [a] was centralized to the position of the mid-central vowel [ə] in the diphthongs [ay] and [aw], as in *right* [rayt] > [rəyt] or *rout* [rawt] > [rəwt]. However, the manner in which the change unfolded is quite remarkable.

Labov found that at the earliest stage, only a few words exhibited a variation between [a] and a slightly more centralized variant, only in the diphthong [ay] if followed by voiceless sounds, and only in the speech of a few individuals.

Somewhere along the way, the variant with centralization was perceived by speakers as a symbol of identity, differentiating "islanders" from the "mainlanders". (There has been a long tradition of animosity of Martha's Vineyarders toward the mainland of Massachusetts, occasionally leading to attempts to secede from the Commonwealth of Massachusetts.)

When it had come to be perceived as socially relevant, the centralized variant began to get generalized along a number of different parameters, including the following:

- the number of speakers using the variable in their speech
- the number of words exhibiting the variant
- the phonetic contexts in which it occurred, including an extension of the variable to the diphthong [aw]
- the degree of centralization (from a slightly centralized [a] toward a fully mid-central [ə])

Moreover, Labov found an interesting correlation between attitude toward the mainland and the degree to which the centralized variant was adopted. Those with the most polarized attitude toward the mainland tended to have the highest degree of centralization, in the largest number of words, and in the broadest range of phonetic contexts. On the other hand, those with a positive attitude toward the mainland exhibited the change to a much lesser degree, if at all.

Based on this study and others that he conducted at roughly the same time Labov proposed that sound change (and all other change, as well) proceeds in the following manner:

(i) The starting point for sound change is the inherent variability of human speech. (This is where Labov agreed with the neogrammarians and the nineteenth-century phoneticians.)

(ii) For reasons that perhaps must remain a mystery, a particular variable is interpreted by a certain group as socially significant. At this point, the variable ceases to be a "mere performance" variant and takes on not only social, but also linguistic significance.

(iii) Under the pressure of its social significance or "marking", the variable gets generalized to new contexts, in terms of both social and linguistic parameters. (On the role that male : female differences can play in social marking and the extent to which a change may be generalized, see Chapter 11, § 1.) What makes it possible for the generalization to continue is the fact that the new pronunciation does not immediately replace the old one, but that old and new pronunciation coexist with each other for some time. The variation between old and new pronunciation, then, can be extended to new forms, much along the lines of analogical change. If, say, we have a variation [aw] : [əw] in the word *house*, then this variation can be extended to, say, *mouse* or *louse*.

(iv) If, as usually happens, the process of generalization continues long enough and without anything to disturb it, the eventual outcome may be a regular sound change, which affects all instances of the sound, and all speakers in the speech community.

This view of sound change as socially conditioned has since then been confirmed by a number of other studies. It also explains a number of things about language change which otherwise would be difficult to account for.

One of these is the fact, noted earlier, that even if a language "decides" to have a specific type of change such as assimilation, the direction of assimilation cannot be predicted on purely linguistic grounds. This is to be expected under Labov's view of linguistic change. The low-level variation of human speech includes a large variety of small-scale assimilations, going in many different directions. Which of these is chosen as socially significant is, from the linguistic perspective, quite arbitrary.

Another aspect of linguistic change explained by Labov's view is the fact that there appear to be changes which are moving extremely slowly, so much so that there can be some legitimate doubt as to whether they will ever reach completion. One of these, noted already in the early 20th century, is the English change of long [ū] (as in *boot*) to short [u] (as in *foot*) found in many varieties of English (and difficult to localize geographically). Let us refer to this change as *oo*-shortening. Unlike the centralizing change on Martha's Vineyard (which was completed in about three generations), this change seems to have been going on for several centuries but still shows no sign of coming to completion. Even now, *oo*-shortening is affecting only a few lexical items, and variability is limited to just a few words (such as *roof, room, root*), while many others only have the long-vowel pronunciation (such as *food, mood, groom, groove*).

Interestingly, the difference in social connotations between, say, [rūt] and [rut] (for written *root*) is minimal. At best we can say that [rūt] may strike some people as perhaps a little too formal, while others consider [rut] a little too informal. This is a far cry from the strong social connotations associated with centralization on Martha's Vineyard. If social marking is indeed the driving force behind linguistic change, then the differences between *oo*-shortening and the centralization of Martha's Vineyard make eminent sense. The fact that centralization took place quite rapidly reflects the strong social motivation of the change, while the slow-moving nature of *oo*-shortening is explained by its weak social motivation.

As a final illustration of the explanatory power of Labov's view of linguistic change, let us take up the issue of typically regular vs. typically sporadic sound change. As noted earlier, sporadic changes are very similar to speech errors and, as such, would be highly noticeable. Regular changes, by contrast, may start as rather minor deviations from an idealized norm, so much so that if somebody said to us, "Hey, you didn't make your [a] in *house* low enough", we would not even understand what the person is saying – except, of course, if we are linguists. (But, as noted in Chapter 1, most speakers are not linguists!)

If these arguments are on the right track, then we can explain the difference between regular and sporadic sound change. The fact that most sporadic changes are noticeable as speech errors makes it difficult for them to be seized upon as marker of social identity. After all, who would want to be identified with a speech error?

Labov's new view of linguistic change has proved its usefulness in many other areas. But perhaps its greatest importance lies in the fact that it provides a satisfactory answer to the question, "Why sound change?"

7 The regularity of sound change redux

The hypothesis that sound change is (overwhelmingly) regular has recently been challenged again. For instance, in an attempt to propose etymologies for prehistoric mushrooms based on words for 'foot' and 'leg', somebody has rejected the regularity hypothesis, with the argument that it "wrongly" rejects "obvious" relationships such as Lat. *caput* : Mod. Germ. *Kopf*, both meaning 'head'. (Recall that by Grimm's Law – who can forget that? – Lat. *c-* [k] would have to correspond to Germ. *h*, and Germ. *k-* to Lat. *g*.) Closer examination shows that the meaning 'head' of Mod. Germ. *Kopf* is an innovation. In Old High German the word meant 'cup'; it is only in Middle High German that it came to acquire the meaning 'head', in addition to its older meaning 'cup'. Considering *caput* and *Kopf* to be cognates, thus,

not only violates the regularity principle, it also ignores the evidence of history. In fact, it also fails to capture an interesting part of Medieval soldiers' slang, shared with French and Italian, in which heads were metaphorically equated with pots, to be smashed in battle; see Chapter 9, § 4.1.

The overwhelming regularity of sound change is, in fact, a boon to historical and comparative linguistics. It is only because of this regularity that we can establish linguistic relationships such as between the different Indo-European languages (or even between different stages of the same language). Consider the easily recognizable similarities in actual Indo-European correspondences such as (18). If sound change did apply in "random" fashion, i. e., differently for each different word, in each different language, we might expect correspondences such as (19). And under those circumstances, claiming that the languages are related would clearly be preposterous.

(18) Actual early Indo-European correspondences

PIE	Sanskrit	Greek	Latin	Old English	
treyes	*trayaḥ*	*treis*	*trēs*	*þrīe*	'three'
tod	*tad*	*to*	*(is-)tud*	*þæt*	'that'
pətḗr	*pitā*	*patēr*	*pater*	*fæder*	'father'
pod/pōd	*pad-*	*pod-*	*ped-*	*fōt*	'foot'
krew/krū-	*krūra-*	*kreas*	*cruor [k-]*	*hrēaw*	'blood, gore'
duō	*dvau*	*duō*	*duo*	*twā*	'two'
dhē-	*dhā-*	*thē*	*fē-*	*dǣ-d*	'put, do, deed'

(19) "Virtual" early Indo-European correspondences, with "random" application of sound changes that are possible in human languages

PIE	Sanskrit	Greek	Latin	Old English	
treyes	*tray*	*deis*	*thrīh*	*ðē*	'three'
tod	*thaz*	*ti*	*(is-)duy*	*þoh*	'that'
pətḗr	*piyā*	*farēl*	*vaser*	*pæle*	'father'
pod/pōd	*fiz-*	*pit-*	*ber-*	*fōs*	'foot'
krew/krū-	*hiva-*	*khrā*	*xōr*	*griu*	'blood, gore'
duō	*va*	*tā*	*ðō*	*bū*	'two'
dhē-	*fē-*	*dī*	*thā-*	*hi-*	'put, do, deed'

Moreover, it is the regularity of sound change that allows us to draw a clear distinction between sound change and other types of change that are in fact irregular, especially analogical change. Thus, overall, the regularity of sound change proves to be a foundational concept in historical linguistics, a tool that clarifies our view and our understanding of language history in case after case after case.