8 ROBERT W. MURRAY

Historical linguistics: the study of language change

Many men sayn that in sweveninges
Ther nys but fables and lesynges;
But men may some swevenes sene
Whiche hardely that false ne bene,
But afterwarde ben apparaunt.

CHAUCER, *THE ROMANCE OF THE ROSE* (c. 1370)

LANGUAGE CHANGE is both obvious and rather mysterious. The English of the late fourteenth century, for example, is so different from Modern English that without special training it is difficult to understand the opening lines to *The Romance of the Rose* cited above. Not only would these sentences have a foreign sound, but words and structures such as *sweveninges, lesynges*, and *false ne bene* are unfamiliar.[1] The existence of such differences between early and later variants of the same language raises questions as to how and why languages change over time.

Historical linguistics is concerned with both the description and explanation of language change. In this chapter we examine the nature and causes of language change and survey phonological, morphological, syntactic, lexical, and semantic change. We also explore techniques used to reconstruct linguistic pre-history and briefly discuss related research into language acquisition and linguistic universals.

8.1 The nature of language change

All languages change over time. English has undergone continuous and dramatic change throughout its three major periods: Old English (roughly from 450 to 1100 AD), Middle English (from 1100 to 1500), and Modern English (from 1500 to the present). Although Chaucer's Middle English is at least partially comprehensible today, Old English looks like a completely foreign language. The following is an extract from an eighth-century Old English document, a translation of Bede's Latin history of England. (The letter þ, called 'thorn', represented the phoneme /θ/ in Old English; here and elsewhere in this chapter ¯ marks a long vowel in the orthography.)

(**1**) and Seaxan þā sige geslōgan.
and Saxons the victory won
'And the Saxons won the victory.'

þā sendan hī hām ǣrenddracan.
then sent they home messenger
'Then they sent home a messenger.'

Language Matters **What Did Old English and Middle English Sound Like?**

Thanks to the efforts of linguists and literary scholars, a great deal has been learned about what Old English and Middle English sounded like, and trained readers often recite literary works from those periods. For a sample of Old English, go to http://www.tha-engliscan-gesithas.org.uk/old-english-readings. For Middle English, go to http://www.luminarium.org/medlit/gp.htm. Want to learn to write and communicate in Old English? Go to www.rochester.edu/englisc/.

These Old English sentences differ from their Modern English counterparts in many respects. In terms of pronunciation, for instance, the Old English word *hām* [haːm] 'home' in the second sentence became [hɔːm] in Middle English, and then [howm] in Modern English. In its morphology, Old English differed significantly from Modern English. The suffix *-an* on the Old English word for 'sent' indicates both past tense and plurality of the subject (*hī* 'they'). Differences in word order are also readily apparent, with the verb following both the subject and the direct object in the first sentence and preceding both the subject and the direct object in the second. Neither of these word orders would be acceptable in the Modern English forms of these sentences.

In addition, some Old English words have disappeared from use, as the unfamiliar *ǣrenddracan* 'messenger' and *sige* 'victory' indicate. Still other words have been maintained, but with a change in meaning. For example, the Old English word *geslōgan* (which we translated as 'won') is the past tense of the verb *slēan*, the Old English predecessor of our word *slay*. Although the Modern English meaning of this word in normal usage is restricted to the act of killing, the Old English verb could also mean 'to strike, beat, coin (money), and forge (weapons)'. As these examples imply, all components of the grammar from meaning (semantics) to individual sounds (phonology) are subject to change.

8.1.1 Systematicity of language change

A striking fact about language change in general is its regularity and systematicity. For example, the development of a fixed subject-verb-direct object (SVO) word order in English did not affect just a few verbs; all verbs in Modern English appear before rather than after the direct object. Similarly, the changes affecting the vowel in the word *hām* did not occur in that word only; they represent the regular development of the Old English vowel *ā* ([aː]). (See table 8.1.)

TABLE 8.1 Changes affecting Old English [aː]

Old English	Middle English	Modern English	
[baːt]	[bɔːt]	[bowt]	'boat'
[aːθ]	[ɔːθ]	[owθ]	'oath'
[staːn]	[stɔːn]	[stown]	'stone'

8.1.2 Causes of language change

The inevitability of language change is guaranteed by the way in which language is passed on from one generation to the next. Children do not begin with an intact grammar of the language being acquired but rather must construct a grammar on the basis of the available data. In such a situation, it is hardly surprising that differences arise, even if only subtle ones, from one generation to the next. Moreover, since all children draw on the same physiological and cognitive endowment in learning language, it is to be expected that the same patterns of change will be consistently and repeatedly manifested in all languages. Following is a brief overview of the principal causes of language change.

Articulatory simplification

As might be expected, most sound changes have a physiological basis. Since such sound changes typically result in **articulatory simplification**, they have traditionally been related to the idea of 'ease of articulation'. Although this notion is difficult to define precisely, we can readily identify cases of articulatory simplification in our everyday speech, such as the deletion of a consonant in a complex cluster or, in some dialects, the insertion of a vowel to break up a complex cluster (see table 8.2).

TABLE 8.2 Simplification of complex clusters

Deletion of a consonant			
[fɪfθ̲s]	→	[fɪfs]	'fifths'
Insertion of a vowel			
[æθlit]	→	[æθə̲lit]	'athlete'

Spelling pronunciation

Not all changes in pronunciation have a physiological motivation. A minor, but nevertheless important, source of change in English and other languages is **spelling pronunciation**. Since the written form of a word can differ significantly from the way it is pronounced, a new pronunciation can arise that seems to reflect more closely the spelling of the word. A case in point is the word *often*. Although this word was pronounced with a [t] in earlier English, the voiceless stop was subsequently lost, resulting in the pronunciation [ɑfən] (compare *soften*). However, since the letter *t* was retained in the spelling, [t] has been reintroduced into many speakers' pronunciation of this word.

Another case in point is the pronunciation of [s] in words such as *assume* and *consume*. Although in earlier English such words were pronounced with [s], the presence of the high vowel [u] resulted in a pronunciation with [ʃ] (still heard in *assure*). However, similar to the case of *often* above, the influence of the spelling (which remained unchanged) led to the reintroduction of the pronunciation with [s] in many dialects.

Analogy and reanalysis

Cognitive factors also play a role in change in all components of the grammar. Two sources of change having a cognitive basis are **analogy** and **reanalysis**. Analogy reflects the preference of speakers for regular patterns over irregular ones. It typically involves the extension or generalization of a regularity on the basis of the inference that if elements are alike in some respects, they should be alike in others as well. Both phonological and semantic characteristics can serve as a basis for analogy. For example, on the basis of its phonological similarity with verbs such as *sting/stung* and *swing/swung*, in some dialects *bring* has developed a form *brung*, as in *I brung it into the house*. The effects of analogy can also be observed in the speech of children, who often generalize the regular *-ed* past tense form to produce forms such as *goed* and *knowed*. As we will see shortly, analogy plays a very important role in morphological change as well.

Reanalysis is particularly common in morphological change. Morphological reanalysis typically involves an attempt to attribute a compound or root + affix structure to a word that formerly was not broken down into component morphemes. A classic example in English is the word *hamburger*, which originally referred to a type of meat patty deriving its name from the city of Hamburg in Germany. This word has been reanalyzed as consisting of two components, *ham* + *burger*. The latter morpheme has since appeared in many new forms including *fishburger, chickenburger*, and even as the free morpheme *burger*. (Note that the reanalysis need not be correct. There is usually no ham in a burger—especially a *veggie burger*!)

Language contact

Another cause of language change is **language contact**. Language contact refers to the situation where speakers of a language frequently interact with the speakers of another language or dialect. As a consequence, extensive **borrowing** can occur, particularly where there are significant numbers of bilinguals or multilinguals. Although borrowing can affect all components of the grammar, the lexicon is typically most affected. English, for example, has borrowed many Aboriginal words including *Canada, moccasin, totem, tomahawk, chinook, moose*, and *skunk*.

Among the effects that borrowing can have on the sound system are the introduction of new phonemes or allophones and changes in their distribution. For example, some English speakers pronounce the name of the classical composer *Bach* with the final velar fricative [x] found in the German pronunciation. If there are a significant number of borrowings from another language, the borrowed foreign segment can eventually become a new phoneme. In the early Middle English period, the London dialect had [f] but not [v] in word-initial position. The [v] was introduced later as a result of contact with other English dialects and with French, in which it did occur word-initially. This contact was a likely factor in the development of a contrast between /f/ and /v/ word-initially, as found in Modern English pairs such as *file* and *vile*.

Language (as well as dialect) contact also results in another minor but nevertheless important source of language change, **hypercorrection**. Hypercorrection occurs when a speaker who is attempting to speak another dialect or language overgeneralizes particular rules. For example, most Canadians speak a dialect in which no distinction is made between intervocalic [t] and [d] so that words such as *latter* and *ladder* are both pronounced with an intervocalic flap [ɾ]. If a speaker from such a dialect attempts to emulate the pronunciation of a speaker from another dialect who does distinguish the two stops intervocalically, hypercorrection could result in the use of intervocalic [t] in words where [d] should be used; for example, the pronunciation *pro*[t]*igy* for *pro<u>d</u>igy*.

Another example of hypercorrection is the use of *I* in constructions such as *He saw John and I*. This usage is an overgeneralization of the rule that only *I* should be used in subject position, never *me*. According to this rule, *John and I are going* is correct but *John and me/Me and John are going* is incorrect. For some speakers, hypercorrection has resulted in the inference that all coordinate phrases containing *me* (such as *John and me*) are incorrect even when they serve as direct object (complement) of the verb. Note that even a person who says *He saw John and I* would not say **He saw I*.

8.2 Sound change

Although all components of the grammar are susceptible to change over time, some types of change yield more obvious results than others. Variation and change are particularly noticeable in the phonology of a language. Several common types of sound change can be distinguished.

Most sound changes begin as subtle alterations in the sound pattern of a language in particular phonetic environments. The linguistic processes underlying such **phonetically conditioned** change are identical to the ones found in the phonology of currently spoken languages. The application of such processes usually brings about an articulatory simplification, and over time significant changes in the phonology of a language can result.

Although all aspects of a language's phonology (e.g., tone, stress, and syllable structure) are subject to change over time, we will restrict our attention here to change involving segments. Since most sound changes involve sequences of segments, the main focus will be on **sequential change**. However, we will also discuss one common type of **segmental change**, involving the simplification of an affricate. In addition, in order to demonstrate that more than just articulatory factors play a role in sound change, we will discuss a case of sound change based on auditory factors. All important sound changes discussed in this section and referred to in this chapter are found in the catalogue of sound changes in table 8.3.

TABLE 8.3 Catalogue of sound changes

Sequential change

- Assimilation
  - Place and/or manner of articulation
  - Palatalization/affrication
  - Nasalization
  - Umlaut
- Dissimilation
- Epenthesis (segment addition)
- Metathesis (segment movement)
- Weakening and deletion
  - Vowels
    - Vowel reduction
    - Syncope
    - Apocope
  - Consonants
    - Degemination
    - Voicing
    - Frication
    - Rhotacism
    - Deletion
- Consonant strengthening
  - Glide strengthening

Segmental change

- Deaffrication

Auditorily based change

- Substitution

8.2.1 Sequential change

Assimilation

The most common type of sequential change is **assimilation**, which has the effect of increasing the efficiency of articulation through a simplification of articulatory movements. We will focus here on the four main types indicated in the catalogue in table 8.3.

Partial assimilation involving **place** or **manner of articulation** is a very common change that, over time, can result in total assimilation. In the Spanish and Latin examples in table 8.4, the nasal assimilated in place of articulation to the following consonant.

TABLE 8.4 Assimilation (place of articulation) in Spanish and Latin[2]

Old Spanish	semda	Modern Spanish	senda	'path'
Early Latin	inpossibilis	Later Latin	impossibilis	'impossible'

The first of the Old English examples in table 8.5 shows voicing assimilation and the second illustrates nasal assimilation (with /f/ becoming /m/ in front of /n/).

TABLE 8.5 Assimilation in Old English

Early Old English	**Later Old English**	
slǣpde	slǣpte	'slept'
stefn	stemn	'stem (of a plant)'

In the Italian examples in table 8.6, a stop assimilated totally to a following stop, resulting in a geminate, or extra long, consonant.

TABLE 8.6 Total assimilation in Italian

Latin	**Italian**	
octo (*c* = [k])	otto	'eight'
septem	sette	'seven'
damnum	danno	'damage'

Another type of assimilation is **palatalization**—the effect that front vowels and the palatal glide [j] typically have on velar, alveolar, and dental stops, making their place of articulation more palatal. If you compare your pronunciation of *keep* and *cot*, you will notice that the pronunciation of [k] in *keep* is much more palatal than in *cot* due to the influence of [i]. Palatalization is often the first step in **affrication**, a change in which palatalized stops become affricates: [ts] or [tʃ] if the original stop was voiceless, and [dz] or [dʒ] if the original stop was voiced (see table 8.7).

TABLE 8.7 Palatalization/affrication induced by front vowels and [j]

Examples from the Romance languages					
Latin	centum [k]	Italian	cento	[tʃ]	'one hundred'
Latin	medius [d]	Italian	mezzo	[dz]	'half'
Latin	gentem [g]	Old French	gent	[dʒ]	'people'

Nasalization refers to the nasalizing effect that a nasal consonant can have on an adjacent vowel. This change occurred in both French and Portuguese, with the subsequent loss of the nasal consonant. (The pronunciation of the vowels in the examples in table 8.8 underwent additional changes in French.)

TABLE 8.8 Nasalization in Portuguese and French

Latin	**Portuguese**	**French**	
bon-	bom [bõ]	bon [bɔ̃]	'good'
un-	um [ũ]	un [œ̃]	'one'

Although assimilation is probably most common in the case of adjacent segments, it can also apply at a distance. A case in point is **umlaut**, the effect a vowel or sometimes a glide in one syllable can have on the vowel of another syllable, usually a preceding one. Umlaut (resulting in the front rounded vowels [y] and [ø]) played an important role in Old English and is the source of irregular plurals such as *goose/geese* and *mouse/mice* in Modern English. For example, the plural of the pre-Old English words *gōs* 'goose' and *mūs* 'mouse' was formed by adding the suffix [-i]. As a result, umlaut of the vowel in the preceding syllable occurred in the plural forms (see pre-Old English stages 1 and 2 in table 8.9) but not in the singular forms. By early Old English, the suffix [-i] had been lost in a separate change, leaving the umlauted vowel as the marker of the plural form. (Subsequent changes included the derounding of the umlauted vowels [ȳ] and [ø̄], yielding [ī] and [ē] respectively by Middle English, and the Great Vowel Shift as described in section 8.2.4.)

TABLE 8.9 Umlaut in English Plurals

Pre-Old English 1		**Pre-OE 2**		**Early OE**		**Modern English, after subsequent changes**	
[gōs]	>	[gōs]	>	[gōs]	>	[gus]	'goose'
[gōsi]	>	[gøsi]	>	[gøs]	>	[gis]	'geese'
[mūs]	>	[mūs]	>	[mūs]	>	[maws]	'mouse'
[mūsi]	>	[mȳsi]	>	[mȳs]	>	[majs]	'mice'

Note: It is traditional in historical linguistics to use the sign > to mean 'changed into'.

Dissimilation

Dissimilation, the process whereby one segment is made less like another segment in its environment, is much less frequent than assimilation. This type of change typically occurs when it would be difficult to articulate or perceive two similar sounds in close proximity. The word *anma* 'soul' in Late Latin, for example, was modified to *alma* in Spanish, thereby avoiding two consecutive nasal consonants. Like assimilation, dissimilation can also operate at a distance to affect non-adjacent segments. For instance, the Latin word *arbor* 'tree' became *arbol* in Spanish and *albero* in Italian, thereby avoiding two instances of *r* in adjacent syllables. (By contrast, dissimilation did not occur in French, where *arbre* has retained both instances of *r*.)

Epenthesis

Another common sound change, **epenthesis**, involves the insertion of a consonant or vowel into a particular environment (see table 8.10). In some cases, epenthesis results from the anticipation of an upcoming sound.

TABLE 8.10 Epenthesis in Old English

Earlier form	Change			Later form	
ganra	VnrV	>	VndrV	gandra	'gander'
simle	VmlV	>	VmblV	simble	'always'
æmtig	VmtV	>	VmptV	æmptig	'empty'

In these examples, the epenthetic [d], [b], and [p] have the place of articulation of the preceding nasal but agree with the following segment in terms of voice and nasality. The epenthetic segment therefore serves as a bridge for the transition between the segments on either side (see table 8.11).

TABLE 8.11 The nature of epenthesis

[m]	[b]	[l]	[m]	[p]	[t]
labial	labial	non-labial	labial	labial	non-labial
nasal	non-nasal	non-nasal	nasal	non-nasal	non-nasal
voiced	voiced	voiced	voiced	voiceless	voiceless

In other cases, vowel epenthesis serves to break up a sequence of sounds that would otherwise be difficult to pronounce or even inconsistent with the phonotactic patterns of the language. As mentioned above, some English speakers avoid [θl] clusters by inserting an epenthetic [ə] in their pronunciation of words such as *athlete* as *ath*[ə]*lete*. In the history of Spanish, word-initial [sk] clusters were avoided by adding a vowel before the cluster (see table 8.12).

TABLE 8.12 Examples of epenthesis

Latin	schola [sk]	Spanish	escuela [esk]	'school'
Latin	scrībere [sk]	Spanish	escribir [esk]	'write'

Metathesis

Metathesis involves a change in the relative positioning of segments. This change, like assimilation and dissimilation, can affect adjacent segments (see table 8.13) or segments at a distance.

TABLE 8.13 Metathesis of adjacent segments in Old English

Earlier form	Later form	
wæps	wæsp	'wasp'
þridda	þirdda	'third'

Metathesis at a distance is found in the change from Latin *mīrāculum* 'miracle' to Spanish *milagro*, in which [r] and [l] have changed places although they were not adjacent (see figure 8.1).

FIGURE 8.1 Metathesis of non-adjacent segments in Spanish

Language Matters **Metathesis in Sign Language**

Although users of signed languages do not use their oral articulators to produce speech sounds, they do nonetheless *articulate*. The difference is that they use the shape, position, and orientation of the hands to create meaning. These gestures are subject to processes very much like the ones found in speech. For example, the sign for *deaf* in American Sign Language was originally made by touching the jaw beside the ear with the index finger, and then touching the cheek beside the mouth. Over time, the movement changed from upper jaw to lower cheek, to lower cheek to upper jaw, especially when following a sign that ended near the jaw. Today, both versions are acceptable.

Weakening and deletion

Both vowels and consonants are also susceptible to outright **deletion** as well as to various **weakening** processes. We will first treat the effects of these processes on vowels and then turn to their effects on consonants.

Vowel deletion commonly involves a word-final vowel (**apocope**) or a word-internal vowel (**syncope**) (see table 8.14). A vowel in an unstressed syllable is particularly susceptible to deletion, especially when a nearby neighbouring syllable is stressed.

TABLE 8.14 Vowel deletion in French

Apocope		
Latin	***French***	
cū̆ra	cure [kyʁ]	'cure'
ōrnā̆re	orner	'decorate'
Syncope		
Latin	***French***	
pē̆rdere	perdre	'lose'
vī̆vere	vivre	'live'

The effects of syncope are also apparent in the loss of the medial vowel in Modern English words such as *vegetable, interest*, and *family*, which are frequently pronounced as [véʤtəbl̩], [íntrɪst], and [fǽmli].

Language Matters **Frequency Contributes to Shortening**

More frequent words are, in general, more likely to have a shortened pronunciation than are less common words. That's why the middle vowel in *every* is far more likely to be dropped than the middle vowel in *summery* (in the sense of 'summerlike'). Words such as *memory* and *family*, which are intermediate in frequency, permit more variation in terms of whether the middle vowel is lost or retained.

Vowel deletion is commonly preceded diachronically by **vowel reduction**, in which a full vowel is reduced to a schwa-like vowel (i.e., short lax central [ə]). Vowel reduction typically affects short vowels in unstressed syllables and may affect all or only a subset of the full vowels (see figure 8.2).

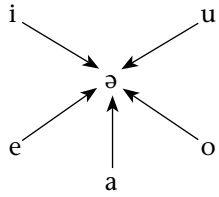


FIGURE 8.2 Vowel reduction

Vowel reduction with subsequent deletion (syncope and apocope) occurred in Middle English and Early Modern English, as shown in table 8.15.

TABLE 8.15 Vowel reduction and deletion in English

Syncope

Old English		***Middle English*** *(vowel reduction)*		***Early Modern English*** *(syncope)*	
stān<u>a</u>s (pl)	[a]	ston<u>e</u>s	[ə]	ston<u>e</u>s	Ø
stān<u>e</u>s (poss)	[e]	ston<u>e</u>s	[ə]	ston<u>e</u>'s	Ø

Apocope

Old English		***Middle English*** *(vowel reduction)*		***Early Modern English*** *(apocope)*	
nam<u>a</u>	[a]	nām<u>e</u>	[ə]	nam<u>e</u>	Ø
tal<u>u</u>	[u]	tāl<u>e</u>	[ə]	tal<u>e</u>	Ø

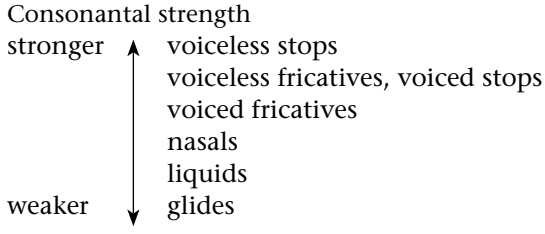
Consonant deletion is also a very common sound change. For example, the word-initial cluster [kn] was found in Old and Middle English, as the spelling of such words as *knight, knit, knot*, and *knee* implies, but the [k] was subsequently lost, giving us our modern pronunciation. The loss of word-final consonants has played a major role in the evolution of Modern French. The final letters in the written forms of the words in table 8.16 reflect consonants that were actually pronounced at an earlier stage of the language.

TABLE 8.16 Consonant loss in French

French spelling (masculine form)	**Current pronunciation**	
gros	[gro]	'large'
chaud	[ʃo]	'warm'
vert	[vɛr]	'green'

Just as vowel reduction can be identified as a weakening process since it represents an intermediate step on the pathway from a full vowel to deletion of the vowel, so too can pathways of **consonant weakening** be identified. The scale of **consonantal strength** in figure 8.3 can be helpful in identifying cases of weakening.

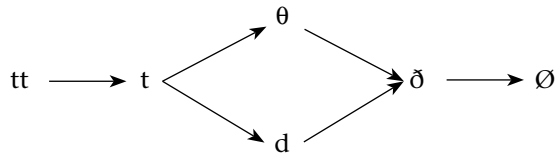
FIGURE 8.3 Scale of consonantal strength



Note: Geminate, or long, consonants are stronger than their non-geminate counterparts.

Geminates weaken to non-geminates (**degemination**), stops weaken to fricatives (**frication**), and voiceless stops or voiceless fricatives weaken to voiced stops or voiced fricatives respectively (**voicing**).[3] Weakening can ultimately result in the deletion of the consonant. Figure 8.4 is a typical pathway of weakening. (We use a double consonant here to represent gemination.)

FIGURE 8.4
Typical pathway of consonant weakening



Consonants are particularly subject to weakening in an intervocalic environment. Parts of the pathway of consonantal weakening are exemplified in table 8.17 with developments from the Romance languages.

TABLE 8.17 Consonantal weakening in Romance

Degemination (tt > t):	Latin	mi**tt**ere	Spanish	me**t**er	'to put'
Voicing (t > d):	Latin	mā**t**ūrus	Old Spanish	ma**d**uro	'ripe'
Frication (d > ð):	Old Spanish	ma**d**uro	Spanish	ma**d**uro [ð]	'ripe'
Deletion (ð > Ø):	Old French	[maðyr]	French	mûr	'ripe'

Rhotacism is a relatively common type of weakening that typically involves the change of [z] to [r]. Often rhotacism is preceded by a stage involving the voicing of [s] to [z]. Within the Germanic family of languages, for instance, [s] first became [z] in a particular intervocalic environment. This [z] remained in Gothic but became [r] in other Germanic languages such as English, German, and Swedish. The effects of the latter part of this change can be seen in the standard spellings of the words in table 8.18.

TABLE 8.18 Rhotacism in English, German, and Swedish

Gothic	**English**	**German**	**Swedish**
maiza	more	mehr	mera
diuzam	deer	Tier	djur
huzd	hoard	Hort	—

In Modern English, rhotacism is the source of the alternation between [z] and [r] in *was* and *were*. The [r] resulted from earlier [z], which was originally intervocalic.

Consonantal strengthening

Just as consonants weaken, they can also strengthen. **Glide strengthening** (the strengthening of a glide to an affricate) is particularly common, especially in word-initial position. In the Italian examples in table 8.19, the glide [j] has been strengthened to [dʒ].

TABLE 8.19 Glide strengthening in Italian

Latin	iūdicium	[j]	Italian	giudizio	[dʒ]	'justice'
Latin	iuvenis	[j]	Italian	giovane	[dʒ]	'young'

8.2.2 Segmental change

Segments such as affricates are considered phonologically complex because they represent the fusing of a stop plus a fricative into a single segment: e.g., [dʒ] or [ts]. Such complex segments are commonly subject to simplification. A very common type of segmental simplification is **deaffrication**, which has the effect of turning affricates into fricatives by eliminating the stop portion of the affricate (see table 8.20).

TABLE 8.20 Deaffrication in French

Old French	cent	[ts]	French	cent	[s]	'one hundred'
Old French	gent	[dʒ]	French	gent	[ʒ]	'people, tribe'

Since deaffrication of [tʃ] (as well as of [dʒ]) has not occurred in English, early borrowings from French maintain the affricate, while later borrowings have a fricative (see table 8.21).

TABLE 8.21 Borrowing from French

Early borrowings (before deaffrication occurred in French)

Old French [tʃ]	***English*** [tʃ]
chaiere	chair
chaine	chain

Note: Compare Modern French [ʃ] in *chaire* 'throne, seat' and *chaîne* 'chain'.

Later borrowings (after deaffrication occurred in French)

Modern French [ʃ]	***English*** [ʃ]
chandelier	chandelier
chauffeur	chauffeur

8.2.3 Auditorily based change

Although articulatory factors (particularly relating to 'ease of articulation') are of central importance in sound change as indicated in the discussion above, auditory factors also play a role. **Substitution** is a type of auditorily based change involving the replacement of one segment with another similar-sounding segment. A common type of substitution involves [f] replacing other voiceless non-strident fricatives, such as velar [x] and interdental [θ]. Earlier in the history of English, [f] replaced [x] in some words in standard varieties of English while [f] replaced [θ] in Cockney, a non-standard dialect spoken in London (see table 8.22).

TABLE 8.22 Auditorily based substitution

[x] > [f]	Middle English	laugh [x]	English	laugh [f]
[θ] > [f]	English	thin [θ]	Cockney	[fɪn]

So far we have treated sound changes without consideration of their effect on the sound pattern of the particular language as a whole. All the foregoing sound changes can lead both to new types of allophonic variation and to the addition or loss of phonemic contrasts. Examples of such cases are presented in the next section.

8.2.4 Phonetic versus phonological change

The sound changes outlined in the previous sections can affect the overall sound pattern (phonology) of a language in different ways. Commonly, the first stage of a sound change results in the creation of a new allophone of an already existing phoneme. The term **phonetic sound change** can be used to refer to this stage.

A good example of phonetic sound change involves the laxing of high vowels that has developed in Canadian French (see table 8.23). This change can be seen in closed word-final syllables, among other environments.

TABLE 8.23 Vowel laxing in Canadian French

European French	**Canadian French**	
Closed syllable		
[vit]	[vɪt]	'quick'
[libʁ]	[lɪbʁ]	'free'
[ekut]	[ekʊt]	'listen'
[pus]	[pʊs]	'thumb'
Open Syllable		
[vi]	[vi]	'life'
[li]	[li]	'bed'
[vu]	[vu]	'you'
[lu]	[lu]	'wolf'

Whereas Canadian French has the lax vowels [ɪ] and [ʊ] in closed word-final syllables, European French has kept the tense vowels [i] and [u]. Both dialects of French retain [i] and [u] in open syllables. This suggests that Canadian French has developed the rule in figure 8.5.

FIGURE 8.5
Vowel laxing rule in Canadian French

$$V_{[+high]} \rightarrow [-tense] \,/\, \_\_\_\ C\ (C)\ \#$$

Although this rule did introduce an allophone not present in European French, it did not create any new phonemes because there was no contrast between lax vowels and their tense counterparts in Canadian French.[4]

Splits

Sometimes sound change can lead to changes in a language's phonological system by adding, eliminating, or rearranging phonemes. Such **phonological change** can involve **splits**, **mergers**, or **shifts**.

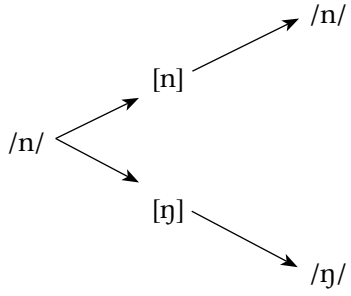
In a phonological split, allophones of the same phoneme come to contrast with each other due to the loss of the conditioning environment, with the result that one or more new phonemes are created. The English phoneme /ŋ/ was the result of a phonological split (see table 8.24). Originally, [ŋ] was simply the allophone of /n/ that appeared before a velar consonant. During Middle English, consonant deletion resulted in the loss of [g] in word-final position after a nasal consonant, leaving [ŋ] as the final sound in words such as *sing*.

TABLE 8.24 Phonological split resulting in /ŋ/

Original phonemic form	/sɪng/
Original phonetic form	[sɪŋg]
Deletion of [g]	[sɪŋg] > [sɪŋ]
New phonemic form	/sɪŋ/

The loss of the word-final [g] created minimal pairs such as *sin* (/sɪn/) and *sing* (/sɪŋ/), in which there is a contrast between /n/ and /ŋ/. This example represents a typical phonological split. When the conditioning environment of an allophonic variant of a phoneme is lost through sound change, the allophone is no longer predictable and thus becomes contrastive (i.e., phonemic). The original phoneme (in figure 8.6, /n/) splits into two phonemes (/n/ and /ŋ/).

FIGURE 8.6
A phonological split



Mergers

In a phonological merger, two or more phonemes collapse into a single one, thereby reducing the number of phonemes in the language. The case of auditorily based substitution discussed above has this effect in Cockney English, where all instances of the interdental fricative /θ/ have become /f/ (see figure 8.7). Consequently, the phonemes /θ/ and /f/ have merged into /f/ and words such as *thin* and *fin* have the same phonological form (/fɪn/). Similarly, /v/ and /ð/ have merged (e.g., /smuv/ for *smooth*).

FIGURE 8.7
A phonological merger

Shifts

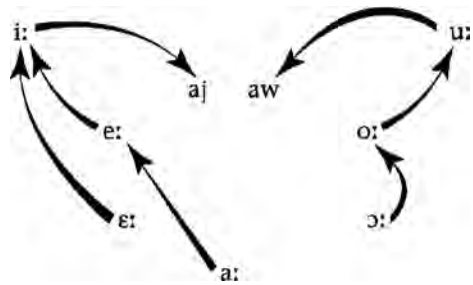
A phonological shift is a change in which a series of phonemes is systematically modified so that their organization with respect to each other is altered. A well-known example of such a change is called the Great English Vowel Shift. Beginning in the Middle English period and continuing into the eighteenth century, the language underwent a series of modifications to its long vowels (see table 8.25).

TABLE 8.25 The Great English Vowel Shift

Middle English	Great Vowel Shift			Modern English	
/tiːd/	/iː/	>	/aj/	/tajd/	‘tide’
/luːd/	/uː/	>	/aw/	/lawd/	‘loud’
/geːs/	/eː/	>	/iː/	/gis/	‘geese’
/sɛː/	/ɛː/	>	/iː/	/si/	‘sea’
/goːs/	/oː/	>	/uː/	/gus/	‘goose’
/brɔːkən/	/ɔː/	>	/oː/	/brokən/	‘broken’
/naːmə/	/aː/	>	/eː/	/nem/	‘name’

Figure 8.8 illustrates the changes that gradually affected the English long vowels.

FIGURE 8.8
Changes brought about by the Great English Vowel Shift

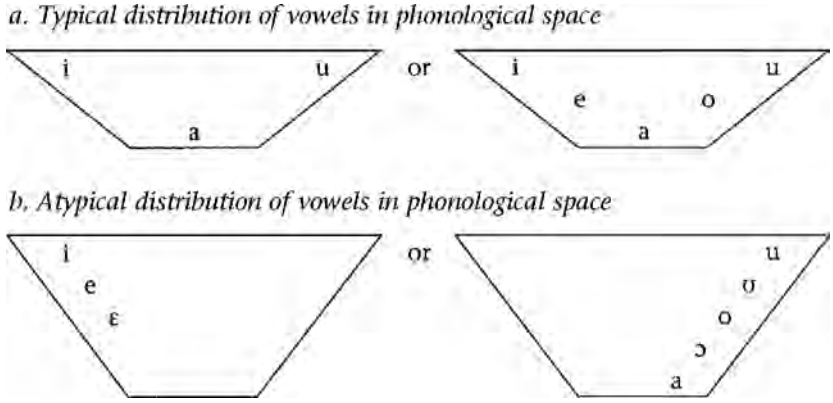


Another well-known shift, Grimm’s Law, is discussed later in section 8.7.4.

8.2.5 Explaining phonological shift

The causes and even the details of the Great English Vowel Shift remain unclear. In fact, the causes of phonological shift in general are not well understood. A possible motivation in some cases may involve the notion of phonological space. Although the vowel systems of languages can be arranged in various ways (see chapter 7), there is a tendency for languages to maximize the use of space in the vowel quadrangle (i.e., the oral cavity). Accordingly, if a language has only three vowels, they will likely be [i], [a], and [o] or [u], not (for example) [i], [e], [ɛ]. Similarly, if a language has five vowels, they will be distributed throughout the phonological space typically as [i], [e], [a], [o], [u] rather than [u], [ʊ], [a], [o], [ɔ], for example (see figure 8.9).

FIGURE 8.9
Common and uncommon vowel systems



Languages with seven (or more) vowels (e.g., English at the starting point of the Great English Vowel Shift illustrated in figure 8.8) often undergo **diphthongization**. This can be seen as a reaction to the overcrowding of the phonological space, since the effect of the diphthongization of a pair of vowels is to reduce a seven-vowel system to a five-vowel system. (Think of the two diphthongs as not infringing on the space of the simple vowels.)

8.2.6 Sound change and rule ordering

In describing language change, it is often crucial to identify the relative chronology, or order in which different changes have occurred. Three important changes in the history of English can be given as the (somewhat simplified) rules in figure 8.10.

FIGURE 8.10
Three rules in the history of English

1) Voicing
   C → [+voice] / [+voice] ___ [+voice]

2) Syncope
   V → Ø / ___ C #
   [–stress]

3) Suffix assimilation
   C → [+voice] / C ___
   [+voice]

These changes have played an important role in the evolution of English plural forms such as *hooves* (versus *hoof*) and *wolves* (versus *wolf*). Of the possible orderings of these three rules, only one will derive the contemporary pronunciation from the earlier (Old English) phonemic form. Two of the possible orderings are given in table 8.26.

TABLE 8.26 Rule ordering in the history of English

Hypothesis A		**Hypothesis B**	
Original phonemic form	/wulfas/	Original phonemic form	/wulfas/
Voicing	wulvas	Voicing	wulvas
Syncope	wulvs	Suffix assimilation	(cannot apply)
Suffix assimilation	wulvz	Syncope	wulvs (incorrect)

If we assume hypothesis A with the ordering voicing, syncope, and suffix assimilation, we can account for the [vz] in the modern pronunciation of a word such as *wolves*. By contrast, the ordering proposed in hypothesis B would not account for the present pronunciation.

8.3 Morphological change

In this section we discuss morphological changes resulting from analogy and reanalysis as well as changes involving the addition or loss of affixes.

8.3.1 Addition of affixes

Borrowing has been a very important source of new affixes in English. During the Middle English period, many French words containing the suffix *-ment* (e.g., *accomplishment, commencement*) made their way into the language. Eventually, *-ment* established itself as a productive suffix in English and was used with bases that were not of French origin (e.g., *acknowledgement, merriment*). The ending *-able*, which converts a verb into an adjective (e.g., *readable, lovable*, etc.), followed a similar pattern. Although words with this ending (e.g., *favourable, conceivable*) were initially borrowed into English as whole units, eventually the suffix became productive and was used with new bases.

Not all new affixes are the result of borrowing. Lexical forms can become grammatical forms over time through a process called **grammaticalization**. Grammaticalized forms often undergo dramatic phonological reduction, as well as semantic change in which they can lose much of their original content; for example, the Latin word *habeō* '(I) have, hold, grasp' is the source of the Italian future suffix *-ō*. In the first stage of grammaticalization, *habeō* remained an independent word but underwent semantic reduction and functioned as an auxiliary verb indicating future tense: for example, *amāre habeō* 'I will love'. When two words are frequently adjacent, over time they can become fused together to form a single unit consisting of a base and an affix. This specific type of grammaticalization, where words develop into affixes (either prefixes or suffixes), is called **fusion** (see table 8.27).

TABLE 8.27 Fusion

word word	>	base + affix (suffixation)
word word	>	affix + base (prefixation)

A number of Modern English suffixes have been derived from earlier words by means of fusion (see table 8.28).

TABLE 8.28 English suffixes resulting from fusion

Suffix		**Old English word**	
-hood (childhood)	<	hād	'state, condition, rank'
-dom (freedom)	<	dōm	'condition, power'
-ly (fatherly)	<	(ge-)līc	'similar, equal, like'

Fusion is also the source of the future tense suffixes in Italian, which are derived from various forms of the Latin word *habere* 'to have' (see table 8.29).

TABLE 8.29 Fusion resulting in a future tense suffix in Italian

Latin	**Italian**	
amāre habeō	amerò	'I will love'
amāre habēmus	ameremo	'we will love'

8.3.2 Loss of affixes

Just as affixes can be added to the grammar, they can also be lost. Sometimes affixes simply fall into disuse for no apparent reason. For example, a number of Old English derivational affixes, including *-oþ* and *-estre*, are no longer used (see table 8.30).

TABLE 8.30 Affixes no longer found in English

V + oþ > N (e.g., *hunt-oþ* 'hunting' from *hunt-ian* 'to hunt')
V + estre > N (e.g., *luf-estre* 'lover' from *luf-ian* 'to love')

It is also very common for affixes to be lost through sound change. For example, Old English had a complex system of affixes marking case and gender. Nouns were divided into three gender classes—masculine, neuter, and feminine. Assignment to a class was not based on sex (natural gender) but on grammatical gender; for example, the word for *stone* (Old English *stān*) and even a word for *woman* (*wīfmann*) were masculine, the word for *sun* (*sunne*) was feminine, and another word for *woman* (*wīf*) was neuter. Each gender class was associated with a different set of case endings (see table 8.31).

TABLE 8.31 Old English case affixes

	Masculine	**Neuter**	**Feminine**
	hund 'dog'	dēor 'animal'	gief 'gift'
Singular			
Nominative	hund	dēor	gief-u
Accusative	hund	dēor	gief-e
Genitive	hund-es	dēor-es	gief-e
Dative	hund-e	dēor-e	gief-e
Plural			
Nominative	hund-as	dēor	gief-a
Accusative	hund-as	dēor	gief-a
Genitive	hund-a	dēor-a	gief-a
Dative	hund-um	dēor-um	gief-um

The following Old English sentence contains all four case categories.

(2) Se cniht geaf gief-e þæs hierd-es sun-e.
the youth-NOM gave gift-ACC the shepherd-GEN son-DAT
'The youth gave a gift to the shepherd's son.'

By the fifteenth century, English case endings had changed radically. Consonant deletion resulted in the loss of the earlier [m] of the dative plural suffix, and through vowel reduction all the unstressed vowels of the case endings were reduced to the short lax vowel [ə] (which was later lost through vowel deletion). Consequently, many of the earlier case and gender distinctions were obliterated. (The examples in table 8.32 also include changes to the stem-internal vowels as the result of various processes, including the Great English Vowel Shift.)

TABLE 8.32 The loss of case affixes through sound change (in English *hound*)

	Old English	**Middle English (e = [ə])**	**Modern English**
Singular			
Nominative	hund	hund	hound
Accusative	hund	hund	hound
Genitive	hund-es	hund-(e)s	hound's
Dative	hund-e	hund-(e)	hound
Plural			
Nominative	hund-as	hund-(e)s	hounds
Accusative	hund-as	hund-(e)s	hounds
Genitive	hund-a	hund-(e)	hounds'
Dative	hund-um	hund-(e)	hounds

Whereas Old English had five distinct suffixes for cases, Middle English had only two suffixes, *-e* and *-es*, which, with the loss of schwa, were ultimately reduced to a single suffix *-s*, still used in Modern English for the plural and the possessive. This represents a typical example of how sound change can result in modification to the morphological component of the grammar.

8.3.3 From synthetic to analytic to synthetic

Since languages vary greatly in the complexity of their morphology, linguists often make a distinction between **analytic** and **synthetic** languages. Whereas analytic languages have very few inflectional affixes (e.g., Modern English), synthetic languages have many (e.g., Latin, Old English).

Even in the absence of borrowing, sound change and fusion ensure that there is an endless transition in the morphology of a language over time. As we have seen, due to the loss of case endings through sound change, English has developed from a synthetic language with many inflectional affixes to a more analytic one with very few, as the above discussion of nouns such as *hound* indicates.

By contrast, fusion ensures the rise of new synthetic forms. Fusion can be observed in some Modern English dialects in forms such as *coulda* (e.g., *I coulda won*), which represents the fusion of *could* and *have*. For many speakers, the *-a* is treated as a suffix that is no longer related to *have*, as evident in spellings such as *coulda*. Through fusion, a language with an analytic morphology can become more synthetic over time.

8.3.4 Analogy

The drastic effects that sound change can have on the morphology of a language are often alleviated through analogy. For example, the plural of Old English *hand* 'hand' was *handa*. Vowel reduction and apocope applying to *handa* would have yielded a Modern English plural form identical to the singular form, namely *hand* (see table 8.33).

TABLE 8.33 Potential sound changes applied to Old English *handa* 'hands'

handa	
handə	vowel reduction
hand	apocope

The Modern English plural *hands* is obviously not the consequence of sound change. Rather, it is the result of earlier analogy with words such as Middle English *hund* 'hound' (see table 8.32), which did form the plural with the suffix *-s*. This suffix, whose earlier form *-as* was predominant even in Old English, was extended by analogy to all English nouns with a few exceptions (*oxen, men, geese*, etc.). Other plural forms besides *hands* that were created on the basis of analogy include *eyes* (*eyen* in Middle English) and *shoes* (formerly *shooen*).

Continuing analogy along these lines is responsible for the development of the plural form *youse* (from *you*) in some English dialects. Each generation of English-speaking children temporarily extends the analogy still further by producing forms such as *sheeps, gooses*, and *mouses*. To date, however, these particular innovations have not been accepted by adult speakers of Standard English and are eventually abandoned by young language learners.

8.3.5 Reanalysis

As mentioned in section 8.1.2, reanalysis can result in a new morphological structure for a word. It can affect both borrowed words and, particularly in cases where the morphological structure of the word is no longer transparent, native words. Reanalysis can result in new productive patterns (as in the case of *(-)burger*) or it can remain quite isolated, affecting perhaps only one word. Since the type of reanalysis exemplified by *hamburger* is not based on a correct analysis of a word (at least from a historical perspective) and does not usually involve a conscious or detailed study of the word on the part of the speaker, it is often called **folk etymology** (see table 8.34).

TABLE 8.34 Folk etymology in English (native words and borrowings)

Modern word	Source
belfry	Middle English *berfrey* 'bell tower' (unrelated to *bell*)
bridegroom	Middle English *bridegome* (unrelated to *groom*)(compare Old English *brȳd* 'bride' and *guma* 'man')
muskrat	Algonquian *musquash* (unrelated to either *musk* or *rat*)
woodchuck	Algonquian *otchek* (unrelated to either *wood* or *chuck*)

In the case of *hamburger*, the only evidence of folk etymology is the productive use of *burger* as an independent word and in compounds like *fishburger*. However, in other cases, folk etymology commonly involves changes in pronunciation that reflect the new morphological analysis. For example, our word *earwig* derives from Old English *ēarwicga* [ǣərwidʒa], a compound consisting of 'ear' and 'insect'. Taking into consideration sound change alone, the expected Modern English pronunciation of this word would be *earwidge* [irwɪdʒ]. However, the second part of the compound was lost as an independent word by Middle English, so speakers could no longer associate it with the meaning of 'insect'. Subsequently, reanalysis related the second part of the compound to the verb 'wiggle' resulting in Middle English *arwygyll* (literally 'ear + wiggle'). The end result is Modern English *-wig* and not *-widge*.

Although reanalysis of individual words is common, affixes can also be affected, sometimes with new productive morphological rules developing as a result. This is the case of the Modern English adverbial suffix *-ly* (from Old English *-lic-e*). In Old English, adjectives

could be derived from nouns by adding the suffix *-lic*. Adverbs, in turn, could be derived by adding the suffix *-e* to adjectives (including those derived with *-lic*) (see table 8.35). At some point, the entire complex suffix *-lic+e* was reanalyzed as an adverbial suffix (rather than as an adjectival suffix *-lic* plus an adverbial suffix *-e*). It was then used by analogy to derive adverbs from adjectives in forms where it was not used before, resulting in Modern English *deeply* and other such words.

TABLE 8.35 The derivation of Old English adjectives and adverbs

Formation of an adjective from a noun				
$[dæg]_N$	+ -lic	→	$[dæglic]_A$	'daily' (e.g., as in 'daily schedule')
Formation of an adverb from an adjective				
$[dēop]_A$	+ -e	→	$[dēope]_{Adv}$	'deeply'
Formation of an adverb from a derived adjective with *-lic*				
$[dæg+lic]_A$	+ -e	→	$[dæglice]_{Adv}$	'daily' (e.g., as in 'she ran daily')

8.4 Syntactic change

Like other components of the grammar, syntax is also subject to change over time. Syntactic changes can involve modifications to phrase structure (such as word order) and to transformations, as the following examples illustrate.

8.4.1 Word order

All languages make a distinction between the subject and direct object. This contrast is typically represented through case marking or word order. Since Old English had an extensive system of case marking, it is not surprising that its word order was somewhat more variable than that of Modern English. In unembedded clauses, Old English placed the verb in second position (much like Modern German). Thus we find subject-verb-object order in simple transitive sentences such as the following.

(3)

S	V	O
Hē	geseah	þone mann.
'He	saw	the man.'

When the clause began with an element such as *þa* 'then' or *ne* 'not', the verb preceded the subject as in the following example.

(4)

	V	S	O
þa	sende	sē cyning	þone disc
then	sent	the king	the dish

'Then the king sent the dish.'

Although this word order is still found in Modern English, its use is very limited and subject to special restrictions, unlike the situation in Old English.

(5) V S O
Rarely has he ever deceived me.

When the direct object was a pronoun, the subject-object-verb order was typical.

(6) S O V
Hēo hine lǣrde.
She him advised
'She advised him.'

The subject-object-verb order also prevailed in embedded clauses, even when the direct object was not a pronoun.

(7) S O V
þa hē þone cyning sōhte, hē bēotode.
when he the king visited, he boasted
'When he visited the king, he boasted.'

After case markings were lost during the Middle English period through sound change, fixed subject-verb-object order became the means of marking grammatical relations. As table 8.36 shows, a major change in word order took place between 1300 and 1400, with the verb-object order becoming dominant.

TABLE 8.36 Word order patterns in Middle English

Year	**1000**	**1200**	**1300**	**1400**	**1500**
Direct object before the verb (%)	53	53	40	14	2
Direct object after the verb (%)	47	47	60	86	98

From SOV to SVO

Just as languages can be classified in terms of their morphology, languages can also be grouped on the basis of the relative order of subject (S), object (O), and verb (V) in basic sentences. Almost all languages of the world fall into one of three types: SOV, SVO, or VSO, with the majority of languages being one of the first two types. Just as languages change through time from one morphological type to another, they can also change from one syntactic type to another. A case in point is found in the history of English, which shows the development from SOV to SVO syntax.

Evidence indicates that the earliest form of Germanic from which English descended was an SOV language. One of the earliest recorded Germanic sentences, for example, has this word order. The sentence in (8) was inscribed on a golden horn (now called the Golden Horn of Gallehus) about 1600 years ago.

(8) Horn of Gallehus

S		O	V
ek HlewagastiR	HoltijaR	horna	tawido
I Hlewagastir	of Holt	horn	made

'I, Hlewagastir of Holt, made the horn.'

Another type of evidence for an earlier SOV order is found in morphological fusion (see section 8.3.1). Since fusion depends on frequently occurring syntactic patterns, it can sometimes serve as an indicator of earlier syntax. The OV compound, very common in Old English (as well as in Modern English), likely reflects an earlier stage of OV word order (see table 8.37).

TABLE 8.37 Old English compounds with OV structure

manslæht	'man' + 'strike'	'manslaughter, murder'
æppelbǣre	'apple' + 'bear'	'apple-bearing'

If the earliest Germanic was SOV and Modern English is firmly SVO, then Old English represents a transitional syntactic type. In developing from SOV syntax to SVO syntax, languages seem to follow similar pathways. For example, Modern German, which developed from the same Germanic SOV source as English, shares two of Old English's distinguishing characteristics. Not only is the verb typically placed in the second position of the sentence in main clauses, preceded by the subject or some other element (such as an adverb), SOV order is employed for embedded clauses.

(9) Modern German word order

a. Verb in second position in unembedded clauses
(Compare the Old English sentence in [4].)

	V	S		O
Gestern	hatte	ich	keine	Zeit.
yesterday	had	I	no	time

'I had no time yesterday.'

b. SOV in embedded clauses
(Compare the Old English sentence in [7].)

	S	O	V
Als	er	den Mann	sah . . .
when	he	the man	saw

'When he saw the man . . .'

The change from SOV to SVO is not restricted to English and other Germanic languages. The same change is evident in completely unrelated languages such as those of the Bantu family of Africa. Since linguists are still not sure why languages change from one syntactic type to another, the causes of such change will undoubtedly remain an important area of investigation, especially since the relative order of verb and object (OV versus VO) has been closely linked with other word order patterns.

8.4.2 Inversion in the history of English

In Old and Middle English, Inversion (the operation that moves auxiliary verbs to the left of the subject in yes-no questions) could apply to all verbs, not just auxiliaries, yielding forms that would be unacceptable in Modern English.

(10) Speak they the truth?

During the sixteenth and seventeenth centuries, the Inversion rule was changed to apply solely to auxiliary verbs.

(11) *Inversion (old form)*
The V moves to the left of the subject
They speak → Speak they?
They can speak → Can they speak?

Inversion (new form)
The Aux moves to the left of subject
They speak → *Speak they?
They can speak → Can they speak?

With this change, structures such as *Speak they the truth?* were no longer possible. The corresponding question came to be formed with the auxiliary *do* as in *Do they speak the truth?*[5]

8.5 Lexical and semantic change

Another obvious type of language change involves modifications to the lexicon. Since we have already dealt with some changes relating to derivational and inflectional morphology in section 8.3, the main focus here will be on lexical change involving entire words. Simply stated, there are two possible types of lexical change: addition and loss. The addition or loss of words often reflects cultural changes that introduce novel objects and notions and that eliminate outmoded ones.

8.5.1 Addition of lexical items

Addition is frequently the result of technological innovations or contact with other cultures. Such developments result in **lexical gaps** that can be filled by adding new words to the lexicon. New words are added either through the word formation processes available to the language or through borrowing.

Word formation

The most important word formation processes are compounding and derivation, although other types, including conversion, blending, backformation, clipping, and acronyms can play a significant role.

Compounding and derivation have always been available to English speakers for the creation of new words. In fact, much of the compounding and derivation in Old English seems very familiar (see table 8.38).

TABLE 8.38 Compounding and derivation in Old English

Noun compounds				
N + N		sunbēam		'sunbeam'
A + N		middelniht		'midnight'
Adjective compounds				
N + A		blōdrēad		'blood-red'
A + A		dēadboren		'stillborn'
Derived nouns				
$[bæc]_V$	-ere	→	bæcere	'baker'
$[frēond]_N$	-scipe	→	frēondscipe	'friendship'
Derived adjectives				
$[wundor]_N$	-full	→	wundorfull	'wonderful'
$[cild]_N$	-isc	→	cildisc	'childish'

Just as speakers of Modern English can use compounding and derivational rules to create new words (e.g., the N + N compound *airhead*), so could Old English speakers create new words such as the poetic N + N compound *hwælweg*, literally 'whale' + 'path', to mean 'sea'.

Language Matters **Dictionaries as Historical Records**

There are some dictionaries, such as the *Oxford English Dictionary*, that provide us with a window on language change. A lexical entry includes not only definitions of the word, but also examples of how the word has been used in written documents over many years. Consider the citations for the word *linguist*:

1591. Shakespeare, *Two Gentlemen of Verona*. "Seeing you are beautiful, with goodly shape; and by your owne report A Linguist."

1695. Edwards, *Perfect Script*. "Here linguists and philologists may find that which is to be found no where else."

The Oxford English Dictionary 2e (1989): Definition of "linguist." By Permission of Oxford University Press.

Even though many Old English compounding and derivational patterns have been maintained in Modern English, words that were acceptable in Old English are not necessarily still in use in Modern English, despite the fact that they are often quite understandable (see table 8.39).

TABLE 8.39 Old English compound and derived forms that are no longer used

Noun compounds				
N + N	bōccræft ('book' + 'craft')			'literature' (compare *witchcraft*)
A + N	dimhūs ('dim' + 'house')			'prison'
Adjective compounds				
N + A	ælfscīene ('elf' + 'beautiful')			'beautiful as a fairy'
A + A	eallgōd ('all' + 'good')			'perfectly good'
Derived nouns				
$[sēam]_V$	-ere	→	sēamere	'tailor' (compare *seamster, seamstress*)
$[man]_N$	-scipe	→	manscipe	'humanity' (compare *friendship*)
Derived adjectives				
$[word]_N$	-full	→	wordfull	'wordy' (compare *wonderful*)
$[heofon]_N$	-isc	→	heofonisc	'heavenly' (compare *childish*)

Not all word formation processes available to Modern English speakers were found in Old English. For example, conversion (as in Modern English $[summer]_N \rightarrow [summer]_V$) was not possible in Old English. In fact, this process is typically not available to (synthetic) inflectional languages such as Old English, since change in a word's category in such languages is usually indicated morphologically; by definition, conversion does not involve the use of affixes.

Borrowing

As discussed in section 8.1.2, language contact over time can result in an important source of new words: borrowing. Depending on the cultural relationship holding between languages, three types of influence of one language on the other are traditionally identified: **substratum, adstratum**, and **superstratum** influence.

Substratum influence is the effect of a politically or culturally non-dominant language on a dominant language in the area. Both Canadian and American English and Canadian French, for instance, have borrowed vocabulary items from Aboriginal languages (see examples in section 8.1.2). From a much earlier period in the history of English, the influence of a Celtic substratum is also evident, particularly in place names such as *Thames, London*, and *Dover*. Substratum influence does not usually have a major impact on the lexicon of the borrowing language. Borrowed words are usually restricted to place names and unfamiliar items or concepts. This situation reflects the fact that it is usually the speakers of the substratum language who inhabited the area first.

Superstratum influence is the effect of a politically or culturally dominant language on another language or languages in the area. For example, the Athabaskan language Gwich'in

(Loucheux) (spoken in Canada's Northwest Territories) has borrowed a number of governmental terms and expressions from English, including *bureaucratic, constituents, program, business, development*, and *political*.

In the case of English, Norman French had a superstratum influence. The major impact of French on the vocabulary of English is related to a historical event—the conquest of England by French-speaking Normans in 1066. As the conquerors and their descendants gradually learned English over the next decades, they retained French terms for political, judicial, and cultural notions (see table 8.40). These words were in turn borrowed by native English speakers who, in trying to gain a place in the upper middle class, were eager to imitate the speech of their social superiors. Not surprisingly, borrowing was especially heavy in the vocabulary areas pertaining to officialdom: government, the judiciary, and religion. Other areas of heavy borrowing include science, culture, and warfare.

TABLE 8.40 Some French loan words in English

Government	tax, revenue, government, royal, state, parliament, authority, prince, duke, slave, peasant
Religion	prayer, sermon, religion, chaplain, friar
Judiciary	judge, defendant, jury, evidence, jail, verdict, crime
Science	medicine, physician
Culture	art, sculpture, fashion, satin, fur, ruby
Warfare	army, navy, battle, soldier, enemy, captain

Language Matters **Getting Rid of French**

The following whimsical piece, from the March 14, 2003, *Christian Science Monitor*, gives you an idea what English would be like without the influence of French.

> The Franco-American ~~dispute~~ *falling out* over the best ~~approach~~ *way* to ~~disarming Iraq~~ *take away Iraq's weapons* has resulted in perhaps the highest ~~level of~~ anti-French feeling in the United ~~States~~ *Lands* since 1763.
>
> A French-owned ~~hotel~~ *innkeeping* firm, Accor, has taken down the ~~tricolor~~ *three-hued* flag. In the House of ~~Representatives~~ *Burghers*, the ~~chairman~~ *leader* of the ~~Committee~~ *Body* on ~~Administration~~ *Running Things* has ~~renamed~~ *named anew* French fries "freedom fries" and French toast "freedom toast" in House ~~restaurants~~ *eating rooms*.
>
> It is time for English-speaking ~~peoples~~ *folk* to throw off this cultural ~~imperialism~~ *lording-it-over-others* and ~~declare~~ *say* our linguistic freedom. It is time to ~~purify~~ *clean* the English ~~language~~ *tongue*. It will take some ~~sacrifices~~ *hardship* on everyone's part to get used to the new ~~parlance~~ *speech*. But think of the ~~satisfaction~~ *warm feeling inside* on the day we ~~are all able to~~ *can all* stare the *Académie Française* in the eye and say without fear of ~~reprisal~~ *injury*: "*Sumer is icumen in . . .*"

In some cases, French loan words were used in conjunction with native English words to convey distinctions of various sorts. For a minor crime, for example, the English word *theft* was employed, but for a more serious breach of the law, the French word *larceny* was used. The English also kept their own words for domestic animals, but adopted the French words for the meat from those creatures (see table 8.41).

TABLE 8.41 French loan words used in conjunction with native English words

English origin	French origin
cow	beef
calf	veal
sheep	mutton
pig	pork

Adstratum influence refers to the situation where two languages are in contact and neither one is clearly politically or culturally dominant. In a city such as Montreal, with its large number of bilingual speakers, English and French inevitably influence each other (see table 8.42).

TABLE 8.42 French influence on Montreal English

Montreal English	
subvention	'subsidy'
metro	'subway'
autoroute	'highway'

Language Matters **Multiple Borrowings**

Languages have been known to borrow back their own words. For example, the French word *biftek* comes from the English word *beefsteak*. However, earlier, English borrowed the French word *boeuf* as *beef*.

Earlier in the history of English, when the Scandinavians settled part of England beginning in 800 AD, there was substantial contact between the speakers of English and Scandinavian, resulting in an adstratum relationship. As evident in the examples in tables 8.42 and 8.43, adstratum contact usually results in the borrowing of common, everyday words. In fact, without consulting a dictionary, most English speakers could not distinguish between borrowings from Scandinavian languages and native English words.

TABLE 8.43 Some loan words from Scandinavian languages

anger, cake, call, egg, fellow, gear, get, hit, husband, low, lump, raise, root, score, seat, skill, skin, take, their, they, thrust, ugly, window, wing

Borrowed words from many other languages attest to various types of cultural contact and serve often to fill the lexical gaps such contact inevitably brings (see table 8.44).

TABLE 8.44 Some lexical borrowings into English

Italian	motto, artichoke, balcony, casino, mafia, malaria
Spanish	comrade, tornado, cannibal, mosquito, banana, guitar, vigilante, marijuana
German	poodle, kindergarten, seminar, noodle, pretzel
Dutch	sloop, cole slaw, smuggle, gin, cookie, boom
Slavic languages	czar, tundra, polka, intelligentsia, robot
Aboriginal languages	toboggan, opossum, wigwam, chipmunk, Ottawa, Toronto
Hindi	thug, punch (drink), shampoo, chintz

Although borrowing has been a very rich source of new words in English, it is noteworthy that loan words are least common among the most frequently used vocabulary items. This reflects a general tendency for highly frequent words to be relatively resistant to loss or substitution (see table 8.45).

TABLE 8.45 Origin of the 5000 most frequent words in English

Degree of frequency	**Source language (%)**			
	English	***French***	***Latin***	***Other***
First 1000	83	11	2	4
Second 1000	34	46	11	9
Third 1000	29	46	14	11
Fourth 1000	27	45	17	11
Fifth 1000	27	47	17	9

8.5.2 Loss of lexical items

Just as words can be added to the lexicon, they can also be lost. Changes in society play an important role in the loss of words as lexical items often fall into disuse because the object or notion they refer to has become obsolete (see table 8.46).

TABLE 8.46 Some Old English words lost through cultural change

dolgbōt	'compensation for wounding'
þeox	'hunting spear'
eafor	'tenant obligation to the king to convey goods'
flȳtme	'a blood-letting instrument'

Language Matters **Borrowing Phrases**

Sometimes languages borrow simple phrases or expressions and translate them word-for-word. The following are all examples of common English phrases that came from another language.

English phrase	*Source phrase*
brainwashing	Chinese *xiù naùo*
flea market	French *marché aux puces*
antibody	German *Antikörper*
moment of truth	Spanish *el momento de la verdad*

8.5.3 Semantic change

Although changes in word meaning take place continually in all languages, words rarely jump from one meaning to an unrelated one. Typically, the changes occur step by step and involve one of the following phenomena.

Semantic broadening is the process in which the meaning of a word becomes more general or more inclusive than its historically earlier form (see table 8.47).

TABLE 8.47 Semantic broadening

Word	Old meaning	New meaning
bird	'small fowl'	'any winged creature'
barn	'place to store barley'	'farm building for storage and shelter'
aunt	'father's sister'	'father or mother's sister'

Semantic narrowing is the process in which the meaning of a word becomes less general or less inclusive than its historically earlier meaning (see table 8.48).

TABLE 8.48 Semantic narrowing

Word	Old meaning	New meaning
hound	'any dog'	'a hunting breed'
meat	'any type of food'	'flesh of an animal'
fowl	'any bird'	'a domesticated bird'
disease	'any unfavourable state'	'an illness'

Language Matters **Dictionaries Help Track Meaning Changes**

The word *girl* in Middle English was used to refer to a child of either sex. Note the following definition from the *Oxford English Dictionary*:

> Girl. A child or young person of either sex; a youth or maiden.
> 1290. "And gret prece of gurles and men comen hire."
> ('And a great throng of children and men came here.')

The Oxford English Dictionary 2e (1989): Definition of "girl" By Permission of Oxford University Press.

In **amelioration**, the meaning of a word becomes more positive or favourable. The opposite change, **pejoration**, also occurs (see tables 8.49 and 8.50).

TABLE 8.49 Amelioration

Word	Old meaning	New meaning
pretty	'tricky, sly, cunning'	'attractive'
knight	'boy'	'a special title or position'

TABLE 8.50 Pejoration

Word	Old meaning	New meaning
silly	'happy, prosperous'	'foolish'
wench	'girl'	'wanton woman, prostitute'

Given the propensity of human beings to exaggerate, it is not surprising that the **weakening** of meaning frequently occurs. For example, our word *soon* used to mean 'immediately' but now simply means 'in the near future'. Other examples are provided in table 8.51.

TABLE 8.51 Weakening

Word	Old meaning	New meaning
wreak	'avenge, punish'	'to cause, inflict'
quell	'kill, murder'	'to put down, pacify'

Semantic shift is a process in which a word loses its former meaning and takes on a new, but often related, meaning (see table 8.52).

Sometimes a series of semantic shifts occurs over an extended period of time, resulting in a meaning that is completely unrelated to the original sense of a word. The word *hearse*, for example, originally referred to a triangular harrow (a farming implement). Later, it denoted a

TABLE 8.52 Semantic shift

Word	Old meaning	New meaning
immoral	'not customary'	'unethical'
bead	'prayer'	'prayer bead, bead'

triangular frame for church candles and later still it was used to refer to the device that held candles over a coffin. In a subsequent shift, it came to refer to the framework on which curtains were hung over a coffin or tomb. Still later, *hearse* was used to refer to the coffin itself before finally taking on its current sense of the vehicle used to transport a coffin.

In the late twentieth century, the word *gay* underwent a dramatic and unusually rapid set of shifts. Just a few generations earlier, this word was typically used in the sense of 'lively, carefree, happy'. It then came to designate 'homosexual', and a phrase such as 'a gay film' would be interpreted in this sense.

One of the most striking types of semantic change is triggered by **metaphor**, a figure of speech based on a perceived similarity between distinct objects or actions. Metaphorical change usually involves a word with a concrete meaning taking on a more abstract sense, although the word's original meaning is not lost. The meanings of many English words have been extended through metaphor (see table 8.53).

TABLE 8.53 Some examples of metaphor in English

Word	Metaphorical meaning
grasp	'understand'
yarn	'story'
high	'on drugs'

8.6 The spread of change

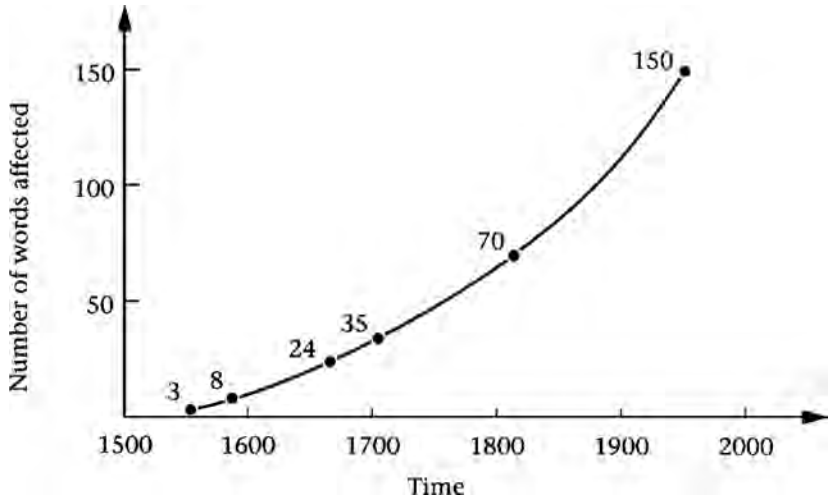
Up to this point, we have been concerned with the causes and description of linguistic change. Still to be dealt with is the question of how linguistic innovations spread. This section focuses on two types of spread, one involving the way in which an innovation is extended through the vocabulary of a language and the other involving the way in which it spreads through the population.

8.6.1 Diffusion through the language

Some linguistic change first manifests itself in a few words and then gradually spreads through the vocabulary of the language. This type of change is called **lexical diffusion**. A well-attested example in English involves an ongoing change in the stress pattern of words such as *convert*, which can be used as either a noun or a verb. Although the stress originally fell on the second syllable regardless of lexical category, in the latter half of the sixteenth

century three such words, *rebel, outlaw*, and *record*, came to be pronounced with the stress on the first syllable when used as nouns. As figure 8.11 illustrates, this stress shift was extended to an increasing number of words over the next decades.

FIGURE 8.11
Diffusion of stress shift in English



This change still has not diffused through the entire vocabulary of English. There are about a thousand nouns of the relevant sort that still place the stress on the second syllable (e.g., *report, mistake*, and *support*). Table 8.54 illustrates the spread of this change to date.

TABLE 8.54 Stress shift in English (nouns)

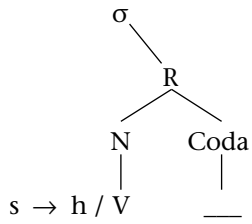
Before the 16th century	During the 16th century	During the 18th century	Today
rebél	rébel	rébel	rébel
affíx	affíx	áffix	áffix
recéss	recéss	recéss	récess
mistáke	mistáke	mistáke	mistáke

This ongoing change can be observed in progress today. The noun *address*, for example, is pronounced by many people with stress on the first syllable as [ǽdrɛs], although the older pronunciation [ədrés] is still heard. Some speakers alternate between the two pronunciations. This change may continue to work its way through the language until all nouns in the class we have been considering are stressed on the first syllable.

The changes discussed in the section on analogy also spread word by word. For example, the transition of strong (irregular) verbs (the *sing/sang/sung* type) to the weak verb class (regular verbs with past tense *-ed*) is an ongoing change. Both strong and weak past tense forms of original strong verbs such as *dive* and *shine* are heard in current English: *dove/dived* and *shone/shined*.

However, not all linguistic change involves gradual diffusion through the vocabulary of a language. Sound changes typically affect all instances of the segment(s) involved. For example, in some dialects of Spanish (such as Cuban) the consonantal weakening of [s] to [h] in syllable-final position affects all instances of *s* in those positions. The relevant rule can be stated as in figure 8.12.

FIGURE 8.12 Consonant weakening of [s] to [h] in certain Spanish dialects



This rule has resulted in changes such as those exemplified in table 8.55.

TABLE 8.55 The effects of the [s] to [h] change in Spanish dialects

Standard pronunciation	New pronunciation	
[felismente]	[felihmente]	'happily'
[estilo]	[ehtilo]	'type'
[espaɲa]	[ehpaɲa]	'Spain'

This change is entirely regular, affecting all instances of syllable-final [s] in the speech of individuals who adopt it.

Two types of language change can thus be identified. One, exemplified by the stress shifts in bisyllabic English nouns of the type we have discussed, affects individual words one at a time and gradually spreads through the vocabulary of the language. The other, exemplified by the consonant weakening of syllable-final [s] to [h] in some dialects of Spanish, involves an across-the-board change that applies without exception to all words.

8.6.2 Spread through the population

For a language change to take place, the particular innovation must be accepted by the linguistic community as a whole. For example, although children acquiring English typically form the past tense of *go* as *goed* instead of *went, goed* has never received widespread acceptance. Doubtless the verb form in *he throve on fame* would be equally unacceptable to most speakers today. In earlier English, however, *throve* was the past tense form of *thrive* (compare *drive/drove*). At some point in the past then, the novel form *thrived* did receive general acceptance. It's no coincidence that the irregular form that survived is from a frequent verb, and the one that was lost is from a verb that is less commonly used. The frequency with which irregular forms are heard and used is a major determinant of their longevity.

Just as change sometimes begins with a small number of words, the effects of a change often appear first in the speech of only a small number of people. Social pressures often play an important role in whether a particular innovation will spread through the entire linguistic community. Since speakers can consciously or subconsciously alter the way they speak to approximate what they perceive to be a more prestigious or socially desirable variety of speech, once a change has taken hold in the speech of a particular group it may gradually spread to other speakers and ultimately affect the entire linguistic community.

There have been numerous examples of this in the history of English, notably the loss of postvocalic [r] along the east coast of the United States. This change, which led to an '*r*-less' pronunciation of words such as *far* as [fa:], originated in parts of England in the seventeenth and eighteenth centuries. At that time, postvocalic [r] was still pronounced throughout English-speaking settlements in North America. Two factors accounted for its loss in parts of this continent. First, the children of the New England gentry picked up the new pronunciation in British schools and subsequently brought it back to the colony. Second, the speech of newly arrived immigrants, including colonial administrators and church officials who enjoyed high social status in the colony, typically lacked the postvocalic [r]. As a result, the innovation was widely imitated and ultimately spread along much of the east coast and into the south.

Social pressures were also involved in limiting the spread of this innovation. It did not penetrate Pennsylvania or the other midland states since the most prestigious group of settlers there were Quakers from northern England, an area that retained the postvocalic [r]. Similarly, in Canada, the influence of Scottish and Irish settlers, whose dialects did not undergo the change in question, helped ensure the survival of postvocalic [r] in all but a few areas where contact with New England was strongest, most notably Lunenburg County in Nova Scotia and Grand Manan Island in New Brunswick. More recently the '*r*-less' pronunciation has become stigmatized in some areas, even where it was previously firmly entrenched, and we now see a trend to restoration of [r] in environments where it had been deleted.

8.7 Language reconstruction

When we compare the vocabulary items of various languages, we cannot help but notice the strong resemblance certain words bear to each other. By systematically comparing languages, we can establish whether two or more languages descended from a common parent and are therefore **genetically related**. The **comparative method** refers to the procedure of reconstructing earlier forms on the basis of a comparison of later forms. By means of such comparative reconstruction we can reconstruct properties of the parent language with a great degree of certainty.

8.7.1 Comparative reconstruction

The most reliable sign of family relationships is the existence of **systematic phonetic correspondences** in the vocabulary items of different languages. Many such correspondences can be found in the sample of vocabulary items in table 8.56 from English, Dutch, German, Danish, and Swedish, all of which are members of the Germanic family of languages.

TABLE 8.56 Some Germanic cognates

English	Dutch	German	Danish	Swedish
man	man	Mann	mand	man
hand	hand	Hand	hånd	hand
foot	voet	Fuβ (β = [s])	fod	fot
bring	brengen	bringen	bringe	bringa
summer	zomer	Sommer	sommer	sommar

Since the relationship between the phonological form of a word and its meaning is mostly arbitrary, the existence of systematic phonetic correspondences in the forms of two or more languages must point toward a common source. Conversely, where languages are not related, their vocabulary items fail to show systematic similarities. This can be seen by comparing words from Turkish, which is not related to the Germanic languages, with their counterparts in the languages cited in table 8.57.

TABLE 8.57 Some words in Turkish, a non-Germanic language (orthographic transcription)

adam	'man'
el	'hand'
ayak	'foot'
getir	'bring'
yaz	'summer'

Words that have descended from a common source (as shown by systematic phonetic correspondences and, usually, semantic similarities) are called **cognates**. Cognates are not always as obvious as the Germanic examples in table 8.56. Where languages from the same family are only distantly related, the systematic correspondences may be considerably less striking. This is exemplified in the data in table 8.58 from English, Russian, and Hindi, all of which are distantly related to each other. Forms from the unrelated Turkish are included to emphasize the similarities among the first three languages.

TABLE 8.58 Some distantly related cognates compared to non-related Turkish

English	Russian	Hindi	Turkish
two	dva	dō	iki
three	tri	tīn	üç
brother	brat	bhāī	kardeş
nose	nos	nahī̃	burun

Once the existence of a relationship between two or more languages has been established, an attempt can be made to reconstruct the common source. This reconstructed language,

or **proto-language**, is made up of **proto-forms**, which are written with a preceding * (e.g., **hand*) to indicate their hypothetical character as reconstructions of earlier forms that have not been recorded or are not directly observable.

8.7.2 Techniques of reconstruction

Reconstruction can be undertaken with some confidence because (as discussed in the previous sections) the processes underlying language change are systematic. Once the processes are uncovered by linguists, they can be reversed, allowing us to infer earlier forms of the language. Although it is possible to reconstruct all components of a proto-language (its phonology, morphology, syntax, lexicon, and semantics), we will focus here on phonological reconstruction, the area in which linguists have made the most progress.

Reconstruction strategies

Reconstruction of a proto-form makes use of two general strategies. The most important one is the **phonetic plausibility strategy**, which requires that any changes posited to account for differences between the proto-forms and later forms must be phonetically plausible. Secondarily, the **majority rules strategy** stipulates that if no phonetically plausible change can account for the observed differences, then the segment found in the majority of cognates should be assumed. It is important to note that the first strategy always takes precedence over the second; the second strategy is a last resort.

Consider the cognates in table 8.59 (somewhat simplified) from members of the Romance family.

TABLE 8.59 Romance cognates

French	Italian	Romanian	Spanish	
si	si	ʃi	si	'yes'

The data exemplify a correspondence between [s] and [ʃ] before the vowel [i]. To account for this, we could assume either that Romanian underwent a change that converted [s] to [ʃ] before [i] or that the other three languages underwent a change converting [ʃ] to [s] before [i], as shown in figure 8.13.

FIGURE 8.13 Hypotheses for reconstructing Proto-Romance 'yes'

Hypothesis A	
Proto-form	*si
Sound change (Romanian only)	*s > ʃ / ___ i
Hypothesis B	
Proto-form	*ʃi
Sound change (French, Italian, and Spanish)	*ʃ > s / ___ i

Both reconstruction strategies favour hypothesis A. Most importantly, the phonetic change needed to account for the Romanian pronunciation involves palatalization before [i]. Since palatalization in this context is a very common phenomenon in human language, it

is reasonable to assume that it occurred in Romanian. It would be much more difficult to argue that the proto-language contained [ʃ] before [i] and that three languages underwent the change posited by Hypothesis B, since depalatalization before [i] would be an unusual phonetic process. (The reconstructed **s* posited in hypothesis A is also compatible with the 'majority rules' strategy since three of the four languages in the data have [s] before [i].)

Reconstruction and the catalogue of sound changes

Although there are factors that can confound our attempt to determine the relative plausibility of various sound changes, the changes listed in the catalogue in table 8.3 can generally be considered highly plausible. Table 8.60 lists some plausible versus less plausible or even implausible changes based on that catalogue.

TABLE 8.60 Different rules in terms of their plausibility based on the catalogue

Rule	Name of sound change in catalogue
High probability	
t > tʃ / __ i	palatalization/affrication
n > m / __ b	assimilation (place of articulation)
t > d / V __ V	voicing
k > Ø / V __ C	consonant deletion (cluster simplification)
Low probability	
tʃ > t / __ i	
m > n / __ b	
d > t / V __ V	
Ø > k / V __ C	

Reconstructing Proto-Romance

Consider now the slightly more complex example in table 8.61 involving data from several languages of the Romance family.

TABLE 8.61 Some Romance cognates

Spanish	Sardinian	French	Portuguese	Romanian	Original meaning
riba [riβa]	ripa	rive [ʁiv]	riba	rîpă	'embankment'
amiga [amiɣa]	amica	amie [ami]	amiga	–	'female friend'
copa	cuppa	coupe [kup]	copa	cupă	'cup, goblet'
gota	gutta	goutte [gut]	gota	gută	'drop'

Note: Orthographic *c* represents [k] in all the above examples. Romanian ă and î represent the central vowels [ə] and [ɨ], respectively. [β] is a voiced bilabial fricative and [ɣ] a voiced velar fricative. Some details of vowel quality have been ignored.

Our goal here is to reconstruct the proto-forms for these words in Proto-Romance, the parent language of the Modern Romance languages, which stands very close to Latin.

Let us first consider the reconstruction of the Proto-Romance form for 'embankment'. Since the first two segments are the same in all the cognate languages, we can reconstruct Proto-Romance **r* and **i* on the basis of the majority rules strategy. In the case of the second consonant, however, there are differences between the cognates (see table 8.62).

TABLE 8.62 Systematic correspondences in the cognates for 'embankment'

Spanish	Sardinian	French	Portuguese	Romanian
-β-	-p-	-v	-b-	-p-

It is most important that we first think in terms of phonetic plausibility. In the absence of evidence to the contrary, we will assume that one of the segments found in the cognates ([p], [b], [v], or [β]) should be reconstructed for Proto-Romance. Logically possible changes ranked with respect to their phonetic plausibility are found in table 8.63.

TABLE 8.63 Changes based on phonetic plausibility

Change in V__V	Name of change based on catalogue	Phonetic plausibility
p > b	voicing	high
p > v	voicing (p > b) and frication (b > v)	high
p > β	voicing (p > b) and frication (b > β)	high
b > p		low
β > p		low
v > p		low

In terms of plausibility, the only possible reconstruction for Proto-Romance is **p*. Proto-Romance **p* underwent no change in Sardinian and Romanian, but in Portuguese it underwent intervocalic voicing and in Spanish it underwent both voicing and frication (that is, weakening) (see table 8.64). (We assume that voicing preceded frication since Portuguese

TABLE 8.64 Summary of the changes affecting Proto-Romance **p*

*p > p / V__V	no change in Sardinian or Romanian
*p > b / V__V	voicing in Portuguese
*p > b > β / V__V	voicing and frication in Spanish
*p > b > v / V__V	voicing and frication in French

shows voicing but no frication.) If we assume that the final vowel of the proto-form was still present in French when the consonant changes took place, we can conclude that voicing and frication occurred in this language as well. (In its written form, *rive* retains a sign of the earlier reduced vowel [ə].) These changes are phonetically plausible and thus expected.

Turning now to the final vowel, we note that three languages have full vowels, Romanian has [ə], and French has no vowel (see table 8.65). Since vowel reduction and apocope are identified as phonetically plausible changes in the catalogue, it is appropriate to posit a full vowel for the proto-language. Furthermore, since the three languages with a full vowel all have [a], we can posit this vowel on the basis of the majority rules strategy. Accordingly, the reconstructed proto-form is **ripa*.

TABLE 8.65 Summary of the changes affecting Proto-Romance **a*

Language	Change (word final)	Name of change(s)
Romanian	*a > ə	vowel reduction
French	*a > ə > Ø	vowel reduction and apocope

We can now outline the evolution of this word in French, which has the most complicated development of the six languages (see table 8.66).

TABLE 8.66 Evolution of French *rive* from **ripa*

Change	*ripa	Name of change
p > b / V __ V	riba	voicing
b > v / V __ V	riva	frication
a > ə / __ #	rivə	vowel reduction
ə > Ø / __ #	riv	apocope

In the case of the cognates for 'female friend' (the second row of table 8.61), the first three segments are the same in all the languages in the data. According to the majority rules strategy we can reconstruct them as **ami-*. In the reconstruction of the second consonant, however, we must appeal to our strategy of phonetic plausibility (see table 8.67).

TABLE 8.67 Systematic correspondences in the second consonant of the cognates for 'female friend'

Spanish	Sardinian	French	Portuguese	Romanian
-ɣ-	-k-	-Ø	-g-	–

Once again, since intervocalic voicing, frication, and deletion are phonetically plausible changes, it is most appropriate to posit **k* for the proto-form (see table 8.68).

TABLE 8.68 Summary of the changes affecting Proto-Romance **k*

Language	Change (in V_V)	Name of change(s)
Portuguese	*k > g	voicing
Spanish	*k > g > ɣ	voicing and frication
French	*k > g > ɣ > Ø	voicing, frication, and deletion

In the case of the final vowel, we have the same situation we had in the previous form. The full vowel is found in Spanish, Sardinian, and Portuguese but there is no vowel in French. We can therefore assume the full vowel **a* for the proto-form, with subsequent vowel reduction and apocope in French. Consequently, we arrive at the proto-form **amika*.

Finally, applying the same procedure to the cognates in the final two rows of table 8.61 yields the proto-forms **kuppa* 'cup' and **gutta* 'drop'. All the languages in the data retain the initial consonant of both proto-forms. The vowel **u* is reconstructed on the basis of the majority rules strategy, since we have no phonetic grounds for choosing either [u] or [o] as the older vowel.[6] The systematic correspondences involving the intervocalic consonants are given in table 8.69.

TABLE 8.69 Systematic correspondences of the medial consonants of **kuppa* and **gutta*

Spanish	Sardinian	French	Portuguese	Romanian
-p-	-pp-	-p	-p-	-p-
-t-	-tt-	-t	-t-	-t-

Regardless of whether we are dealing with original **pp* or **tt*, the same pattern is evident in the case of both geminate types. There is a geminate stop consonant in Sardinian and a single consonant in Spanish, French, Portuguese, and Romanian. Since degemination is an expected sound change (see the catalogue in table 8.3), we assume that the proto-forms contained geminate consonants that underwent degemination except in Sardinian. This is an example of a case where the phonetic plausibility strategy overrules the majority rules strategy (since four of the five languages have [p]/[t] whereas only one language has [pp]/[tt]). As far as the final vowels are concerned, the same pattern found in the previous examples is once again evident. Proto-Romance **a* was retained in Spanish, Sardinian, and Portuguese, reduced to [ə] in Romanian, and deleted in French (see table 8.65).

Of the languages exemplified here, Sardinian is considered the most conservative since it has retained more of the earlier consonants and vowels. (In fact, the Sardinian words in the examples happen to be identical with the proto-forms, but this degree of resemblance would not be maintained in a broader range of data.) In the case of the other Romance languages

and changes we have discussed, the most to least conservative are Portuguese (degemination and voicing) and Romanian (degemination and vowel reduction); Spanish (degemination, voicing, and frication); and French (degemination, voicing, frication, consonant deletion, vowel reduction, and apocope).

Although Proto-Romance is not identical with Classical Latin, close similarity is expected.[7] Accordingly, the fact that our reconstructions are so close to the Latin words gives us confidence in our methods of reconstruction (see table 8.70).

TABLE 8.70 Comparison of Latin and Proto-Romance forms

Latin	Proto-Romance form
rīpa	*ripa
amīca (c = [k])	*amika
cuppa	*kuppa
gutta	*gutta

It is sometimes not possible to reconstruct all the characteristics of the proto-language. For example, on the basis of our data we were not able to reconstruct vowel length (Latin had a distinction between long and short vowels) since there was no evidence of this characteristic in the cognate forms.

It is also worth noting that we are not always so fortunate as to have written records of a language we expect to be very close to our reconstructed language. In the case of the Germanic languages, for example, there is no ancient written language equivalent to Latin. We must rely completely on our reconstruction of Proto-Germanic to determine the properties of the language from which the modern-day Germanic languages descended. Furthermore, for many languages of the world we have no written historical records at all and for other languages, such as the Aboriginal languages of North America, it is only very recently that we have written records.

In summary, when the forms of two or more languages appear to be related, we can, through a consideration of systematic phonetic correspondences among cognates, reconstruct the common form from which all the forms can be derived by means of phonetically plausible sound changes. The reconstructed forms are proto-forms, and a reconstructed language, a proto-language.

8.7.3 Internal reconstruction

Sometimes it is possible to reconstruct the earlier form of a language even without reference to comparative data. This technique, known as **internal reconstruction**, relies on the analysis of morphophonemic variation within a single language. The key point is that the sound changes that create allomorphic and allophonic variation can be identified and then used to infer an earlier form of the morpheme. The data in table 8.71 are from French; because of borrowing, English exhibits a parallel set of contrasts involving [k] and [ʃ].

TABLE 8.71 [k] / [s] correspondence in French

maʒik	'magic'	maʒis-jɛ̃	'magician'
loʒik	'logic'	loʒis-jɛ̃	'logician'
myzik	'music'	myzis-jɛ̃	'musician'

The root morpheme in each row exhibits two forms, one ending in [k], the other ending in [s]. The same methods and principles used in comparative reconstruction can be applied here to reconstruct the historically earlier form of the root morpheme. If a root ending in **s* is posited, no phonetically plausible change can account for the [k] in the left-hand column. By contrast, if a root-final **k* is posited, the [s] can be accounted for by assuming that the **k* was fronted under the influence of the palatal glide [j] of the suffix (palatalization) and became an affricate [ts] (affrication), which was later simplified to a fricative [s] (deaffrication). All of these changes are phonetically plausible and listed in the catalogue in table 8.3. Accordingly, internal reconstruction indicates that at an earlier point in the development of French, the root morphemes in table 8.71 contained the consonant **k*.

8.7.4 The discovery of Indo-European

The late eighteenth-century discovery that Sanskrit (an ancient language of India) was related to Latin, Greek, Germanic, and Celtic revolutionized European linguistic studies. Sir William Jones, a British judge and scholar working in India, summed up the nature and implications of the findings in his 1786 address to the Royal Asiatic Society, a part of which follows:

> *The Sanskrit language, whatever be its antiquity, is of a wonderful structure; more perfect than the Greek, more copious [having more cases] than the Latin, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of the verbs and in the forms of the grammar, than could possibly have been produced by accident; so strong indeed, that no philologer could examine them all three, without believing them to have sprung from some common source, which, perhaps, no longer exists; there is a similar reason . . . for supposing that both the Gothic and the Celtic . . . had the same origin with the Sanskrit; and the old Persian might be added to the same family . . .*

This discovery led to several decades of intensive historical-comparative work and to important advances in historical linguistics during the nineteenth century. By studying phonetic correspondences from an ever-increasing number of languages, linguists eventually ascertained that most of the languages of Europe, Persia (Iran), and the northern part of India belong to a single family, now called Indo-European. By applying the techniques of the comparative method, they began reconstructing the grammar of the proto-language from which these languages evolved, **Proto-Indo-European (PIE)**.

A number of individuals advanced this research. In 1814, the Danish linguist Rasmus Rask carefully documented the relationships among cognates in a number of Indo-European

languages, and at the same time established the methods that would govern the emerging science of historical-comparative linguistics. He wrote:

> *When agreement is found in [the most essential] words in two languages, and so frequently that rules may be drawn up for the shift in letters [sounds] from one to the other, then there is a fundamental relationship between the two languages; especially when similarities in the inflectional system and in the general make-up of the languages correspond with them.*

Rask worked without access to Sanskrit. The first comparative linguistic analysis of Sanskrit, Greek, Persian, and the Germanic languages was conducted by the German scholar Franz Bopp in 1816. In 1822 another German, Jacob Grimm, extended Rask's observations and became the first person to explain the relationships among the cognates noted by Rask in terms of a **sound shift**, the systematic modification of a series of phonemes. Some of the correspondences on which he based his work are given in table 8.72.

TABLE 8.72 Some Indo-European phonetic correspondences

Greek	Latin	English
patḗr	pater	father
treîs	trēs	three
hekatón	centum [k]	hundred

The crucial observation is that where English has [f], [θ], and [h] (here, in word-initial position), Greek and Latin have [p], [t], and [k]. Grimm tabulated a series of consonant shifts for Proto-Germanic that differentiated it from other Indo-European languages. **Grimm's Law** is the name given to the special set of consonant shifts that affected the Germanic language family (see table 8.73).

TABLE 8.73 The sound shifts underlying Grimm's Law

Proto-Indo-European	p	t	k	b	d	g	bh	dh	gh
Proto-Germanic	f	θ	x	p	t	k	b	d	g

Note: [x] underwent a subsequent change to [h].

Language Matters **The Brothers Grimm**

Jacob Grimm is well known for the collection of fairy tales and songs that he compiled with his brother Wilhelm. Stories such as "Snow White" and "Sleeping Beauty" were first written down by the Brothers Grimm. However, the two siblings were also scholars. Wilhelm focused on literary studies and Jacob, who developed Grimm's Law, was a philologist.

Some additional examples of the relationships captured by these shifts follow in table 8.74. The Proto-Indo-European consonants were either maintained in Sanskrit, Greek, and Latin or, in some cases, underwent changes different from those found in Germanic (represented here by English).

TABLE 8.74 Some examples of the consonant shifts underlying Grimm's Law

Shift in Germanic	PIE	Sanskrit	Greek	Latin	English
p > f	*ped	pād-	pod-	ped-	foot
t > θ	*ténhus	tanu-	tanaós	tenuis	thin
k > x (> h)	*ḱmtóm	çatam	hekatón	centum	hundred
d > t	*dékmt	daça	déka	decem	ten
g > k	*hégros	ajras	agrós	ager	acre
bh > b	*bhrā́tar	bhrātā	phrā́tēr	frāter	brother
dh > d	*hwidhéwh	vidhavā	ēítheos	vidua	widow
gh > g	*ǵhans	hansas	khḗn	(h)ānser	goose

Note: [x] underwent a subsequent change to [h].

It should also be noted here that borrowing must be taken into consideration in comparative reconstruction. For example, English has many words that do not show the effects of Grimm's Law (see table 8.75).

TABLE 8.75 English words not showing the effects of Grimm's Law

Expected by Grimm's Law	Latin	English
p > f	ped-	pedestrian
t > θ	tenuis	tenuous
k > x (> h)	canalis	canal

The apparent failure of Grimm's Law here stems from the fact that the English words were borrowed directly from Latin or French many centuries after the sound shifts described by Grimm's Law had taken place. The task of reconstruction can often be complicated by such borrowings.

Subsequent developments

By the middle of the nineteenth century, the study of language had made great strides, especially in the field of phonetics, which opened the way for the detailed comparison of linguistic forms. One influential hypothesis at that time was that sound laws operated without exception. A group of linguists known as the Neogrammarians adopted this idea and made many important contributions to the fledgling science of linguistics by applying it to new and more complicated data. Although such factors as lexical diffusion and social pressures

Language Matters **Reviving Indo-European**

A non-profit organization in Europe, the Dnghu Association, is devoted to reviving Indo-European and promoting its use as the main official language of the European Union and as the second language of all its citizens (*dnghu* is the reconstructed Indo-European word for 'tongue' or 'language'). To read more about this project, go to the association's website at http://dnghu.org/en/, which also includes a proposed grammar and dictionary of what the association calls Modern Indo-European.

were more or less ignored by the Neogrammarians, their hypothesis represented an important and daring advance in the scientific study of language.

The nineteenth century also saw major advances in the classification of languages. A German scholar, August Schleicher, developed a classification for the Indo-European languages in the form of a genealogical tree. This type of genetic classification is discussed in more detail in the chapter on language typology.

Work in comparative reconstruction is far from finished. In particular, linguists are now considering the possibility of superfamilies. One such proposed family is Nostratic, which includes Indo-European, Afro-Asiatic (e.g., Arabic, Hebrew), Altaic (e.g., Japanese, Korean, Turkic), and Uralic (e.g., Finnish, Hungarian). Comparative reconstruction is also playing an important role in determining the genetic relationships of the hundreds of North American indigenous languages, a topic that still remains highly controversial.

8.7.5 Reconstruction and typology

Since the 1800s, when the reconstruction of Proto-Indo-European was carried out, linguists have accumulated vast amounts of information on thousands of languages. This is in part due to the explosion of studies in the field of linguistic typology, which is concerned with the investigation of structural similarities among languages that are not genetically related. Even languages that do not belong to the same family can have striking similarities. For example, in addition to shared word order patterns, SOV languages commonly exhibit a strong tendency toward agglutinating morphology (a type of complex affixation). Typological studies play an important role in the linguist's search for universals of language—statements that are true for all languages.

The extensive information on the languages of the world available to modern linguists was, of course, not available at the time the original reconstruction of Proto-Indo-European was undertaken. Modern linguists involved in comparative reconstruction now take a keen interest in typological studies and the role of **typological plausibility** in reconstruction has become an important topic. For example, a linguist would be very reluctant to propose a reconstruction that violated a universal property of language or that had no parallel in any known language.

Some linguists have argued that the traditional reconstruction of the PIE consonant system (given in table 8.76) should be rejected on the basis of typological plausibility. This reconstruction is typologically questionable in at least two respects. First, reconstructed forms with PIE **b* are extremely rare, almost as if there were a gap in the labial system. Such

TABLE 8.76 The traditional reconstruction of the Proto-Indo-European consonants

p	t	ḱ [c]	k	k^w	(voiceless stops)
(b)	d	ǵ [ɟ]	g	g^w	(voiced stops)
bh	dh	ǵh	gh	g^wh	(voiced aspirated stops)
	s				

Note: ḱ, ǵ, and ǵh are palatal stops, and ^{w} indicates a labialized consonant.

a gap is very uncommon in the languages of the world. Typically if there is a missing labial stop, it is the voiceless stop that is missing, not the voiced counterpart. Second, the traditional reconstruction posits a series of voiced aspirated stops but no corresponding series of voiceless aspirated stops, even though some typologists have argued that all languages that have a voiced series also have the voiceless one.

Such facts have led some linguists to propose what they believe is a more typologically plausible reconstruction of Proto-Indo-European involving a voiceless stop series, an ejective series, and a voiced stop series (as well as **s* as in the traditional reconstruction) (see table 8.77).[8]

TABLE 8.77 A recent reconstruction of the Proto-Indo-European consonants

p	t	ḱ	k	k^w	(voiceless stops)
(p′)	t′	ḱ′	k′	k'^w	(ejectives)
b	d	ǵ	g	g^w	(voiced stops)
	s				

Not only does this reconstruction avoid the problem with aspirates, it is also common for languages with an ejective series to lack the labial ejective. From this perspective, this reconstruction seems much more plausible than the traditional one.

Both reconstructions have their supporters, and it is difficult to come to a definitive decision on the basis of typological considerations, since it is common for a proposed universal to have exceptions. For example, a few languages have been found with the characteristics attributed to Proto-Indo-European by the traditional reconstruction. These languages have labial gaps in the voiced series (e.g., North American Aboriginal languages of the Athabaskan and Caddoan families) and a voiced aspirate series but no voiceless counterpart (e.g., Madurese, an Indonesian language). Accordingly, as long as the traditional reconstruction is linguistically possible, it would not seem possible to reject it simply because the phonological system proposed would be a rare one.

Typological plausibility will likely continue to play a secondary role in reconstruction until linguists can draw a clear line between what is linguistically possible and what is not possible. Nevertheless, as our knowledge and understanding of language universals continues to improve, it is certain that linguists involved in the reconstruction of proto-languages will maintain an interest in typological plausibility.

8.8 Language change and naturalness

A striking fact about language change is that the same patterns of change occur repeatedly, not only within a particular language at different periods in its history but also across languages. Both the similarity of changes across languages as well as the directionality of language change suggest that some changes are more natural than others. This notion of **naturalness** is implicit in the phonetic plausibility strategy introduced in the section on comparative reconstruction.

If naturalness is a factor in language change, its manifestations should also be found in language acquisition and in language universals. This does seem to be the case. As a specific example, let us consider the frequently made claim that the CV syllable is the most natural of all syllable types. At least three different kinds of evidence can be brought forth in support of this claim. First, in terms of universals, virtually all languages of the world have CV syllables in their syllable type inventory, and some languages only have CV syllables. Second, a variety of sound changes have the effect of reducing less natural syllable types to the more natural CV type (see table 8.78).

TABLE 8.78 Sound changes yielding CV syllables

Deletion							
CCV	>	CV	Old English	cnēow	English	knee	/ni/
CVC	>	CV	Old Spanish	non	Spanish	no	
Vowel epenthesis							
CCVCV	>	CVCVCV	Italian	croce	Sicilian	kiruci	‘cross’

By contrast, such changes rarely, if ever, apply to a CV syllable to yield a different syllable type. Deletion of the C in a word-initial CV syllable is extremely rare, as is vowel epenthesis in a CV syllable or a sequence of CV syllables.

Third, in terms of language acquisition, the CV syllable type is one of the first syllable types to be acquired and many phonetic processes found in child language have the effect of yielding CV syllables, just like the sound changes listed above (see table 8.79).

TABLE 8.79 Phonetic processes in language acquisition yielding CV syllables

CCV → CV	tree → [ti]	(simplification of consonant clusters)
CVC → CV	dog → [dɑ]	(deletion of final consonants)

The precise effects of linguistic naturalness are not yet fully understood. For example, some sound changes actually do produce less natural syllables. Thus, syncope has the effect of reducing a sequence of CVCVCV syllables to the less natural CVCCV. Usually in such

cases, a different motivation can be identified, such as the preference for shorter phonological forms over longer forms. But given the complexity of human language, not to mention human behaviour in general, it should not be surprising that there are many different parameters of linguistic naturalness and that these can, in turn, lead to apparently conflicting changes in language over time. It remains an important task of the linguist to identify, rank, and ultimately explain relations of linguistic naturalness. The study of language change will continue to make an important contribution to this area.

Summing up

Historical linguistics studies the nature and causes of language change. The causes of language change find their roots in the physiological and cognitive makeup of human beings. Sound changes usually involve articulatory simplification, as in the case of the most common type, **assimilation**. **Analogy** and **reanalysis** are particularly important factors in morphological change. **Language contact** resulting in **borrowing** is another important source of language change.

All components of the grammar, from phonology to semantics, are subject to change over time. A change can simultaneously affect all instances of a particular sound or form, or it can spread through the language word by word by means of **lexical diffusion**. Sociological factors can play an important role in determining whether or not a linguistic innovation is ultimately adopted by the linguistic community at large. Since language change is systematic, it is possible, by identifying the changes that a particular language or dialect has undergone, to reconstruct linguistic history and thereby posit the earlier forms from which later forms have evolved. Using sets of **cognates**, **comparative reconstruction** allows us to reconstruct the properties of the parent or **proto-language** on the basis of **systematic phonetic correspondences**.

Studies in historical linguistics can provide valuable insights into relationships among languages and shed light on prehistoric developments. Furthermore, historical studies of language are of great importance to our understanding of human linguistic competence. In fact, it has often been stated that language change provides one of the most direct windows into the workings of the human mind. Furthermore, the study of language change contributes to our understanding of how social, cultural, and psychological factors interact to shape language. Finally, the integration of studies on language change, language acquisition, and language universals remains one of the most important challenges facing linguists today.

Notes

[1] The translation for the passage is as follows:

Many men say that in dreams
There is nothing but talk and lies
But men may see some dreams
Which are scarcely false
But afterward come true.

[2] In these and other examples throughout this chapter, orthographic forms are given where these clearly reflect the sound change(s) in question. If required, partial or full phonetic transcriptions are provided.

[3] Since voicing commonly occurs between voiced segments, it can also be considered a type of assimilation. It is treated here as a weakening since it is often part of a larger pattern of change involving various weakening processes.

[4] A fully phonemic contrast between lax and tense vowels appears to be developing in Canadian French. Borrowings from English are contributing to this development (e.g., *poule* 'hen', pronounced [pʊl] in colloquial speech, versus *pool*).

[5] We have simplified here in two respects. First, we ignore the fact that the verbs *be* and *have* can undergo Inversion even when they do not function as auxiliaries.

Are they here?

Have you no sense?

Second, we have not traced the emergence of the auxiliary verb *do* in the formation of questions.

[6] In fact, the assumption of umlaut would be a very good working hypothesis; that is, **u* became [o] in Spanish and Portuguese due to the lowering influence of the word-final low vowel **a*. However, a larger dataset would show that this type of umlaut did not occur in these languages.

[7] Classical Latin was the literary language of ancient Rome, whereas Proto-Romance represents an attempt to reconstruct the spoken language spread throughout Europe that was the source of the various Romance languages.

[8] Ejectives are produced by a closing of the glottis and raising of the larynx.

Recommended reading

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Exercises

1. Identify the following sound changes with reference to the catalogue of sound changes provided in table 8.3. In each pair of examples, focus on the segment(s) in bold only. The form on the left indicates the original segment(s) before the change and the form on the right indicates the segment(s) after the change. (The orthography is supplemented with IPA, in square brackets, where the intended pronuncation is not otherwise clear.)

a)	Sanskrit	**sn**eha	Pali	**sin**eha	‘friendship’
b)	Old English	**hl**āf	English	**l**oaf	
c)	Latin	**i**uvenis [j]	Italian	**gi**ovane [dʒ]	‘young’
d)	English	tria**thl**on	dialect	tria**th[ə]l**on	
e)	Latin	vi**du**a [dw]	Spanish	vi**ud**a [wd]	‘widow’
f)	Sanskrit	sa**pt**a	Pali	sa**tt**a	‘seven’
g)	Latin	tur**tu**r	English	tur**tl**e	
h)	Pre-Spanish	*ve**nr**é	Spanish	ve**ndr**é	‘I will come’
i)	Italian	mu**nd**o	Sicilian	mu**nn**u	‘world’
j)	Old French	**c**ire [ts]	French	**c**ire [s]	‘wax’
k)	Latin	pā**n**-	French	p**ain** [ɛ̃]	‘bread’
l)	Latin	**mul**gēre	Italian	**mun**gere	‘to milk’
m)	Latin	pa**c**are [k]	Italian	pa**g**are	‘to pay’
n)	Old Spanish	ni**d**o	Spanish	ni**d**o [ð]	‘nest’
o)	Latin	pe**cc**ātum [kk]	Spanish	pe**c**ado [k]	‘sin’
p)	Pre-Latin	*honō**s**is	Latin	honō**r**is	‘honor (gen sg)’

q)	Old French	rai**g**e [dʒ]	French	ra**g**e [ʒ]	‘rage’
r)	English	co**ff**ee	Chipewyan	[ka**θ**i]	
s)	Latin	mar**e**	Portuguese	mar	‘sea’
t)	Latin	vīcī**n**itās	Spanish	vecindad	‘neighbourhood’
u)	Gothic	**þ**liuan [θ]	English	**f**lee	
v)	Old English	(ic) sing**e**	English	(I) sing	
w)	Latin	su**mm**a	Spanish	su**m**a	‘sum, gist’
x)	Latin	ōrn**ā**mentum	Old French	orn**e**ment [ə]	‘ornament’
y)	Pre–Old English	*l**ū**si	Old English	l**ȳ**s [yː]	‘lice’

2. a) Describe the difference between the two French dialects in the following data. Assume that the data are in phonetic transcription.
b) What sound change would you posit here? Why?
c) State the sound change in the form of a rule.

	European French	*Acadian French*	
i)	okyn	otʃyn	‘none’
ii)	kør	tʃør	‘heart’
iii)	ke	tʃe	‘wharf’
iv)	kɛ̃ːz	tʃɛ̃ːz	‘fifteen’
v)	akyze	atʃyze	‘accuse’
vi)	ki	tʃi	‘who’
vii)	kav	kav	‘cave’
viii)	kɔr	kɔr	‘body’
ix)	kurir	kurir	‘run’
x)	ɑ̃kɔːr	ɑ̃kɔːr	‘again’

3. a) What sound changes differentiate Guaraní from its parent language, Proto-Tupí-Guaraní, in the following data?
b) State these changes in rule form.

	Proto-Tupí-Guaraní	*Guaraní*	
i)	jukɨr	jukɨ	‘salt’
ii)	moajan	moajã	‘push’
iii)	puʔam	puʔã	‘wet’
iv)	meʔeŋ	meʔẽ	‘give’
v)	tiŋ	tʃĩ	‘white’
vi)	potiʔa	potʃiʔa	‘chest’
vii)	tatatiŋ	tatatʃĩ	‘smoke’
viii)	kɨb	kɨ	‘louse’
ix)	men	mẽ	‘husband’

4. a) Describe the three changes that took place between Proto-Slavic and Bulgarian in the following data. (The symbol ˘ over a vowel indicates that it is short.)
b) State these changes as rules and indicate, as far as possible, the order in which they must have applied.
c) Apply these rules to the Proto-Slavic word for ‘adroit’ to show how the Bulgarian form evolved.

	Proto-Slavic	*Bulgarian*	
i)	gladŭka	glatkə	'smooth'
ii)	kratŭka	kratkə	'short'
iii)	blizŭka	bliskə	'near'
iv)	ʒeʒĭka	ʒeʃkə	'scorching'
v)	lovŭka	lofkə	'adroit'
vi)	gorĭka	gorkə	'bitter'

5. Determine all the sound changes required to derive the later form from the proto-form. Where necessary, give the chronology of the sound changes.

a)	*feminam	Old French	femme (final e = [ə])	'woman'
b)	*lumine	Spanish	lumbre	'fire'
c)	*tremulare	Spanish	temblar	'tremble'
d)	*stuppam	Spanish	estopa	'tow'
e)	*populu	Romanian	plop	'poplar'

6. Taking into consideration the Great English Vowel Shift, give all the changes necessary to derive the Modern English forms from the Old English forms. (*Note:* Assume, simplifying somewhat, that the Old English forms were pronounced as they are written.)

	Old English	*Modern English*
a)	brōde	brood [brud]
b)	cnotta (c = [k])	knot [nɑt]
c)	wīse	wise [wajz]
d)	hlæfdige	lady [lejdi]

7. Place names are often subject to spelling pronunciation. Transcribe your pronunciation of the following words and then compare your pronunciation with that recommended by a good dictionary. Do you think any of your pronunciations qualify as spelling pronunciations?

a) Worcestershire
b) Thames
c) Edinburgh (Scotland; compare Edinburgh, Texas)
d) Cannes (France)
e) Newfoundland

8. Compare the Old English singular and plural forms:

Singular	*Plural*	
bōc	bēc	'book(s)'
āc	æc	'oak(s)'

Although the Old English words have a plural form that was brought about by umlaut (as in Old English gōs/gēs 'goose/geese'), the Modern English forms do not. Explain how the change in plural formation in Modern English could have come about.

9. As evident in the following sentence, Shona, a modern Bantu language, has SVO word order. (*Note*: The morpheme *ano-* marks present tense.)

mwana	anotengesa	miriwo
child	sells	vegetables

'The child sells vegetables.'

By contrast, Shona's word structure reflects a different pattern, as evident in the following examples.

mwana ano**mu***ona*
child **him**+*see*
'The child sees him.'

mukadzi ano**va***batsira*
woman **them**+*help*
'The woman helps them.'

What do these examples indicate about earlier Shona or Proto-Bantu word order?

10. All of the following English words at one time had meanings that are quite different from their current ones. Identify each of these semantic changes as an instance of narrowing, broadening, amelioration, pejoration, weakening, or shift.

	Word	*Earlier meaning*
a)	moody	'brave'
b)	uncouth	'unknown'
c)	aunt	'father's sister'
d)	butcher	'one who slaughters goats'
e)	witch	'male or female sorcerer'
f)	sly	'skilful'
g)	accident	'an event'
h)	argue	'make clear'
i)	carry	'transport by cart'
j)	grumble	'murmur, make low sounds'
k)	shrewd	'depraved, wicked'
l)	praise	'set a value on'
m)	ordeal	'trial by torture'
n)	picture	'a painted likeness'
o)	seduce	'persuade someone to desert his or her duty'
p)	box	'a small container made of boxwood'
q)	baggage	'a worthless person'
r)	virtue	'qualities one expects of a man'
s)	myth	'story'
t)	undertaker	'one who undertakes'
u)	hussy	'housewife'
v)	astonish	'strike by thunder'
w)	write	'scratch'
x)	quell	'kill'

11. Look up the following words in a good dictionary. Discuss any semantic changes that have affected the underscored portions since Old English. Do you think speakers of Modern English have reanalyzed any of these forms in terms of folk etymology?

a) wed<u>lock</u>
b) witch<u>craft</u>
c) stead<u>fast</u>
d) after<u>ward</u>

12. The following line is from *Troilus and Criseyde V* by Geoffrey Chaucer.
His lighte goost ful blisfully is went.
[hɪs liçtə gɔːst fʊl blɪsfʊlli ɪs wɛnt] ([ç] is a voiceless palatal fricative.)
'His light spirit has gone very blissfully.'

a) How has the meaning of the word *ghost* changed since Chaucer's time?
b) Describe the changes that have taken place in the pronunciation of *light* and *ghost*.

13. Consider the following lyrics from the Middle English song "Sumer is i-cumen in." Compare the Middle English lyrics with the Modern English translation and answer the questions that follow.

Original text	*Transcription*
Sumer is i-cumen in;	[sʊmər ɪs ɪkʊmən ɪn
Lhude sing, cuccu!	luːdə sɪŋg kʊkku
Grōweþ sēd, and blōweþ mēd,	grɔːwəθ seːd and blɔːwəθ meːd
And springþ þe wude nū.	and sprɪŋgθ ðə wʊdə nuː]

Translation
'Summer has come in;
Loudly sing, cuckoo!
Seed grows and meadow blooms
And the wood grows now.'

a) What affix converted the adjective *loud* into an adverb in Middle English?
b) What accounts for the difference between the Middle English and Modern English pronunciation of the vowel in *loud*?
c) What other words in this poem reflect this general shift?
d) How has the relative ordering of the subject and verb changed since this was written?
e) How has the third person singular present tense suffix changed since Middle English?

14. The following words found in various Cree dialects were borrowed from French as the result of contact between the two groups on the Canadian prairies. (Notice that the French determiner was not treated as a separate morpheme and was carried along with the borrowed word.) What types of considerations could one plausibly assume played a role in the borrowing of these words into Cree?

	Cree	*French*	
a)	/labutoːn/	le bouton	'button'
b)	/lɪːbot/	les bottes	'boots'
c)	/lamilaːs/	la mélasse	'molasses'
d)	/lapwɪːl/	la poêle	'frying pan'
e)	/litɪː/	le thé	'tea'

15. The following Latin roots are found in words that have been borrowed into English. Since these words were borrowed after Grimm's Law had applied, they do not show its effects. All of these roots, however, do have Germanic cognates that did undergo Grimm's Law. On the basis of your knowledge of this law and the meaning of the borrowing, try to determine the Modern English (Germanic) cognate for each root. Consult a good dictionary if you need help. (*Note:* Focus on the portion of the Latin word in bold only; you can ignore vowel changes.)

	Latin root	*Related borrowing*	*English cognate*
a)	**ped**is	pedestrian	*foot*
b)	**nep**os	nepotism	_____
c)	**pisc**es	piscine	_____
d)	**ten**uis	tenuous	_____
e)	**corn**u	cornucopia	_____
f)	**duo**	dual	_____
g)	**ed**ere	edible	_____
h)	**gen**us	genocide	_____
i)	**ager**	agriculture	_____

16. Attempt to reconstruct the Proto-Germanic form for each pair of cognates. Focusing on the vowels, describe the changes that affected the Old English forms. (*Note*: y = [y], œ = [ø], c = [k], and j = [j]).

	Gothic	*Old English*	
a)	kuni	cyn	'kin'
b)	badi	bed	'bed'
c)	dōmjan	dœ̄man	'to judge, to deem'
d)	sōkjan	sœ̄can	'to seek'
e)	bugjan	bycgan	'to buy'
f)	nati	net	'net'

17. Reconstruct the Proto-Romance form for each set of cognates. Give all the changes necessary to derive each of the modern forms from the proto-forms. If you are not sure how to proceed, return to section 8.7. (*Note*: The Spanish and Romanian spelling 'ie' represents the sequence /je/, and the Romanian spelling 'ia' represents the sequence /ja/.)

	Spanish	*Sardinian*	*Romanian*	
a)	vida	bita	vită (ă = [ə])	'life'
b)	sí	si	şi (ş = [ʃ])	'yes'
c)	riso	rizu	rîs	'laugh'
d)	miel	mele	miere	'honey'
e)	hierro	ferru	fier	'iron'
f)	piedra	pedra	piatră (ă = [ə])	'stone'
g)	hierba	erva	iarbă (ă = [ə])	'grass'
h)	oso	ursu	urs	'bear'
i)	roto	ruttu	rupt	'broken'
j)	lecho	lettu	–	'bed'

To learn more about the topics discussed in this chapter, visit the Companion Website for *Contemporary Linguistic Analysis*.