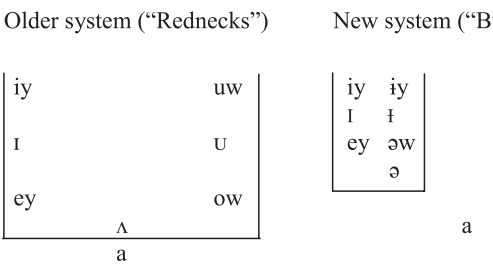

Illustration 5.9: Effects of the Central Illinois solidarity shift.

5.5.5 Phonological pattern; conspiracies

Earlier sections of this chapter have examined numerous changes that affect word or syllable structure. Cluster simplification, including anaptyxis (**5.3.11**), syllabification, and resyllabication (**5.3.11**) may reduce consonant clusters within syllables or words; contraction, desyllabication/gliding, glide insertion, and vowel truncation help eliminate vowel clusters (**5.3.12**). Maximal application of these processes would lead to phonological patterns of the type CVCV(...), with alternating [- syllabic] and [+ syllabic] segments; but few languages have patterns of this "ultimate simplicity". More commonly languages approximate the CVCV type by exhibiting patterns of the type (C)CVCCVC(C), etc., with consonant clusters limited to two (or three) members, and frequently with the restriction that initial and final clusters must be smaller than medial ones.

While reduction of clusters, thus, may be a common tendency in linguistic change, most languages go about implementing this goal in a rather haphazard way, reducing some clusters (such as Engl. initial *kn-* > [n-]) in *knee*), but retaining others (such as Engl. initial [kl-, kr-] in *clam, cram*). Moreover, processes like epenthesis may increase consonant clustering (as in Gk. **anros* > *andros*); and intervocalic consonant loss will introduce new vowel clusters.

In some languages, we find much more radical and consistent modifications of the PHONOLOGICAL PATTERN of words and/or syllables. Remarkably, in many cases these modifications are implemented not by a single change, but by a number of phonetically quite different processes. The only thing that the changes share is that they "cooperate" or "conspire" to bring about a general modification of the phonological pattern. Shifts of this sort accordingly are referred to as CONSPIRACIES.

Consider the PALI TWO-MORA CONSPIRACY. Old Indo-Aryan, as represented by Sanskrit, permitted syllables of one, two, or three moras, as in (242). (Mora count, as usual, begins with the syllabic nucleus. Short vowels (= V) have one mora; long vowels (= VV) two moras; and a coda consonant adds another mora. For greater clarity, numerals below the line keep track of the mora count in relevant syllables.)

(242) a. One mora: *ma$ta-* ‘thought’
1
b. Two moras: *maanasa-* ‘related to the mind’
1 2
man$tum ‘to think’
1 2
c. Three moras: *mii$maaṁ$sa$tee* ‘inquires’
1 2 3

In the early Middle Indo-Aryan language Pali, by contrast, three-mora syllables were no longer permitted. They were turned into permissible two-mora structures by means of three phonetically distinct processes. One of these shortened long vowels, as in (243). A second change was cluster simplification, which removed the syllable-final consonant together with its mora; see (244). A third process inserted an anaptyctic vowel, which made it possible to resyllabify consonants from the coda of trimoraic syllables to the onset of the next syllable. Once in onset position, these consonants no longer were in the domain of mora counting. See (245).

(243) Vowel shortening

Sanskrit	Pali	
mii$maaṁ$sa$tee	*vii$maṁ$sa$ti*	‘inquires’
1 2 3	1 2	
raaj$ñaḥ	*rañ$ñoo*	‘of a king’
1 2 3	1 2	

(244) Cluster simplification

diir$gha-	*dii$gha-*	‘long’
1 2 3	1 2	

(245) Anaptyxis and resyllabication

raaj$ñaḥ	*raajinoo*	‘of a king’
1 2 3	1 2	

Several considerations support the contention that the elimination of three-mora syllables is not just an accident, but that the developments in (243)–(245) actually “conspire” to bring it about. First, Sanskrit one- or two-mora syllables remained essentially unaffected, as in Skt. *ma$ta-* : Pali *ma$ta-*, Skt. *man$tum* : Pali *man$tuṁ*. (But see below for an interesting complication.) Second, there does not seem to exist any principled way of predicting which Sanskrit three-mora

word will undergo which of the changes in (243)–(245). In fact, some words were affected by more than one change, leading to doublets; e.g. Skt. *raaj$ñaḥ* : Pali *rañ$ñoo* beside *raajinoo*. Therefore, none of the three changes, taken by itself, is regular – even though all three processes belong to categories of sound change that ordinarily are regular. What is regular and predictable is the fact that all Sanskrit three-mora syllables are converted into acceptable two-mora configurations. Finally, independent evidence attests to the funcational equivalence of the two-mora VC outcomes of (243) and the two-mora VV outcomes of (244) and (245). In many cases where Sanskrit has a two-mora VV syllable, Pali (optionally) offers a VC structure, and vice versa; see e.g. (246). (The alternation between singleton *ḷ* and geminate *ḍḍ* is allophonic.)

(246)

Skt.	*nii$ḍa-*	Pali	***nii*$ḷa- / *niḍ$ḍa-***		‘abode, nest’
	12		12	12	
	har$tum		***hat*$tuṁ / *haa*$tuṁ**		‘to hold’
	12		12	12	

Another famous example of the cooperation of several phonetically unrelated changes toward a common goal is the Slavic open-syllable conspiracy. While Proto-Indo-European had both open and checked syllables, early Slavic permitted only open syllables. Processes that served to convert checked into open syllables include syllable-final consonant loss, vowel-liquid metathesis, anaptyxis, resyllabication, and word-final consonant loss or anaptyxis. See (247)–(251). Some of these processes were pan-Slavic, others were dialectally restricted, and the changes in (251b) seem to have been limited to just a few words or morphological categories (in only some of the dialects). Here, too, regularity does not lie in the individual changes, but rather in the effect of these changes on the overall structure of the language.

(247) Loss of syllable-final consonant

**sup$no-*	>	pan-Slav.	*sŭ**Ø**$nŭ*	‘sleep’
**sed$lo-*	>	dial.	*se**Ø**$lo/sě**Ø**$lo*	‘seat’

(248) Vowel-liquid metathesis

**gor$do*	>	dial.	*g**ro**$dŭ / g**ra**$dŭ*	‘city’

(249) Anaptyxis (in the context V [+ liqu.] ___ CV)

**gor$do-*	>	dial.	*go$r**o**$dŭ*	‘city’

(250) Resyllabication

**mes$ti-*	>	pan-Slav.	*me$**st**i* ‘to throw’
**sed$lo-*	>	dial.	*se$**dl**o* ‘seat’

(251) a. Word-final consonant loss

**ḱle$wos#*	>	pan-Slav.	*slo$vo**Ø*** ‘word’
**tod#*	>	pan-Slav.	*to**Ø*** ‘that’
**eǵ#*	>	dial.	*ja**Ø*** ‘I’
**bhe$ret#*	>	dial.	*be$re**Ø*** ‘will carry’

b. Word-final anaptyxis

**eǵ#*	>	dial.	*(j)a$z**ŭ*** ‘I’
**bhe$ret#*	>	dial.	*beret**ŭ*** ‘will carry’

5.5.6 Teleology?

Most of the developments examined in this section are directed toward a goal. The goal may be quite modest, such as keeping a marging of safety between contrasting segments, but some goals consist in a major rearrangement of phonological structure.

The question whether such goal-oriented or TELEOLOGICAL developments have any historical reality or whether they are simply figments of the imagination of historical linguists is a matter of controversy. One may well ask how, say, the first generation of speakers, making the first step in a goal-oriented series of shifts, can possibly know – or control – what further changes will be undertaken by future generations of speakers. However, the existence of empirically well attested series of changes like the ones in Swedish (Illustration 5.7, Central Illinois (Illustration 5.9), and Chicago and New York (Illustration 5.8) show both that such changes are possible and how they can take place. A first change affects the system and thus gives rise to a later response change, which in turn may lead to yet other responses. By and large, then, the teleology does not consist in any preconceived grand plan or strategy but evolves through a series of “tactical decisions”, in response to the situation prevailing at a given time.

In a few cases, however, something more seems to be involved. As noted earlier, the Pali Two-Mora Conspiracy was brought about by the “cooperation” of three phonetically quite different changes; see (243)–(245). Moreover, taken by themselves, none of these changes is regular; only the conspiracy is regular. Similarly, the Slavic Open-Syllable Conspiracy was implemented in part by non-regular changes; see especially (251b). Cases like these seem to require the assumption that at a certain point the results of various “tactical decisions” may build up enough “critical mass” to establish a goal for further changes, and that

from that point onward, all that matters is the accomplishment of that goal, no matter whether this is brought about by an irregular application of otherwise regular sound changes. The very regularity of these conspiracies, however, shows that they are not just the figments of linguists' imaginations and that, whatever their explanation, they must be accepted as genuine historical developments. (See **15.13** for further discussion.)

Chain shifts and conspiracies are theoretically important in historical linguistics in that they provide an explanation in principle for similar, prehistoric wholesale rearrangements of phonological systems or patterns, even if the evidence now available may not permit an unambiguous identification of the sequencing of events that gave rise to these rearrangements. For instance, Grimm's Law, with its wholesale shift of the PIE stop system, probably came about through some kind of chain shift, although we may never be able to establish with certainty whether this shift was of the drag-chain, push-chain, or solidarity-chain variety, or a combination of these; see Illustration 5.10 for a possible drag-chain account.

	bh	dh	gh				
3	↓	↓	↓				
	b	d	g				
2	↓	↓	↓				
	p	t	k				
1	↓	↓	↓				
	p^h	t^h	k^h	(>	f	þ	x)

Illustration 5.10: Grimm's Law as a drag chain.

In some cases, we can do better, even if some of the details may not be clear. Thus, it is probable that the Great English Vowel Shift was at first motivated by overcrowding, brought about by Middle English open-syllable lengthening; see (252) and compare **5.1.4.3.1**, example (112). Significantly, as in other languages, original short vowels differed in quality from their corresponding long vowels, and open-syllable lengthening of short vowels did not lead to merger with these long vowels (although later developments did lead to some mergers). The result of these changes was the highly crowded long-vowel system in Figure 5.25.

(252) Open-syllable lengthening

	mete [ɛ]	>	*mēt(ə)*	'meat'
vs.	*mēte* [ē]	=	*mēt(ə)*	'meet'
	fole [ɔ]	>	*fɔ̄l(ə)*	'foal'

vs.	*dōm* [ō]	=	*dōm*	‘judgement’
	stān [ā]	>	*stān*	‘stone’
vs.	*name* [a$^{<}$]	>	*nǣm*	‘name’

ī	ū
ē	ō
ɛ̄	ɔ̄
ǣ	ɑ̄

Figure 5.25: (Early) Middle English long-vowel system.

A series of changes alleviated the overcrowding. These included an early diphthongization of high vowels (253) and raising of *ɑ̄* to *ɔ̄* leading to merger with *ɔ̄* (254). Diphthongization may possibly have started in the back vowel *ū*, because of the asymmetry of the vowel tract; in that case the diphthongization of *ī* would be a solidarity shift. Raising of the upper mid vowels *ē* and *ō* to *ī* and *ū* (255) filled the gaps left by the change in (254), and similarly, raising of the lower mid vowels *ɛ̄* and *ɔ̄* (256) filled the gaps left by (255). The resulting *ē* apparently raised further to *ī* in some dialects (or under some conditions) and some of the results were adopted in what was to become the standard variety of English; hence the different outcomes in (256). A final change raised *ǣ* to upper mid vowel *ē*, hence merging with the outcome of (257). Illustration 5.11 presents a simplified summary of the changes, with references to the changes in (253)–(257).

	Early Middle English	Late Middle English	Modern English
(253)	*īs*	*əys*	*ice* [ay]
	hūs	*həws*	*house* [aw]
(254)	*stān*	*stɔ̄n*	(*stone* [ō])
(255)	*mēt(ə)*	*mīt(ə)*	*meet* [ī]
	dōm	*dūm*	*doom* [ū]
(256)	*mɛ̄t(ə)*	*mēt(ə)* > *mīt(ə)*	*meat* [ī]
	grɛ̄t	*grēt*	*great* [ē]
	stɔ̄n	*stōn*	*stone* [ō]
(257)	*nǣm*	*nēm*	*name* [ē]

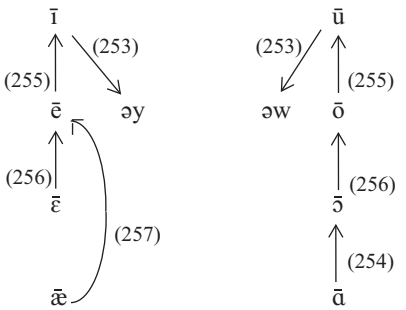

Illustration 5.11: Simplified summary of the Great Vowel Shift changes.

5.6 Tonogenesis and other suprasegmental changes

Up to this point, the focus of this chapter has been on sound changes as they affect segments and systems of segments. However, other aspects of phonetic and phonological structure can also be affected. One development is TONOGENESIS, here understood not only as the development of contrasting tonal contours on every syllable, as in Chinese, but also – and especially – contrasting tonal contours whose domain is the word. Another aspect is the behavior of PITCH ACCENTS in linguistic change. (As noted in **2.11**, pitch accents are not always clearly distinguishable from stress accents, but since stress accent tends to involve pitch, much of the discussion in this chapter will also be applicable to stress accent systems.) A third aspect is the interaction between accent, both pitch and stress, and PHRASAL PRODODY, the organization of utterances into phonological phrases and the intonational aspects of prosodic phrasing. Sections 5.6.1–5.6.5 focus on the development of contrasting tonal contours and changes affecting pitch accent systems; sections 5.6.6 and 5.6.7 more broadly address changes affecting accent systems in general; and 5.6.8 deals with phrasal prosody, with special focus on the effects of UTTERANCE FINALITY.

Except where noted otherwise, the acute accent (´)indicates high tone; the grave (`) low tone; and mid tone is left unmarked.

5.6.1 Consonantal quality and tonogenesis

Crosslinguistically, vowels tend to have a lower fundamental frequency (F_0) next to voiced consonants than next to voiceless ones, and F_0 lowering is especially strong next to breathy-voiced consonants. As long as the conditioning environments remain unchanged, this tonal difference remains at the predictable, allo-