CONSONANTAL ASSIMILATION IN ENGLISH

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LIST OF PHONETIC SYMBOLS

Vowels

[ɪ] be
[ɛ] city
[ɛ] bet
[æ] sang
[a] ah
[ɔ] law
[ɒ] omen

[u] pull
[u] tooth
[ʌ] further (in accented syllables, r's sounded)
[ʌ] further (in unaccented syllables, r's sounded)
[ʌ] must (in accented syllables)
[ə] above (in unaccented syllables)

Diphthongs

[ɔɪ] while
[au] how

[ɔɪ] toy
[ju] using

Consonants

[p] pity
[b] be
[k] custom
[g] go
[f] full
[v] vision
[θ] tooth

[t] tooth
[d] dish
[h] how
[tʃ] watch
[dʒ] jaw
[w] custom
[n] vision
[θ] further [ŋ] sang
[ʃ] sang [l] full
[z] using [ʌ] million (without tongue-palate contact)
[ʃ] dish [w] watch
[ʒ] vision [j] yet

Stress

[′] placed before a symbol indicates that the sound represented by the symbol has primary stress.
CHAPTER I

PHONETIC ASSIMILATION

Basic to linguistic change is that process whereby one sound is attracted to a neighboring one which influences it in such a way that its articulation is altered, or eliminated. A simple illustration of this phenomenon is heard in a common pronunciation of the phrase who's your friend [huzr frend]. The [z] of who's is drawn to the palatal of your, resulting in the voiced fricative [ʒ]. While this particular phrase represents a phonetic change which is regarded as distinctly oral and perhaps somewhat temporary in the language, nevertheless it illustrates precisely the development of the same sound which is regularly associated with such words as azure, pleasure, usual, seizure. There are many phrases like [huzr frend] in which changes occur which are easily explainable in terms of their present phonetic environment, like [wʌʃə dain], [gremdo], [pliktn], have to [hæftə]. Many phonological changes, however, took place at earlier periods in the history of the language, and the orthographical representation of the sounds that motivated them have been obscured or have completely disappeared with time. This is exemplified in the vowel gradation of strong verbs — bite, bit — in the
umlaut plural -- men, men -- and in the voiced plural -- wife, wives. It is the purpose of this paper to consider such phonetic changes as they are reflected in the sound and spelling of Modern English consonants.

Various descriptive terms have been applied to the phonetic process under discussion. The name combinative change often identifies it, and is adequate enough to describe sounds that are actually the product of a combination, like [\w\a\t\s\\d\u\i\n], [\j\u\z\u\w\e\l]. Many changes, however, involve considerably more than simple combination, for example, the voiced or voiceless s in grease, the disappearance of d in Wednesday, or the evolution of gossamer from goose summer. Some have preferred the word analogy, and there would be no objection to it, except that it is often used to describe more accurately other linguistic processes. Accord emphasizes the aspect of phonetic agreement and compatibility, but has not gained general acceptance. The process is most often described as phonetic assimilation, stressing the fact that one sound is made like another sound.¹ This is the term that will be used here.

When one sound is assimilated to a second one, several factors may have played a part in producing the resulting

¹Aiken voices an objection to the term assimilation where it is employed to describe the disappearance of a sound, like the absence of d in ModE night. She insists that this sound is abandoned, not assimilated. J. R. Aiken, Why English Sounds Change (New York, 1929), p. 20.
new sound. Of prime importance to the assimilative process is the tendency to anticipate. As one writer has put it, "The speaker's thoughts are inevitably somewhat ahead of his actual utterance."² In the unconscious struggle of the speech organs to catch up with their thought motivations, certain alterations are made in the phonetic components of their vocalization. These alterations may be simple, immediate, and permanent. The word sink provides an excellent example. A strong assimilative bond between k and n existed the moment the word was formed.³ Anticipation of the velar closure for k eliminated, or rendered ineffective, the tongue contact of n. The result was a compromise in which n was made like, or assimilated to, k. In this instance a third sound [ŋk] resulted, which is now permanently associated with the spelling nk. General usage has established this assimilation as a regular, accepted pronunciation. On the other hand, the identical process when applied to income tax [ɪŋkæm tæks], is not considered standard, as Thomas points out.⁴ The reason is not hard to find. There is a stronger association of [ŋk] with the spelling nk, than with no; moreover, syllabic division of income places n in the root.

²R. G. Kent, "Assimilation and Dissimilation," Language, XII (1936), 245-258


⁴Ibid.
The tendency to anticipate does not only apply to sounds within the same word. Some of the most interesting applications of the principle of assimilation are observed in phrases and even entire sentences. The phrase *why don't you* is nearly always assimilated to [waiˈdəntʃə]. The point of greatest force is on the ⟨d⟩, and the dental characteristic of this sound allows it to be easily stressed. With an increase of energy the tongue is pressed against the teeth or alveolar ridge. If the point of greatest stress falls upon a preceding sound, the articulation of ⟨d⟩ is weakened and may even disappear:[ˈwaɪntʃə]. In have to and used to the assimilated forms [ˈhæftə] and [ˈjuʃtə] exhibit greater articulatory force in their medial consonants than the un-assimilated forms [ˈhævtə] and [ˈjuzdə]. Thus, it can be seen that the point of greatest force also exerts an important influence on assimilation, especially as it occurs in phrases and sentences.

Sometimes an assimilation is effected when a speaker tries to reproduce an unfamiliar succession of sounds by substituting for it a more familiar succession. A lady who has been exposed to the Haydn Sixth Symphony for the first time confidently reports that she has heard the Hide and Seek Symphony. Several associative ideas are involved in her reduction, but what she has done, essentially, is to have substituted the name of a game which is familiar to her for the title of a symphony which is not. Actually,
there is not a great deal of difference between [hайдыз сик симфани] and [хайды сик симфони]. The second contains two simple consonant assimilations. The [z] in [хайдыз] is assimilated to the following stressed [s] and loses voice. The cluster [ксо] is reduced first to [кстс] and then [кс] by place assimilation. One more alteration in the raising of [і] to [i] is made, and the transfer is complete. The phonetic processes involved in such a reduction are easily described, but elements other than mere sound are factors here; hence, such derivations as *Hide and Seek Symphony* belong more properly to the area of folk etymology.

In the spoken language, assimilated forms may be employed at one level of usage, but not at another. A well-educated person delivering a formal lecture in a large hall often avoids generally acceptable forms like [жуста] and [хаета], even though he may use them regularly in his everyday, informal speech. On the other hand, even the most meticulous speaker might reduce *I don't know* to *M-m-m* in informal conversation. Obviously, the circumstances surrounding a speaker's pronunciation have considerable influence on the degree of precision he uses in articulating his words. Inasmuch as these circumstances are basically psychological in nature, they will occupy a position of secondary importance here. Chief consideration will be given to the sounds themselves and their interrelationships.
Although most linguists have devoted some attention to the phenomenon of assimilation, they have not, as yet, developed a generally acceptable vocabulary by means of which the process can be thoroughly discussed. Authorities agree that all assimilations are due to adjustments in the placement of the speech organs, and grant a special place to assimilations that depend only on an adjustment in the vocal cords. When the word *gooseberry* is pronounced with a voiceless \( s \), the vibration of the vocal cords is interrupted for the duration of that sound. The cords are set in motion again for the articulation of the following voiced \( b \). Sometimes the cords begin to vibrate prematurely, while the other organs are still occupied with the articulation of \( s \). Because of this anticipation, the \( s \) picks up the vocal vibrations intended for \( b \) and becomes voiced \( s \ [z] \). The voiceless quality of the \( s \) has been assimilated to the voiced characteristic of \( b \). Assimilations of this type are called *voice assimilations*.\(^5\)

Organs other than the larynx also anticipate. In pronouncing the word *class, [k\(\alpha\)]*, many speakers anticipate the alveolar [\(l\)] and position the tongue point on the alveolar ridge before they have completed the articulation of the initial consonant. This has the effect of eliminating velar closure of [\(k\)] and produces [\(t\[\alpha\]]*. This particular

word illustrates the assimilation of consonant to consonant, but the same process can be observed in vowels as well. In some areas of Texas, as well as in other states, the -ing of words like finger, spring, and thing, is pronounced [æŋ]. This is due to an assimilation of [ɪ] to [ɡ]. These people have a [ɡ] which is normally more open than the in -ing. It is in the position of the [ɡ] in words like [ɡad], [ɡardɪn], [ɡan]. When this articulation of [ɡ] is anticipated, the vowel of -ing if opened and lowered to [ɛ]. Such changes, based on placement alterations of organs other than the vocal cords, are called place assimilations.

It will be observed that the examples given in preceding paragraphs illustrate the assimilation of one sound to a following sound. The [s] in [ɡusˈbɛrə], for example, assimilates by voice to the following [b] and becomes [z] in [ɡusˈbɛrə]. In the same way, the [k] of [klæs] assimilates to a following [l], and the [f] of [fruga], to a succeeding [ɡ]. Another way of describing these assimilations is to say that one sound causes a preceding one to assimilate; that is, its influence is brought to bear on a sound behind or before it. If the influence works from front to back, as it were, the assimilation is said to be

6Ibid.
regressive. Many important assimilations, however, go in the opposite direction. In the weak preterite stopped, the ą loses voice by assimilation to the preceding voiceless p. The word open is often pronounced [ɔpən], because the n is articulated while the lips are still closed for the articulation of p. The [n] is assimilated to the [p] and becomes bilabial nasal[m]. In these two words, assimilative influence is exerted by one sound upon a succeeding one. In stopped, p causes ą to assimilate; in open, p influences the n. When the assimilative influence operates on a succeeding sound, when the direction is from back to front, the assimilation is described as progressive. Kenyon lists only progressive and regressive directional types, but Thomas has added a third. To illustrate, he cites issue and sure. Here are two sounds exerting mutual influence upon each other to produce a third sound. This third sound represents a compromise between the two original ones. An unassimilated pronunciation of issue is [ɪsʃu] . A failure to make the delicate adjustment necessary to pronounce [s] + [j] results in [ʃ] . The new sound has both the continuant quality of [s] and the palatal characteristic of [j] . It is, therefore, a compromise between the two original sounds. This variety of change Thomas names reciprocal assimilation.7

7Thomas, op. cit., p. 129
Many assimilations have become so ingrained in the English language that most speakers are not conscious of them. They do not realize that in struggling between "unpractical" and "impractical" they are repeating a process that occurred long ago in the history of such words, a process which has been completed, in many instances, even before these words became a part of English. The negative prefix in- often assimilated to following consonants. Thus, in + legible = illegible. The n of in- has assimilated to the l of legible and in so doing has become exactly like l. When a sound becomes identical to another sound, it has undergone a complete assimilation. The words cupboard, raspberry, and blackguard are further examples. They are especially interesting because their unassimilated forms are still reflected in their spelling.

Often, one sound will be "made like" another, but not completely like it. In the word [græmpə], for example, the [n] of [græmpə] has been made like, or assimilated to, the [p], to the extent that the latter's bilabial quality is shared. It has not been made exactly like [p], in the way that [n] was made identical to [l] in [ɪdʒəbl]. It is, therefore, a partial assimilation. Another illustration can be heard in class [tæs], where [t] shares the lingual characteristic of [l], but is not identical to it.
In contrast to complete and partial assimilations, there is a type which is not readily discernible to the naked, untrained ear. The placement of the \[g\] in \[g\, u\, s\] , for instance, is not in the same position as the \[g\] in \[g\, i\, s\] . Because of the great degree of flexibility in the velum, \[g\] can be articulated from a variety of positions. In \textit{goose}, the placement of the initial consonant is influenced by the back vowel which follows it; the vowel in \textit{geese}, however, is farther front, and so the preceding consonant is articulated from a more fronted position. Such nicety of place-adjustment is apparent only to the trained, or extremely sensitive ear and is named by Thomas a \textit{minor assimilation}.  

Words like \textit{illegible}, \textit{gossamer}, \textit{assimilate} (\textit{adsimilate}) have spellings which obscure the original sounds that combined to give them their present accepted pronunciations. It is doubtful that the average speaker is conscious of the fact that they contain phonetic assimilations. In any case, he would be more conscious of the influence of the dictionary on the spelling as well as on the pronunciation. Since that influence is not likely to diminish, it hardly seems possible that these words will ever revert to their earlier, unassimilated forms. For this reason they are referred to as \textit{permanent assimilations}. There are also in English many assimilations which are spoken but not written, as in \textit{have}.

\[\text{Ibid.}\]
to [hæfts], don't you [dɒnts], used to [juːts]. These are general assimilations. A third group includes temporary assimilations. These are represented by forms that are characteristic of informal, or uneducated speech, like [pʌŋkɪn] and [græmp]. Membership in the permanent, general, and temporary categories is not fixed. Many words have belonged to all three in the course of their history.

In the light of these preliminary remarks a more detailed study of the assimilative process can be made. The purpose of this study is to show that the phonetic changes wrought by assimilation in the development of the sound of Modern English are still at work. To do this, historical examples will be placed side by side with others from present-day English. No effort is made to restrict examples to any one dialectal area or time.
CHAPTER II

VOICE ASSIMILATION

Although assimilation is recognized as a universal speech phenomenon, it seems to be particularly pronounced in English. There is a marked tendency to simplify complex sounds into articulations that require less effort. Processes of voicing and devoicing afford an example of one type of effort reduction. The s in absorb, for example, is sometimes pronounced as a voiced consonant [əbəsrəb] and sometimes as a voiceless one [əbəsrəb]. One can observe the same variation in nephew with the pronunciations [nɛvju] and [nɛfju]. In pretty one hears both [ prɪdi] and [ prɪti]. These are instances where voiceless consonants become voiced: [s] to [z], [f] to [v], [t] to [d]. This is the normal tendency, but the direction of voiced to voiceless is by no means unusual. The word anxiety usually has [z] and is pronounced [æŋkəstət]. Occasionally, however, one hears [æŋksətət], where a voice assimilation has taken place not only in the [z], but also in the [k]. The only organic change involved here is made in the position of the vocal cords. In [s], [f], and [t], they are open; in [z], [v], and [d], they are closed. An assimilation involving this single organic change is called a voice assimilation.
There are two factors which facilitate voice assimilation. Of prime importance is the character of the phonetic environment in which the assimilating consonant appears. A voiceless consonant which stands between two vowels, or between a vowel and a voiced consonant, is surrounded by voice and tends to become voiced itself. The [f] in [Χefj]u, for example, occurs between two vowels and assimilates to them, becoming [v]. In newsboy, s is preceded by a vowel and followed by a voiced consonant and is also in an environment suitable to produce voicing in [Χjuzb]or. If, however, a voiceless consonant is followed by another voiceless consonant, the latter tends to form a barrier against voicing. In aptitude[Χpttud], the voicelessness of [t] makes it unlikely that contiguous [p] would ever become voiced[b]. However, a voiced consonant followed by a voiceless one tends to lose voice, as in absolute[Χpslut].

Obviously, phonetic environment is not the sole factor influencing voice assimilation, as one can perceive in newspaper. Here, s is followed by voiceless p, and yet it is often heard as a voiced consonant. An explanation for this change can be found in the principle called la loi du plus fort by its discoverer, Maurice Grammont. He has said that the dominating phoneme is the one that has the greatest amount of force, resistance, stability, or favor.\footnote{Maurice Grammont, Traité de Phonétique (Paris, 1933), p. 185.} If this
principle is applied to [nju:pepa], it can be seen that [p] represents the dominant phoneme. It requires greater articulatory force than the preceding [s]; it offers greater resistance, being a stopped sound; and its position as the first sound in the compound element [pepa] secures its stability. The voicelessness of [p] dominates the preceding consonant and makes it voiceless. In [nju:zpepa] the compound nature of the word is weakened. It is pronounced as though it were news paper. Now the articulatory force is centered on the vowel [u] and the s is assimilated to it, becoming [z]. Assimilation is often associated with semantic change. The semantic limits of news and paper fade in the compound newspaper, terminal s and initial p now becoming contiguous medial consonants. The permanent sequence of s + p created through compounding established a favorable environment for assimilation. No semantic change takes place when the medial consonant of nephew assimilates. If the ph is pronounced so that it receives the greatest amount of articulatory force, it remains stable and voiceless [nɛfju:]. If the articulatory stress recedes to ne [nɛ], then voicing dominates and ph [f] assimilates and becomes [v]. The principle of articulatory force is nothing more than phonemic stress. For the first three sounds of nephew three stress patterns are possible: [nɛnju:], [nɛnju:], and [nɛ'fju:].

The voice assimilation of consonants will now be considered in a systematic way. They will be analyzed in terms
of the two principles of phonetic environment and phonemic domination. The necessity for semantic distinction will occasionally appear as a determining factor in causing or preventing anticipated assimilation.

**Stops**

[p] [b]

The word *cupboard* represents a permanent voice assimilation of [p] to [b]. On glancing at the spelling, which represents the older, unassimilated form, one is tempted to assume that p assimilated to the following b. The stressing [kʌbɔrd] of the word, however, makes this seem unlikely. If p had assimilated to b, the latter would have had to have phonemic stress [kʌp'bɔrd] and the assimilated form would then be [kəbɔrd]. In order to evolve the word as we now have it, restressing would then have to occur. The semantic value of *cup* would tend to prevent a stress shift in the first place. Locutions with *board* are not rare. One need only think of *starboard*, *larboard*, *buckboard*, *bread board*, and it is apparent that *board* is not the specific semantic element of the compound. A speaker might wish to make a distinction, for example, between a board for books, a board for bread, and a board for cups. It is likely, then, that *cup* has always been the stressed element in *cupboard*. This being the case, the p must have assimilated to the preceding vowel, producing
The doubled [b] could then be simplified, the quantity of the assimilated one being transferred to its preceding vowel: [kʰabəd]. In this assimilation phonemic stress is the decisive factor. Since p is preceded by a vowel and followed by a voiced consonant, it might have assimilated in either direction, but stress occasioned by semantic necessity demanded a progressive change. The importance of phonemic stress to the assimilative process can be further demonstrated in the word pecan. In parts of Louisiana it is pronounced [pə'kɑn] or [pə'kɑn]. Initial unstressed voiceless consonants often undergo minor voice assimilation, and so [p] has more voice in [pə'kɑn] than it would in [pi'kɑn]. The Negro of North Louisiana hears the initial consonant as a voiced sound and articulates it as a [b]. Frequently, he restresses it, retaining, of course, the voiced sound: ['bʌkɔn]. So different is his sound from the original word that many visitors, on first hearing it, think the word is buckhorn.

Minor voicing of unstressed p is not limited to sub-standard pronunciations. In stop him, p is voiceless if the h is articulated; if it is not, then p is in intervocalic position and picks up a certain amount of voice. The same is true of the p in apple as compared with the p in apt. The same phenomenon can be observed in unstressed initial p in pagoda, pedantic, preamble, persimmon. In stressed position, p is voiceless, as in pat, puppet, potter, peanut.
It will be noted that minor assimilations do not, as a rule, effect phonemic change. The p in the foregoing examples is consistently recognizable as the phoneme [p].

Voiced [b] sometimes loses voice by assimilation to a voiceless consonant. The b in the prefix ab- frequently does this. In abate, abject, abduct, b is in intervocalic position and retains its voice; in abstain [æstɛn], absolute [æbsəlut], absent [æbsənt], it occurs before voiceless [s] and assimilates. In absurd and absorb both voiced and voiceless b are heard, but the fully voiced sound is more likely if the following s is also voiced: [æbsəd], [æbzəb].

[t] [d]

The inflectional -ed suffix of the weak preterite verb regularly exhibits voice assimilation. It is voiced when it is syllabic and when it follows homorganic d or t, as in heated and heeded. Non-inflectional -ed is also voiced, as in ragged and crooked. However, when it is inflectional and non-syllabic, -ed is voiced after voiced sounds — maimed, lagged, nabbed, cried — but is voiceless after voiceless consonants — tapped, asked, cranked, wished. A preceding sound causes a progressive assimilation.

Initial t is generally stable, as in Tom, tenacious, teeth, troth, etc. On the folklore level, however, is

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10 Thomas, op. cit., p. 129.
[dræntsə] , a pronunciation of tarantula heard in Denton County, Texas. In the standard pronunciation of this word, the initial t is in unstressed position: [təræntsə] . The [ə] of the first syllable was heard as part of the following [r] , producing [trænts(ə)ə] . This is the same process that sometimes takes place in terrific [trɪfɪk] and terrain [tren] . In [træntsə] the [t] is now initial and stressed, but has picked up voice by minor assimilation to the following voiced sounds. The less sensitive ear mistakes this minor voicing of [t] for [d] and hears [dræntsə] .

Medial t is often voiced in unstressed position, as in water [waːdə] , duty [djuːdɪ] , beauty [bɪdʒɪ] , potato [pətədə] , and city [sɪdɪ] . Similar voicing can be heard in phrases like sit down [sɪdəʊn] , get up (cf. gɪddap) , let him [lɛdɪm] . The adjective pretty is often pronounced [prɪdɪ] , but there is an intermediate stage where the doubled t exhibits a minor change and becomes [dɪt] : [prɪdɪt] . This minor assimilation also occurs in other words, like attract [ədtrækt] , attest [ədtest] , attribute [ədtrɪbjʊt] , where the assimilated [t] is in unstressed position. In a stressed syllable, as in attribute [ədtrɪbjʊt] , the change is less likely to occur. Three stress aspects can be illustrated in this kind of assimilation: got to go, [gət tə go] , [gədəˈgo] , [gadəˈgo] .
Unlike the labial and lingual stops, the velars generally resist voice assimilation, save for a few minor changes. Initially, $k$ may pick up voice from a following vowel, especially in unstressed position. Accordingly, there is minor voicing in *convene*, *collate*, as compared with the unassimilated initial $[k]$ of *convent*, *collar*. Similarly, intervocaled $[k]$ may also assimilate slightly, as in *seeking*, *micro-*, *syncope*. The same is true of the first $k$ in $[kk]$ : *account* $[\acute{a}k^\prime k\acute{a}u\acute{n}t]$ , *accumulate* $[\acute{a}k^\prime k\acute{j}u\acute{m}\acute{a}l\acute{e}t]$ , etc. The same assimilation occurred in *blackguard*, but the assimilating was later lost to its preceding vowel: $[\acute{b}l\acute{a}k\acute{g}\acute{a}rd]$ , $[\acute{b}l\acute{a}g\acute{g}\acute{a}rd]$ , $[\acute{b}l\acute{a}g\acute{g}\acute{a}rd]$ , $[\acute{b}l\acute{a}g\acute{a}rd]$ .

Homorganic $[g]$ may become $[k]$ , when it is preceded by $[y]$ and followed by a voiceless consonant, as in *anxious* $[\acute{a}n\acute{k}\acute{g}k\acute{s}\acute{a}s]$ , *length* $[\acute{l}\acute{e}n\acute{y}k\acute{\theta}]$ , *strength* $[\acute{s}\acute{t}\acute{r}e\acute{y}k\acute{\theta}]$ . This $[y]$ is itself either the result of a place assimilation (*anxious*)$^{11}$ , or it is a residual sound going back to the Middle English and Old English periods, when the spelling *ng* regularly represented $[y] + [g]$ . This pronunciation has been retained in some words (*linger*, *finger*), but has disappeared from others (*singer*, *bringing*).$^{12}$ In *length* and *strength* the $[g]$ is often reinstated and, as been pointed out, sometimes becomes $[k]$ through assimilation.

$^{11}$See page 47.

$^{12}$See page 38.
Fricatives

[f] [v]

The voicing of f was a regular phenomenon in Old English. Initially, finally, and before voiceless consonants, f was voiceless. Between vowels, or between a vowel and a voiced consonant, it assimilated. This voicing of f is reflected in Modern English in plurals like halves (half), calves (calf), wives (wife), and in derivative pairs such as give (gift), leave (left), save (safe). It took place at a time when the following e was still sounded, placing the f in an intervoiced position.

In Modern English assimilated of is found alongside unassimilated off. Both words occur frequently in the language. The latter did not assimilate, because it almost always appeared in stressed position. The former did assimilate, because it regularly occurred in unstressed position and was often followed by a voiced sound. Through lack of stress it sometimes lost its consonant entirely (O'Neil, time of day [tairme] , etc.).

The expression have to also appears in parallel forms. The y assimilates to the following voiceless t and may also be influenced by the initial aspirate, producing [hæftə]. This version is used as a circumlocution for must, expressing compulsion. Thus, [θiŋz æt hæftədu] means things I must do.

On the other hand, the unassimilated $[\theta y z \varepsilon i h a n t e d u]$ is frequently used in the sense of things on hand which are to be done.

The expression if I were you is often reduced to $[\varphi a \varphi a j u]$ and this in turn can become $[\varphi a \varphi a j u]$. Primary stress on the last syllable permits the $f$ to assimilate and become $y$. This kind of reduction can lead to semantic confusion, especially for those who are familiar with the spoken language only. The tendency here is to substitute a familiar sound for one which is unfamiliar, or which appears in an unusual position. This is often done by children of preschool age, who are learning the language by sound alone. Everyone has his favorite example. For instance, the child who loves his Aunt Vi wonders, as he recites by rote if I should die $[\varphi a \varphi a d a r]$, why this particular relative has been singled out as the victim of so malevolent an assertion. Kent notes similar instances of semantic confusion due to assimilation.  

$[\theta]$  $[\delta]$

No distinction is made in Modern English spelling between $[\theta]$ and $[\delta]$. Both are represented by $\text{th}$. In Old English $\text{th}$ was voiceless when initial, final, or before a voiceless consonant. This is also true of Modern English in thin, moth, baths, worth. North, south, heath, worth

$^{14}$Kent, op. cit., p. 257.
have terminal th, which is regularly voiceless. Their derivatives, however, have intervoiced th, which is regularly voiced. Kenyon also lists several plurals with [θs], which he designates as exceptions to the rule. Among them are healths, fifths, sixths, eighths, nintha (etc.), months, breadtha, lengths, etc. He declares the th is voiceless, because it is preceded by a consonant. This is perhaps a simplification of the case. Except in fifths, in which th is already preceded by a voiceless consonant, an intrusive voiceless stop occurs before th, providing the regular environmental background for devoicing. This intrusive stop is the result of place assimilation and is indicated by Kenyon in some of his examples: [ˈnelθəs], [ˈɛŋθəs], [ˈmʌntθəs], [ˈnaɪntθəs]. It can also be traced in the others: [ˈsɛkstθəs], [ˈbrɛθθəs]. Other exceptions are plurals in which [æ] (formerly a consonant [r]) precedes, fourths, hearths, etc.; forms in which [æ] (formerly a vowel + a consonant [r]) precedes, births, earths, worths, etc; other words with [θs], breaths, deaths, drouths, growths, faiths, froths. Forms that waver between [θs] and [ðs] are baths, paths, mouths, oaths, wreaths, sheaths, laths, broths, moths, troths, youths, truths.

An important exception to the rule of voiceless initial th is found in this, that, they, them, their, those, then,

15 Kenyon, op. cit. p. 131.
16 See page 39.
than, these. Originally, these words also had voiceless initial th. The nature of their syntactical function regularly placed them in unstressed position. This lack of stress eventually led to voice assimilation resulting in initial [ð]. In time, this voiced initial came to be the accepted form, even when occasionally used in stressed position.

Other apparent irregularities in the behavior of th are found in many English words. Kenyon gives considerable attention to this sound. Loan-words like ether, method, catholic, atheist, sympathy, author, pathetic, he points out, retain the voiceless th characteristic of the language of their origin, or of the language from which they were borrowed. A consciousness on the part of the speaker of the foreign nature of these words would tend to suspend the application of English phonetic rules. On the other hand, native words with intervoiced th regularly have [ð], like either, brother, father, mother, fathom, feather, weather. To this list may be added words like baths, oaths, mouths. These plurals with [ð] represent Middle English forms in which the th was intervocalic: bathes, oathes, mouthes. In Modern English there are pairs like north, nothern; south, southern; heath, heathen.

The preposition with is presently wavering between [ð] and [ð]. Since there are more voiced sounds in the

17 Kenyon, op. cit., p. 131
language than voiceless ones, with is more often than not in prevocalic position. In sequences like with apples, with omens, with honor, with me, with bath, with dancing, the phonetic environment is ideal for voicing the th. Many speakers use an analogous \[ \ell \] before voiceless consonants.

\[ s \] \[ z \]

Inflectional -(e)s follows an assimilative pattern somewhat like that for inflectional -ed. Syllabic s is voiced, as in wishes, gases, loses, matches, judges. When non-syllabic, it is voiced after voiced sounds -- maims, lags, nabs, cries -- but is voiceless after voiceless consonants, as in taps, asks, halts, cranks. The verb forms is and has often assimilate in the same way: he's already here, he's already gone, the pipe's not here, his sight's left him.

In the Old English period s, like f and th, was regularly voiceless whenever it was initial, final, or stood before a voiceless consonant. This is still evident in Modern English. Initial s is voiceless in seat, sat, sot, smote, sky, slight, sprite. Medial s follows the rule in master, whisper, buskin, schism, misery, music, gosling. The rule is not so obviously followed in scissors, discern, Xerxes, and dessert, for they have voiced medial s. In the case of scissors, spelling is at fault. The word came into English by way of Old French cissoires, which has intervocalic s, and not by way of Medieval Latin scissor, as the spelling
suggests. The medial consonant of *discern* is voiced, because there is no longer a feeling of separation between prefix and root in this word. In *disburse*, *displace*, *discommodate*, *disgorge*, etc., a separate semantic designation is given the prefix. The word *discern*, however, no longer assigns semantic distinction to *dis*- and, as a result, *sc* is actually a single medial consonant [dɪzən]. The fact that most dictionaries list the voiceless pronunciation along with the assimilated one indicates that some analogy to other *dis*- compounds does exist, however. The name *Xerxes* [zəksiz] is a borrowed word; its medial [s] is part of the sound which attempts to imitate the original guttural fricative. Also borrowed is *dessert*. An immediate analogy to *desert* is suggested and, to a certain extent, is justifiable. In *desert*, *s* is intervocalic and voiced. In *dessert*, *s* is doubled and should be voiceless, but it is not. The stress pattern of the word encourages the assimilation. The point of greatest articulatory stress falls on the *e* which follows the *ss*. Through lack of stress, *ss* is reduced to *s*. The *s* is now in a position to assimilate.

An apparent contradiction to the rule of voiceless final *s* occurs in certain verbs like *rise*, *lose*, *choose*, *raise*. Formerly, the *s* in these words was intervocalic, when the final *e* was still sounded. The assimilation to [z] occurred at that time and was retained after the sound of *e* had disappeared. Verbs like *base*, *cease*, *force*, *mince* are
Latin-French in origin and found their way into English at a later period when final e had already become silent. They contain genuine final voiceless s. The final e of their spelling is justified historically. It had simply become silent prior to the time these words entered English. Such is not the case with the final e in house and goose. It never appears in the older forms of these words. It is, in fact, an analogical spelling and represents no sound at all. The s in the singular of these words has always been final and always voiceless. Their derivatives, houses and gosling, do have medial voiced s.

\[ [ts] \quad [dʒ] \]

Formerly, cabbage, spinach, knowledge, partridge, sausage were \([kəbətsə]\), \([s髌ətsə]\), \([ˈknoʊlɪtsə]\), \([ˈpɑrtritʃə]\), \([ˈsɒsɪtʃə]\). The unstressed \([ts]\) assimilated and became \([dʒ] : [kæbɪdʒ] \), \([spɪnɪdʒ] \), \([nælɪdʒ] \), \([ˈpɑrtɪdʒ] \), \([ˈsɒsɪdʒ] \). With the possible exception of knowledge these words still waver between \([ts]\) and \([dʒ]\).

Prefixes

The preceding discussion was primarily concerned with the position of a consonant within a word, and the effect this position produces in the assimilative process. In general, it was pointed out, initial consonants tend to be stable; medial consonants often assimilate; and final consonants remain stable, or assimilate progressively. Any of
these positional tendencies can be changed by articulatory stress. There are two important determinants in stress: (1) the amount of additional energy required for the production of certain sounds and (2) the semantic importance of expending that additional energy. These two factors are especially important in analyzing voice assimilation in prefixes.

Let us consider the prefix dis-. The s is almost always voiceless, and an extra speech impulse is necessary to produce this voicelessness after di. This impulse and the cessation of voice it produces make a line of demarcation between prefix and stem. It is possible then for the s to be articulated as the last sound in the prefix, as in disarm [disərm], or as the first sound of the stem, as in disease [deziz]. The determining factor here is essentially semantic. The prefix dis- has a definite association with the ideas of separation, reversal, or negation. While it does not have the force of a separate word, it is strong enough to preserve its identity in most compounds. The maintenance of this identity provides a barrier against the assimilation of its s: disable, discard, dispose, disburse, dishonor. Each of these words expresses two distinct ideas: dis + able, dis + card, dis + pose, etc. The same kind of distinction cannot be made in the case of disgust and disdain, since gust and dain are not normal vocabulary units. For this reason, the cleavage between prefix and
stem is not defined, and the \( g \) of the prefix is more apt to assimilate: \([drzgast\), \([drzden\). In disease, \(dis-\) is no longer thought of as a prefix, and \( g \) behaves like a radical medial consonant: \([dz\)iz\].

The prefix \( ab-\) is rarely felt to possess separate semantic force and displays regular assimilative tendencies. It remains voiced before vowels and voiced consonants, as in \( abate\), \( abdicate\), \( abnormal\), but loses voice before voiceless \( s\), as in \( abstruse\) and \( abstract\). One word, \( absurd\), exhibits semantic influence. This word has exceeded its original limit, which was determined by the somewhat technical word \( surd\). Since this root is seldom used as a separate word in the normal English vocabulary, its \( s\) is often articulated as a medial consonant, rather than as a radical initial, and sometimes assimilates: \([\text{æ}b\)z\)\( d\)\].

Words like \( exporter\), \( ex\)-\( porter\), \( ex\)-\( hero\), \( exhume\) illustrate two uses of the prefix \( ex-\). With separate semantic force, it has the meaning of \( formerly\), but \( not\) \( now\), and is generally applied to nouns implying office or position. This use is indicated by a hyphen in the spelling and never involves voice assimilation. In its various other connotations the prefix is directly attached to the stem and regularly assimilates: \([e\)ks\( \varepsilon l\), \([e\)ks\( t\)\( s\)\( end\)\( z\), \([e\)ks\( h\)\( el\], \([e\)ks\( p\)\( æn\)s\), \([e\)ks\( t\)\( end\]), but \([e\)gz\( æ\)d\( j\)\( æ\)\( r\)\( et\], \([e\)gz\( j\)\( b\)\( j\)\( t\] , \([e\)gz\( j\)\( æ\)\( r\)\( et\], \([e\)gz\( æ\)\( r\] .
The prefix **ob-** is stable before voiced sounds, as in **obedient, obdurate, object, oblige, obvert**. It undergoes partial loss of voice before voiceless consonants, as in **obfuscate, obscene, and obtain**. Before homorganic **p**, complete assimilation occurs, as in **opponent** and **oppress**.

Like **ob-**, **sub-** sometimes exhibits minor voice assimilation before voiceless consonants. In **substance, subconscious, subtract, b approaches [p]**; in **supplant, suppose suppress**, it assimilates completely to homorganic **[p]**. The latter change is preserved in its unassimilated form in the spelling of **subpoena [səˈpino]**.

The development of the prefix **with-** parallels that of the adjective. Its **[θ]** is frequently heard as **[ð]**, as in **withhold [wɪθhɔld]**, **withstand [wɪθstænd]**, **withdraw [wɪθdrə]**, **without [wɪθfaʊt]**. Since the voiced consonant appears before voiceless as well as voiced sounds, the change here is likely due to analogy, rather than to assimilation.

The voicing that occurs in the preposition is probably carried over to the **[θ]** of the prefix. There is little semantic opposition to this, because the association of this prefix with its original meaning of **against or away from** is not very strong. While this change is general, it cannot yet be regarded as permanent, inasmuch as one still hears **[wɪθhɔld]**, **[wɪθstænd]**, **[wɪθdrə]**, **[wɪθfaʊt]**. It is safe to assume

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18See page 23.
that, in the course of time, the voiced form will prevail, as in the case of the these-them words. Another possibility would be for one sound to be used in pronouncing the preposition and the other, in the prefix; but analogy has already interfered with this.

In the phenomenon of voice assimilation, both regressive and progressive changes occur. Because of the anticipatory character of the process, the regressive direction predominates; that is to say, it is more common for one sound to assimilate to a following sound than to a preceding one. Also, the tendency of a voiceless sound to become voiced is greater than the tendency of a voiced sound to become voiceless. A sound that receives the greatest amount of articulatory stress rarely assimilates, while lack of articulatory stress enables a sound to assimilate readily. Semantic distinction between the elements of a compound often provides a deterrent to the assimilation of their contiguous consonants. It will be demonstrated in the following chapter that the principle of articulatory stress and the desire for semantic precision apply to place assimilation as well.
CHAPTER III

PLACE ASSIMILATION

All assimilative change results from the alteration of one or more of the articulating organs. When the opening or closing of the vocal cords brings about a phonetic modification, the process is referred to as voice assimilation; if positional alterations of the other speech organs are made, the process is described as place assimilation. In pronouncing cup and saucer [καρπός κύκλος], the speaker articulates the η in and before he has released the lip position of p. He may assume the proper tongue position for η, but since the lips are still closed, the η-resonance becomes m. The open lip position of η has been altered to the closed lip position of p, causing a place assimilation of η to p.

Place assimilations may be progressive, as in kcalýpsas, regressive, as in give me another [ɡίμνουσανδα] or reciprocal, as in mission [μεσιον] to [μισαν]. An assimilating sound may often disappear entirely, as in lawn from land, or in the substandard pronunciation [fɪl] for field. This type of assimilatory loss can be ascribed to decreasing energy of articulation. Sometimes, when one sound assimilates to another, an intervening sound occurs, as when warmth is pronounced [wɜːrmθ]. Here, voiced ːwː assimilates to
voiceless [θ], but in losing some of its voice [m] partially changes to [p], which has the same lip position. This intrusive [p] then serves as a barrier against assimilation of [m] to [θ].

The assimilative process is by no means an exclusive characteristic of consonants. Vowels also assimilate, as can be illustrated by the forms man and men, or by comparing the vowel of keel with that of yield. Since each vowel can be articulated from a great number of positions, and since these positions may change, to some extent, with the phonetic environment of every word, the possibilities would be infinite. Consonants, on the other hand, have more distinct phonemic limits which make possible the observation of influences and changes.

[p] [b]

The bilabial stops sometimes assimilate to a following labiodental. In up front, cupful, stop for it, [f] is anticipated, and the preceding [p] is articulated from labiodental position; that is, it is articulated by bringing the lower lip into contact with the upper teeth in order to stop the sound. Homorganic [b] does the same thing when followed by voiced labiodental [v] in words like subvert, obvious. Both [p] and [b] develop intrusively after and are discussed in connection with the assimilation of that sound.
[t] [d]

In the words chaste, fast, list, the t, when pronounced, concludes the syllable and is articulated more energetically than the preceding sounds. It may be said to bear primary stress within the syllable. When -en is added, the pattern changes. The primary stress recedes, and t is unstressed. Moreover, the tongue, anticipating -en, fails to make alveolar contact for the t, and that sound disappears. In chasen, fasten, listen, the tongue position for s is very close to that of the following t. The t, in turn, has the same tongue position as the n which follows it. If chasen is pronounced in two syllables, the articulation of t offers no problems; when it is reduced to one syllable, complete articulation of t is impossible. To differentiate between t and the following n, tongue contact must be broken. Otherwise, their tongue positions being identical, the termination of t would merge into the beginning of n. This kind of merging often happens when the t is preceded by a voiced sound as in Latin [lɔntə], Walton [wɔltə]. In chasen, however, the preceding sound is the voiceless continuant s whose articulatory stress is increased as the word is reduced to one syllable. The s is now dominant and is to be followed by two weak tongue contacts for t and n. Eventually, t yields to n, and is lost. Even the tongue point contact of n is assimilated to the blade or front contact of s in these words.

An identical assimilatory loss of t occurs in bristle, hustle,
castle, wrestle, where t and l share the same tongue point position. In soften and often, t is lost because it is articulated before the labiodental position of f has been released. By the time this position is released, the velum has been lowered for n and the t is obscured by velar resonance.

A substandard t is often added to once [wʌnst], twice [twərst], across [əkrəst]. The proximity of tongue positions for s and t is responsible for this. For s the tongue point is very close to the back of the upper teeth. If it is raised slightly as the s is being released, it makes contact with the teeth and produced t. This assimilatory gain of t is traceable in standard forms like against for against, amongst for amongs, and midst for mids. A similar gain can develop after final n. A slight plosive quality if often produced when final n is released. The alveolar position of the tongue point plus this plosive release make t, as in peasant from Old French paysan, pheasant from OF faison, and pennant from OF pennon.

Because of decreasing articulatory energy, final d is often lost after a consonant, as in sand [sæn], field [fɪl], asked [æsk]. This dropping of final d is considered sub-standard, but the omission is often heard on the acceptable level when d is internal, as in grandfather [ɡrændfaðə], sand trap [sæn træp], send some [sɛn ʃʌm], land poor
[lan pur], lan(d)caster [lʌŋkəstər], 19 twined vines [twain vairn], signed bill [sain bil]. In these compounds the consonant following the d marks the beginning of a word and receives careful articulation because of its semantic importance. Consequently, the articulation of the preceding d is slighted. If the d in sandpaper were fully articulated, a delay would be caused by the explosive release of the consonant, and something approaching [sʌndəpeɪpər] would ensue. Working counterclockwise to this tendency is the influence of the preceding n. If d is articulated while the velum is lowered for n, and if its explosive release is omitted, then it becomes identical to n and is lost as a separate sound. In old fellow [ɔl ˈfɛl], mild time [ˈmaɪld ˈtaɪm], sold some [sɔld ˈsʌm], chilled pudding [ˈtʃild ˈpuːdɪŋ], mold clay [ˈmɔld ˈkleɪ], wild view [ˈwɪld ˈvjuː], killed Bob [ˈkɪld ˈbɑːb], the influence of the lateral is not as great as n would be, because l is not completely homorganic with d. It is possible to pronounce the sequence [ld] so that both consonants are distinguishable, merely by raising the tongue from [l] position and pressing forward for the [d]. This is the accepted pronunciation, but in extremely informal speech the raising and forwarding of the tongue are often omitted and the d-less forms occur. In some words intrusive d develops after n or l. This may be due in part to an association

19 A later assimilation produced [lʌŋkəstər].
made with words that display an assimilated loss of ə, a conscious attempt to restore a ə that did not exist in the first place. It may also be the result of the natural phonetic tendencies of n and l described above. The words sound (from sound) and thunder (cf. Ger. Donner) contain such an intrusive ə, as do dialectal and substandard words like gownd, Henry [hɛndr], and gallery [ɡɔldrɪ].

[k] [ɡ]

A complete loss of k in words like know, knee, knave, knight took place in the Early Modern English period. The combination kn involves two sounds which have little in common, as far as organic position is concerned. The k is articulated with the velum closed, the tongue back on the velum, the tongue sides touching, and the vocal cords at rest. The n has the tongue point on the alveolar ridge, the tongue sides touching, the velum open, and the vocal cords vibrating. The major positional adjustment that has to be made in the transition from k to n is in the opening of the velum and the change from tongue back to tongue point. The phonetic possibilities can be illustrated in connote. When this word is spoken rapidly in a sentence, it often loses the vowel of the first syllable through lack of stress, progressing from[kænɔt] to[knɔt]. But the [n] is in a stronger position than the [k] and causes the latter to pick up some voice. The resulting sound approaches
[k (g)ənət] and there it stops, for the preservation of the prefix is semantically important. In the km-words, however, there is no such semantic reason for preserving the velar, and the assimilation progresses to its logical conclusion, the loss of k. After undergoing minor voice assimilation, the k in knee [(k)ni] was only lightly indicated by a momentary closure of the velum, because [n] now had dominant articulatory stress. In time even this slight closure was abandoned and [k] disappeared.

Temporary place assimilation of [k] is often heard in the sequence [kl]. In words like class, clear, clear, the [kl] sometimes becomes [tl]. This change of [k] occurs when the tongue point is placed against the teethridge for [l] before the velum is closed for [k]. The voicelessness of [k] is transferred to the tongue point and [t] is produced: [tlæs], [tlɛr], [tlɪt]. Another obliteration of [k] is sometimes heard in phrases like ask the man [æsk də mən], ask teacher ([æsk tɪʃər]). Both the preceding s and the following t require a tongue position where the point is at or near the teethridge. The k requires a contact between the tongue back and the closed velum. The tongue position for s and t is sometimes maintained during the time the speaker attempts to effect the velar contact. If this contact is not completed, [k] disappears and the forms [æsðʌmən] and [æstɪʃə] emerge. In [æsðʌmən] a further assimilation takes place between [s] and [t].
producing [æst] for ask. Both [æs] and [æst] are regularly heard in substandard speech. The occurrence of the latter is strengthened by analogy with a similar assimilation in the preterite asked.

Paralleling the disappearance of k in kn is the loss of g in words like gnome, gnat, gnaw. Through lack of stress, and because it is difficult to articulate in the sequence, g is lost. Like the development of [tʃ] from voiceless hemorganic [kʃ], [dʃ] frequently evolves out of [ŋ] in words like glad [dʌgl], loom [dʌm], gleam [dʌm].

The assimilation of [ŋ] to [ŋ] is still in a transitory stage. In hunger, linger, younger, longer, the g is unassimilated. In singer, longing, spring, the [ŋ] is absorbed by the preceding [ŋ]. Originally, ng, as it appears in this words, was consistently sounded [ŋŋ]. In [ŋŋ], [ŋŋ], [ŋŋ] disappeared through lack of stress (decrease of articulatory energy): [ŋŋ], [ŋŋ], [ŋŋ].

When ng occurred internally, however, neither lack of stress nor decrease of energy was sufficient to bring about an assimilation and the original [ŋŋ] was preserved. But analogy was a powerful factor in equalizing the sound in derivative groups like sing - singer - singing; wrong - wrongdoing; hang hangman - hanger - hanging. On the other hand, even among derivative groups there is divergence: [ŋŋ], but [ŋŋ].

[strɪŋk] but [strɛɪ̯ghold]. In general, final [ŋ] has assimilated to [ŋ] ; medial [ŋ] has not, except by analogy.²¹

[f] [v]

A substitution of [p] for [f] in diaphthong and diphtheria is often heard in Modern English. This is probably a spelling pronunciation. The spelling ph regularly represents [f] in English, but is generally followed by a voiced sound, as in philosophy, diaphragm, aphorism. The sequence phth is somewhat unusual and may be incorrectly read as pth. Phonetic tendency makes this possibility more likely, since a labiodental [p] results, if the terminal fricative quality of [f] is eliminated.

Unstressed [v] often disappears, notably in the so-called poetic contractions e'er, o'er, and e'en. The full forms ever, over, even generally appear in unstressed position. In rapid unstressed articulation the [v] is pronounced as a bilabial, rather than as a labiodental. This process is reflected in the restressed form [ɛbɔ] for ever, associated with some of the Negro dialects. In the contracted forms, the labiodental [v] was ultimately lost because of lack of stress.

[θ] [ð]

The sequence the [θs] often develops an intrusive [t] in words like fifths [fɪfθs], months [mʌθs], ninths

²¹For a further discussion, see Kenyon, op. cit., especially pp. 147-149.
The difficulty here is the extension of the tongue to the predental position required for [θ]. In [mʌθʊs] and [nɛntʊs], the tongue automatically presses against the teethridge in moving from [n] to [θ]. Inasmuch as [n] and [t] share the same tongue position, this pressure is all that is required to produce the quality of [t] from [n] position, giving [mʌntʊs] and [nɛntʊs].

A second assimilation of [θ] to [t] may now take place. If the tongue is not extended sufficiently forward for predental [θ], but stops at the juncture of tongue point and teeth, a postdental [t], not unlike the [t] of the Romance languages, is articulated: [mʌnts], [nɛnts]. In standard speech, however, there is usually some slight indication of [θ], but much less than one would hear in [θɛn], for example. In [frɛftθs] the intrusive [t] is also produced at the beginning of the tongue extension for [θ]. This word may also assimilate further to [frɛts].

The disappearance of [θ] in clothes is attendant upon the voicing of s. As the s became voiced, [θ] assimilated to it and [klɔðz] resulted. The buzzing sound of strongly voiced [s] is hardly distinguishable from that of strongly voiced [z], and in time the two were heard as one: [klɔz]. The [z] dominated, probably because it occurs more frequently in the language. It should be mentioned that, along with the assimilated [klɔdz] and [klɔz], the unassimilated [klɔθs] has persisted. There is a semantic distinction,
however, between [klɔdəz], garments, and [klɔθəz], pieces of cloth.

[m]

Before [f], [m] frequently develops an intrusive [p]. The process is analogous to that described for the development of intrusive [t] before [θ]. In comfort, symphony, camphor, an extra energy impulse accompanies the transition from [m] to [f]. At the same time, the voice is stopped in preparation for the [f]. The partial devoicing of [m] and the extra energy impulse for the articulation of [f] produce the voiceless bilabial explosive characteristic of [p]: [kʌmˈfɔːt], [sɪmˈfɔːnɪ], [kʌmˈfɔːr]. Sometimes the intrusion occurs at the moment the lips are in position for [f] and a labiodental [m] results. This labiodental [m] may also occur before [v] in words like triumvirate, some voice, seem vague. Intrusive [p] is orthographically reproduced in some English words, like empty (from enty), glimpse (from glimse), assumption (assume).

[n]

A loss of [n] is traceable in the words mill (from miln) and kiln. The [l] shared the same tongue position with [n]. The extra impulse required to distinguish [n] from preceding [l] gradually disappeared through decrease of articulatory energy, and these words became [mɪl] and [kɪl].
The words *mine*, *thine*, *none* are the unassimilated forms of *my*, *thy*, *no*. They assimilated regularly to following consonants. The process can best be understood if several sequences are examined. Let us assume the form *mine* is followed by a bilabial stop, as in *mine pain* ([mærn pɛn]). When stress is removed, it is an easy matter for [m] to assimilate to [p] and become [mærpɛn]. It is now possible, again through lack of stress, for the [m] to disappear. The only characteristic separating it from the following [p] is lip resonance, and in a hurried unstressed articulation that resonance would either disappear, or transfer to the preceding [æ] as vowel resonance. The form [mær] would then remain. A similar development can be traced for *mine* before [b], as in *mine barn*. Before [t] lack of stress alone can achieve the reduction: [mærtɛrm] to [mærtɛrm]. This is also the case before [d]. Before [k] and [q], [ŋ] develops and then disappears: [mærkɔu] to [mærkɔu] to [mærkɔu]. Before [m] premature closing of the lips would eliminate [n]: [mærn mædɔ] to [mærn mædɔ] to [mærn mædɔ]. Similar steps could be traced for *thine* and *none*.  

22 A brief but excellent history of the possessive pronouns can be found in Stuart Robertson and Frederic Cassidy, *The Development of Modern English* (New York, 1954), pp. 124-129. From the phonetic point of view they are discussed by Kenyon, *op. cit.*, p. 147.
A natural outcome of the reduction of [ŋŋ] to [ŋ] is the further reduction of [ŋ] to [n]. After going became [gɔŋ], a strong spelling influence still existed in the n of ing. Many speakers may have articulated it with the tongue point at the same time they were moving the velum for [ŋ]. If the tongue point contact is made before the velum is lowered, the velar resonance may be obliterated. [gɔŋ] is then reduced to [gɔn]. Although the use of this assimilated form is widespread, it is not considered standard, there being now a stronger association of [ŋ] with the spelling ing.

[!] is generally classified as a lateral consonant, it also possesses a distinctly vowel-like quality. This quality is sometimes that of a front vowel, and sometimes that of a back vowel. The sound of [!] in feel is described as "clear" and the [!] of fool is called "dark." Both dark and clear [!] assimilate in English. The tongue position for this sound is quite variable, contact being made by point, blade, or front. As a result, the tongue position of [!] is compatible with the tongue positions of a great many other sounds, a fact which encourages assimilation and eventual loss. The dialectal forms gulf [ɡʌf], help [hɛp], self [sɛf] are excellent
cases in point. In these words the lingual contact for [l] is made at the exact spot at which the preceding vowel is articulated; that is, the initial impulse of [l] is the preceding vowel itself: [gəl], [gəlf], [helpl], [sefl]. When this impulse is not made, the first part of the [l] articulation merges with the preceding vowel, and the last part can be obliterated, if the following consonant is pronounced before tongue contact is established. The words [gαl], [gəf], [helpl], [sefl], are not considered standard English, yet in many accepted words [l] has been lost in exactly the same way. In walk, the articulation of [l] was marked by an energy pulsation [walk], but in order to distinguish the [l] from the preceding [a] its quality was darkened at the point of initial impulse to [u], resulting in [walk]. From this position contact was made by the tongue front against the hard palate. In the meantime, however, the velum had already closed for [k], and [l] disappeared. But the [u] remained, giving [walk], which was further reduced to [wək].

The same assimilatory loss occurred in talk [tək], balk [bək], calf [kəfl], folk [fək].

Many of the words in which assimilatory loss of [l] appears entered the language by way of French. In Old French the assimilation of [l] to a preceding vowel was a regular

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23 The change of [au] to [ɔ] is the result of vowel assimilation and is not of immediate concern here.
phenomenon, but applied only to the dark [l]. In some of
these words l had also disappeared from the spelling: 
auurn (Lat. alburnus), fau
cet (Lat. falsare), dauph
in (Lat. del-
phinus). In other words [l] had already been lost at the
time they were borrowed, but l still appeared in the spelling:
fault, alter, vault. Until standardization of spelling elim-
inated them, parallel forms without l appeared quite fre-
quently. Finally, in the eighteenth century a general fondness
for imitating original Latin forms restored the l permanently
and with it, the [l] was restored. Kenyon attributes this re-
sounding of [l] to the influence of lexicographers. 24

Thomas has described the development of an intermediate
sound [ʌ] which he attributes to the partial loss of [l]
before [j]. 25 It is a tongue glide, lower than [j], that
evolves when an attempt is made to pronounce [l] with the
tongue point lowered. Contact must then be made by the front
or the blade against the hard palate. If this contact is
not completed, the intermediate sound results. It is similar
to the sound of ll in French brillante. He traces it in words
like will you[wɔʌ], million[miʌn], lute[ʌut]. While
[ʌ] is heard regularly in French and Spanish, it is not
considered phonemic in English.

24 Kenyon, op. cit., p. 151.

[j]

Palatalization by [j] has occurred many times in English and is responsible for the creation of several phonemes. Its effect can be heard in words like sure, nation, vision, verdure, as well as in such phrases as miss you, hurt you, feed you.

The words sugar, sure, issue were originally pronounced [sjuɡə], [siur], [ısju], [j] being contained in the sound of u [ju]. Assimilation takes place as a result of similarity in the tongue positions for [I] and [j]. The vowel [I] is formed with the tongue blade near the alveolar ridge. Being a true vowel, its position is more or less fixed. The sound [j], however, is a glide and as such commences its articulation with the tongue position of the sound that precedes it. From this beginning, the tongue is successively raised and then flattened out, not coming to rest until the following sound is articulated. When the [I] in [siur] receives so little stress that there is not time for the tongue to come to rest for full articulation, it remains in constant motion as it glides from preceding [s] to the following [u]. Its character is changed from high vowel [I] to tongue glide [j]. At this stage the word [siur] has become [sjur]. A second assimilation now takes place between [s] and [j]. Again, tongue position is responsible. The continuant [s] is pronounced with the tongue blade near the alveolar ridge. The position for the
glide [j] is the same, at the beginning of its articulation. As described, the tongue must now flatten out, rise, and then fall to the position of the following sound, here [u]. Since the time for articulation is brief, the precise tongue position cannot be fully executed, and so each one is partially formed. In the first place, a complete flattening out of the tongue does not occur; part of the groove formed for [ɔ] remains. Next time does not allow the tongue to rise to the [j] position, so it only approximates this level. Finally, in its rapid descent to [u], the tongue restricts the flow of breath and forces it out along the tongue curvature. Not until the vowel is reached do the vocal cords close. Consequently, the entire gliding process is voiceless. The sound that emerges as the result of this reciprocal assimilation is the phoneme [ʃ], as it appears in words like sensual, luxury, pressure, sugar, issuur. In these words the assimilating [t] is contained in the pronunciation of ʊ; in mission, nation, ocean, anxious, conscience, miss you [misʊ], however, it is represented in the spelling. The process is identical to the one which developed [ʃ] in sure. The [t] indicated in the spelling soon became a tongue glide [j], and the following pattern was established: [mɪʃən] to [misʃən] to [mɪʃən]; [nesʃən] to [nesʃən] to [nesʃən]; [ɔstən] to [østən] to [østən]; [ɔstən] to [østən]

26 The change from [t] to [s] in -tion had taken place before the suffix entered English,
In nation, position, condition the development of $\{s\}$ was possible because the $t$ of the suffix had already changed to $\{s\}$, producing the assimilating sequence $[sl]$. After $g$, however, such a change failed to occur, as in question. Now the combination $[sj]$ is replaced by $[tj]$, and the resulting sound is $[ts]$. In changing the tongue position from $[t]$ to $[j]$, sudden surge of breath held in check by the tongue stop is released. This provides the $[t]$ with a terminal fricative quality $[ts]$. For nature, adventure, creature, future, fortune, righteous, the pattern is similar to that for $[s]$: [netjur] to [netjur] to [netjəɾ] ; [adventjur] to [adventjur] to [adventjəɾ] ; [kritjur] to [kritjur] to [kritjəɾ] ; [fjutjur] to [fjutjur] to [fjutjəɾ] ; [fortjun] to [fortjun] to [fortjəɾ] ; [raitjas] to [raitjas] to [raitjas]. Unlike $[sj]$, $[ts]$ has not universally received recognition as a phoneme. The $[t]$ of the combination is still heard as a separate sound. This fact, as well as a desire for supercultivated speech on the part of many speakers, accounts for the fact that many of these words are still heard in their transitional stage of $[tj] ; [netjur] , [fortjun] , [literatjur]$. Some of these words, like beauteous, nature, literature, had already changed from $[tj]$ to $[ts]$ by 1790, but are now returning to seventeenth-
century [t̪j]. 27 Transitional stages can also be heard in words like tune, Tuesday, Tudor, tulip, tune. Either [tun], [tuzdɔ], [tuda], [tulip], or [tju:n], [tju:zdɔ], [tjuda], [tju:lp] occur in common use. Occasionally, [tsu:n], [tsuzdɔ], [tʃuda], [tʃu:l] occur.

Assimilative [s] was traced from [s] to [sj] to [ʃ]. The same organic positional changes can be traced in the development of [ʒ], homorganic voiced equivalent of [ʃ]. It is a phonetic development of the Modern English period and is heard in words like vision, elision, erosion, division, glazier, azure, closure, pleasure, seizure, usual, genre, regime. In erosion, the development is traceable in the spelling: [tɹoʊzəm] to [tɹoʊzjən] to [tɹoʊʒən]. In treasure, [s] is disguised in the spelling, but inherent in the u. In [reʒim] and [ʒæn], the [ʒ] is taken over from Modern French from which they were borrowed. [ʒ] often develops when you follows [z], as in sees you [sizju], please you [pliʒu].

Paralleling the development of [tʃ] is the evolution of homorganic [dʒ]. The [dʒ] sound existed in words like just, gentle, judge, regiment at the time they were borrowed from Old French. The stop was later lost in French (cf. later loan-words [dʒəraz], [reʒim], [ʒæm], [dʒæ]] but retained in English: [dʒæst], [dʒent!], [dʒændʒ], [redʒeɪm].

27 Kenyon, op. cit., p. 144.
Another group of words followed the pattern [dʒ] to [dʒ] to [dʒ]. In soldier, grandeur, the process is indicated in the spelling: [sɔldər] to [sɔldʒər] to [sɔldʒər]; [ɡrændjʊər] to [ɡrændʒər] to [ɡrændʒər]. In verdure, arduous, credulous, the [ʃ] is inherent in the pronunciation of u: [vərdʒər] to [vərdʒər]; [ɑrdʒuəs] to [ɑrdʒuəs]; [krɛdʒuəs] to [krɛdʒuəs]. The initial glide in you also assimilates in the same way to a preceding [d], as in told you [tɔldʒu] and said yet [sɛdʒet].

Prefixes

A number of prefixes have undergone assimilative change in English. Those whose change has been one of voice are discussed in Chapter II; those that are the product of place assimilation will be considered here. The assimilative changes that are exhibited in these prefixes took place, in most instances, before the words they appear in became an accepted part of the English language. Nevertheless, they furnish excellent illustrations of the kind of phonetic evolution described in the foregoing pages.

The prefix as- does not assimilate before vowels and before [d], [h], [m], [v], as in adore, addict, adhere, admonish, advice. Before [s] (spelled sc), [sp], [sp], [st], the [d] is lost, as in ascend, aspire, astern. A complete assimilation to the following consonant occurs before [k], [ʃ], [ʒ], [l], [n], [p],
[r], [s], [t], as in acquire, affix, agglutinate, allot, annex, appear, assign, attain.

The Latin cum appears as com-, con-, and co- in English. Before bilabials it remains unassimilated, as in combine, command, and comport. Before [k], [g], [t], [d], [tʃ], [ŋ], [n], [s], the [m] of com- assimilates to the consonant and becomes [n], as in concur, congratulate, contain, condemn, confer, converge, connote, consign. Before [n] and vowels the terminal consonant is lost, as in cohesion, coagulate, coerce, coincide, coordinate.

There are two sources of the prefix in- in English. When it occurs in native words, like inroad, inland, inmate, its semantic importance is indicated by the fact that it regularly receives primary stress. In words of Latin origin the [n] assimilates completely to a following [l], as in illegible, illiterate, illumine. Before labials it makes a partial assimilation to [m], as in imbibe, impart, immanent.

Before vowels and most consonants ob- is unassimilated, as in obdurate, obey, obfuscate, object, oblige, obnoxious, obscene, obtuse, obvert. It undergoes complete assimilation before [k], occasion, occlude; is lost before [m], omit; and assimilates completely to [p], oppose.
CHAPTER IV

CONCLUSION

Assimilation is the process whereby the articulation of one speech sound is "made like" the articulation of a second sound. When [grænpɔ] becomes [græmpɔ] the articulation of [n] is made with the lip position of the following [p] and becomes bilabial [m]. The word pretty is often pronounced [prıdə] instead of [prıtə] because the closed position of the vocal cords necessary for the production of the surrounding sounds is maintained during the articulation of the medial t, normally a sound that is made with the vocal cords in open position. In mission [miʃən], a compromise is effected between the tongue position for s and the tongue position for i [ı], and [ʃ] results.

Assimilative changes result from a weakening of articulatory stress. Within a given word or phrase, the sound which demands the greatest expenditure of energy for its production is said to occupy the point of primary articulatory stress. In [grænpɔ], [n] occupies the point of primary articulatory stress. In [prıtə] it is [t] that demands the greatest amount of energy for its production; and in [miʃ], it is [ʃ]. As long as these sounds
continue to represent the point of greatest articulatory stress, they are produced with care and precision. If, however, the point of greatest stress is shifted to another sound, they will be less accurately articulated, and more likely to assimilate.

A tendency on the part of a speaker to anticipate, to lag, or to simplify a difficult sequence of articulation is the motivating factor in causing a shift of articulatory stress and consequent assimilation. Anticipating the [p] in [grænpɔ], a speaker closes his lips while he is still articulating [n] and changes the latter to [m]. This type of anticipatory assimilation is called regressive and appears more frequently than other types. A reversal of this process occurs when open is pronounced [əpɔn]. Here, the lip position of [p] is held over while the [n] is being articulated and [m] results. This is described as a progressive assimilation. In mission [mɪʃən] a third sound [ʃ] emerges when [s] and [z] combine. This is a reciprocal assimilation.

Many assimilations involve only one organic readjustment: the position of the vocal cords. They are usually designated as voice assimilations. Voiceless sounds may become voiced, as in [nɛʃju] to [nɛvju]; or voiced sounds may become voiceless, as in [hæftu] for have to [hæv tu]. Inasmuch as voiced sounds predominate in the language, the tendency is for voiceless consonants to assimilate to them, rather than the reverse.
Changes which depend on organic readjustments other than the opening or closing of the vocal cords are called place assimilations. Examples may be heard in mission [miʃan], class [klæs], open [opən], grandpa [græmpə]. The articulatory changes connected with the assimilation heard in mission, open, and grandpa have already been described. When class [klæs] is pronounced [tlaes], the tongue point is sometimes placed upon the alveolar ridge, in anticipation of the [l], before the velum is closed for [kl]. The velar closure is then obliterated and the impulse intended for [kl] is transmitted to the tongue point, producing, from the latter's alveolar position, the sound [t]. This results in the assimilated pronunciation [tlaes].

Assimilative change accounts for the emergence of [ts] and [dz] in many English words. The former is the result of palatalization by [j] of a preceding [t] in words like nature [neɪtʃər], righteous [rətʃəs], fortune [fɔrtʃən]. The latter is the product of [j] palatalization after [d] in words like soldier [sɔldər], grandeur [ɡrændər], verdure [vɜrdər]. After [z], [j] develops [ʒ], as in vision [vɪʒən], pleasure [plɛʒər], usual [juʒuəl]. When [j] follows [s], [z] results, as in spacious [spɛʃəs], sure [ʃʊər], officious [əˈfɪʃəs].

Besides creating new phonemes, assimilation has produced other permanent forms. Prefixes often assimilate to their following roots: com (Lat. cum) + gratulate =
congratulate; ad + similate = assimilate; in + regular = irregular; sub + ceed = succeed, etc. Inflectional endings regularly exhibit assimilative changes, like the assimilation of -ed to preceding voiceless consonants in stopped, asked, confessed; or the assimilation of inflectional s to preceding consonants in caps, cabs, pots, pods. An intrusive sound often develops as a result of assimilation. When the tongue-teeth contact is held a moment before the [θ] of months is articulated, an intrusive [t] is heard [muntθs]. The t in against and midst originated in this way, as did the d in thunder and sound. Consonants that are the result of assimilatory gain are quite often heard in substandard words like once, gallerry, Hendry, ast.

Consonants may also disappear as a result of assimilation. The loss of k and g in the sequences kn and gn in words like know, knave, gnome, gnat occurred when the point of greatest articulatory stress was moved from the initial sound to the following n. Consonant sequences frequently lose a sound when they are reduced through assimilation, like the l in walk, folk, alms; or the t in fasten, listen, chasten. Analogous forms are heard in substandard speech: self [səf], help [həp], gulf [gʌlf], field [fil], sand [sænd], loft [lof].

Assimilative changes occur between words as well as within them. Many sequences that appear regularly in the language exhibit such changes. In the spoken language, verbs
followed by to frequently assimilate: have to [haftə], want to [wanda], going to [gənə], used to [juʃtə], ought to [idə]. The initial sound of you often assimilates to a preceding consonant: miss you [mizju], tapped you [tæptju], sees you [siːju], fed you [fɛdju]. In general, the phonetic relationship between sounds in contiguous words in the same as the relationship between sounds in the same word, if the sequence of sounds from one word to the next remains undisturbed.

An expected assimilation is sometimes prevented by syllabic division, if the separated syllable or syllables represents a distinct semantic unit. This is most easily illustrated by means of a prefix. In the word disallow, dis- has the distinct meaning of lack of, prevention of. There is a definite cleavage between it and the root allow. Consequently, the s does not assimilate, even though the phonetic environment is ideal for it to pick up voice. In disease, however, there is no such semantic association with the prefix, and so it merges into the rest of the word,permitting its s to become voiced. The same process is probably responsible for the assimilated elements in compounds like cupboard and blackguard. As such words developed into locutions which expressed simple ideas, rather than composite ones, the cleavage between their components disappeared, and they functioned phonetically like root-words. In blackboard, lifeguard, each element of the compound has its own
separate semantic significance and assimilated forms have not, as yet, appeared. Assimilative forms which were evolved early in the language have been made permanent through the influence of spelling. The voiced plurals like *calf* - *calves*, inflectional *ed* and *s* may be cited as examples. At the same time, the standardization of spelling has so set the written representation of English words, that later assimilations are not reflected there. Such is the case with words like *officious*, *vision*, *soldier*.

It is important to point out that assimilation is a phonetic process which is in continuous operation in the language. While its effects can be traced throughout the history of written English, it remains, nevertheless, a phenomenon of the articulated sounds of language, and it is in terms of these articulations that it must be studied. Many assimilative changes have become permanent parts of spoken English and many more now evolving will undoubtedly one day also achieve similar permanence.
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