Speech Sounds in Context

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PART II

We have tried to exhaust the major categories of assimilative changes in the previous chapter. However, it would be naive to assume that all those types of assimilation / reduction occur with equal frequency in the English language. Some are observed very regularly and consistently, and some are seen only in the extremely rapid speech. Therefore, it should be worthwhile to determine which types and specific cases are rather spontaneous and which can be regarded as established patterns in process of becoming phonological rules. When we design the syllabus for an ESL oral / aural class, especially when there are constraints on the time and amount of materials for instruction, only the types of assimilation that are very frequent and worth explicit explanation should be selected among others. Unnecessarily confusing explanations should be definitely avoided. And in order to grasp the general tendency and also discover further demonstrative examples, I assume the observation of a series of natural discourses in English will be indubitably helpful. Here we are studying the excerpts of two American movies: “Halloween” and “The Silent Partner”. Of course, the examination of these materials is still too limited to be the basis for establishing definite phonetic rules, but it will at least constitute a first step in the direction for the most efficient

Note: This is the second part of “Speech Sounds in Context”, continuing my paper placed in the previous year’s issue of this same periodical. While the earlier, or the first half of my study concentrated on the review of the literature on various phonological processes, this latter half presents my research work aimed at the determination of the most frequently observed alterations among them.
material design and programming.

Incidentally, the materials from which the raw data are being extracted are actually ten years old, which might surprise the readers. The fact is that the discovery and analysis of each case of assimilative change in the context was conducted a short time after the tapes were issued from the Screen English. However, the paper did not find its way to publication for an extended period of time, and during this time, my reading of the relevant literature proceeded; consequently I came around to analyze the same data, which I still found valuable enough, in a new perspective.

As will be illustrated in due course, the materials yielded a substantial number of useful examples. But unfortunately, the publisher of the pertinent materials has gone bankrupt, leaving us no alternative but to look for a different source of information for future research.

The very first examples that I have given in the category of the assimilation of release, aren't you, did you ([tr][d3]) into ([tr]([d3])), are seen quite consistently in the movie recordings. In “Halloween”, this assimilative change takes place in 12 of the 13 potential contexts. “The Silent Partner” also provides a substantial number of examples.

Example 1.  *Serious about it, aren't you? [tr]*

> Did you see the look on his face? [d3]

The only potential but unrealized phrase for this assimilation in “Halloween” is *a few hundred years*. But it can be explained that the assimilation did not occur because the last syllable of *hundred* is not stressed, leaving the final [d] unreleased.

Besides this most prominent example, we also find a change from [z] to [ζ] in as you. Here [z] is assimilated to [ζ], and furthermore, gets devoiced to [ɾ]. Pedagogically, from the evidence so far obtained, we should say that this particular category of assimilation, including the above two patterns, requires some explicit instruction in the ESL class.

There is yet another subgroup of this category, although in a narrow sense, it has not been defined as a type of assimilation. (It is also possible to regard them as cases of apocope—the omission of a sound in final position. Refer to *omission.*) They are unreleased stops ( [t̪, d̪, p̪, b̪, k̪, g̪]). I counted 66 of them in “Halloween” alone.
Ex. 2. when they start raving on and on  \([t\sim][d\sim]\)  
you’d better hurry up \([p\sim]\)

The huge number of examples demonstrates that there is a strong tendency, at least in American English, for the stops in the sentence-final position to be unreleased. (Most of the alveolar stops ([d] or [t]) preceded by a stressed vowel and followed by an unstressed vowel are normally realized as a tap \([\mathit{r}]\).) However, we can also find released cases easily in the same environments. (e.g. \textit{You haven’t anything to worry about}, \textit{He hasn’t spoken a word about fifteen years}, \textit{He’ll barely be able to sit up? Can we make jack-o’lanterns?}) Obviously, whether the stop gets released or remains unreleased depends on various factors, including the position of stress in the word, the personal accents, the speed of the speech, and the presence or absence of emotion in the utterance. But the distribution is rather arbitrary, and probably, we should simply generalize and say that the stops in such positions are weakly pronounced and susceptible to a variety of changes, instead of establishing any definite rule for these phenomena.

Ex. 3. \textit{Don’t you} Assimilation of Release  
\textit{Just try} Reduction  
\textit{front of} \([\mathit{nt}\rightarrow\mathit{nt}\rightarrow\mathit{nn}\rightarrow\mathit{n}]\) Assimilation of Nasal

In other words, there is no need to consider this item in the syllabus design.

—Assimilation as to Voicing—

Many voiced stops and fricatives are found to be devoiced while many voiceless stops and fricatives are voiced, as in the following:

Ex. 4. \textit{I have to drop off the key} \([t]\rightarrow[d]\)  
\textit{I was told there was} \([z]\rightarrow[s]\)

As seen above, plain assimilations in voicing, such as \([d]\rightarrow[t]\), \([v]\rightarrow[f]\), \([\theta]\rightarrow[\theta]\), \([z]\rightarrow[s]\), \([\mathit{f}]\rightarrow[p]\), are very frequent. The data I have obtained suggests that the devoicing of voiced consonants tends to occur more easily than vice versa. Another interesting point to be noticed is that not only single consonants but also consonant clusters can be devoiced: e.g. \textit{Besides} \([\mathit{dz}]\rightarrow[\mathit{ts}]\), \textit{Is that} \([z\partial]\rightarrow[s\theta]\).
We must also examine the partial assimilation instead of taking it for
granted that all the voice-assimilations are carried out throughout the
unit. The determination of the period of voicing is very difficult, but the
phrase all they took was some appears to provide an example of partial
devoicing. The [z] of was is partially devoiced under the influence of the
following [s]. In the case of taking advantage, we should assume that [3]
turned into [f] under the influence of the zero sound following it. Interest-
ingly, we also find some devoiced vowels, which are not officially recog-
nized in English: e.g. Terrific \(\text{ter}1\text{f}1\text{k}\). It is important that the context
in which "terrific" appears is very emotional. On the contrary, metal
provides an example of the voicing of a voiceless consonant. But in this
particular case, it may be more appropriate to regard this change as the
reduction of aspiration or the delay in voice onset after a stressed vowel
and before an unstressed vowel rather than as a kind of voice assimila-
tion. (See Ladefoged p.124.)

Finally, it must be acknowledged that we cannot possibly point out all
the cases of voice assimilation individually because some also include
other types of assimilation, doubling and / or reduction. Consider At the
Myer's \(\text{t}\text{o} \rightarrow \text{d} \rightarrow \text{d} \rightarrow \text{d} \rightarrow \text{d}\), which involves assimilations in place of
articulation and manner of articulation as well as doubling. Although we
can regard this process simply as the omission of [t], it is only a matter
of classification. We will include in the category of omission only the
drastic deletion which cannot be accounted for as above.

—Assimilation in Place of Articulation—

The most prominent patterns include the change from alveolar stop to
dental stop \([d] \rightarrow [\text{d}]\) as in did they, And there's, or \([\text{t}] \rightarrow [\text{t}]\) as in let
them, met this and the nasalization of the oral sounds such as \([\text{n}] \rightarrow \text{n} \rightarrow
\text{n}\) in emotionless, \([\text{d} \rightarrow \text{n} \rightarrow \text{n}]\) in the money, in the cash, him the hundreds
and what made you \([\text{t}] \rightarrow [\text{m}]\). The nasalization will be reviewed as the
assimilation in manner of articulation.

As we see above, the stops in the contiguity are especially susceptible
to the assimilation in place of articulation. However, it must be under-
stood that, when the process of assimilation proceeds to the reduction to
a single consonant, as usually happens, the change can also be interpreted
as the omission of one of the two sounds. Normally, the preceding sound is eliminated. Again, this is simply a matter of classification. The assimilation involving the contiguous stops is exemplified by the following words and phrases: get candy, and blackest, up because, that boy, street corner, check back [kk → k], I'd go, must be, I'd be, back to, deposit box, stop coughing, hard growing, not getting.

Another major subgroup involves the three consonant clusters. Blank pale may be assumed to go through the process [ηkp → ηpp → ηpP → ηp] and must be [stb → sbb → sb Ep → sb]. However, the same problem of definition as above arises here. That is, it is also possible to state that [k] in blank and [t] in must have been just omitted in these particular environments: e.g. just going, asked, just watch, must be, must think, just plain, blank pale.

The change from the alveolar stops to the glottal stop belongs to this category: e.g. thousand cubic, won't kill, I can't go, just couldn't, had quite, what kind, you could go. [d] in thousand is substituted with [ʔ], for instance.

—Assimilation in Manner of Articulation

The first thing I noticed in reviewing the corpus material is that there is virtually no exception to the nasalization of the alveolar stop [t] preceded by the alveolar nasal [n]. Haven't, front of, won't are just a few of the innumerable items involving the process [nt → nn → n]. The assimilation involving this combination of consonants is almost always accompanied by doubling and / or reduction to the single [n]. This single pattern seems to prove sufficiently the strong influence of nasals over other sounds. (Refer to Greenburg.) The process [nt → nn → n] can also be simply interpreted as the omission of [t] after [n] rather than the complex combinatorial process of assimilations and reductions. But we follow Heffner's view in classification again. Other examples of nasal assimilations are emotionless [nl → n → n], on the inside [δ → n], ran the same, what made you [t → m], I'm not meeting [t → m], in the cash drawer, him those, maybe [b → m] and down there.

Especially, a drastic change as in maybe [meimi]—with no obvious
motive like a neighboring sound's influence—seems to represent the nasal stops' strong assimilating power (i.e. distant progressive assimilation).

Actually, we find the reverse process, too. That is, some nasal consonants are assimilated to neighboring oral sounds. Consider when people [np → pp → ♯♯], him locked [ml → ll → ♯ → l], open them [n → θ], come in then [n → θ]. But such changes occur far less frequently and should rather be treated as exceptional.

The change from an alveolar stop to an alveolar fricative appears to be another common type of assimilation in manner of articulation. (e.g. dance tomorrow [st → ss → s], You don't stop [ts → ss → s].) We are probably right in assuming that this phenomenon derives from the physiological difficulty in pronouncing [s] and [t] in succession.

It has been noticed that some of the assimilative changes are so drastic as to include both the assimilations in place of articulation and those in manner of articulation. In I was told there, the [d] not only suffers the assimilation to the point of articulation of the following consonant—dental—but further suffers the assimilation in manner of articulation, as well as the reduction in duration. The whole process may be described as [dʊ → dʊ → dʊ → dʊ → dʊ] if we do not regard it simply as the omission of [d]. In the same manners, the following includes extreme assimilative changes: come up there [pʊ → ðʊ → ð], ran the house [ðɔ → no], Not for [tʃ → ðʃ → f], have been [vð → ðð → b], him locked [ml → ll], down there [ð → n], in the cash drawer, him these [θ → m], maybe, As the bank [s → θ], out from [tʃ → ðʃ → f].

We also observe an example of lip-rounding in the articulation of a consonant as in I'll go [l → w]. However, since the data analysis is exclusively based on the aural examination of the taped materials, it is difficult to determine exactly where the first consonant in this phrase is articulated. [l] may be pronounced as [w], or it may be realized as [l] (palatal lateral).

—Doubling / Reduction—

As has been indicated earlier, the assimilation of [t] into the preceding [n] is almost always accompanied by doubling and / or reduction to a single [n]. These demonstrate the strong influence of nasal consonants:
e.g. haven't [n̩t̩→n̩n→n], front of [n̩t̩→n̩n→n], hasn't, happen to, opened, lantern, won't, haunted, doesn't, into, couldn't, I don't, pardon, didn't, wouldn't, happened, Wouldn't the, didn't know, gone to, partner, I didn't know, I don't know. Likewise, a variety of assimilations in place / manner of articulation or voicing are followed by doubling / reduction. (e.g. What do I [t̩d→t̩t→t→r], and television [d̩t→t̩t], you don't stop [ts→s̩s→s], mouths shut [s̩→ʃ̩→ʃ], dance tomorrow [st̩→s̩→s], and blackest [db→bb→bb], up because [pb→b], I'd go [dg→gg→g]) There are processes which include even more drastic assimilative changes: At the Myer's [t̩d→d̩d→d̩d→d̩d], I was told there [t̩d→d̩d→d̩d→d̩d], when people [np→pp→pp], emotionless [n̩l→n̩m→n], him those [d̩m→mm], him the hundred [m̩d→mm→m], come up there [p̩d→d̩d→d], have been [vb→bb→b]).

Needless to say, the clusters of the identical sounds are more prone to doubling and / or reduction than the others. (e.g. Just try [t̩t→t], about to [t̩t→t], just trying, They'll look [l̩l→l], Halloween night [n̩n→n], lantern now [n̩n→n], read to, let twenty, finished dinner, himself from, They'd do, with this, didn't take, thousand dollars, You did it to, a bit to, not totally, with those, I didn't know [n̩n→n], I don't know, there's something, haven't told, take care, he'll laugh, I want to, there's something, apartment tonight, As soon as) Regardless of whether they include various assimilations or whether the two sounds involved are identical sounds, again, the reduction to a single sound is, in a different perspective, the complete omission of one of the two contiguous sounds.

—Omission—

For the sake of classification, I include in the category of omission only the reductions which are too drastic to be explained by the process of assimilation.

As for the consonant omission, word-final fricatives [s] and [f] before consonants, word-initial [h] after consonants, word-final [t] after [s], and final [r] seem to be especially liable to be deleted. (e.g. this before, of knives, take him, give him [givəm], from here, and he, just as, just watch, You just couldn't, look for him, where are you.)
Obviously, [l] in all make-believe, all night, tell them, [n] in blank, and the last [t] in that's too (i. g. [tzt → tz]) are omitted, too.

It is also very important to acknowledge that the unreleased stops [t, p, k]([d, b, g]) can also be regarded as omissions since they are actually not very different from zero sound.

Especially radical omissions are concrete ([kr → φ]) and there's ([εðø]) which cannot be explained by any common process so far studied. The deletion of a nasal sound [m] under the influence of the preceding [t] in want me must be also regarded as a drastic assimilation owing to the rapid delivery of speech. Ordinarily, the nasals influence the oral sounds as illustrated earlier.

We also have evidence to support the phoneticians who pointed out the omission of the velar stop [k] between two consonants. (e. g. asked, risks)

The omission has been shown to occur not only in terms of single consonants or vowels, but also in larger units of morpheme or word. (e. g. by to look [luk], time the squad, station the same, You are doing, where were we, would have [wu r ], while he's, what is, any of the)

But these items should probably be treated more appropriately at the syntactic level instead of at the phonetic and / or phonological level.

—Vowel—

Concerning vowel changes, we do not find any assimilative change from a strong vowel to another strong vowel. All the phenomena involve the reduction from strong vowels to weak vowels, especially the weakening into a schwa [ə] or the complete omission of a vowel. Prominent examples include Your [jo], why are [waθ], gone to [tu → tə], Could've been a skunk [hev → əv → v], He'll [φ + l], have a permit [ə → φ], what are you [aə → ə], I don't [ou → ə], I don't know where the [weə → wə], go out [gouaut], sinister [smstə], So you [sju]. The deletion found in the phrases such as have to come [u → ə], going to try [gouŋ tu → gənə], kindaremarkable [ɔv → ə], what is that [i → φ] are rather idiomatic and widely recognized or transcribed in the short forms. On the other hand, if he'd gone [if → iv → əı] is such an extreme change that we have no way of explaining the process.
The only case of dissimilation discovered in our materials is *Elam probably* \[m \to t\]. Apparently, the speaker shifted the place of articulation for \[m\] from the bilabial to the alveolar in the effort to avoid the difficulty of pronouncing the two contiguous consonants at the same point of articulation. The assimilated sound somewhat suffered the further change from the nasal to the oral.

—Regressive vs. Progressive—

Besides the comparisons based on the above classification, a number of interesting examples have been found for the regressive vs. progressive contrast. First of all, the corpus distinctly shows that the regressive type overwhelmingly surpasses the progressive type in volume and variety, supporting the earlier researchers' indication to that effect. The examples generated in the current analysis include almost all the categories of assimilative changes. Assimilations in place of articulation are observed in *at the* \[t \to t\], *minimum security* \[m \to n\], *up to* \[p \to t\], *that boy* \[t \to p\], *pack to* \[k \to t\], for instance. Likewise the assimilations as to release are illustrated in *stop coughing* and *squad car* where the final stops of the preceding words end unreleased instead of the initials of the following being affected in some way; a case of assimilation as to voicing *was soon* \[z \to s\] has also been found to be occurring in the "on-going" direction.

So were the assimilations in manner of articulation: *it's* \[\tilde{t}s \to \tilde{s}s \to s\], *as the* \[z \to (s) \to \theta\] *have been* \[\tilde{v}b \to \tilde{b}b \to b\] as well as the alteration from stops to the glottal stop as in *not getting* \[t \to ʔ\], *had quite* \[d \to ʔ\], *get on* \[t \to ʔ\], which is known to be typical of the alveolar stops. Furthermore, the alterations demonstrate their regressive direction even in the process of complex assimilative changes like *him locked* \[m \to l\]—involving not only the assimilation in manner of articulation but also an assimilation in place of articulation—and the conversion from the alveolar lateral \[l\] to the frictionless continuant \[r\] along with its subsequent reduction as in *all right*.

The only notable examples of the progressive shift characteristically involve nasals. The particular modification which was most frequently
observed was the contracted form of the negative adverb *n’t* in which 
[nt] cluster became the double consonant [nn] and then ended in the form 
of single [n]. Consider won’t [nt→nn→n]. In very much the same way, 
the consonants were progressively assimilated into the nasal stops in the 
following: *happen to* [nt→n], *down there* [ð→n], *blank* [ŋk→ŋ]. The 
strong influence of nasal sounds has been proved in past findings, but this 
does not mean that, when a nasal is involved, the distinct tendency of the 
English language toward the regressive assimilation will always be 
reversed. In point of fact, we have noticed as many cases of the regres-
sive assimilation in the context where the nasal precedes an oral conso-
nant. (e.g. *I’m the* [m→n], *been born* [n→m], *when people* [n→p]) 
The last example shows a rather drastic change.

In addition to above alterations, an assimilation in *dance tomorrow* 
[st→ss→s] was realized as a progressive assimilation though it does not 
chance to involve a nasal. In this same respect, *check back* [kb→(kp)→ 
k\k/2 k] may also be regarded as rather an exception.

To recapitulate, some types of assimilations are significant for their 
regular occurrence. The assimilation of release, to begin with, should be 
counted as one: the combination of voiced / voiceless alveolar stop and the 
semivowel [j] almost unexceptionally leads to the coalescent assimilation 
into [t\j/d\j] in normal speech. In the course of time, it may even find itself 
an established position in the English phonological system like the French 
liason. At least, so far as our corpus is concerned, this series of changes 
has relatively strong potentials to be a firm phonological rule.

On the other hand, the loss of the release of final-position consonants—
whether they may be considered as a case of assimilation as to release or, 
instead, the omission of the word-final element—has proved to be quite 
common and frequent but not systematic enough in its occurrence in 
general American English.

Also, *[d]* and *[t]* preceded by a stressed vowel and followed by an 
unstressed vowel have a palpable inclination to turn into a tap [ r ], 
reflecting credit on the ESL instructors who often introduce pattern 
practice of this sound change. However, when we elaborate on the
distribution of its occurrence, this alteration is rather sporadic.

A quite substantial number of assimilations in voicing have been seen; in comparison, the devoicing of voiced consonants tends to occur more easily than vice versa. At the same time, the devoicing or voicing often combines with other categories of assimilation as well as doubling and / or reduction in duration.

As regards the assimilation in place of articulation, the majority of changes involve nasal sounds, thus demonstrating the nasal’s dominance not only in the assimilations in manner of articulation but also in the shifts concerning the articulatory points.

One conspicuous type of modification, which has rarely been discussed in the past, was discovered in abundance in the current examination: that is, the change from alveolar stop to dental stop \([d \rightarrow d]\)/\([t \rightarrow t]\) due to the neighboring dental fricatives \([\delta/\theta]\). This may easily be explained by the ESL instructor in the Japanese classroom when it is formulated into some explicable rules, since \([t]\) and \([d]\) are the exact equivalents of the corresponding Japanese syllables.

As expected, the stops in the contiguity have almost always undergone a regressive assimilation in place of articulation. However, it still remains a point of controversy if the entire process of such changes through subsequent reductions should be regarded simply as an omission of a stop before another with or without the intervention of a glottal stop. In spite of the absence of empirical evidence, my impression from the current analyses is that latter view accounts for the pertinent phenomenon more conveniently. We can safely say the same goes for the deletion of the middle sound in a three-consonant cluster.

As has been pointed out by the phoneticians of individual languages as well as the researchers of phonological universals, the nasalization of the neighboring stop is most conspicuous among the assimilations as to the manner of articulation. It also consistently facilitates the shortening of the cluster of assimilated sounds. \([nt]\)\(\rightarrow\)[n] sets a demonstrative sample. Furthermore, though the regressive assimilation is more common in English, nasals may help to reverse the direction of such shifts. Consequently, it is not too much to say that this particular pattern should be
even remembered for the future development of the English phonological system itself.

While a change from fricative to stop has been quoted from a rather deviant accent of American English in the earlier part of this paper, we have found out ourselves that an alveolar stop is quite vulnerable to the assimilation to an alveolar fricative (i.e. $[\tilde{s}t \rightarrow s]$, $[\tilde{t}s \rightarrow s]$). This takes place both regressively and progressively due to the extreme physiological difficulty to pronounce this cluster.

In passing, when a drastic sound change occurs, it is very likely that several different categories of assimilations in place and manner of articulation as well as reductions in duration proceed simultaneously. Therefore, if each and every stage of the exact process needs to be explicated, some compromise may have to be allowed in the deductive part of accounting. In the respect of the analytical methods, this should be acknowledged. At any rate, it may be appropriate to repeat here again that an assimilative change does not always occur singly but quite a few multiplex versions of assimilations have been recognized all along.

It was difficult to identify lip-rounding in the recorded materials. However, as it came about, the lip-rounding was indeed conspicuous to the extent that some change of this category was detected even without the aid of visual observation of the speaker's pronunciation.

As for the omission, it has turned out that the clear deletion of certain fricatives and resonants is quite common in rapid speech. The omission even reaches the level of the deletion of a whole morpheme. Nevertheless, from a phonological point of view, no notable regularity was confirmed in any of the patterns to form a phonological rule. (Some three-consonant clusters have been delved into by earlier researchers.) The specific patterns seem to require further examination. Pedagogically, the teacher's opportune instruction to meet the student's spontaneous needs may prove useful for the time being.

In the future, a research subject should be explored in the areas of vowel adaptations and dissimilations, in which a relatively small number of useful examples have been collected from the present study. In semblance, the vowels, if they ever suffer an assimilation, tend to be
identically rendered to the weak neutral vowel that we call a schwa. Since it is so, the quality of the schwa in various contexts would indubitably present a worthwhile topic for future study and research.

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