One interesting theoretical issue is the question whether there are rules of absolute neutralization in phonology. Kiparsky (1968) has attempted to constrain phonology so that rules of absolute neutralization are disallowed, suggesting that rule exception features are appropriate for describing purported cases of absolute neutralization. However, Kisseberth (1969) and Beame (1972) have given convincing examples showing that a rule feature analysis is untenable for Yawelmani and Maltese Arabic respectively (Odden forthcoming) gives a similar argument for Manchu vowels. This paper shall not concern itself with the general question of absolute neutralization. Instead, this paper shall investigate an example of absolute neutralization proposed by Hyman (1970a, b, 1973) for Nupe. An alternative analysis of Nupe will be given that does not require a rule of absolute neutralization, which means that it is preferable to an analysis with absolute neutralization, ceteris paribus (which is not the case: the evidence indicates that, apart from the question of absolute neutralization, Hyman's analysis is untenable).

In Nupe, consonant is in complementary distribution before nonlow vowels: rounded consonants appear before back round vowels and palatalized consonants appear before front nonround vowels. Thus, [b̥’] 'to come' and [b̥’i] 'to crush' show palatalization before front vowels, and [p̥’o] 'to roast' and [t̥’u] 'to vomit' show rounding before round vowels. There are no forms * [t̥’i] or * [k̥’u] in the language. These facts lead Hyman to assume that there is only one set of consonants in Nupe which are nonrounded and nonpalatalized. The rounded and palatalized consonants can be derived from plain consonants by a Palatalization and Rounding (PR) rule:

(1) \[ C \rightarrow [\text{back, round}] / [\text{back, round}] \]

/bé/ becomes [b̥’é] and /po/ becomes [p̥’o] through the application of this rule.

In addition to this fact, stridents show a similar distribution. Only [s̥’, z̥’, ʃ, ʒ] and ʃ appear before front vowels, and only s̥’, z̥’, ts̥’ and dz̥’ appear before back rounded vowels. Thus, before front vowels, s̥ appears in [s̥’é] 'to fill' and [s̥’h] 'to buy', and before back rounded vowels, s̥’ appears, as in [s̥’é] 'to hide' or [s̥’u] 'to bear fruit'. Hyman suggests that in addition to the PR rule, there should also be a Strident Rule to effect the change of s, z, ts and dz to s̥, z̥, ʃ and ʃ before front vowels:

(2) \[ [+\text{strident}] \rightarrow [+\text{hi}, -\text{ant}] / [+\text{syl}, -\text{back}] \]

(I will not discuss his argument against a rule modifying s̥’, z̥’, ts̥’ and dz̥’ to s̥’i, z̥’i, ʃi and ʃi). According to his analysis, the Strident Rule applies before PR, so that /s₁/ becomes ʃi by the Strident Rule and [s̥’i] by PR.

However, before the low vowel a, palatalized, rounded and plain consonants contrast, as in [eg̥’a] 'hand', [eg̥’a] 'blood' and [eg̥’a]
'stranger'. Hyman argues that, since one can eliminate the distinctiveness of palatalized and rounded consonants before nonlow vowels, one must eliminate the distinctiveness between plain, rounded and palatalized before low vowels. Hyman considers two proposals to do this. The first proposal is one which derives C" and C/3 from /Cw/ and /Cy/ respectively. The second proposal is the one that distinguishes different a's with a diacritic, so as to distinguish a; a2 and a3. He incorrectly rejects both of these solutions.

His proposal is to allow two additional vowels in the language, /e/ and /o/, both low vowels which do not occur in the language (he uses e instead of the more conventional a for the front low vowel). All instances of a which condition palatalization derive from e, and all instances of a which condition rounding derive from o. Any other instances of a derive from a. Thus, the contrasts [en w] , [en a] and [en a] can be explained at a deeper level as deriving from /e/ and /o/ and /a/ through application of the P/R rule. A rule of absolute neutralization merges o and e with a.

In addition to the arguments from surface distribution of consonants, Hyman adduces two other arguments. Hyman (1970b) argues that borrowing supports his absolute neutralization analysis, because words in Nupe recently borrowed from Yoruba show the effect of the P/R, Strident and Absolute Neutralization rules (we shall discuss his position on borrowing later). This can be seen by the following Yoruba words and the shape they take in Nupe.

(3) Yoruba k'k'f > Nupe k'v a' 'bicycle'
     lgb' > lgb' (A Yoruba town)
     tawr > tawr 'a' to give a gift'
     k'w'a > k'w a' 'penny'

The final piece of evidence that he adduces in favor of his absolute neutralization analysis is through reduplication. Nouns can be formed from verbs by reduplicating the verb, as in the following examples (from Hyman (1970a)):

(4) [v'] 'to eat' = [v'v'] 'eating
     [v'] 'to be good' = [v'v'] 'goodness'
     [v'] 'to puncture' = [v'v'] 'puncturing
     [v'] 'to receive' = [v'v'] 'receiving
     [v'] 'to trim' = [v'v'] 'trimming
     [v'] 'to be mild' = [v'v'] 'mildness'
     [v'] 'to tell' = [v'v'] 'telling'

Hyman formulates the following reduplication rule:

(5) RED = C1 [+hi, around, əback, ətone]/___[-syl, around]

By assuming that [v'] derives from /tɔ/, the fact that [v'] reduplicates as [v'v'] is explained by the fact that the high vowel of reduplication is u when the stem vowel is əround. Hyman claims these facts support the absolute neutralization analysis.

One important reason to limit abstractness in phonology is to limit the number of possible analyses of a language. If all else is equal, an analysis which derives a phonetic [Y] from an underlying /Y/ is to
be preferred to an analysis that derives phonetic [Y] from underlying /w/. A theory which limits abstractness also limits the number of possible descriptions, since an abstract analysis could also derive [Y] from /X/ or /Z/, allowing nonunique solutions. However, a theory which claims that all words have their phonetic form as their underlying form is untenable for many reasons. In order to account for facts in an orderly, insightful, nonad hoc manner, it is necessary to allow some abstractness in phonological representations. Abstractness can be justified by alternations in morphemes. In fact, alternations provide the strongest evidence for abstractness yet discovered in generative phonology.

In order to reduce the number of possible analyses, abstractness should be constrained by a general principle that a segment has its phonetic shape as its underlying shape, unless there is good reason to believe otherwise. Alternations are a valid reason to claim 'otherwise'. However, economy of phonemes is not a valid reason for abstractness and has no place in generative phonology. In structuralist phonology, the main goal of an analysis to reduce the number of phonemes in a language. While the phoneme was rejected by generative phonology, the goal of reducing the number of underlying segments was accepted wholesale, both in the guise of blank specifications in matrices or markedness (with unmarked specification being equivalent to blank specification), and in the fact that generative phonologies in general attempt to reduce the number of underlying segments in a language by deriving them from other segments (thus, English η derives from /ng/: this reduces the number of underlying segments by eliminating η from underlying representations). However, there has been no evidence of any sort suggesting that having 1, 2 or more 'additional' phonemes will overly tax human linguistic ability. Further, there is no evidence that limiting the number of underlying segments in a language is good, necessary or in any way desirable (outside of the a priori reasoning that limiting the number of underlying segments is good and desirable). The fact that Nupe has [t\textsc{y}d] and [p\textsc{wo}] but not *[p\textsc{ye}] or *[t\textsc{y}o] does not necessarily mean that [t\textsc{y}d] and [p\textsc{wo}] come from /b\textsc{d}/ and /p\textsc{o}/. The only argument in support of this position is the fact that by deriving palatalized and rounded consonants from plain consonants, one is able to reduce the number of phonemes in upe. But since 'saving phonemes' leads to no generalizations, then one should question whether [t\textsc{v}d] should be entered in the lexicon as anything but /t\textsc{v}d/.

Although there appears to be a weak argument for deriving [t\textsc{v}d] from /b\textsc{d}/, because of the appearance of complementary distribution (a fact which can just as easily be accounted for by a Morpheme Structure Condition on consonants and vowels.), the argument falls apart totally because of the existence of the minimal pairs [t\textsc{v}d],[t\textsc{y}d] and [t\textsc{d}]. The fact that Nupe has almost no alternations means that it will be nearly impossible to find any evidence supporting the claim that [t\textsc{v}d] comes from anything but /t\textsc{v}d/.

The analysis which I am proposing here is a very concrete analysis, one which derives [t\textsc{v}d] from /t\textsc{v}d/, [t\textsc{y}d] from /t\textsc{y}d/ and [t\textsc{d}] from /t\textsc{d}/. Since rounded, palatalized and plain consonants are possible in Nupe, all three types of consonants are possible underlying segments. There exists an MSC which limits the cooccurrence of consonants and vowels, such that before nonlow vowels, consonants must agree in backness and roundness with the following rule:
This MSC will disallow any forms such as *[p^e] and *[b^o]. Further, this MSC explains why w and y contrast only before s, since *wi and *yu are non-sequences in Nupe (we shall discuss later how Hyman accounts for this fact). An additional MSC assures that all palatalized stridents are [-terior]:

(7) [+str, +hi] = [-terior]

The surface facts can be accounted for by admitting these two MSC's and by allowing rounded, palatalized and plain consonants in underlying representation.

Given that C^w, C^y and C are underlying segments in Nupe, Hyman's argument from borrowing evaporates entirely. Hyman (1970b) formulates a set of principles governing the shape borrowings will take in a language. His first principle is that foreign sounds are perceived in terms of underlying sounds. This is certainly a rather uncontroversial claim. But since C^w and C^y are underlying sounds in Nupe, then the fact that Yoruba kikü is borrowed into Nupe as [kik^u] is explainable from the fact that [k^u] is an underlying segment of Nupe. Therefore, borrowing does not support his absolute neutralization analysis over a concrete analysis, since it is still possible either that C^w and C^y are underlying segments or w and y are underlying segments. His principles cannot choose between these alternatives in a non-arbitrary manner.

In Nupe, *we, *wi, *yu and *yo are impossible sequences. w and y contrast only before s; further, h appears only before s. Thus, the following are possible sequences:

(8) wo, wu, ye, yi, ha, wa, ya

The following do not appear in Nupe:


This fact Hyman takes to mean that all glides are derived from underlying h; derived from a glide spelling rule (in conjunction with the absolutely neutralized segments /e/ and /o/).

(10) h = [+son, ord, alb]/_____ [+syl, ord, alb]

By Hyman's analysis, [w]^d 'to want' derives from /hu/ by this and the absolute neutralization rule. In this way, he is able to eliminate two more phonemes.

Hyman proposes a second principle governing borrowings. This second principle states that foreign segments equivalent to native segments derived by a rule are lexicalized as the corresponding native underlying segment. Thus, when Hausa warn: is borrowed into Nupe as warn 'open space', Hausa k and lexicalized as k, since w supposedly derives from k in Nupe. Similarly, the fact that Yoruba sifel 'sixpence' is borrowed into Nupe with the underlying representation /sif^l/ is explained by the fact k is an underlying segment in Nupe, and phonetic [g^l] is
derived by Hymans Strident Rule.

Hymans proposes a third principle, that when a foreign segment appears in an environment in which the equivalent native derived segment does not appear, then the form of the incoming foreign word is modified so that the structural description of that rule is met and the segment in question is then derived in the appropriate context. This principle is necessary to account for the fact that when Hausa ɓągaba 'leader' is borrowed into Nupe, it has the shape ɓagaba. According to the second principle, ɓ should be borrowed as /s/, since ɓ is derived in Nupe. But /dbagaba/ will not correctly derive initial ɓ; therefore, his third principle must take precedence, which requires that ɓ be altered to i.

However, his third principle fails to apply in certain examples. Nupe hisỳira 'The Hijra' is borrowed from Hausa hijra. Since ɓ is not in a position where it can be derived in Nupe (before i, ɓ appears) the third principle requires that ɓ be changed to something that will allow ɓ to be derived in Nupe; this would be i. But hisỳira does not become *heisyira. Therefore, Hymans third condition fails to apply where it should.

Given the fact that ɓ and ɓ are underlying segments of Nupe, borrowing in no way supports his claim for absolute neutralization. Since his principles of borrowing either predict two contradictory things or are incorrect, then his principles are meaningless or false.

It is an important fact that some of the 'impossible' sequences of glides and vowels in fact occur. ɓ occurs in we 'you' and wenyi 'a button', yo appears in yen i 'trade cloth', hi appears in hisỳra 'muslim year' and ɓi 'yes'. The fact that ɓ does not become y in hisỳra can be accounted for by assuming that this word is an exception to the glide spelling rule. However, the forms wenyi, we or yen i cannot be accounted for in such a fashion. Given that all glides derive from ɓ, the underlying representation of these forms must be /henfi/, /he/ and /dmin/. If the glide realization rule applies to these forms, then incorrect *yenfi, *ve and *dmin will be derived. Marking these forms as exceptions to the glide spelling rule will not solve the problem, since incorrect *henfi, *he and *dmin will be derived. There is no way at all to force these forms to undergo the glide spelling rule contrary to the instructions of the structural change (barring absurdities, such as complicating the glide spelling rule and introducing more absolutely neutralized segments, such as y). The conclusion is that to account for these forms, y and w must be admitted as underlying segments. However, once one has admitted y and w as underlying segments in some places, then one should just as well admit ɓ and y in other places where they appear phonetically.

A further argument against deriving y and w from ɓ and in favor of the independent status of ɓ, y, and w is the fact that, according to Smith (1969), there is a constrain against ɓ appearing in verbs. With the exception of two lexical items ɓa 'hang' and ɓa ɓa 'to be easy', ɓ never appears in a verb. But y and w commonly appear in verbs, such as wd 'to be hot', mdyi 'fondle', ɓa 'help', ɓa 'pity' and many other verbs. This fact cannot be explained in the analysis where ɓ and y come from ɓ. Hymans would be required to state an MEC which disallows ɓ in verbs unless it is followed by anything but a, surely an adhoc condition.

The same type of fact holds true of other segments which are, according to Hymans, derived by a rule, such as ɓ and ɓ. Words like
Wuni 'blueing', sentaf 'a rank of councillor', asangi 'a tree',
sonkara 'a platform', ëfwa 'fleshy', ëdwa 'mask', zere 'to be accustomed
with' and seti 'a type of perfume' all violate Hyman's claims (again,
barring absurdities like /t/). The forms Wuni, ëfwa, and ëdwa cannot be
derived by his Strident rule, and show that θ and Ë are underlying
segments, as is the case with w and y.

Further evidence shows that Hyman's Strident rule is incorrect.
The one alternation in the language, reduplication, provides further
counterexamples to that rule. The reduplicated form of sá 'to cut'
is stásá, and the reduplicated form of za 'to wander is zdzada. The Strident
rule should apply to these forms, but it does not. Hyman argues that the
Strident rule must therefore apply before reduplication. By ordering
reduplication with phonological rules, Hyman is able to account for the
nonglottalization in stásá and zdzada. However, reduplication is not a
phonological rule, conditioned by phonetic material. It is a word formation
rule sensitive to semantic information. If word formation rules are
allowed to apply along with the phonological rules, then one has greatly
increased the number of possible grammars over a theory that restricts
word formation rules to applying before phonological rules. Even if one
could make some argument in a language that some word formation rules
must apply after some phonological rules, Nupè does not provide any
support for such rules. The fact that the one alternation in the language
fails to show the effect of the purported Strident rule is a strong
argument against the reality of that rule.

In addition, reduplication shows numerous counterexamples to
Hyman's derivation of y and w from ë. When ë reduplicates, it does not
become y before i, as in hā 'to hang', which reduplicates as hinda. If
Hyman's analysis of ë were correct, incorrect *yinda would be derived.
Hyman would be forced to order reduplication after Glide Spelling as well,
which again casts doubt on the reality of the Glide Spelling rule.

Hyman's account of reduplication is complicated by the fact that
it must be ordered with phonological rules, which casts suspicion on
the reality of the Strident rule. Still, reduplication does pose a minor
problem for the concrete analysis, in that an additional rule is needed
(however, the Glide Spelling, absolute neutralization and Strident rules
will not be needed). We have claimed that [t'á] derives from /t/.
Assuming that Hyman's reduplication rule is correct, the reduplicated
form of /t'á/ should be [t'Ta]. It would appear that the concrete
analysis requires a vowel assimilation rule:

(11) [+syl,-back] = [+back,+rd]/[+back,+rd]

This rule will correctly change /t'̩Ta/ to [t'̩Ta]. Hyman's reduplication
rule will have to be further revised in the concrete framework, where we
shall assume that the vowel of the reduplicated syllable is uniformly i,
which becomes u only after rounded consonants. Since Hyman will be required
to revise his account of w and y, as outlined above, this same rule will
be necessary for Hyman to account for the fact that /wá/ reduplicated as [wwá], not *[wwá].

We have given a concrete analysis of Nupè which correctly
accounts for all of the facts that Hyman accounts for, and further, accounts
for certain facts that Hyman cannot account for. Empirical facts have
been used to refute the a priori decision that, since rounded and palatalized consonants are in (near) complementary distribution, these consonants are all allophones of another type of consonant. We have underscored the poverty of an analysis which is based on surface facts, not phonetic alternations, and have come to the conclusion that Nupe does not support the existence of rules of absolute neutralization.

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