On the Natural History of Diphthongs

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This paper is a minor contribution to the study of natural phonological processes. Its topic is the origin and development of certain diphthongs, namely the sort that resulted from the English Vowel Shift, but it is limited to those developments which were context-free, and which are therefore to be explained by the character of the vowels and diphthongs themselves. There are of course many other diphthongs besides these.

Getting the Vowel Shift Straight.

Chomsky and Halle's analysis of the English Vowel Shift asserts that high vowels, which had been diphthongized, changed places with mid vowels (2), and then low vowels became mid (3):1

(1) & → [voc] [cons] [+tense] [high] [back] 
    / → [voc] [cons] [tense] [high] [back] 
    (a → a2, u → u2)

(2) [+high] [low] → [-high] / [+tense] [+stress] 
    (a2 → a, u → u)

(3) [back] → [-low] 
    (a → e, i → o)

(4) [-low] → [-tense] / → [-voc] [cons] 
    (a → e2, u → o2)

It is pretty hard to imagine an explanation for the exchange (2). Traditional analyses have separated the lowering of the diphthongs from the raising of the monop thongs, so that these contrary changes could be separately explained. Such an alternative is rejected by Chomsky and Halle as motivated merely by presuppositions about the nature of sound change. Since they offer no better reasons for accepting their exchange analysis, it seems to me this could be motivation enough.

But there is also some evidence for the traditional analysis. The exchange analysis presupposes that the high diphthongs resulting from Middle English i → u were tense (1). Chomsky and Halle offer no evidence for this, and in fact the orthoepists they quote all have lax reflexes, so that a special laxing rule (4) has to be dragged in.

In fact the diphthongs were lax to begin with. To see this we have to consider the fate of glides in Middle English. The only one relevant to this question is the y glide which had arisen before x, as in taught < taught (Wright 1928:58). x was lost or changed to r, and the glide was then absorbed by r; thus while taught has the regular - derived from Middle English ey, laught and draught have the reflex of Middle English a (a2). This glide absorption had more general effects, which the handbooks I have seen do not notice. Modern English lacks the expected reflex of Middle English u before labial and velar consonants: in its place we have the reflex of lax u: plum, instead of *pleae, for Middle English pleae, move [mow] for mure, duck for duke, suck for taken, rough for rugh. And before palatal consonants, likewise, we have the reflex of Middle English lax i rather than that of tense I: ditch, instead of *deich, from Middle English dithe (compare dike). The explanation seems clear. The high tense vowels had become lax diphthongs:

(5) dih2 >dike >duke
    &dih2 >plume >duke

and then, by the same process that changed [drah] to [draft], the glides were absorbed by homorganic consonants:

(6) dih2 >plume >duke
    &dih2 >plume >duke

The fact that lax vowels remain after glides were absorbed shows that the diphthongs were not tense, as Chomsky and Halle assume, but lax.

One reason that Chomsky and Halle insisted on their analysis
is that the binary features with which they represent vowel height, are inherently incapable of expressing the traditional view that in the Vowel Shift the tense monophthongs each were raised one degree of height. I will argue that this conclusion and also the conclusion that the diphthongs were lax is crucial to understanding the Vowel Shift.

A Theory of Vowels.

The theory of vowel systems of Patricia Miller (1972) is the basis for the explanations I will propose. Miller's theory concerns only simple vowels, but I will argue that it extends to diphthongs as well.

According to the theory vowels have three cardinal properties: sonority, palatazity, and labiality:

(7) PALATAL i u LABIAL a

SONORANT
Sonority, the syllabic and tone-bearing property of vowels, is optimized by a maximally open and minimally constricted vocal tract: the most sonorant vowel is a. Palatality and labiality are "chromatic" properties, and they are optimized by a maximally open and minimally constricted vocal tract. The most palatal vowel is i and the most labial is u. If contextual factors do not interfere, vowels tend to polarize the three cardinal properties.

Raising.
Therefore while achromatic vowels tend to lower, chromatic vowels tend to rise:

(8) $i \rightarrow y \rightarrow u$
$e \rightarrow Š \rightarrow o$
$a \rightarrow š \rightarrow o$

It is this tendency which expresses itself as the process of raising.

(9) $[\text{chr} \quad !lo] \rightarrow \text{higher}$
$[V \quad !tns]$

The change "higher" involves each vowel affected rising one degree of height. The process is stated in its strongest form, as it commonly applies in the earliest speech of children. It may be limited just to tense vowels, as it was in the Vowel Shift, and it may be limited just to low vowels.

In the Vowel Shift high tense vowels had previously been diphthongized. Then raising applied first to both colors:

(10) $e \rightarrow i$ see $\rightarrow Š$ do
$a \rightarrow š$ see $\rightarrow S$ so

and later, after $\ddot{a}$ had become $\dddot{a}$, to palatales only:

(11) $e \rightarrow i$ see
$a \rightarrow š$ sake

The first phrase is illustrated by the 16th century speech of Hart, the second by the 17th century speech of Cooper (Chomsky and Halle: Chapter 6).

The color-series seem to be potentially independent in all processes affecting chromatic vowels, except that labialpalatales are affected by any process affecting either palatales or labials.

Diphthongization.

In accordance with our finding that the reflexes of Middle English diphthongization were lax, the process can be formulated as:

(12) $[\text{chr} \quad !hi] \rightarrow [-tns] [-syll]

The process may be limited to high vowels as in Middle English:

(13) $I \rightarrow i$ high
$\ddot{u} \rightarrow u\ddot{u}$ low

But it may extend to mid vowels, as it has since in English since the 18th century,

(14) $I \rightarrow i$ be
$\dddot{u} \rightarrow o\dddot{u}$ be

and even to low vowels, as in some American dialects:

(15) $\dddot{a} \rightarrow a$ had
$S \rightarrow o\dddot{a}$ saw

Diphthongization does not affect nonchromatic vowels, and is therefore to be understood as a polarization of color. This is accomplished by the development of the nonsyllabic. Non-syllabics are more intensely colored than the corresponding syllabics, as is apparent, for example, in the fact that they often color adjacent consonants while nonsyllabics fail to. In English the palatal nonsyllabic may palatalize a preceding apical, as in gotcha for got you, but the corresponding syllabic does not: got it.

In high vowels, diphthongization of this sort seems to be a surrogate for raising. For lower vowels it has the same function, in that it allows them to intensify their color without merging with the next vowel up.

Developments of the diphthongs.

In their initial appearance, as indicated in the formulation of the diphthongization process (12), and evidenced by the reflexes of glide absorption in Middle English, the diphthongs under consideration consisted of syllabic and nonsyllabic elements which were homorganic. My explanation of diphthongization suggests that these elements function as sonorant and coloration, respectively.

This is borne out by subsequent developments.

The nonsyllabic, if it is not already high, is raised: the reflexes $\dddot{a}$ of the second diphthongization became $e\dddot{a}$ of (14) and $\ddot{e}$ became $e\ddot{u}$ (15). Compare further 22b. Since such non-syllabics as these are chromatic and tense (tenser, in my judgment, than the corresponding tense syllabics), and since they are raised by degrees, it seems likely that their raising is due to the same process (9) that raises chromatic vowels in general. Raising of chromatic nonsyllabics is not, after all, peculiar to the sort of diphthongs under discussion.

Since the color of the diphthong is polarized in the nonsyllabic element, the syllabic element is left to carry the syllable pulse
and its accentual features. This is best accomplished by a relatively sonorous vowel, and the subsequent development of the syllabic typically polarizes this property. But just as the polarization of color in the nonsyllabic is achieved not through arbitrary changes but rather through a process (raising) which serves also to polarize the color of simple vowels, so also the polarization of sonority in the syllabic is achieved through processes which also may affect simple vowels: lowering and bleaching.

Lowering.

Lowering is the complement of raising; it ordinarily affects only the vowels that raising doesn't affect—the achromatics—and its motivation is obviously to increase the one cardinal property of these vowels—their sonority.

(16) \[
\begin{array}{c}
\text{chr.} \\
V \\
\text{lax}
\end{array}
\] + lower

Lowering changed English \( \hat{\text{u}} \) \( (<\text{EU}) \) to \( \hat{\text{a}} \); and it is responsible for the change of \( \hat{\text{a}} \) to \( \text{a} \) in Russian akanye and its counterpart in many languages. Although lowering normally affects only achromatic vowels, there are a few examples of it applying to lax chromatic vowels. One is the lowered—though rounded/reflex on Middle English \( \text{u} \) reported by Wright (1905) for many British dialects. Since in sister dialects \( \text{u} \) was unrounded, it appears likely that the relative achromaticity of lax vowels is responsible for their occasional lowering.

Bleaching.

Bleaching depalatalizes and delabializes vowels. By eliminating their palatal or labial constrictions, it increases the sonority of the vowels it affects:

(17) \[
\begin{array}{c}
V \\
\text{lax}
\end{array}
\] \( \rightarrow \) -lab and/or -pal

Like other processes referring to chromaticity, it may affect just palatal or just labial, or both series. Low vowels, the least intensely colored, are most susceptible to bleaching, as in the common changes of \( \text{a} \) or \( \text{o} \) to \( \text{u} \); mid vowels are occasionally affected, as in the change of Indo-European \( \text{e} \) to Sanskrit \( \hat{\text{a}} \); and high vowels are affected in "linear" vowel systems (e \( \hat{\text{A}} \) a) described by Trubetsky (1969:97) and others. The process is often encountered in its strongest form in the earliest speech of children, where, in conjunction with lowering, it may change all adult vowels to the optimal syllabic \( \text{a} \).

(18) \[
\begin{array}{c}
\text{i} \\
\text{u}
\end{array}
\] + 

\[
\begin{array}{c}
\text{e} \\
\text{a} \\
\text{o}
\end{array}
\] +

\[
\begin{array}{c}
\text{3} \\
\text{a} \\
\text{o}
\end{array}
\] +

Because of their strong coloration, high vowels resist bleaching and chromatic vowels resist lowering. But in diphthongs where color is borne in the nonsyllabic, the syllabic is freed from its color-bearing function and is especially susceptible to these processes that polarize sonority. Thus, while the corresponding monophthongs were largely unaffected, the diphthongs journeyed through lowering and bleaching toward \( \hat{\text{u}} \text{a} \).

In (19) the most widely attested reflexes are circled. These suggest that the usual path of the diphthongs is a zigzag one. This is precisely the path that the relative susceptibilities of the various syllables to lowering (higher) and bleaching (lower) and lowering again (achromatic) would lead us to expect. The triangular convergence of these paths reminds us of the typically triangular pattern of systems of simple vowels, which in the extreme case consists of just three vowels of optimal palatalization, labialization, and sonority (7). As Miller has demonstrated, triangular patterns are a consequence of the polarizing processes we have discussed above. Diphthongs which polarize sonority and color as syllabic and nonsyllabic are even more susceptible to these processes than the corresponding simple vowels. It is for this reason that, even in languages with rich vowel systems, sonority-color diphthongs are often limited to the optimal cases \( \hat{\text{a}} \text{u} \)--in which the familiar triangle is implicit:

(20) \[
\begin{array}{c}
\text{i} \\
\text{u}
\end{array}
\]

Causality.

In seeking to understand the phonetic causality of the processes discussed here, it is necessary to distinguish secondary or contributing causes from primary ones. The change of \( \hat{\text{a}} \text{u} \) to \( \text{a} \text{u} \) in Canadian dialects is limited to contexts before voiced segments: \text{hays house} (verb) beside \text{hays} (noun). We know that the
context cannot be the primary cause here because in other dialects the change is carried out regardless of voicing: hays (noun).
Voicing is merely a contributing cause; it lengthens the diphthong (exactly as it lengthens the simple vowel of hax buzz beside bas buzz) and thereby contributes to its susceptibility to lowering, a process which favors tenser vowels.

Similarly, although lowering affects only in diphthongs while simple \( \Lambda \) is unaffected (buzz, bus), the diphthongal context can only be a secondary cause, since in many other languages (e.g., Indo-European dialects except Indo-Iranian) \( \Lambda \) becomes a regardless of context. The primary causality of lowering is clearly to be sought in some property (e.g., sonority) of the segment affected. The diphthongal context merely favors this self-motivated change by transferring the height- and color-marking role from the syllabic to the nonsyllabic, so that the sonority of the syllabic need not be constrained by its height or color.\(^{16}\)

Contrary tendencies

The context-free development of diphthongs is a centrifugal tendency which begins with a chromatic syllable splitting its simultaneous but incompatible properties of sonority and color into sequential elements, which then polarize and dissipate these properties to the extremes of the vowel triangle. This development must be contrasted with the opposite centripetal tendency, where the elements of a diphthong attract each other: a\(\dot{}\) becomes ej (Gothic stains, Middle High German stein 'stone' or eg (Greek Aivios, Latin Aeneas). Assimilation typically ends in a coalescence of the diphthongal elements as a monophthong: Old Saxon stein, Old English stein 'stone'.\(^{17}\)

The change of a\(\dot{}\) to ej in German was followed by a change back to a\(\dot{}\) (Stein). These contradictory changes do not present an inexplicable paradox, for they clearly represent separate but contrary causalities. The change of a\(\dot{}\)tain to stein was the same assimilatory process (palatal umlaut) that changed a\(\dot{}\)nni to a\(\dot{}\)nni 'moon', while the later change of stein back to stein was the same dissimilatory development (bleaching and lowering) that changed a\(\dot{\text{m}}\)n (seim) to a\(\dot{\text{m}}\)n 'my'. In the first case the vowel responded to its palatal context, in the second to its own sonority.\(^{18}\)

The distinct motivations of assimilative and polarizing processes are especially clear in the contrast between hyperarticulated and hypoarticulated speech styles. English a\(\dot{e}\) is pronounced as such only in very careful speech; it becomes a\(\dot{\text{g}}\) in ordinary speech and ą in casual speech, e.g. ąnfr I'm here. This assimilative, monophthongizing tendency in increasingly hyperarticulated speech is paralleled in reverse by a diphthongal, dissimilatory tendency in hypoarticulated speech. In some Southern U.S. dialects a is heard only in rapid speech and is diphthongized to ą in ordinary speech; in emphatic articulation it may polarize further to a\(\dot{\text{g}}\) or a\(\dot{\text{g}}\).

Footnotes

\(^{2}\)This paper, which has benefited from discussions with Patricia Miller and many others, is dedicated to Harold Whitehall.

\(^{3}\)These are the rules Chomsky and Halle (1968:265) propose for the 16th c. speech of John Hart. None of the rules (1-4) survive the diachronic evidence presented here, but of course this does not necessarily bear on their synchronic status.

\(^{4}\)After the adoption of French orthography, tense ą was spelled ou.

\(^{5}\)Glide absorption can be dated after the loss of x (hence taught with a < a\(\dot{e}\)), and before the change of hovok 'hawk' to houk and the lengthening of ı u to ı ą in open syllables (wik: weeks 'week: week's', Wright 1928:437), since rım 'room' > Örm > Öum and by lengthening Öum > Öomes, the modern form Öumes is a regular raised and diphthongized reflex of the inflected form Öum. Wright dates the lengthening in the fourteenth century; since glide absorption preceded it and diphthongization in turn preceded glide absorption, I conclude that the Vowel Shift began at least a century earlier than the 15th c. date of Chomsky and Halle (1968:256) and others.

\(^{6}\)This representation is required, according to Halle (1957), by the 'evaluation measure' of generative phonology.

\(^{7}\)Chromatic properties cross-out Trubetzkoy's classification of oppositions (1969:478f) in being privative, in that certain vowels (e.g. ą a) lack them entirely, and gradual, in that there are degrees of chromaticity (I is more palatal than ı or ą or ą, and ą more palatal than ı). These properties, unlike the features of Jakobson, Pant, and Halle (1951) or Chomsky and Halle (1968:Ch.7), are deduced from the behavior of sounds in natural processes, as in the assumption that like sounds respond to like
causalities. Thus the cover term chromatic is suggested by the parallel behavior of palatal and labial vowels in many processes. Given our small knowledge of these processes, our identification of significant properties is undoubtedly full of error.

The notation lio is means the lower or tense a vowel is, the more susceptible it is to the process. For more detail and examples of these processes in monophthong systems, see Miller (1972a).

Thus lax vowels are not raised unless the corresponding tense vowels are, and mid vowels are not raised unless the corresponding low vowels are. It is this 'implicational' hierarchy that shows raising of mid and low vowels to be the same process.

For example, the next process to be discussed, diphthongization of high chromatic vowels, affected ʃ as well as i and u in Dutch and German.

Apparent cases like Mod. Icelandic k > my presumably involve the prior change ʌ > ɔ (cf. OE stān 'stone' > MG stēn, etc.), diphthongization ɔ > ɔ, raising ɔ > ɔ > ɔ, and bleaching ɔ > ɔ (see below, and compare note 15).

The implication of this assumption, that the raising of syllables should presuppose a raising of corresponding nonsyllables is not disappointed by any language I know.

This process is a restricted version of neutralization (discussed in Miller 1972a, b)), which in its strongest form would neutralize height as well as color.

The change of u to ʌ in English and Japanese, for example, while o remains rounded except in American English (hot), seems to reverse this hierarchy. So does the change in certain dialects of oy (too) to oy while uy (too) remains or only optionally changes to oy. I think there is something we don't yet understand about back round vowels, possibly that there is a kind of o (retracted?) which is less subject than the other o to bleaching and other processes. This might solve the riddle of why in some vowel systems (e.g. American one) the sole back round vowel is not u but o.

Early descriptions do not distinguish between ʌ and ʌ, perhaps due to the subtlety of the distinction, but ʌ survives in some Piedmont dialects. ʌ and ʌ alternate with ʌ ʌ in lengthening contexts in Canada and some U.S. dialects. The reflex ʌ is not attested, to my knowledge, and ʌ is described only by Batchelor (1969, quoted in Chomsky and Halle 1968: Ch. 6). Batchelor's palatal reflex is ʌ, which indicates an asymmetry in the application of lowering and bleaching (but cf. note 14).

It is possible, and not improbable, given the resistance of chromatic vowels to lowering, that these developments always involve some degree of bleaching, so that the underlying path of the diphthong is 'down the center', and surface manifestations like ej oy are due to the assimilation of the underlying chromatic syllabic to the color of the syllabic. This sort of assimilation to glides is familiar from Caucasian languages (Trubetsky 1969: 97).

Korean (Kim 1968), etc. The zigzag path of the attested pronunciations would then follow from various susceptibilities not to lowering and bleaching but to color-assimilation, since lower vowels are less responsive to color (compare the hierarchies in color-assimilation in Agheje and Akan in Trubetzkoy loc. cit.). Batchelor's symmetric reflexes (note 14) ej oy would then be due to labialization of ʌ without the corresponding palatalization of ʌ.

My discussion of color is limited in this paper to its competition with sonority, but palatality and labiality are not wholly compatible properties either, as is evident from the common simplification of mixed vowels (usually by delabialization, y > ù, but occasionally by depalatalization, y > u). The change of oy (the diphthongized and lowered reflex of y in the German Vowel Shift) to ɔ or ɔ is such a simplification of color, with apparently dissimilative motives. Dissimilation of color also plays a role in the competition with English ɔy to ey in many dialects and ɔy to ɔ in some, e.g. Cockney, and in the change of ʌy (the bleached reflexes of uy (too), oy (too), note 12) to uy (ey), though all these changes can be paralleled in simple vowels (Miller 1972a, b). The opposite dissimilation has changed Faroese ɔ (which I assume as the diphthongized and bleached reflex of i) to ɔ, while the reflex of ʌ remains uy (Andersen 1972: 32, with a different analysis).

English ey seem in some individuals undergo monophthongization to ɔ (as seen in some). This suggests a re-evaluation of the putatively simple change u > y, often joined by o > ʌ, which is reported for many languages. If the change were really due to diphthongization uy > uy, bleaching uy > ʌy color-dissimilation ʌy > ʌy, and monophthongization ʌy > ʌy, then some coincidental properties of the 'fronting' change and diphthongization would be explained, e.g. that both favor tense and higher vowels. Furthermore languages with y from u typically lack the diphthong ɔy, and the monophthongization assumed to give y would explain this lack. Finally, the peculiar round central vowel ʌ which derives from Swedish ʊ could be derived by diphthongization, BLEACHING, and (without color-dissimilation) monophthongization of ʊ to y.
I & & > 11 ef gj (-al), f f s (&, note 9) > uy oy oy (-ay). The resultant diphthongs are long, whereas those we would assume from lax u o would have been short: yh oy. Now although lax vowels resist diphthongisation they favor bleaching, and therefore it is not at all strange that the short diphthongs should have bleached and thus progressed to y, while only the long low diphthongs (ey oy) bleached.

To conclude this note, it appears that both the common 'vowel shift' developments u > ay and u > y begin with the same process, a diphthongisation u > uy motivated by a polarization of labiality. As tertiary causality is the 'systematic' factor emphasized by the Prague phonologists it might be mentioned. The change of Swedish u to a rather than y as in most languages is obviously related to the prior existence of y in Swedish. The fact that raising or some other process creates new high tense vowels (in German ie ye we become I y, in Faroese u u tensed to I a) after diphthongisation has eliminated the old ones recalls Martinet's idea of 'chain reaction'. And so forth. But these factors do not provoke extraordinary changes or distort natural changes, and in general they are not necessary conditions on change. The second raising of palatals in English (10) destroyed the symmetry of / (ME e) and (ME au) and merged e (ME e) with I (ME e). And if it is correct to analyze the lowering of high tense vowels in Yucatec Maya diphthongisation I > I > u > I u, the Yucatec diphthongisation I > I u > ey oy, assimilation ey oy > ey oy, and monophthongisation ey oy > ey oy, then the fact that Yucatec lacks high tense vowels can be attributed to a non-application of raising.

Examples like the last have shown that Jakobson's implicational law that: a secondary [marked] value cannot exist in a linguistic system without the corresponding primary (unmarked) value' (1968:59) was not taken. When Icelandic u o became y y (note 15) 'marked' values displaced 'unmarked' values and the latter have not been replaced. 'Markedness' and systematic properties are the result, not the cause, of the nature and application of natural processes; as Miller (1972a) shows, these processes are capable of producing not only the 'expected' triangular system, but also unexpected systems like the Icelandic i e a y, the Cornish line yokula (which Jakobson 1968:84 compares to color-blindness!), and others. Panderrational causalities do not, in general, override the individual causalities of phonotactically motivated processes (compare Stampe 1959).

1It appears that, unlike monophthongization of mixed-color diphthongs (e.g. I > y, note 19), monophthongization of sonority-color diphthongs always occur through assimilation. This is why in dialects which monophthongize a y ay (buy boy cow to f s) the glides of ey oy (bay boy) remain; in the former diphthongs the glides were first assimilated to the low syllable (ey oy ay). This view is supported by the fact that while many German dialects monophthongized ay ay, German and Old Icelandic monophthongized them only in contexts which lowered ay to y; Gothic haude 'high', 8th c. Bavarian hohe, later OHG heh, OECE har; Gothic aude 'male', OHG hehr, OECE her; Gothic aude 'male', OHG hehr, OECE her.

References
Miller, Patricia Donegan. 1972b. Vowel neutralisation and vowel re-
duction. In this volume.
Reordering in Diachronic Syntax

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1. The last decade has seen a small but increasing number of linguists who have been concerned with diachronic syntax. There are now primarily two approaches to syntactic change. One view has it that syntactic change may be due to regularization in the surface structures, through which children perpetuate the innovations by optimizing the language that they are acquiring. The results of such changes may alter the input of rules and bring about regularization in a grammar which may differ from its precursor in terms of rule ordering, rule simplification and rule restructuring. Detailed examples may be found in Klima, Closs-Fraugott, and Naro. The other view, brought forth by Robin Lakoff, suggests that radical changes may be the result of only changes in grammatical categories and redundancy conditions that govern rules dealing with specific classes of elements. These two views are not incompatible and it is quite likely that a more complete picture of syntactic change may be based on a combination of these and other factors.

The first view holds that syntactic change is analogous to phonological change and recently King has cast serious doubts on the possibility of rule insertion in phonology. In this paper we shall be concerned with questions of rule reordering and insertion in syntax and with the relationship between reordering and changes in the deep structure. Our data are based on a study of three rules in Yes-or-No question (YNQ) derivations in Chinese dialects at different points in time.

2.1 Mandarin Dialects

When considering YNQ derivations in Mandarin it is necessary to distinguish four kinds of subgroupings.

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<th>Md1</th>
<th>Md2</th>
<th>Pek1</th>
<th>Pek2</th>
<th>NP</th>
<th>VP</th>
<th>Neg</th>
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"Is he going?"

Peking Mandarin (Pek1 and Pek2) differs from common Mandarin (Md1 and Md2) by not requiring the deletion of the sentence-final particle, ParTV, in sentence type (c). Md1 and Pek1 are