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Persistent Substratum Contrasts

BAO ZHIMING

1 A Thought Experiment

It is well-known, among people who know Mohanan, that Mohanan likes ideas, including apparently crazy ideas. So, one day, during an official ‘chat’ between Mohanan and me, the conversation took a curious turn, to the outcome of competition between two non-isomorphic subsystems from typologically distant languages. The problem can be formulated as follows. In an idealized contact ecology, two languages, A and B, compete to provide linguistic materials to a third language, C. Let’s say A contributes a grammatical construction or subsystem to C, to be exponenced—or ‘fleshed out’—by suitable morphosyntactic materials from B. In the contact linguistics literature, A is identified as the substratum language, B the superstratum, or lexifier, and C the emerging contact language. Both of us are trained as phonologists, so for evidence the conversation naturally turned to phonological subsystems, say the obstruent system. An interesting case is this: if the substratum and superstratum obstruent systems are not isomorphic, and the substratum system contains more contrasts than the superstratum obstruent system,1 what happens to the ‘surplus’ substratum contrasts

* As mentioned in the paper, the idea reported here emerged from my discussion with Mohanan, for which I am grateful. I have also benefited from the detailed comments of two anonymous referees. All errors that remain are my own.

1 The superstratum system may contain more contrasts than the substratum system. Hong Kong English offers such a case. In Cantonese, stops contrast for aspiration, and neither stops nor fricatives contrast for voicing. This pattern is found in the obstruent system of Hong Kong English, with Cantonese aspiration taking the contrastive role of English voicing; see Hung (2000) for detail. Incidentally, Southern Min, the main substratum language in early stages of Singapore English, voicing is contrastive among obstruents (Bodman 1955). In present-day Singapore English, voicing is contrastive among obstruents.
in the obstruent system of the emerging contact language? Mohanan argued that the surplus contrasts will find a way to surface—this is the empirical content of PERSISTENCE proposed by Mohanan and Mohanan (2003). I tried a different tack. Prima facie, one would expect the surplus substratum contrasts to have no chance of emerging in the contact language for lack of suitable exponencing materials from the superstratum language, and for lack of a need in the contact language. The debate ended when we both realized we were off-track, and returned to the more serious business of the day.

Lexical and structural borrowing is, of course, long known to modern scholarship. The analysis of lexical borrowing in Haugen (1950) is still relevant today after half a century, as is Weinreich’s (1964) analysis of the structural consequences of borrowing. From the point of view of systemic transfer, when an entire system of contrasts is transferred from the substratum to the contact language, the ‘fate’ of the surplus substratum phonological contrasts is a matter of considerable analytical significance, although, curiously, it has not received much attention from students of language contact. Here, I follow up on the conversation by exploring the possibility that the surplus contrasts do not persist, as the Mohanans argued. On the contrary, they are filtered out of the contact language. The substratum contrasts (from Language A) that ‘persist’ in the contact language (Language C) are those which are sanctioned by the grammar of the superstratum language (Language B), which contributes the exponencing materials.

## 2 The Facts, and the Appearance of Persistence

Mohanan and Mohanan’s (2003) insight about the persistent substratum feature is based on the analysis of the sound system of Malayalee English, a non-native variety with a Malayalam substratum. The Mohanans’ persistence argument can be illustrated with the obstruent system, which will be the focus here. The ‘surface’ obstruent systems of Malayalam, English and Malayalee English are summarized in (1).

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I thank the referees’ comments that lead to this clarification.

2 Following Mohanan (1982, 1986), Mohanan and Mohanan (1984, 2003) recognize three levels of representation, underlying, lexical and phonetic, in their analysis of the lexical phonology of Malayalam. The Malayalam consonants in (1) are found at the lexical level, which are subject to postlexical rules to be mapped on to the phonetic level of presentation. For our purpose, the surface level includes the lexical and phonetic levels, and the phonemic level corresponds to their underlying representation. The palatalized alveolar fricative s and the palatal stops are not found at the underlying level; in other words, they are not phonemic in our terms.
<table>
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<tr>
<th>Malayalam</th>
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<th>Malayalee English</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Labial</td>
<td>p, pʰ, b, bʰ</td>
<td>p, b</td>
</tr>
<tr>
<td>b. Dental</td>
<td>ṭ, ḍ, ḍʰ</td>
<td>ṭ, ḍ</td>
</tr>
<tr>
<td>c. Alveolar</td>
<td>t, d</td>
<td>t, ḍ</td>
</tr>
<tr>
<td>d. Palato-alveolar</td>
<td>c, cʰ, j, jʰ</td>
<td>tʃ, dʒ</td>
</tr>
<tr>
<td>e. Retroflex</td>
<td>tʃ, dʃ</td>
<td>tʃ, dʃ</td>
</tr>
<tr>
<td>f. Palatal</td>
<td>k, kʰ, g, gʰ</td>
<td>k, g</td>
</tr>
<tr>
<td>g. Velar</td>
<td>k, g</td>
<td>k, g</td>
</tr>
</tbody>
</table>

The data are collated from Mohanan and Mohanan (1984, 2003), notated with standard IPA symbols. Aspirated stops are not discussed in Mohanan and Mohanan (2003). I include them in (1) from Mohanan and Mohanan (1984). Note that aspiration does not persist in Malayalee English, a fact which is important for the argument I will present in the next section. Stops in Malayalam contrast in aspiration and voicing in all places of articulation except the alveolar, where we only find the voiceless stop ᵗ. In Malayalee English, the alveolar stops, set in italic in (1), are allophones of the retroflex stops, as we shall see shortly.

The correspondence between the Malayalee English obstruents and their English counterparts is displayed in (2), which establishes the sources of the obstruents we see in the contact vernacular.

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Similar correspondences have been observed in the integration of lexical borrowings in Hindi (Hock 1991, Winford 2003). Hock (1991) cites the Hindi correspondences as examples of what he calls system-based substitution, an insight which will be elaborated upon in section 2. In Malayalee English, the obstruents exhibit some of the allophonic alternations which are also observed in Malayalam in similar contexts. Details of the alterna-
tions need not concern us here; interested readers should consult Mohanan and Mohanan (1984, 2003).

From the data in (2), Mohanan and Mohanan (2003) make the following observations about the source of the obstruents in Malayalee English, expressed in OT-style constraints. First, if the segment is present in both Malayalam and English, it is present in Malayalee English (OVERLAP, eg. labials (2a)). Second, if the segment is present in English but not in Malayalam, it may be used to substitute for a different, but phonetically similar segment in Malayalam (ADAPTATION, eg. dentals (2b)); or it may be lost from Malayalee English (LOSS, eg. voiced fricatives (2a,c,d)), or be introduced into the vernacular (RETENTION, the voiceless labial fricative (2a)). Third, if the segment is present in Malayalam but not in English, it may still be present in Malayalee English (PERSISTENCE, eg. the alveolar-retroflex contrast). These phenomena of phonological integration, especially OVERLAP, ADAPTATION and LOSS, are familiar to the current contact linguistics literature. PERSISTENCE deserves close scrutiny. Let’s take a closer look at the facts. While t/d and p/q are observed in Malayalee English, they occur in complementary environment. Relevant facts follow.

(3) a. take [t-]     tip [t-]     train [tt-]
b. autumn [-t-]   cut [-l]    wrote [-l]
c. cult [-lt]     heart [-tt]
d. atom [-t-]     bet [-t]    write [-t]
e. built [-lt]    dreamt [-nt]    soft [-fl]

(4) a. debt [d-]    direct [d-]    dream [d-]
b. seldom [-d-]   feed [-d]    ride [-d]
c. weld [-ld]     cold [-d]    picked [-kd]
d. fend [-nd]    grind [-nd]    bandage [-nd-]

The data reveal that the English alveolar stops are realized as the Malayalam retroflex stops except when preceded, in the case of t, by a non-back vowel or consonant (3d,e), and in the case of d, by n (4d). Following Mohanan and Mohanan (2003), we state the alveolar-retroflex correspondence as follows:4

3 On ADAPTATION, Mohanan and Mohanan (2003:13) explain: ‘NE [b, d, f] are reanalyzed as Malayalam [t, d, ʃ], illustrating the adaptation of the superstrate contrasts to the nearest substrate structures.’ NE refers to native English.

4 The [back] harmony expressed in (5) is also observed in other coronals, eg. the lateral l: cult [-li] vs. hailed [-li] (see (3c,e)), and the alveolar nasal: fend [-nd] vs. fond [-nd]; see Mohanan and Mohanan (2003).
Note that, in Mohanan and Mohanan’s (1984, 2003) analysis, the voiced alveolar stop \( d \) is not a segment in the underlying or lexical inventories of Malayalam. In our terms, it is not a phoneme in Malayalee English, and can at best be analyzed as an allophone of \( \ddot{d} \). So the persistence of the Malayalam alveolar-retroflex contrast in Malayalee English operates at distinct levels of representation. It is driven by the two principles stated below ((45) of Mohanan and Mohanan (2003)):

(6) a. The offspring retains the structure of the substratum.
   b. The output of the offspring system must match the output of the superstratum.

These principles are faithfulness constraints along the lines of Optimality Theory. Note that in Malayalam the alveolar and retroflex stops are contrastive at both the underlying and lexical levels, but the contrast is lost at the phonetic level. Principle (6a) compels the alveolar-retroflex contrast to emerge at the lexical level in Malayalee English, even though it is not contrastive at the underlying level. The process is schematized below, adapted from (50), Mohanan and Mohanan (2003):

(7) \[
\begin{array}{ccc}
\text{English} & \text{Malayalam} & \text{Malayalee English} \\
alveolar & \text{alveolar} & \text{alveolar} \\
& \text{retroflex} & \text{retroflex}
\end{array}
\]

All stages are at the level of lexical representation, consistent with the three-level lexical phonology of Malayalam (cf. footnote 1). Under this analysis, the puzzling fact is that other Malayalam underlying or lexical contrasts, notably aspiration and palatalization, do not transfer to Malayalee English, contrary to PERSISTENCE.

3 The Filter, and the Patterns of Persistence

At the risk of simplifying matters a bit, we will interpret Mohanan and Mohanan’s (2003) lexical and phonetic representations as a single surface level in opposition to the underlying representation. An examination of the un-
derlying Malayalam contrasts that persist in Malayalee English, and those that do not, helps shed light on the roles of Malayalam and English in the emergence of the sound system of Malayalee English, the contact vernacular. From the segment inventories listed in (1) and (2), we can make the following observations. First, the purely lexical contrasts in Malayalam do not persist, eg. the palatalized segments in (1c,f). These are surface segments in our two-level analysis. Second, the underlying Malayalam contrasts that are attested in English persist in Malayalee English, i.e. the places of articulation and voice contrast among stops, as shown in (2). However, the segments that realize those persistent contrasts need not have the same articulatory properties. This is the case in the Malayalee dental stops substituting for the English dental fricatives (2b), and in the voiceless retroflex fricative substituting for the English palato-alveolar fricatives (2d). This sort of substitution is common across all contact languages and among lexical borrowings. Third, the Malayalam underlying contrasts that are not attested in English do not persist in Malayalee English, a fate that befalls aspiration among stops and the alveolar-retroflex contrast, even though the latter exhibits lexical or surface complementarity. Fourth, the underlying English contrasts that are not attested in Malayalam do not persist in Malayalee English, eg. the voicing contrast among fricatives. Among the four types, only the first type deals with surface, or realizational, phenomena, and the rest deal with underlying phonological contrasts in the contributing languages of Malayalam and English. Focusing on underlying contrasts, we can re-cast the last three types in (8).

(8) 

<table>
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<tr>
<th>Malayalam</th>
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<th>Malayalee</th>
<th>Example</th>
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<tbody>
<tr>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>voicing in stops</td>
</tr>
<tr>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>aspiration in stops</td>
</tr>
<tr>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>voicing in fricatives</td>
</tr>
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Clearly, the Malayalee English obstruent system is not an exact replica of the Malayalee system, nor is it a replica of the English system. To explain the persistence patterns summarized in (8), I propose a two-step analysis. The first step calls for the entire Malayalam underlying obstruent system to transfer to Malayalee English, and the transferred system is subsequently ‘sieved’ through the phonology of English, filtering out those contrasts in the Malayalam system that are not part of the English system. This step is governed by the two constraints stated below:

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5 We ignore the possibility of a Malayalee English underlying contrast emerging independently of the contributing languages. Such possibilities exist in contact languages, often as a result of the internal development of the contact variety in question.
Substratum transfer involves an entire grammatical subsystem.

Morphosyntactic exponence of the transferred system conforms to the structural requirements of the lexical-source language.

In Bao (2005) and Bao and Lye (2005), these constraints are motivated to account for the aspectual system and topic prominence of Singapore English, a non-native variety with an active Chinese substratum. Constraint (9b) filters out the components of the transferred system that lack well-formed exponents in the superstratum language.

In the second step, the ‘surviving’ underlying contrasts are instantiated, or realized, by drawing from the available phonetic stock of Malayalam. Unlike the exponencing of morphosyntactic constructions, such as the aspectual system, which relies on morphosyntactic materials exclusively from the superstratum language, the exponencing of phonological contrasts needs to fall back on the substratum language for phonetic materials to substantiate the transferred contrasts that satisfy (9b). In the current contact linguistics literature, this step is often the only step that deals with the substitution of superstratum sounds with those of the same or similar quality from the substratum language. The Malayalee English data show that we need to look at the underlying contrasts as well.

Under the two-step analysis, the persistence patterns summarized in (8) are not at all surprising. Among stops, English allows in voicing, but not aspiration (8a,b), precisely because English contrasts the former but not the latter. Lack of the voicing contrast among fricatives in Malayalam persists in Malayalee English, suggesting that English acts merely as a filter, and does not reintroduce into Malayalee English its own underlying contrasts. Similarly, the Malayalam 6-way contrast in place of articulation (excluding the palatal) is reduced to 5, the number allowed in English (see (1) and (2)). It is inconsequential which of the alveolar-retroflex contrast, alveolar or retroflex, survives in Malayalee English. We will list the retroflex /d/ as phonemes of Malayalee English, and treat t as an allophone of /d/ due to back harmony (see (5)), and d as an allophone of /d/ due to assimilation (see (25) of Mohanan and Mohanan 2003). Need does not play a role in the process. Obviously, there is no need for the surplus Malayalam contrasts in the phonological specification of English lexical items, but there is an urgent need for the voicing contrast among fricatives for the maintenance of English lexical distinctness (eg. few vs. view, Sue vs. zoo). Nevertheless, all fricatives are voiceless in Malayalee English, causing the English minimal pairs to be homophones.

The two-step process produces the phonemic inventory of Malayalee English as shown in (10):
The appearance of / does not affect the overall system of contrasts; instead, it fills a gap in the system.

4 Conclusion

In the current contact linguistics literature, works on substratum phonological or phonetic influence tend to focus on surface correspondence between the substratum speech sounds and their targets; see summary accounts in Mühlhäusler (1986), Romaine (1988), Thomason and Haufman (1988), and Winford (2003). Unlike pidgins and creoles, the so-called New English varieties typically emerge in contact ecologies in which the contributing languages, especially English and the substratum language, remain active. The contributing languages participate not only in the initial stage of the contact vernacular, but also in the subsequent stages of development. Our analysis of the Malayalee English data reveals the precise roles of the linguistic substratum and superstratum in shaping the emerging contact variety—the obstruent system of Malayalee English is essentially the Malayalam system filtered through the English system. The two competing systems do not mix randomly, as is the case with the aspeuctual system of Singapore English (Bao 2005). Furthermore, Malayalam provides the phonetic stock for the realization of the Malayalam system that has been sieved through the English system. This analysis predicts that the sound system of a new variety of English, such as Malayalam English and Singapore English, will not be radically different from the sound system of English, even when the substratum language has a far richer system of underlying contrasts.
References


