Must in Singapore English

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1. Introduction

It is well known that Singapore English, the vernacular variety spoken in Singapore, has undergone grammatical restructuring through prolonged and intense contact with the local languages, mainly the various southern Chinese dialects and Malay. There is a large and growing body of scholarly literature documenting the contact-induced linguistic changes in the variety, see, among many others, Platt and Weber (1980), Platt et al. (1984), Brown (1992), Tay (1993), Gupta (1992, 1994), Ziegeler (2000), Bao (2001, 2005, 2009), Lim (2004, 2007), Bao and Lye (2005) and Deterding (2007). Some of the innovative features in Singapore English that have been studied in these works are displayed in (1).

(1) a. Topic prominence

Good suggestion hah this one (ICE-SIN: s1a-013)

'(A) good suggestion, this one is.'

b. Use of clause-final particles

Be more professional lah, you know (ICE-SIN: s1a-011)

'(You should) be more professional, you know'

c. Got to express existence or possession

Apple pie inside got wine or not? (ICE-SIN: s1a-006)

'Does the apple pie contains wine or not?'

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ABSTRACT

In Singapore English, the modal verb must is predominantly deontic, in contrast with the usage profile of must in most native varieties of English. I account for this variation in terms of three linguistic factors prevalent in the contact ecology of Singapore English. First, the deontic and epistemic modalities are expressed by different modal expressions in Chinese, the main substratum language. Second, the perfect form have V-en has experienced a sharp decline in Singapore English, which contributes to the decline of the epistemic must. Third, the grammaticalization path that must has undergone in English is not followed by the equivalent expressions in Chinese. These three factors exert convergent pressure on must towards the deontic modality. The paper demonstrates the importance of computerized corpora in the study of contact-induced linguistic change. © 2010 Elsevier B.V. All rights reserved.

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Table 1
Languages used at home in Singapore in 1990 and 2000, in percent.

<table>
<thead>
<tr>
<th>Language</th>
<th>1990</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandarin</td>
<td>23.7</td>
<td>35.0</td>
</tr>
<tr>
<td>Chinese dialects</td>
<td>39.6</td>
<td>23.8</td>
</tr>
<tr>
<td>English</td>
<td>18.8</td>
<td>23.0</td>
</tr>
<tr>
<td>Malay</td>
<td>14.3</td>
<td>14.1</td>
</tr>
<tr>
<td>Tamil</td>
<td>2.9</td>
<td>3.2</td>
</tr>
<tr>
<td>Others</td>
<td>0.8</td>
<td>0.9</td>
</tr>
</tbody>
</table>


1 Actually to express the perfective aspect

Actually we challenge him for two years already lah (ICE-SIN: sla-013)

'Actually, we have challenged him for two years.'

These features are all calqued on Chinese. The data are cited from the Singaporean component of the International Corpus of English (ICE-SIN).

Most of the linguistic studies of grammatical restructuring in Singapore English, including those cited in [1], focus on the grammatical constructions that reflect influence from the linguistic substratum and are expressed with suitable English morphosyntactic materials. The substratist perspective on linguistic innovation is characteristic not only of the scholarly work on Singapore English, but also of research on other English varieties that emerge through contact with local languages, such as Indian English, see Kachru (1982), Cheshire (1991), Pride (1992), Baumgardner (1996), Schneider (2003), Kachru et al. (2006), and the numerous articles in the pages of the specialist journals World Englishes and English World-Wide. These varieties are often referred to as nonnative, indigenized, institutionalized, or simply, new, English; see Mufwene (1994) for a critique of the terminological issues. In this paper we use the term New English and its derivatives.

The contact environment of Singapore English, and indeed of other new varieties of English such as Indian English, differs in crucial respects from the contact environments in which pidgins and creoles emerge. Throughout the history of Singapore, there has been a constant sociolinguistic matrix, with standard English enjoying the position of power and prestige, and the local languages being given the burden of upholding the culture and tradition of the respective communities—Mandarin for the Chinese community, Malay for the Malay community and Tamil for the Indian community. In the Chinese community, the early immigrants spoke the southern dialects of Hokkien, Teochew and Cantonese, and a plethora of minor dialects such as Hakka. At around the turn of the 20th century, the Chinese community started the process of double language shift: from dialects to Mandarin and from Chinese to English. (For the Malay and Indian communities, there has been a parallel shift to English.) The double language shift accelerated after Singapore gained independence from Britain in 1965, when the government adopted English as the medium of instruction in all public schools, and formally launched the Speak Mandarin campaigns (www.mandarin.org.sg).1 At the present time, Singapore enjoys a high degree of multilingualism, with English gaining currency at the expense of the local languages. Within the Chinese community, Mandarin is now the most widely spoken Chinese dialect, thanks to the government’s bilingual education policy and the Speak Mandarin campaigns. Table 1 displays the data on language use in Singapore at the turn of the 21st century.

According to the same census, Singapore has a resident population of 4.2 million in 2000; 76.8% are Chinese, 13.9% Malay and 7.9% Indian. This ethnic mix has been constant since the mid 19th century (Lee, 1978; Pan, 1998; Bao, 2001). Note that the shift to English is most noticeable within the Chinese community, where Mandarin has displaced the traditional dialects as the most spoken Chinese dialect at home. Given the strong presence of standard English, Chinese and the other immigrant languages throughout the history of Singapore, it is not surprising that Singapore English exhibits robust Chinese influence in its grammar, as well as the circumscriptive effect of English on the influence from the substratum; see Bao (2005, 2009).

The emphasis on substrate grammatical features in Singapore English, and in other new varieties of English, is understandable. These features define the nature of indigenization in the indigenized English, and are often seen as indexical.

1 The shift to English first started among the Peranakans, who were ethnically Hokkien born in Southeast Asia. The Peranakans speak the Malay-lexified creole called Baba Malay. Incidentally, it was Lim Boon Keng (1869–1957), co-founder of the Straits Chinese British Association (renamed the Peranakan Society after independence), who advocated the learning of Mandarin as a means of reconnecting with the ethnic and cultural roots of the community. Around 1900, the Peranakans constituted 10% of the Chinese population (Lee, 1978; Bao, 2001). Ansaldo et al. (2007) argue that Baba Malay exerts strong influence on Singapore English out of proportion to the size of the Peranakan community, due to the Founder Principle (cf. Mufwene, 2001). While it is possible that new immigrants and other non-Peranakan people had as target the English vernacular from the Peranakans, the continued presence in Singapore of Hokkien and Malay, the main input languages to Baba Malay, mitigates the founder effect. There is no doubt that Baba Malay is an active part of the contact ecology of Singapore English. However, to my knowledge, no grammatical feature in Singapore English has been shown to derive ‘indirectly’ from Baba Malay, instead of directly from Hokkien or Malay.

I wish to thank one reviewer’s comment that led to this clarification.
The availability of computerized databases makes reliable usage-based studies possible and practical. The International Corpus of English (ICE) proves to be a valuable tool in the study of convergence-to-substratum—the adaptive response of an English grammatical feature when English comes into contact with local languages. The ICE is a set of country-based corpora of English, subdivided into several registers, both spoken and written. The data used in this paper come from the private dialogue subcorpora of the relevant country databases. The private dialogue corpus consists of 100 text files (sla-001 to sla-100), for a total of 200,000 words. The reason for choosing only the private dialogue data is that it represents the vernacular dialogue subcorpora of the relevant country databases. The private dialogue corpus consists of 100 text files (sla-001 to sla-100), for a total of 200,000 words. The reason for choosing only the private dialogue data is that it represents the vernacular variety of Singapore English that exhibits contact-induced linguistic change, see Bao and Hong (2006). For detailed descriptions of the design and use of the corpus, see Nelson et al. (2002).

In this paper, I examine the way the English modal verb must is used in England and Singapore, as reflected in the spoken subcorpora of the respective country corpora of the International Corpus of English, and show that must, while retaining the English modal meanings, predominantly expresses the meaning of obligation in Singapore English. I argue three points. First, the divergent usage pattern of must between Singapore English and British English is due to influence from Chinese and Malay, the main substratum languages in the contact ecology of Singapore English. Second, the convergence-to-substratum of must is facilitated by the verbal morphology that is typically used with the epistemic must (have V-en). Third, in English, the epistemic must is derived from the deontic must, but its Chinese counterpart does not follow this development path. If we adopt the metaphor-based explanation of the deontic-to-epistemic shift (Sweetser, 1990; Bybee et al., 1994), the lack of the metaphorical effect in Chinese may weaken the cognitive support for the deontic–epistemic link. It appears that language contact affects the derived modal meaning more readily than the original modal meaning.

2. The data

The English modal system has been thoroughly studied from various descriptive and theoretical perspectives, see Leech (1971), Quirk et al. (1972), Coates (1983), Huddleston (1984), Palmer (1990), Biber et al. (1999), and Huddleston and Pullum (2002), among many others. The terminological, classificatory and analytical details vary among these works. Here I follow Coates’s analysis (1983) and focus broadly on the two modal meanings of must, the deontic modality and the epistemic modality. The deontic and epistemic meanings of must are exemplified below (Coates, 1983:31):

(2) a. “You must play this ten times over,” Miss Jarrova would say, pointing with relentless fingers to a jumble of crotchets and quavers.
    b. That place must make quite a profit for it was packed out and has been all week.

In (2a) must expresses obligation (deontic), and in (2b), necessity (epistemic). In Singapore English, as one would expect, must has both these modal meanings, as exemplified by the two sentences quoted from the Singaporean component of the International Corpus of English:

(3) a. Deontic
   At the end of the day you must see what are they going to do (ICE-SIN: s1a-005)
   b. Epistemic
   Her daughter must be very young (ICE-SIN: s1a-013)

The sentences shown in (4) are cited from Huddleston and Pullum (2002). A quick consultation with native speakers of Singapore English confirms that must has the same modal meanings in the nonnative variety as it does in English.

(4) a. Deontic: You must pull your socks up
    b. Epistemic: He must have been delayed
    c. Ambiguous: You must be very tactful
In Singapore English, as it is in British English, *must* expresses the deontic meaning in (4a) and the epistemic meaning in (4b). (4c) is ambiguous between the two meanings. On the basis of the intuitive judgment of native speakers, we can safely conclude that there is no difference in the modal meanings of *must* between Singapore English and British English.

Differences, however, emerge when we examine how *must* is used in daily conversation. The availability of the country corpora that make up the International Corpus of English makes it possible to adopt a usage-based, quantitative approach to the study of contact-induced linguistic change in general, and convergence-to-substratum in particular. To study the usage pattern of *must* in Singapore English and British English, we gather all tokens of *must* from the 200,000-word subcorpus of unplanned conversation in the Singaporean and British components of the International Corpus of English, and determine, for each token, whether it is deontic or epistemic. We have seen samples of *must* from the Singaporean corpus in (3). More Singapore English samples are shown in (5), and samples from the British corpus can be found in (6).

(5) Deontic
   a. You must build up your spiritual life also (ICE-SIN: s1a-078)
   b. Now before I go on I mustn’t forget the title (ICE-SIN: s1a-029)

Epistemic
   c. Your labor must be very expensive (ICE-SIN: s1a-023)
   d. I think the time-table must have got mixed up (ICE-SIN: s1a-063)

(6) Deontic
   a. I keep thinking I must do something about it (ICE-GB: s1a-010)
   b. Oh we mustn’t be too late then (ICE-GB: s1a-094)

Epistemic
   c. It must be a highly ingenious cat (ICE-GB: s1a-061)
   d. I think I must have lent it to somebody (ICE-GB: s1a-045)

The interpretation of (5b,d) and (6b,d) is straightforward based on form: the negative *must* is normally deontic, and *must* have V-en is normally epistemic (Leech, 1971:72; Coates, 1983; Huddleston and Pullum, 2002:181). In isolation, the data in (5a,c) and (6a,c) may be given either the deontic or epistemic interpretation. In such cases we rely on the immediate context in the conversation fragment to arrive at the more likely interpretation. As an illustration, consider (5a) and (6a), which occur in the conversation fragments shown below:

(7) Context of (5a)
   Speaker A: It is very tough.
   Speaker B: Can be quite tough you know.
   Speaker A: That is why must pray a lot.
   Speaker B: Yah I mean spiritually you must build up also. You must build up your spiritual life also.
   Speaker A: Hopefully my future spouse is someone who has the same vision.

Context of (6a)
   Speaker B: I have actually got about a pound of smoked salmon in the freezer at the moment. *I keep thinking I must do something about it*, you know, it’s been there a while and I can’t bring myself to actually, you know use it for anything other than a, an occasion.

In the fragment for (5a), the interlocutors are talking about the teacher training course that Speaker A enrolls in. The deontic meaning is obvious within the fragment. Similarly for (6a), the deontic meaning is obvious in Speaker B’s narrative.

Table 2 displays the token counts of *must* in the spoken subcorpora of the Singaporean and British components of the International Corpus of English.2 In Coates (1983), the 500,000-word, conversational portion of the Survey of English Usage yields a total of 198 tokens of *must*, of which 106 tokens, or 53.5%, have the deontic meaning.3 This usage pattern is similar to that of ICE-GB shown in Table 2. In fact, the usage pattern remains remarkably constant in native varieties such as Australian

2 The frequency figures exclude tokens of repetition such as (i), but include false starts such as (ii):
(i) ... and then she said oh must must ask Lay Kuan along (ICE-SIN: s1a-010)
(ii) what must you do what must you do besides marking papers (ICE-SIN: s1a-049)

There are all together 4 tokens of such repetition in the ICE-SIN corpus.

3 Coates’ figure excludes 2 tokens of indeterminate meaning. In the written English corpus, Coates (1983:32) finds a total of 227 tokens of *must*, with the root *must* leading the epistemic *must* 153 to 74 (67% vs. 33%). In either the written and spoken genres, the deontic *must* has a higher incidence of use than the epistemic *must*. 
and New Zealand English, and nonnative varieties—new Englishes—such as Indian English and Philippine English. Table 3 shows the proportion, in percent, of must in these varieties of English. 4

From Tables 2 and 3, we can see that the obvious divergence in the use of must in Singapore English does not occur in other varieties of English, both native or nonnative. In the English varieties listed in Table 3, the modal function of must is about evenly split, with the deontic enjoying a slight edge over the epistemic. American English is the only exception, where the epistemic must is predominant, see also Biber et al. (1999:494). In fact, if we only consider the dialogue data in Collins’s (2005) study, the epistemic must prevails over the deontic must in Australian, British and New Zealand Englishes as well; see Table 4.

In Singapore English, by contrast, must is predominantly deontic, which is all the more remarkable given the fact that must in general, and the deontic must in particular, is on the decline in native English varieties (Collins, 1991, 2005; Leech and Smith, 2006), with the deontic function being taken over by the quasi-modal have to. 5 Although must has not yet evolved to be an exclusively deontic modal verb in Singapore English, the divergence in modal function is statistically significant, and calls for an explanation.

3. The explanation

To explain the divergent pattern of must, we need to look at the linguistic substratum in the contact ecology of Singapore English. In the following pages I show that must in Singapore English converges in its modal function with the equivalent modal verb in Chinese (bixu), which has only the deontic meaning. Furthermore, the convergence-to-substratum process is aided by the relatively complex verbal morphology in English that typically accompanies the epistemic must, and by the deontic-to-epistemic grammaticalization path that must has undergone in the history of English. 6

Table 2
Token frequencies of must in the spoken subcorpora of ICE-SIN and ICE-GB.

<table>
<thead>
<tr>
<th></th>
<th>ICE-SIN</th>
<th></th>
<th>ICE-GB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>Percent</td>
<td>Count</td>
</tr>
<tr>
<td>Deontic</td>
<td>167</td>
<td>83.8</td>
<td>65</td>
</tr>
<tr>
<td>Epistemic</td>
<td>33</td>
<td>16.2</td>
<td>43</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
<td>108</td>
</tr>
</tbody>
</table>

$\chi^2 = 20.51, p < 0.000006.$

Table 3
The usage pattern of must in the spoken (dialogue and monologue) register of six varieties of English, in percent.

<table>
<thead>
<tr>
<th></th>
<th>AmE</th>
<th>BrE</th>
<th>AusE</th>
<th>NZE</th>
<th>IndE</th>
<th>PhiE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>Percent</td>
<td>Count</td>
<td>Percent</td>
<td>Count</td>
<td>Percent</td>
</tr>
<tr>
<td>Deontic</td>
<td>38.1</td>
<td>52.5</td>
<td>53.9</td>
<td>52.3</td>
<td>59.6</td>
<td>52.3</td>
</tr>
<tr>
<td>Epistemic</td>
<td>61.9</td>
<td>47.5</td>
<td>46.1</td>
<td>47.7</td>
<td>39.4</td>
<td>47.7</td>
</tr>
</tbody>
</table>

Table 4
The usage pattern of must in the dialogue register of British, Australian and New Zealand English, in percent.

<table>
<thead>
<tr>
<th></th>
<th>BrE</th>
<th>AusE</th>
<th>NZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deontic</td>
<td>43.9</td>
<td>36.6</td>
<td>35.3</td>
</tr>
<tr>
<td>Epistemic</td>
<td>56.1</td>
<td>63.4</td>
<td>64.7</td>
</tr>
</tbody>
</table>

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3. The explanation

To explain the divergent pattern of must, we need to look at the linguistic substratum in the contact ecology of Singapore English. In the following pages I show that must in Singapore English converges in its modal function with the equivalent modal verb in Chinese (bixu), which has only the deontic meaning. Furthermore, the convergence-to-substratum process is aided by the relatively complex verbal morphology in English that typically accompanies the epistemic must, and by the deontic-to-epistemic grammaticalization path that must has undergone in the history of English. 6

4 The figures for American, British, Australian, and New Zealand Englishes in Tables 3 and 4 are derived from Collins (2005). For the Australian, British and New Zealand data, Collins (2005) uses the dialogue and monologue data in the respective country corpora of the International Corpus of English (total word count from each country corpus: 360,000). So the frequency counts for must in British English differ from the data shown in Table 2. The figures from Indian English (IndE) and Philippine English (PhiE) are obtained from the conversation subcorpora of the Indian and Philippine components of the International Corpus of English, in the same way as the ICE-SIN and ICE-GB data are collected.

5 In our databases, have to enjoys a slightly higher incidence of use in Singapore English (388 tokens) than in British English (316 tokens). Apparently, the frequent use of the deontic have to does not prevent must from developing a strong deontic bias in Singapore English.

6 One reviewer points out that since the school system is instrumental in the spread of English in Singapore at the turn of the 20th century, this could have an impact on the development of must in Singapore English. While it is possible that formal instruction may make the deontic modality the prototypical meaning of must, hard evidence is not easy to obtain. Furthermore, the role of the school may not be as important as has been assumed in the literature since Platt and Weber (1980). Although Raffles Institution was established in 1823, a formal education in English, or in the vernacular languages, remained a luxury for the majority of the resident population until well into the 20th century (cf. Turnbull, 1989). Mass English-medium education did not start until after Singapore gained independence in 1965. By then, Singapore English had displaced Bazaar Malay as the lingua franca in Singapore.

I wish to thank the anonymous reviewer for the thoughtful comment that led to this clarification.
3.1. The linguistic substratum

The linguistic ecology of Singapore English provides an interesting case study of how different ways of modal expression interact and converge. In Chinese, unlike in English, the deontic or epistemic meanings are not necessarily expressed by auxiliary verbs. The Chinese auxiliary system has been studied extensively; see, among many others, Lü (1947, 1980), Wang (1959/1985), Chao (1968), Ding et al. (1979), Hu and Fan (1995), and Li (2003). Chao (1968) lists some five auxiliary verbs that express the deontic meaning in Chinese, of which bixu is the most common in modern Chinese, and serves as the primary dictionary gloss of must. We will use bixu as the representative auxiliary verb for the English deontic must. Chinese does not have an auxiliary verb that corresponds to the English epistemic must. The epistemic meaning is expressed lexically, typically by adverbs such as biding and yiding, both of which express the meaning of certainty or necessity. The modal meanings of bixu and yiding are illustrated in the examples below (CL, classifier; PART, particle):

(8) a. women bixu jianchi zhenli
    we must abide-by truth
    ‘We must abide by the truth’

b. zhe jian shi bieren ban bu liao, bixu ni qinzi qu
    this CL matter other do not finish, must you personally go
    ‘This matter, others can’t do it, it is necessary you go personally’

c. zhe er yiding you ren lai guo
    this place certainly have person come PART
    ‘This place, someone must have been here’

d. zhe zhong cailliao yiding jieshi
    this CL material certainly solid
    ‘This type of material must be solid’

The examples are cited from Lü (1980). In Chinese, yiding and biding have the same epistemic interpretation, and they can be used interchangeably. In (8c,d), for example, yiding can be replaced with biding without change in modal interpretation. We set up the correspondence between English must and its Chinese counterparts in (9).

(9) must
    ^
    deontic  bixu
    ^
    epistemic biding, yiding

A brief note on bixu is in order. In literary Chinese the two component morphemes, bi and xu, are both free forms with overlapping modal functions (Lü, 1947:196; Chao, 1968:743). According to Wang (1959/1985), the authoritative work on contemporary Chinese based on the 18th century novel Honglou Meng ‘Dream of the Red Chamber’, bi and xu as separate words express the epistemic and deontic meanings, respectively. Relevant data are shown below (Wang, 1959/1985:110–111):

(10) a. bi you bie de yuangu
    must have other CL reason
    ‘There must be other reasons.’

b. xu-de tiaoxi yi ye
    must rest one night
    ‘(...) must rest for one night’

In (10b) and (11a) below, the ellipsis ‘...’ is the missing subject that can only be recovered from the context. Note that xu-de in (10b) is interchangeable with xu, which as a verb has the lexical meaning of need, demand or require. (Lexically de in xu-de means ‘obtain.’) While xu has only the deontic meaning, bi is primarily epistemic, and can be used in deontic contexts as well. Ding et al. (1979:181–182) observe that bi, like English must, has two modal meanings, citing examples such as those in (11):

(11) a. bi qu ge yiqingerbai de gunian
    must marry CL clean PART girl
    ‘(...) must marry a clean girl’

b. fan shi zuo huochrome qu de difang bi shi hen yuan
    all be sit train go PART place must be very far
    ‘All places which (you) take the train to go to must be very far’
According to Ding et al. (1979), (11a) is deontic, and (11b) epistemic. Nevertheless, it is equally felicitous to give (11a) an epistemic reading. The modal ambiguity of bi is disambiguated through compounding. As mentioned earlier, bixu is exclusively deontic, preserving the modal function of xu, and biding (or yiding) is exclusively epistemic, preserving the meaning of ding 'certain, fixed'; see examples in (8). The two modal meanings are negated with different negators: the deontic bi (and bixu) is negated with bu (bu bi/*bu bixu) and the epistemic bi (and biding) is negated with wei (wei bi/*wei biding). The adverb yiding, however, is negated with bu (bu yiding). The examples below are excerpted from Wang (1959:110-111).

(12) a. zamen jintian bu bi biaojue
   we today not must vote
   ‘We don’t have to vote today (It is not necessary that we vote today)’
   b. ni bu bi wei wo danxin
   you not must for I worry
   ‘You don’t have to worry about me (It is not necessary that you worry about me)’
   c. ta wei bi/ bu yiding shentong dacheng jiaoli
   he not-must understand Mahayana principle
   ‘He may not understand Mahayana Buddhism (It is not necessarily true that he understands Mahayana Buddhism)’
   d. ne ge ren wei bi/ bu yiding shi zhentan
   that cl person not-must be spy
   ‘That person may not be a spy (It is not necessarily true that that person is a spy)’

In (12c,d) wei bi and bu yiding are interchangeable.

Two differences between Chinese bixu/yiding and English must are worth noting. They support the view that Singapore English must is not a relexified version of Chinese bixu/yiding. First, as indicated by the English gloss in (12), there is a crucial difference between Chinese and English in the scope of negation. In English, must not has what Huddleston and Pullum (2002) call internal negation, with not negating the embedded proposition (it is necessary/certain that not-P). In Chinese, by contrast, bu bi/wei bi have external negation, which negates the modality, rather than the proposition (it is not necessary/certain that P). The English examples below are cited from Huddleston and Pullum (2002):

(13) a. He mustn’t have done it deliberately (epistemic, Nec not-P)
   b. You mustn’t attend the lectures (deontic, Nec not-P)

In Chinese, what is negated is not the proposition that follows the modal expressions (bixu or yiding), but the modality itself. We have seen examples of this in (12); more examples follow:

(14) a. women bixu qu haibian
   we must go beach
   ‘We must go to the beach’
   b. women bu bi qu haibian
   we not must go beach
   ‘We don’t do have to go to the beach (It is not necessary that we go to the beach)’
   c. ta yiding shengqi
   he certain angry
   ‘He must be angry (It is certain that he is angry)’
   d. ta bu yiding shengqi
   he not certain angry
   ‘He may not be angry (It is not certain that he is angry)’

In this respect, the negation of the deontic bixu (bu bi) corresponds to the negation of the quasi-modal have to.

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7 According to Ci Yuan, the authoritative etymological dictionary of Chinese characters published by the Commercial Press, bi has three related lexical senses in classical Chinese: stubborn, determined, and necessary. The last sense is retained in yiding, which is the canonical expression of the epistemic meaning in modern Chinese. The epistemic sense of bi is attested in the following line from the Book of Poetry (ca. 800bc), among the oldest extant texts in Chinese:

he qi jiu ye, bi you yi ye
why he long part, necessary have reason part
‘Why does it take so long? There must be reason’

Unlike English must (see section 3.3 below), the deontic use of bi appears after the epistemic use.
Second, while it is equally common for the deontic and epistemic modal expressions in Chinese, negation is not common for the epistemic must in English, a characteristic observed in most studies of the English modal system, among them Leech (1971), Coates (1983), Palmer (1990), and Huddleston and Pullum (2002). Coates (1983) reports no incidence of negation of the epistemic must in her corpora of spoken and written English. This is also true of the spoken subcorpora of ICE-SIN and ICE-GB, respectively, where all tokens of the negative must (ICE-SIN: 2 tokens; ICE-GB: 6 tokens) are interpreted deontically:

(15) a. You mustn’t think that is a friend (ICE-SIN: sla-010)
   b. It mustn’t dangle (ICE-GB: s1a-044)

By comparison, the negated modal expressions in Chinese (deontic bixu and epistemic yiding) can be interpreted deontically (bu bi) as well as epistemically (wei bi/bu yiding), both with the external scope of negation. The deontic bias of must in Singapore English results from convergent pressure from its contact ecology.

The convergence-to-substratum pressure not only comes from Chinese, but from Malay as well. In Malay, as in Chinese, the deontic and epistemic modalities are normally expressed by different modal expressions, mesti for the deontic and tentu (or pasti) for the epistemic. The data in (16) illustrate this lexical division of labor (Mintz, 1994).

(16) a. tentu dia datang
certain she come
‘She must be coming (ie. it is certain that she is coming)’

   b. Saya mesti pergi sekarang
      I must go now
      ‘I must go now’

However, unlike bixu/yiding in Chinese, mesti may also be used in epistemic contexts (Ho, 1993; Mintz, 1994). Ho (1993:25) shows that the example in (17) can be interpreted deontically (17a) as well as epistemically (17b).

(17) Awak mesti lulus ujian memandu itu
You must pass test driving that

   a. ‘There is an obligation for you to pass that driving test’
   b. ‘I confidently infer that you will pass that driving test’

Based on qualitative judgment by native speakers, Malay mesti has the same modal functions as English must. In terms of usage, however, differences emerge. Ho (1993) studies a whole range of modal expressions in a small corpus of Malay newspaper articles. All 22 tokens of mesti in the corpus are given the deontic interpretation. Based on this small sample and the meanings of the lexical items derived from mesti, Ho (1993:25) concludes that mesti is ‘not primarily an epistemic modal.’ Given the preferred division of labor between mesti and tentu, it is safe to say that mesti is predominantly deontic. By comparison, in British English must does not exhibit clear bias in usage between the two modal functions, and in varieties where bias is attested, the epistemic function is favored, as we have seen in Tables 2–4. Malay joins forces with Chinese in pushing English must towards the deontic function. As we can see in Table 1, the Chinese and Malay communities constitute 90.7% of Singapore’s resident population, a ratio that has been steady since the late 19th century (Pan, 1998; Bao, 2001). The robust convergence-to-substratum in must has strong demographic support.

3.2. Must have V-en

In Coates’s (1983) study, all tokens of must occurring with negation, the progressive (V-ing) and perfect (V-en) verb forms are interpreted epistemically. There are only a few tokens of negative must in the ICE corpora, which we have seen in section 3.1. They are, incidentally, all epistemic. The incidence of use of the must be V-ing form is equally low; we gathered only 2 tokens in ICE-SIN and 3 tokens in ICE-GB. They are shown in (18).

(18) a. It is not out so somebody must be hoarding it. (ICE-SIN: sla-059)
   b. So that that waiter must be smiling and smiling. (ICE-SIN: sla-067)
   c. You must be running out of time. (ICE-GB: s1a-052)
   d. On the other hand she’s been oh must be getting her down because I still ring her a lot. (ICE-GB: s1a-062)
   e. Who is it in your head who said to you, you must be doing something, to justify your existence. (ICE-GB: sla-060)

---

8 The primary deontic function of mesti is tied to its lexical meaning. According to Ho (1993), mesti appears with verbal prefixes or suffixes, as in me-mesti-kan and di-mesti-kan. These derived expressions convey the meaning of order or prohibition, consistent with the deontic meaning of mesti as a modal expression.
All may be given the epistemic reading. (18e) is ambiguous; it could be interpreted deontically if the clause, you must be doing something, expresses a condition for the following infinitival clause, rather than an ongoing action.

There are too few tokens of must be V-ing in either ICE-SIN or ICE-GB to allow a meaningful assessment of this verb form on the usage pattern of must in vernacular Singapore English. The distribution of the perfect form among the epistemic tokens of must is interesting, despite the small number of tokens. The frequencies of must have V-en are displayed in Table 5.

The distribution is the mirror-image of each other between the two varieties of English—the perfect is the preferred verb form in British English, but not in Singapore English.

The decline in the use of must have V-en in Singapore English is a reflection of the general decline in the use of the perfect itself, given the relative formal and aspectual complexity of the form. In Singapore English, the progressive aspect is expressed by (be) V-ing, with be being optional (Ho and Platt, 1993). There is no structural impediment for the functioning of must be V-ing. By comparison, the perfect have V-en expresses a complex aspectual meaning which overlaps with the simple past tense, and for regular verbs the past participial form overlaps in phonological shape with the past tense form V-ed. In Singapore English, past tense is not marked consistently, ranging from 57.3% past tense marking for strong verbs (eat ~ ate) to 3.9% for regular verbs (work ~ worked) (Ho and Platt, 1993:87). One would expect the same decline in the use of the perfect in Singapore English. This is indeed the case. Table 6 displays the frequencies of have V-en in the dialogue corpora of ICE-SIN and ICE-GB, respectively.

The frequencies displayed in Tables 5 and 6 show clearly that the lower incidence of use of must have V-en tracks that of the perfect verb form at a rate of roughly 1 to 2 (13:26 vs. 850:1891). The complex morphology and the intricate aspectual meaning of the English perfect cause its use to decline in Singapore English, which in turn causes the decline of the epistemic must, consistent with the direction of the substratum influence from Chinese and to a lesser extent, Malay.

Incidentally, have V-en is one of the morphosyntactic contexts that have favored the shift from the deontic must to the epistemic must in the history of English, as we shall see presently.

### Table 5
The frequencies of must have V-en among the epistemic tokens of must in the dialogue subcorpora of ICE-SIN and ICE-GB.

<table>
<thead>
<tr>
<th>Verb Form</th>
<th>ICE-SIN Count</th>
<th>ICE-GB Count</th>
<th>Percent</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>must have V-en</td>
<td>13 (39.4%)</td>
<td>26 (60.5%)</td>
<td>33 (100.0%)</td>
<td>43 (100.0%)</td>
</tr>
<tr>
<td>Other verb forms</td>
<td>20 (60.6%)</td>
<td>17 (39.5%)</td>
<td>37 (100.0%)</td>
<td>43 (100.0%)</td>
</tr>
</tbody>
</table>

### Table 6
The frequencies of have V-en in the 200,000-word dialogue subcorpora of ICE-SIN and ICE-GB, respectively.

<table>
<thead>
<tr>
<th>Verb Form</th>
<th>ICE-SIN</th>
<th>ICE-GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>have</td>
<td>334</td>
<td>410</td>
</tr>
<tr>
<td>has</td>
<td>139</td>
<td>100</td>
</tr>
<tr>
<td>had</td>
<td>22</td>
<td>51</td>
</tr>
<tr>
<td>having</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>'ve</td>
<td>268</td>
<td>1014</td>
</tr>
<tr>
<td>'s</td>
<td>84</td>
<td>179</td>
</tr>
<tr>
<td>'d</td>
<td>2</td>
<td>115</td>
</tr>
<tr>
<td>Total</td>
<td>850</td>
<td>1891</td>
</tr>
</tbody>
</table>

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9 The copula be is the verb most frequently used with the epistemic must, and there is no divergence between Singapore English and British English in this respect. ICE-SIN yields 19 out of 33 tokens (57.6%), whereas ICE-BR yields 24 out of 43 tokens (55.8%).

10 Huddleston (1984:158) characterizes the perfect in this way: “the perfect locates the situation within a period of time beginning in the past and extending forward to include the present.” The past tense also talks about the past, but it does not include the present. According to Huddleston (1984), the English perfect mixes tense and aspect (have/has/had V-en), and is used in a complex array of temporal and aspectual contexts. In this sense the perfect is more complex than the simple past.
According to Traugott (1989), the epistemic must is derived from the deontic must, which is in term derived from the verb with the lexical meaning of permission. We set out the relevant part of the development path as follows:

(19) deontic > epistemic

The grammaticalization path shown in (19) is generally accepted in the literature, and is consistent with similar grammaticalization trends in other, unrelated languages (Bybee et al., 1994). Nevertheless, it is difficult to argue that the historical path in (19) would have an impact on must's usage pattern in modern Singapore English. To argue along this line would require us to make an unreasonable assumption that the creator-developer of the vernacular variety has access to the history of must in English. We need to understand the usage pattern of must from a synchronically relevant perspective.

Various theories have been put forth to explain the process of grammaticalization in general, and the grammaticalization of must in particular, see Heine (2003) and Traugott (2003) for a recent summary of the major works. Sweetser (1990) offers an analysis of (19) based on metaphorical transfer, arguing that the epistemic must arises out of the deontic must when its function shifts from the sociophysical domain of obligations on the subject of the sentence to the domain of the speaker's attitudes towards, or beliefs about, the proposition being expressed. Bybee et al. (1994) observe that the deontic must and the epistemic must are used in mutually exclusive contexts—the epistemic reading in sentences with past tense (have V-en) or progressive (be V-ing) meanings, and it has the deontic reading in sentences with dynamic or future meanings. This contextual differentiation facilitates the metaphorical transfer from the deontic to the epistemic.

Grammaticalization is a gradual process (see Heine, 1993; Hopper and Traugott, 2003). The transfer model of grammaticalization advocated by Sweetser (1990) and Bybee et al. (1994), among others, forces us to define gradualness in a more precise manner. There is no sense in which the shift from one cognitive domain to another can be considered gradual. Intuitively, the metaphorical transfer from the sociophysical domain (the deontic) to the attitude/belief domain (the epistemic) must be abrupt to the extent that the domains involved are conceptually discrete. What is gradual is the usage—the diffusion of the epistemic use of must is gradual among construction types and speakers alike. In this sense, the transfer-based analysis is synchronically motivated, unlike analyses based on semantic weakening or pragmatic strengthening (see Sweetser, 1990; Traugott, 2003), which involves the gradual loss of semantic features, or the strengthening of some pragmatic force, in the process of grammaticalization.

The transfer-based analysis of must helps us understand the decline of the epistemic use in Singapore English when English comes into intense contact with Chinese (and to a lesser extent Malay) in Singapore. One crucial aspect of this analysis is that, although the epistemic must is diachronically derived from the deontic must in English, the metaphorical linkage is as relevant in today's English as it is at the time when must was first used in epistemic contexts. In other words, the metaphor that first compelled the obligation-to-belief shift also acts as a cohesive to maintain the modal polymesy of must at a given point in time. Now, Chinese epistemic biding (or yiding) is not derived from the deontic bixu. Although they share the root bi (see footnote 7), ding ‘decide, certain’ and xu ‘need, require’ are independent lexical items that serve as heads of their respective compounds. The metaphorical shift that happened to English must does not happen to its Chinese counterpart. The environment in which English evolves into Singapore English lacks the metaphorical glue that binds the epistemic must with the deontic must. This facilitates the convergence-to-substratum of must in Singapore English.

4. Conclusion

In the preceding pages we have seen the change that must has undergone in Singapore English in response to pressures from similar modal expressions in the local languages, mainly Chinese and Malay. We have shown that the Singapore English must is not a relexified version of Chinese bixu, or Malay mesti. While must retains the deontic and epistemic modal functions in Singapore English, it is predominantly used in the deontic sense, in sharp contrast with the strong epistemic bias in other native or nonnative varieties of English. We account for the divergent development of must in Singapore English in terms of Chinese influence, facilitated by the decline in Singapore English in the usage of have V-en and by the absence of the deontic-to-epistemic development in the Chinese counterparts of must.

The constant and stable linguistic and sociolinguistic matrix of Singapore creates the necessary condition for the robust substratum influence we have seen in Singapore English, the new English vernacular. The constant and homogeneous linguistic substratum provides impetus not only for systemic substratum transfer, when an entire grammatical subsystem is appropriated and suitably exponenced, but also for convergence-to-substratum, when English grammatical features acquire the usage patterns from their Chinese counterparts. Compared with substratum transfer, convergence-to-substratum is gradual and its effect is consequently subtle. The change that must has undergone in Singapore English demonstrates the need for a usage-based approach to the study of contact phenomena.

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References


