The nature of loanword input is a debated issue. In Silverman 1992, followed by Yip 1993, the input to loanword adaptation is viewed as consisting of acoustic signals. In contrast, Paradis & Lacharité 1997 suggest that loanwords enter the borrowing language with their own phonological structures. I argue that English loanword input to Mandarin is best treated as acoustic signals without any phonological structures.

An acoustic-signal view of loanword input implies that we are able to find in the output non-contrastive or phonetic features from the perspective of the lending language. Data from English loanwords in Mandarin show that such features do appear in the output. Four English non-contrastive or phonetic features are considered. (i) [spread gl] in English voiceless stops/affricates. In English, voiceless stops/affricates are assigned [+spread gl] syllable-initially but [−spread gl] elsewhere. The data show that English syllable-initial voiceless stops/affricates in most cases surface as aspirated, e.g., Kevin → [kʰaj.wən], Ted → [tʰaj.ta], Peg → [pʰej.kə], Michael → [məj.kʰə]. Surprisingly, English voiceless stops/affricates in the coda are also found to match to Mandarin aspirated ones, e.g., Hitchcock → [ci.kʰy.kʰaw.kʰə], Matt → [mət.tʰə]. This unexpected matching can be accounted for by the fact that English coda voiceless stops/affricates are released: Though the release of air is much weaker and shorter than aspiration, it is still perceived by Mandarin speakers as aspiration (Eric Zee p.c.). (ii) [labial] in English [ʃ] and prevocalic [r]. English [ʃ]/prevocalic [r] is labialized (Ladefoged 2001:53, 55, Duanmu 2000:26) and the corresponding feature [labial] is non-contrastive. We find that [labial] may show up in the Mandarin correspondents to these two segments, e.g., Nash → [naj.ɕy], Sharon → [ʃən.evən], Rachel → [rəj.ʨʰəw], Ricky → [rəj.ʨʰi]. (iii) Surface syllabicity in English [l]. English [l] is syllabic when immediately preceded by a consonant at the end of a word (e.g., paddle [pʰædl]). The data show that English [l] in this context is matched to [o]/[ow] while one occurring elsewhere surfaces intact as [l], or as [r] or is deleted, e.g., bagel → [pej.kʰə], Rachel → [rəj.ʨʰəw], but Lisa → [li.ɕa], Miles → [məj.ɕi], Goldberg → [kə.po]. The fact that only the [l] in this particular context surfaces as a vowel indicates that the redundant surface syllabicity is retained in the loanword adaptation. (iv) [nasal] in vowels before a nasal. In English, a vowel is nasalized before a nasal. The data show that a nasalized vowel may be ‘unpacked’ and surfaces as V+[n] if the English form is monosyllabic and augmented to bisyllabicity by schwa epenthesis, e.g., Dgn → [tʰan.ɕn], Lynn → [lin.ɕn]. Notice that the augmentation cannot be treated by adding the syllable [ən] to the end of the form, because we also find adaptations such as Boone → [pu.ɕn] and Wayne → [waj.ɕn], where the input vowel is a tense one/diphthong and apparently a schwa is inserted between the vowel and the form-final [n]. Whether the feature [nasal] surfaces as [n] or is deleted (as in the latter case) is subject to the requirement that each Mandarin syllable is bimoraic (Duanmu 2000:§4). When Lynn, for example, enters Mandarin and is augmented to bisyllabicity, the first syllable has only one mora (Lynn
contains a lax vowel), violating the bimoraic requirement. The most economical way of fixing this syllable seems to be to let [nasal] in the vowel surface as [n]. On the other hand, [nasal] in a nasalized tense vowel/diphthong is deleted because a tense vowel/diphthong has two moras and no extra slot is available for it to surface as [n].

In addition, we discover two phenomena in the borrowing of English loanwords which Paradis & Lacharité’s view fails to account for. The first is that a [t/d] may merge with an immediately following [s/z] or [r], e.g., Betsy → [pej.t’h], Tracy → [ts’æj.çi]. If English loanwords entered Mandarin with phonological structures (i.e., segments, sequences, syllable structure etc.), we would expect a schwa epenthesized between the two segments without exceptions because in English they are two separate segments phonologically (e.g., *[bet.st] → [pej.t’o.çi] ‘Betsy’). Paradis & Lacharité’s view is thus not supported. An acoustic-signal view can easily explain the merger: The acoustic properties of the sequences are close to particular affricates in Mandarin and therefore those sequences are mapped to them. The second phenomenon is that English coda liquids are deleted if preceded by a back vowel but preserved if the preceding vowel is a front one, e.g., Mark → [ma.kʰ], Goldberg → [kə.po] but Pierce → [pʰi.əɾ.si], Miles → [maj.əɾ.si]. An analysis under Paradis & Lacharité’s view cannot explain why this deletion-preservation asymmetry is related to the preceding vowel’s place of articulation. In contrast, a felicitous perceptual account is available. An English sequence of a front tense vowel plus a coda liquid results in the perception of an intervening schwa, e.g., eel [i’il] and air [i’r] (Ladefoged 2001:84, Gick & Wilson 2001). Since the acoustic properties of the epenthetic schwa and the liquid are very close to the Mandarin syllable [ə], they are mapped to [ə] in the adaptation. On the other hand, an English coda liquid preceded by a back vowel is perceived as being unsalient (i.e., Mandarin speakers have difficulties recognizing it). This perceptual unsalience can be attributed to two factors: (i) liquids are vowel-like so that they fail to stand out from the neighboring vowel(s) (Fay & Culter 1977, Zue 1985, Yip 1993); (ii) a back vowel and a velarized [l]/dark [r] have a similar tongue body position, which I interpret as agreeing in place of articulation (Côté 2000:42). Since an English coda liquid is perceptually similar to a back vowel, the consequence is that Mandarin speakers choose to delete it in the loanword adaptation.

The presence of English non-contrastive/phonetic features in the Mandarin output naturally follows from an acoustic-signal view of the nature of the input. This perspective also clearly explains the phenomenon of the segment merger and the deletion vs. preservation asymmetry in the coda liquids. Paradis & Lacharité’s idea that loanwords enter the borrowing language with their own phonological structures fails to account for the last two cases. The acoustic-signal view’s success in analyzing English loanwords in Mandarin also suggests that Mandarin speakers have no access to the phonological system of English.