**The adaptation of English final stops in Standard Chinese loanwords**

**[Introduction]** In loanword adaptation a word from one language is borrowed into another language by keeping it as similar as possible to its original form and meanwhile meeting the grammar of the recipient language. Three views can be found in the literature on what play(s) a role in the process of loanword adaptation, namely **1)** merely misperception is the cause of adaptations (Peperkamp & Dupoux 2003); **2)** phonological grammar determines most adaptations (Jacobs & Gussenhoven 2000; LaCharité & Paradis 2005); **3)** both perception and phonological grammar are involved (Silverman 1992; Yip 1993, 2006; Steriade 2002; Kenstowicz 2003; Kang 2003; Broselow 2005; Miao 2005). The adaptation of English words in Standard Chinese (henceforth, SC) is highly interesting to study given that SC has far simpler phonotactics than English. SC e.g. does not allow any consonant clusters in any position, and nasals [n] and [ŋ] are the only permitted codas. The current study argues that no misperceptions are found in the adaptation of English final stops in SC loanwords (against view 1). It moreover shows that the adaptation of English final stops conforms with SC native grammar and thus supports the second view stated above without excluding the third view.

**[Data]** 758 loanwords were collected from *Loanwords Dictionary* (Liu et al. 1984) and *Place names of the world* (Zhou 2006). 134 out of 758 English words with final stops were found. As I pointed out above, SC does not allow any codas except nasals [n] and [ŋ]. Therefore, when English final stops are adapted into SC, two strategies are applied to repair the illegal structure, *viz.* vowel epenthesis and consonant deletion. Examples are given in (1) and (2).

**(1) Strategy 1: vowel epenthesis**
jeep /dʒiːp̲/ → /tɕi p̲ʰu/          Widnes /ˈwɪd̲.nəs/ → /wei t̲ɤ ni sɿ/
Watt /wɒt̲/ → /wʌ t̲ʰɤ/          Victor /ˈvɪk̲.təʳ/ → /wei k̲ʰɤ tuo/
Bexley /ˈbek̲.sli/ → /pei k̲ʰɤ sɿ li/          Rutland /ˈrʌt̲.lənd/ → /lʌ t̲ʰɤ lan/
**(2) Strategy 2: consonant deletion**
pump /pʌmp̲/ → /pəŋ/          Sidney /ˈsɪd̲.ni/ → /ɕi ni/
Scotland /ˈskɒt̲.lənd̲/ → /su kɤ lan/          Victoria /vɪk̲ˈtɔː.ri.ə/ → /wei tuo li jʌ/
Mexico /ˈmek̲.sɪ.kəʊ/ → /muo ɕi kɤ/          Bismarck /ˈbɪz.mɑːk̲/ → /pi sɿ mai/

**[Analysis]** Firstly, I argue that there are no misperceptions of English final stops by SC adapters. Evidence for this comes from the fact that even in the same phonological context some final stops are kept while others are not. For example, *Victoria* /vɪk̲ˈtɔː.ri.ə/ and *Sidney* /ˈsɪd̲.ni/ are modified into /wei tuo li jʌ/ and /ɕi ni/ by final stop deletion, while *Victor* /ˈvɪk̲.təʳ/ and *Widnes* /ˈwɪd̲.nəs/ are adapted as /wei k̲ʰɤ tuo/ and /wei t̲ɤ ni sɿ/ by vowel insertion. If we assume that the deletions are due to misperceptions, then we would predict that /k/ and /d/ in /ˈvɪk̲.təʳ/ and /ˈwɪd̲.nəs/ will be deleted too. Nevertheless, this is not the case.

Secondly, I claim that the adaptation of English final stops in SC loanwords is due to neither free variation between MAX-IO (C) and DEP-IO (V) nor FT-BIN (feet are binary under moraic or syllabic analysis). **Miao (2005)** argued that the free ranking between MAX-IO (C) and DEP-IO (V) can explain vowel epenthesis and consonant deletion. She claimed that vowel epenthesis happens when the ranking is MAX-IO (C) >> DEP-IO (V), while consonant deletion takes place when the ranking is DEP-IO (V) >> MAX-IO (C). However, a loanword grammar is stable. Native speakers will not change their grammar in order to match new forms (Yip 2006). Hence, this variable constraint ranking does not stand. **Broselow et al. (1998)** argued that vowel epenthesis and consonant deletion could be accounted for by the emergence of unmarked constraint WD BIN (I adapt this constraint as FT-BIN in my study).

For instance, a monosyllabic input *vig* /vɪg/ is repaired to /vɪ.gə/ via vowel insertion, whereas a form like *fealig* /fɪl.ɪg/ is modified to /fɪ.lɪ/ via coda deletion. But if we look at the examples in (1) and (2) above, *Victor* /wei k<sup>h</sup>ɤ tuo/ and *Scotland* /su kɤ lan/ do not satisfy this constraint.

Lastly, I argue that the adaptation of English final stops is due to the emergence of some hidden constraints in SC phonology, while the ranking between MAX-IO (C) and DEP-IO (V) is not important at all. With respect to English monosyllabic words, the constraint PRAG (Pragmatic: A semantic element is added to a monosyllabic word to indicate the meaning of the word) plays an essential role. For instance, instead of a schwa being added after the coda /p/ in *pump*, the latter is deleted while a semantic element such as *jou* "oil" or ṣuei "water" is attached to obey both constraints PRAG and FT-BIN. I claim that in general for English monosyllabic words vowel epenthesis or consonant deletion can be explained by the ranking **PRAG >> PARSE-SYL >> FT-BIN >> MAX-IO (C); DEP-IO (V)**. As for English non-monosyllabic words, four hidden constraints are involved in the adaptation (see (3)). I use English words *Sidney*, *Bismarck* and *Rutland* to illustrate how these constraints work ($V_e$ is an inserted vowel).

(3) **a. IDENT (SB)** − preserve the syllable boundary of input; for *Sidney* (ɕi.ni) is preferred over (ɕi).(t$V_e$.ni) due to the preservation of the /d.n/ syllable boundary.

**b. BSW** − balanced syllable weight within a prosodic word; for *Sidney* (ɕi.ni) but not (ɕi.t$V_e$)(ni) is chosen, because the former but not the latter satisfies BSW;

**c. DELETE** − if a final stop is in an unstressed syllable, delete it; for *Bismarck* (pi.s$V_e$).(mai) is better than (pi.s$V_e$).(mai.k$V_e$), given that /k/ is in an unstressed syllable;

**d. KEEP** − if a final stop is in a stressed syllable, keep it; for *Rutland* (lA.t<sup>h</sup>$V_e$).(lan) is preferred over (lA.lan), since /t/ is in a stressed syllable.

I propose for English non-monosyllabic words that the choice of SC speakers for epenthesis or deletion depends on the following ranking **IDENT (SB) >> PARSE-SYL>> BSW >> FT-BIN >> DELETE >> KEEP >> MAX-IO (C); DEP-IO (V)**. This ranking can be merged with the one for monosyllabic words, which gives rise to the following ranking **PRAG; IDENT (SB) >> PARSE-SYL >> BSW >> FT-BIN >> DELETE >> KEEP >> MAX-IO (C); DEP-IO (V).** This ranking is able to account for the adaptation of the stop coda cases in my corpus.

**[Conclusion]** In conclusion, the present study shows that perception does not play a role in the adaptation of English final stops in SC loanwords, which is against view 1. Native grammar alone can account for the choice of between vowel epenthesis and consonant deletion, which supports view 2 without excluding view 3. Moreover, some hidden constraints in native phonology have been revealed in the loanword adaptation.

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