Daniel Silverman
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THE BINARY FOOT IN CANTONESE: AGAINST THE IAMB
(or: Bipedalism in the Descendants of Peking Man)

0.   Basics of Cantonese morpho-phonology

    1.   Segment Inventory:

        p   t   ts   k   kʷ   i   u   u
        p'   t'   ts'   k'   kʷ'   e   oe   o
        f   s   h   a
        m   n   ng
             l
                  y   w

        (aspiration is represented by inverse commas)

    2.   Tonal Inventory:

        55 (H)   53 (HM)
        33 (M)   35 (MH)
        22 (L)   24 (LM)
        21

    3.   - morphemes are almost exclusively monosyllabic
          - syllables are obligatorily bimoraic (Duanmu 1990)
          - syllables are superficially (C)VX -- no branching
            onsets, no branching codas
          - one tone is lexically associated with each morpheme
          - the segmental phonology and the tonal phonology are
            both extremely impoverished.

1.   Yip's arguments for the iamb

    - according to Yip, iambicity (weak-strong) in Cantonese is
      achieved primarily through pitch prominence: [[T] [H]]

    4.   hypocoristics (Yip 1990, from Whitaker 1955,6))

          familiar names
          /yip[L]/   -> a[M] yip[LH]
          /ts'an[L]   -> a[M] ts'an[LH]
          /tsoeng[HM] -> a[M] tsoeng[H]

          family relations
          /kung[M]/   -> a[M] kung[H] "maternal grandfather"
          /t'ai[M]/   -> a[M] t'ai[MH] "great grandmother"
          /kao[L] fu[L] -> kao[L] fu[LH] "mother's brother"

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        /ku[H] ts'e[H] -> ku[H] tse[H]   "paternal aunt"

        names based on birth order
        /yi[L]/          -> a[M] yi[H]         "Number 2"
        /ng[LM]/         -> a[M] ng[LH]        "Number 5"
        /sap[L] sei[M]   -> sap[L] sei[MH]     "Number 14"
        /sap[L] ng[LM]   -> sap[L] sei[LH]     "Number 15"

        nicknames
        /pai[HM]/          -> a[M] pai[H]           "the lame"
        /fei[LM]/          -> a[M] fei[LH]          "the fat"
        /wong[L] mou[L]/-> wong[L] mou[LH]          "the yellow-
                                                     haired one"
        /m ng[L] pei[L]/-> m ng[L] pei[LH]          "deformed nose"

Assumed process:
- iambic template
- associate to head (i.e. second syllable)
- fill first syllable with default melodic material if
  necessary
- make second syllable more prominent (i.e. attach a [H])

5.   loanword phonology

     - stressed syllables perceived as [H] toned

     game      kem[H]                 Jack      tsik[H]
     show      sou[H]                 hi-fi     hai[H] fai[H]

     - non-primary-stressed syllables perceived as [M] toned

     guitar    kit[M] t'a[H]          cigar     syt[M] ka[H]

     - derived syllables perceived as [L] toned

     stamp     si[L] t m[H]           fluke     fu[L] luk[H]
     stick     si[L] tik[H]           cream     kei[L] lim[H]

     - final rise: [L], [M] -> [MH]

     margin    ma[H] tsin[MH]         salad     sa[H] loet[MH]
     inch      in[H] tsi[MH]          post      p'ou[H] si[MH]

6.   truncated loanwords

     insurance in[M] so[H]       philosophy  fi[M] lo[H]
     biology   pai[M] o[H]       psychology  sai[M]k'o[H]
     tutorial  [t'iu[M] t'o[H]   political science
                                             p'ou[M]lit[H]
```

7.   C-liquid clusters

     epenthesis:
          brake   pik[L]lik[H]   plum   pow[L]lam[H]
          cream   kei[L]lim[H]   fluke   fu[L]luk[H]

     deletion:
          floorshow fo[H]sou[H]   printer pen[H]ta[MH]
          freezer   fi[H]sa[MH]   place   p'ey[H]si[MH]

8.   polysyllabic loanwords

     professor   pou[M] fa[H] sa[MH]
     strawberry   si[L] to[H] pe[M] lei[MH]

     tennis   t'en[H] ni[M] si[MH]
     assignment   a[M] sai[H] m n[MH]
     condenser   k'on[M] ten[H] sa[MH]

9.   Yip's conclusions:

     - pressure to achieve iambicity in loans
     - iambic template is applied to right edge of form,
       thus accounting for polysyllabic forms:

```
          iamb              iamb                  iamb
          /  \              /  \                  /  \
          w  s              w  s                  w  s
          |  |              |  |                  |  |
       pou fa sa        t'en ni si        si to pe lei
       |   |  |          |   |  |         |  |  |   |
      [M] [H][MH]       [H] [M][MH]      [L][H][M][MH]
```

10.
```
iamb                    iamb                 iamb
/ \                     / \                  /\
insurance               philosophy           biology

   iamb                    iamb                    iamb
   /  \                    /\                      /  \
professor               tennis                  strawberry
```

2.   Against the iamb

11. more truncated loanwords

     economics   i[M] k'on[M]

```
        sociology                    sou[M] si[M]
        physics chemistry biology    fi[H] k'em[H] pai[M]


   * iamb              * iamb                    * iamb
   /   \               /   \                     /   \
  w     s             w     s                   w     s
  |     |             |     |                   |     |
  i    k'on          sou   si                  fi   k'em  pai
  |     |             |     |                   |    |    |
 [M]   [M]           [M]   [M]                 [H]  [H]  [M]
```

12. native truncation

```
    kong kong siu yeng pa si          ->    siu pa
    "public collective small style bus      "small-bu(s)"
    ("minibus")

    tai hak t'ek lou                  ->    tai t'ek
    "underground iron road"                 "ground-iron"
    ("subway")

    ngou yau t'o si                   ->    yau t'o
    "milk-oil toast                         "oil-toa(st)
    (buttered toast")
```

13.
```
                      F                          F
               /      \                   /      \
    kong kong siu yeng pa si        tai hak t'ek lou
```

14. adjectival reduplication

```
    pak[L] "white"       pak[L]  pak[LH]      "rather white"
                         pak[LH] pak[L]       "very white"
    man[M] "slow"        man[L]  man[LH]      "rather slow"
                         man[MH] man[M]       "very slow"
    sai[M] "small"       sai[M]  sai[MH]      "rather small"
                         sai[MH] sai[M]       "very small"
```

15.
```
     * iamb                    * iamb
     /     \                   /      \
    w       s                 w        s
    |       |                 |        |
  pak[LH] pak[L]           man[MH]  man[M]
```

16. verbal reduplication/truncation

```
    tok[L] jat[H] tok[L]        tok[LH] tok[L]
    measure one    measure      "to measure (once)"

    kwang[M] jat[H] kwang[M]    kwang[MH] kwang[M]
```

```
        stroll   one    stroll        "to walk around (a
                                         while)"


        t'iu[M] jat[H] t'iu[M]    t'iu[MH] t'iu[M]
        jump    one    jump      "to jump (once)"

17.  * iamb              * iamb                * iamb
     /     \             /     \               /      \
    w       s           w       s             w        s
    |       |           |       |             |        |
   tok     tok        kwang   kwang         t'iu     t'iu
    |       |           |       |             |        |
   [LH]    [L]         [MH]    [M]           [MH]     [M]

18.  a.                     F
                           / \
         yip              a yip
          |         ->    |  |
         [L]             [M][LH]


     b.                      F
                            /  \
         ts'an            a ts'an
           |        ->    |    |
          [L]            [M]   [LH]




     c.                      F
                            /  \
         tsoeng           a tsoeng
           |        ->     |   |
          [HM]            [M] [H]

     d.                      F
                            /    \
         wong mou         wong mou
          |    |    ->     |    |
         [L]  [L]         [L]   [LH]
```

5

3. Bisyllabic minimality in derived environments?

    19. Truncation

         composition   ->   t   ->   k' m pou
         geography   ->   ->   tsok ka
         marketing   ->   r   ->   ma   k'et
         resident   ->   ->   re   si
         insurance   ->   u   ->   in   so
         philosophy   ->   ->   fi   lo
         political
           science   ->   n   ->   p'ou lit
         English
           literature   ->   c   ->   ing lit
         university
           library   ->   a   ->   ju   lai
         tutorial   ->   t   ->   t'iu t'o
         economics   ->   ->   i   k'on
         sociology   ->   i   ->   sou si
         psychology   ->   ->   sai k'o
                                    o
         biology   ->   ->   pai o
                                    n
         physics   ->   ->   fi
         chemistry   ->   ->   k'em

         (physics chemistry biology ->   fi[H] k'em[H] pai[M])

    20. Hypocoristics

input   suffixation   bisyllabic minimality

yip[L]   ->   yip[LH]   ->   a[M]   yip[LH]
ts'an[L]   ->   ts'an[LH]   ->   a[M]   ts'an[LH]
tsoeng[HM]   ->   tsoeng[HMH]   ->   a[M]   tsoeng[H]
ng[LM]   ->   ng[LMH]   ->   a[M]   ng[LH]
(no. 5)
wong[L] mou[L] ->   wong[L] mou[LH]->   -------------------
(the yellow-haired one)
sap[L] sei[M] ->   sap[L] sei[MH] ->   -------------------
(no. 14)

4. Retreat: Derived environments that violate bisyllabic
        minimality

    21. changed tone in common nouns

         pei[M]   (comb)   ->   pei[MH]   ("comb-y")
         tang[HM]   (stool)   ->   tang[H]   ("stool-y")
         k'im[L]   (pliers) ->   k'im[LH]   ("pliers-y")
         p'aw[L]   (plane)   ->   p'aw[LH]   ("plane-y")
         hap[M]   (box)   ->   hap[LH]   ("box-y")
         hok[M]   (crane)   ->   hok[MH]   ("crane-y")

5. Bisyllabic minimality in Mandarin

    22. Tonal inventory:

         [1]. [High]   gao[1] ("tall")
         [2]. [Mid-rising]   gao[2] (
         [3]. [Mid-falling to rising] gao[3] ("make, do")
         [4]. [High-falling]   gao[4] ("inform")
        ([5]. [Neutral])

    23. Tone Sandhi rule:

         [3] -> [2] / ___[3]   (conditioned in complex ways
                                     by the syntax)

         /hen[3]/ /hao[3]/   ->   hen[2] hao[3]
          very   good   very good

         /xiang[3]/ /fa[3]/   ->   xiang[2] fa[3]
          think   method   idea

    24. Lexical tone neutralization:

         [T] -> [5] / [T]___   (phonetic quality of [5] is
                                   dependent upon previous tone;
                                   unimportant for the present
                                   discussion)

    25.a./xing[2]/ /xing[1]/ ->   xing[2] xing[5]
          move   star   planet

         /dong[1]/ /xi[1]/   ->   dong[1] xi[5]
          east   west   thing

```
                                        (cf. dong[1] xi[1]
                                        (east-west))
          /bao[4]/ /gao[4]/   ->    bao[4] gao[5]
           announce tell            report
                                    (cf. bao[4]gao[4] (to report))


      b./xiao[3]/ /jie[3]/   ->    xiao[2] jie[5]
         little   sister          young lady

        /ke[3]/ /yi[3]/       ->    ke[2] yi[5]
         able                      okay

        /lao[3]/ /shu[3]/     ->    lao[2] shu[5]
         old    rat                rat
```

26. Rule ordering (cf. 25b):

    1.   Tone Sandhi
    2.   Tone neutralization

26. terms of familial address:

```
  a./ge[1]/    ->    ge[1]  ge[5]  (elder brother)
    /ye[2]/    ->    ye[2]  ye[5]  (elder brother)
    /ba[4]/    ->    ba[4]  ba[5]  (father)

  b./jie[3]/   ->    jie[3] jie[5] (elder sister)
    /sao[3]/   ->    sao[3] sao[5] (elder brother's wife)
    /lao[3]/   ->    lao[3] lao[5] (maternal grandmother)
    /nai[3]/   ->    nai[3] nai[5] (grandmother)
```

- Tone neutralization bleeds Tone Sandhi
- Cheng (1973): TS applies across word-boundaries only.
  Reduplication of terms of familial address is a stem-
  level process.
- The output of the lexicon must be bisyllaic
- No reference to derived status of form
- Assume a similar constraint holds in Cantonese

6. Conclusions

- The iamb does not exist in Cantonese
- Iambic quality of hypocorisitcs, loanwords, etc. is an
  artifact of two fully independent processes:
1. tonal suffixation, usually denoting familiarity
2. a binary foot template applied within
certain lexical classes (loanwords, hypocorostics,
terms of familial address), and applied to all
truncated and reduplicated forms.