

# What Chinese Language Instructors Should Know About Mandarin Tone: Phonological Representation, Acoustic Targets, and Cognitive Processes \*

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## 1. Student comment (Kleanthes Koniaris):

*I'm starting to think that the Chinese books are trying to mislead students so they don't learn Chinese at all. I think that the books are correct about tones #1, #2, and #4. However, I think that the description of tone #3 is wrong. Listening to most Chinese, #3 does one of three things:*

*3d. - it dips down, like the mirror-image of #2*

*3u. - it climbs up, like its mirror-image, #2 (when followed by another #3)*

*3x. - it dips down and then back up*

*Behavior #3x is rare---only at the end of the sentence, perhaps, or for emphasis.*

**Practical conclusions:** *When students are learning vocabulary, and how to speak/listen, students should work on #3d and #3u, but NOT #3x. I am now convinced that yet another reason that I have trouble speaking and listening is because I always practice #3x, and not #3u and #3d.*

## 2. Textbook depictions (common sense approach) –

### a. DESCRIPTION:

i. Graphics (Ch'en, Link, Tai and Tang 1994):

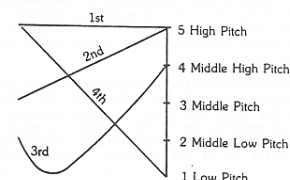
ii. Text (T'ung and Pollard 1982: 3):

#### 1. TONES:

- 1<sup>st</sup>: pitched high; level; even in volume; held onto slightly longer than average.
- 2<sup>nd</sup>: rising from about the middle of the range to peak at the end slightly above the first tone; volume progressively louder; fairly short in duration.
- 3<sup>rd</sup>: low and dipping to nearly the bottom of the range, turning up abruptly at the end; volume progressively louder; fairly short in duration.
- 4<sup>th</sup>: starts high and loud; falls sharply, the volume diminishing with the downward curve; very short in duration.

#### 2. SANDHI:

- It is very difficult to say two third tones one after the other without interrupting the flow of one's speech. For this reason, the first of them changes to the second tone, e.g., *hèn hǎo* is said *hén hǎo*.
- Before any other tone, the third tone does not rise at the end of its downward curve. In effect then, it is only before a pause that the third tone completes its full contour.
- The fourth tone is also modified when followed by another fourth tone: its pitch does not fall to its full extent.



### b. ANALYSIS:

- Level of Representation:** Description of surface phenomena
- Contextual Variants:** Tones in isolation taken as primary; tones in context taken as secondary
- Phonological Processes** (i.e., tone sandhi) introduced early on

### c. PROBLEMS:

- Against surface description:
- Obligatory vs redundant features
- Isolation vs context

## 3. Theoretical perspectives:

### a. Understanding natural reflexes: Fundamentals of L2 acquisition

#### i. L1 transfer 母語轉移

1. Equivalence classification (Rochet 1995):
2. Solution: Listen only / don't repeat (Rochet 1995, Wang *et al* 1999); C.f. Silent period in child language acquisition (Brown 1992)

#### ii. Universal grammar 通用語法 (search for regularity and symmetry)

##### 1. Application to Mandarin lexical tones:

- a. Markedness hierarchy (Zhang 2004, Li & Thompson 1978):  
**Level --> Simple Contour --> Complex Contour**
- b. Mandarin asymmetry: H, LH, HL, MLH
- c. Target Approximation Model (Xu & Wang 1997, 2001; Xu 2004; Xu, Xu & Luo 1999): emphasize pitch targets rather than actual contour
  - i. Voluntary vs involuntary forces (Xu 2004):

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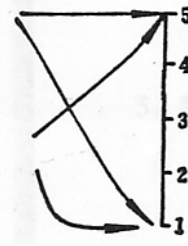
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- ii. Chan (1987); Xu & Xu (2003):
  1. 平 : High (H) vs Low (L)
  2. 仄 : Rising (R) vs Falling (F)
- iii. T3 as L – empirical evidence (c.f. Duanmu 2000, 2004)
- iv. 鄧懿 : 《漢語初級教程》 (北京大學出版社, 1993)

b. The view from cognitive psychology -- prototype theory

i. Analogy: Teaching a child what a "bird" is

1. What not to do (1): listing all birds
2. What not to do (2): focus on attributes
3. Giving prototypes / What is a prototype?
  - a. Most frequent
  - b. Pattern overlap
  - c. Maximal cross-category distinction



ii. Application to Mandarin T3:

1. Frequency of appearance
2. Pattern overlap
3. Maximum within category identity + intercategory distinction
4. Replaceability (c.f. Duanmu 2000; Li 1999)

c. Tone sandhi (Xu 2004; Xu 1994; Shih and Sproat 1992)

i. Voluntary target alternation:

1. T3 T3 > T2 T3

ii. Involuntary articulatory implementation

1. T4 T4 > T1 T4
  - a. Lin (1985): 69% of types do not change / sociolinguistic variation:
2. (T1,T2) T2 T4 > (T1,T2) T1 T4 (Chao 1965: 36)
  - a. Shih and Sproat (1992); Xu (1994): altered R still identified as R

4. Suggestions:

- a. Teach prototype T3 (non-final T3)
- b. Representation of T3 as underlying low tone
- c. Tone sandhi: Teach target alternation / Omit articulatory implementation

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