

Chinese character grammar and Chinese teaching

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Thanks!

- This talk is just a summary of this paper:

Myers, J. (2022). Teaching Chinese character grammar. *Chinese Language Learning and Technology* 《臺大華語文學與科技》, 2(2), 1-37.

- So thanks to the journal editor 張莉萍 for inviting me to write it and for not making me undergo any peer review (heh heh)
- The paper also benefited from help from 蔡素娟, 陳欣徽, 陳泱儒, and 劉美君, as well as MOST 109-2410-H-194-096-MY3
- The usual caveat applies: all mistakes are my own fault
- Plus another caveat: I don't teach Chinese

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Overview

- Character grammar
- Strategies for learning character morphology
- Strategies for learning character phonology
- Strategies for learning character phonetics

Character grammar

- Hue (2003, in *Journal of Chinese Linguistics*)
 - University students in Taiwan have “a set of strategies to guess the pronunciation and the meaning of an unknown character” (p. 300)
 - These strategies have also helped them memorize over 5,000 characters
- Traditional character analysis:
 - Components (部件)
 - Phono-semantic characters (形聲字)
 - Semantic compounds (會意字)
 - Stroke inventory: ↶
 - Stroke order

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Character grammar: my own take

- Myers (2019, *The grammar of Chinese characters*)
 - The traditional analysis reflects a psychologically real grammar
 - This grammar is richer than tradition says, and is like spoken/signed grammars
- **Character morphology:** Patterns in component combinations
 - Phono-semantic characters are derived via **affixation** of semantic radicals (形符)
 - Semantic compounds are true **compounds**
 - **Reduplication** (叠韻) obeys universal constraints on meaning and form
- **Character phonology:** Stroke-level patterns
 - Stroke features, combinations, alternations, holistic constraints (**prosody**)
- **Character phonetics:** Visual and motoric processing
 - Stroke direction and order

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Implications for Chinese teaching

- Adult L2 learners
 - Want answers to their non-traditional questions about character form
 - Benefit from conscious awareness of grammatical patterns
 - Achieving native-language knowledge involves filtering out irrelevancies...
 - ... so to learn a new language, adults benefit from consciously adjusting the filtering
- Child learners
 - May also benefit, since literacy is not as natural as speech & signing
- Deaf learners
 - Can exploit more vision-only strategies to character learning

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Teaching character morphology: Affixation

- Chinese teachers already emphasize phono-semantic structure
 - **Affix strategy 1:** Affixes are closed-class, so there aren't many to memorize
 - **Affix strategy 2:** Affix = semantic category, the rest is pronunciation (聲旁)
 - **Affix strategy 3:** Affixes prefer the left edge (like English prefers suffixes)
- But further strategies are available
 - **Affix strategy 4:** Affixation is recursive
 - Recursion helps decompose characters for memorization, recognition, and writing
 - Pronunciation may even be guessable from the most-embedded component
- 檯 = [木[匱]] = [木[ㄉ[ㄎ]]]
- Affix position is often predictable from character phonology (as we'll see)

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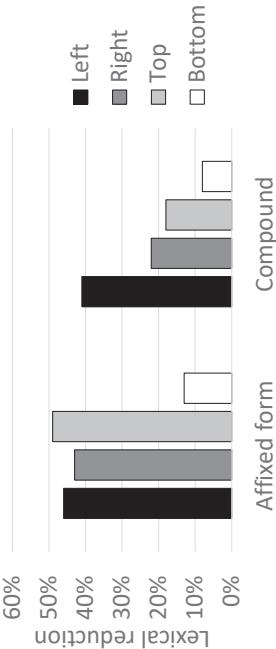
Teaching character morphology: Compounds 1

- Rarer than phono-semantic characters, risking mispronunciation
 - 法 (fǎ, not qù) 位 (wèi, not lì) 宋 (sòng, not mù) 翡 (fēi, not jīn)
 - "Rarer" = lower type frequency = higher token frequency
(Higher token frequency protects exceptional items against regularization)
- **Compound strategy 1:** If an affix-like character seems common, be cautious:
 - it may be a semantic compound and phono-semantic strategies won't work
- Semantic components less fixed in position (unlike affixes)
- **Compound strategy 2:** If an apparent affix appears in an unusual position, it is more likely to actually be part of a compound or a phonetic component
 - As an affix, 田 favors left and bottom: 畫 畜 男
 - Elsewhere it's part of a compound: 畫 金 田
 - Or a phonetic component: 𠂔 𠂔 𠂔

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Teaching character morphology: Compounds 2

- Lexical reduction (e.g. 水 → 氵) of dictionary radicals (部首) is more position-biased in compounds



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- Compound strategy 3:** It's safer to apply phono-semantic strategies if lexical reduction is at the right or top

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Teaching character morphology: Reduplication

- Reduplication strategy 1:** Semantics is iconic, as in speech/sign (plurality, abundance, duality, intensity, attenuation)

林 森 蟲 多 比 朋 羽 雙 品 昆 弱 (cf. 翼)

- Reduplication strategy 2:** Fixed arrangements, as in speech/sign:

囗 叩 叨 叨
三 川 爻 照 燥

- Thus these strategies don't apply to copying in other arrangements

- Thus these strategies don't apply to copying in other arrangements

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Teaching character phonology: Strokes 1

- Memorizing hundreds of components is eased by stroke regularities
 - Stroke strategy 1:** Components are formed of a very small inventory of strokes (e.g., no circles): obvious, but crucial!
- Stroke combinations are also highly restricted, often in ways that obey universal biases in drawing and visual perception*
- Stroke strategy 2:** Strokes usually start rather than end at others (‐↑ > ‐↓):
𠂊𠂊 have more typical stroke combinations than 𠂊𠂊
- Stroke strategy 3:** Cardinal axes (‐|‐) predominate, and don't like to mix with oblique axes (‐\‐): +×子 have more typical combinations than 才才

Van Sommers (1984, *Drawing and cognition*, Cambridge); Changizi et al. (2006, in *The American Naturalist*)

Teaching character phonology: Prosody 1

- Myers (2019) argues for weak-strong (WS) binary structure
 - Reduplication (prosodic morphology) is binary (even 呂呂)
 - Stress-like enlargement on right and bottom: 冒 林 餉/帖 尖/奇
 - Regular reduction only in weak positions at left and top: 土/地 雨/雲
 - Lexical reduction favors weak positions too: 肉/臉 烹/花 情/想
- Implications for affix position and form
 - Affix strategy 5:** Tall affixes prefer the left (說), flat affixes prefer the top (完), wide affixes prefer the right (鵝, 翠)
 - Affix strategy 6:** Tall affixes favor the bottom as an alternative: 青/警 (cf. 水/照)
 - Affix strategy 7:** Lexical reduction is usually blocked on the bottom: 请/警

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Teaching character phonology: Strokes 2

- Prosody also affects stroke size and shape
 - Enlargement on right and bottom: 川 = 官 飛 (cf. 土 末)
 - Curving (豎撇) applies in weak position: 月 [WS] vs. 罂 [SIS]
- **Stroke strategy 4:** Curving is more likely in taller/narrower components: 周 has more stuff above 口 than 同, so it's taller, so it's curved (cf. 角/甬)
- Hooks also show patterns, though they're more irregular
 - **Stroke strategy 5:** Hooks don't like to be near anything: 哥 小/少
 - **Stroke strategy 6:** Rightward hooks point to crosses: 衣 氏 民 長 艮 (cf. 長)
 - **Stroke strategy 7:** Leftward hooks like asymmetry*: +/十 平/𠩺 東/東 捠/捺 (cf. 卍, 小)

*See also Wang (1983) *Toward a generative grammar of Chinese character structure and stroke order*. University of Wisconsin-Madison Ph.D. thesis.

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Teaching character phonology: Strokes 3

- Even very complex components can be decomposed hierarchically
龜 = 彐 亼 丂 又 口 ... = | — — — | — □ × ...
- Knowing stroke regularities can help readers find component boundaries, even if not all components have been memorized
 - **Decomposition strategy 1:** Curve = left boundary: 川
 - **Decomposition strategy 2:** Rightward hook = left boundary: 低
 - **Decomposition strategy 3:** Long stroke = right/bottom boundary: 順 圭
 - **Decomposition strategy 4:** Other non-contacting strokes belong to the same component, especially if they're parallel: 三 川 十 𠩺 (cf. 八)

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Teaching character phonology: Prosody 2

- Knowledge of prosody can also help with decomposition
- **Decomposition strategy 5:** Component combinations that don't form weak-strong structures do not form a holistic character: 塹/土 鬼
- **Decomposition strategy 6:** Prosody is binary, so triples are really branching:

- Prosody also plays a role in character phonetics (as we'll see)

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Teaching character phonetics: Order 1

- Stroke direction follows natural hand movements
 - **Order strategy 1:** Downward and rightward movements are favored (↓→↘)
 - That's why dots have this shape: 、
 - ... and why there are two “/” strokes: down but left (才) & right but up (𠩺)
 - Downward is natural to all writers, but rightward is only natural to right-handers (pulling rather than pushing the pen)
 - But since left-handedness is also natural, teachers should not force students to change hands; patterns described here reflect historical patterns in the lexicon
- The same motoric bias affects the order of strokes and components
 - **Order strategy 2:** Stroke order favors rightward and downward: 川 三
 - **Order strategy 3:** Component order favors rightward and downward: 明 早

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Teaching character phonetics: Order 2

- Another motoric constraint on stroke order
 - **Order strategy 4:** Stroke order favors minimizing pen movement ≠ (I last) vs. ≠ in 物 (/ last) 正 (4th stroke is I, not —)
 - Motoric constraints implement prosodic structure
 - Rightward/downward bias = weak before strong
 - **Order strategy 5:** Component order favors tall [WS] early, wide [WS] late

$$\begin{aligned} \text{起} &= \text{走}_1 + \text{已}_2 & \text{vs.}^* & \quad \text{建} = \text{乚}_2 + \text{丨}_1 \\ \text{走} [\text{W}] + \text{已} [\text{S}] &\rightarrow \text{起} [[\text{W}] \xrightarrow{\text{S}} \text{S}] & \text{走} [\text{W}] \text{ S} &+ \text{已} [\text{S}] \rightarrow \text{建} [\text{W} \xrightarrow{\text{S}} \text{S}] \end{aligned}$$

*(Cf. Wang, 1983)

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Teaching character phonetics: Order 3

- Stroke order is also influenced by visual constraints, and these may conflict with motoric constraints or with each other
 - **Order strategy 6:** Stroke order favors symmetrical movements: 平 小 舟
 - **Order strategy 7:** Stroke order favors large (setting) > small (details): 大 女 方
 - **Order strategy 8:** Stroke order favors writing components as wholes: 大 必 因
- Variation in stroke order is thus natural

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Conclusions

- Character fluency requires many skills
 - Memorizing thousands of characters
 - Memorizing hundreds of character components
 - Identifying phono-semantic characters and semantic compounds
 - Writing clearly enough for others to read
- Being consciously aware of character grammar can help
 - Characters conform to regular morphological operations
 - Components conform to regular phonological constraints
 - Morphology and phonology interact
 - Prosody and phonetics help shape clear writing

Other stuff I didn't have time for

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Teaching character morphology: Clustering

- The first lines in two standard textbooks:

- 李先生：先生，您貴姓？（《新版實用視聽華語》（第1卷））
• 生/姓
- 明華：請問你是凍月美小姐嗎？（《當代中文課程》（課本1））
• 月/明 閃/馬

Textbook	Actual clustering of shared components	Mean random clustering	p*
《新版實用視聽華語五》	1.045	0.610	< .0001
《當代中文課程》	0.696	0.581	.029

*Proportion of times that clustering within 20-character blocks was more extreme in 10,000 random text orderings than in actual texts (clustering = dispersion: variance/mean in number of characters sharing components [https://commons.wikimedia.org/w/index.php?title=Category:Chinese_characters_decomposition])