

# The flexibility of categorial features — types and consequences

Julio Chenchen Song, `cs791@cam.ac.uk`

DTAL, University of Cambridge

SyntaxLab, 7 February 2017

## 1 Introduction

- Starting assumptions
- The issue

## 2 Two types of categorial flexibility

- Categorizer “flavoring”
- Defective categorizer

## 3 Conclusion... and a third type?

# Introduction: Starting assumptions

1. Lexical categories of vocabulary items (e.g. V, N) are syntactically derived rather than statically listed (a widely adopted view in e.g. DM, Exo-Skeletal Syntax). → single engine hypothesis (Marantz 2001)
  - Parts-of-speech are root-external, e.g. the string *cat* spells out  $[\sqrt{\text{CAT-N}}]$ , not merely  $\sqrt{\text{CAT}}$ . → bare root view (i.a. Alexiadou 2014)
  - Strings may have categorial preferences (e.g.  $\text{cat}_N$ ), but these need not be encoded in roots (as FFs).
2. The syntactic derivation of lexical categories is taken care of by categorizers (DM little *xs*, NB not the XP-shell), which may be defined distributionally (Borer 2005) or interpretationally (Panagiotidis 2015).
  - Borer (2005): categorizers=complement space delineators.
  - Panagiotidis (2015): categorizers have C-I interpretations.
  - I assume categorial features exist, as a type of **formal** feature.

3. Root categorization is **adjunction**, where the root adjoins to and modifies the categorizer (Marantz 2013).

- Roots are **not** syntactic complements, though they semantically “complement” (i.e. modify) the categorizer heads.
- Roots cannot head or label, hence no  $\sqrt{P}$ .
- Adjunction is always to the **left** (Kayne 1994).
- One categorizer can only categorize **one** root (Embick 2010).
  - e.g.  $\checkmark[\sqrt{\text{CAT}}\text{-N}]$  vs.  $\times[\frac{\sqrt{\text{CAT}}}{\sqrt{\text{DOG}}}\text{-N}]$
- Roots can also adjoin to other syntactic objects or simply “final-attach” to a phase (Biberauer *in press*), but these other scenarios are not categorization (and have different effects).

categorized root

$(\sqrt{\phantom{x}}, x)$

e.g.  ${}_n(\sqrt{\text{CAT}}, n)=/kæ\text{t}/$  “cat”

final-attached root

Phase- $\sqrt{\phantom{x}}$

e.g. CHI  $[_{CP} \text{ xīn-nián hǎo } ]-\sqrt{A}$   
“Happy New Year-SFP!”

In generative syntax, while the inventory of functional categories has been exploding (e.g. Cartography), that of lexical categories has remained minimal (and in fact shrunk).

- Chomsky (1970): [ $\pm$ N], [ $\pm$ V] (N, V, A, P)
- Baker (2003): [N], [V] (N, V, A)
- Panagiotidis (2015): [N], [V] (N, V)

# Introduction: The issue

Lexical categories are not significantly more monotonous than other syntactic categories (e.g. they subsume different inflectional/semantic classes and distributional patterns), but we are less “generous” in giving such variation featural status.

- The trend is to keep categorial features as simple (and pure) as possible, leaving the variation to phonology/semantics or non-categorial features.
- Categorial features define the “idealized fundamental contrasts” that persist even when a lot of other formal features are absent.

Against this backdrop, can categorial features assume any syntactic flexibility? **Conclusion: YES (and with non-trivial consequences).**

# Flexibility I: Categorizer “flavoring”

The first type of flexibility is categorizer “flavoring”, i.e. the categorizers can have different flavors. This is not a new idea (since Harley 1995).

- Cuervo (2003): primitive event types are  $v$  flavors.

|                    | $v_{DO}$          | $v_{GO}$    | $v_{BE}$    |
|--------------------|-------------------|-------------|-------------|
| character of event | dynamic, agentive | dynamic     | stative     |
| example            | <i>dance</i>      | <i>fall</i> | <i>like</i> |

- Lowenstamm (2008): some Gen/Num properties are  $n$  flavors.
  - French:  $n_{MASC} = \emptyset$ ,  $n_{FEM} = /a/$ .
  - Yiddish:  $n_{MASC} = /s/$ ,  $n_{FEM} = \emptyset$ ,  $n_{NEU} = /s/$ ,  $n_{PL} = \emptyset$ .
- De Belder (2013a): collective mass nouns have  $n_{ATOMIC}$ .
  - Dutch: *suikerwerk* “confectionery”, *ondergoed* “underwear”.
  - English: *furniture*, *stationery*, *software*.
  - Spanish: *charcutería* “meat products”, *lencería* “lingerie”.

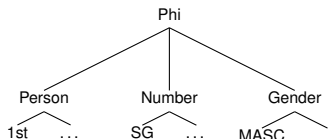
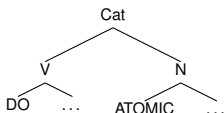
# Flexibility I: Categorizer “flavoring”

What are such categorial flavors?

- Panagiotidis: additional FFs in categorizers’ feature bundles.
  - e.g.  $v_{DO}$  is  $\{[V], [DO]\}$ .

However, there are some conceptual issues to think about.

- **Feature relation misrepresentation.** Categorial features and flavors are not independent features; the latter depend on the former (similar to phi-features, e.g. no  $\{[Number], [SG]\}$  or  $\{[Phi], [Gender]\}$ ).



- **Granularity level mismatch.** Categorizers belong to a high granularity (HG), where really independent FFs of traditional lexical items have a decomposed rather than bundled status.
  - e.g. (LG)  $C \dots V =$  (HG) split- $C \dots$  split- $V$



# Flexibility I: Categorizer “flavoring”

## Hypothesis 1

Categorial features and categorizer flavors have an **<attr:val>** relation, e.g.  $v_{DO} = \{[V: DO]\}$ .

- Feature values are also formal features (Adger & Svenonius 2011).
- Categorial features do not have to have values. Compare:
  - [Num:\_\_\_] (w/o grammaticalized value, [Num] is useless)
  - [V:\_\_\_] (value-free [V] can still categorize verbs)
- The postulation of categorial features is different from that of non-categorial features. To use Borer’s illustration, the inherent property of the “categorial complement space” (grammaticalized or not) is unimportant to categorial delineation.



## Hypothesis 2

Categorizer flavors are emergent (à la Biberauer 2016).

- Given Feature Economy (Roberts & Roussou 2003), unless PLD requires otherwise, the categorizers of a language remain flavorless (though flavoring could still exist on semantic level).
  - e.g. while primitive event types may be ontologically universal, they are not universally grammaticalized as *v* flavors.
- What categorizer flavors there are is a language-specific issue.
  - just like other grammaticalized categories (e.g. tense).
- The emergence of categorizer flavor has non-trivial consequences.
  - e.g. different flavors of the same categorizer are formally distinct and can be adjacent in the same phase without violating the Distinctness Condition (Richards 2010).

# Case study: V-V resultatives in Chinese

V-V resultatives like *dǎ-pò* “hit-broken”, *rǎn-hóng* “dye-red” did not exist in Old Chinese but are fully productive in Modern Chinese. The transition happened during Middle Chinese, when the originally separate cause-and-result clauses gradually collapsed. (Shi 2002)

- (1) a. Separate clauses: [<sub>CP</sub> CAUSE] [<sub>CP</sub> RESULT]

Yān gōng qí. Qí pò. (Old Chinese)

Yan attack Qi. Qi break

“The State of Yan attacked the State of Qi. Qi was broken.”

- b. Monoclausal: [<sub>CP-TP-VP</sub> [<sub>VP</sub> CAUSE [<sub>TP-VP</sub> [<sub>VP</sub> RESULT]]]]

Dàshī shuō jié yǐ liǎo. (Middle Chinese)

master talk gatha already finish

“The master already finished talking gatha.”

- c. Monophase: [<sub>CP-TP-VP</sub> [<sub>VP</sub> CAUSE [<sub>V(BE)P</sub> RESULT]]]

Qí fù dǎ suì le yí jiàn jiāshì. (Early Modern Chinese)

his father hit broken ASP one CL utensil

“His father hit-broken a utensil.”

(Song *to appear*)

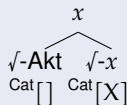
- Lexical categories form a stable minimal inventory in generative theory, but they still have syntactic flexibility.
- One type of such flexibility is categorizer flavoring.
- Categorizer flavors are not independent FFs, but values of categorial features.
- Categorizer flavors are emergent and do not arise unless acquisitionally necessary.
- Hence, categorial features only have “minimized flexibility”.

The second reflection of categorial feature flexibility is the “defective categorizer” Akt (Song 2015), i.e. a minimally specified categorizer with merely **class** information [Cat]. →Hypothesis 3

- Such a defective categorizer is uninterpretable (no concrete [V/N]) and unvalued (no flavor).
- It needs to form a strictly local dependency with a concrete (i.e. interpretable) categorial feature (i.e. a non-defective categorizer), which may be valued (i.e. flavored) or not. →split-categorizer
- Since Akt has no concrete categorial feature, feature valuation qua assignment cannot take place when it should (Akt- $v/n$ =Probe-Goal).
- Akt can only be “valued” via Feature Sharing (Pesetsky & Torrego 2007), which also labels the split-categorizer (Chomsky 2013).

## Hypothesis 4


Feature Sharing + labelling effectively make Akt an **adjunct**.



- Thus, Akt is always to the **left** of  $x$ .
- Assuming categorizers do not have exponents (Acedo-Matellán & Real-Puigdollers 2014), the surface result is an Akt-categorized root left-adjoined to an  $x$ -categorized root, like a **prefix**.
- Since Akt depends on  $x$  for categorial interpretability, the root it categorizes serves as a **secondary root modifier** of  $x$ .
- Thus, we have two roots modifying one categorizer without violating Embick's hypothesis.

# Defective categorizer: Acquisitional motivation

The postulation of a defective categorizer is non-costly and beneficial.

- Since the postulation of any categorial feature would bring about a class metafeature [Cat], no extra effort is needed.
  - this is essentially different from the postulation of categorizer flavors (which requires extra grammaticalization).
- Remember that one categorizer can only categorize one root; the word-creation capacity of human language is quite limited as such. 
- Since Akt- $x$  can categorize two roots under a single lexical category, the word-creation space is greatly enlarged.

Thus, we achieve a new (and important) function with readily available (and simple) material (Maximize Minimal Means, Biberauer 2016).

The Akt hypothesis (hypotheses 3-4) has some general predictions:

- As a “free-rider” of categorial features, Akt should be widely available across languages.
- Akt-modifiers should appear very early in history (probably simultaneously with categorial features).
- Akt-modifiers should always be prefixal regardless of head-direction parameterization.



# Defective categorizer: Empirical manifestation

Cross-linguistically, there are many complex nouns/verbs with prefixal modifiers, which do not have a unified interpretable category, e.g.

- Complex nouns

- Swedish: **skolflicka** “school-girl”, **rödfärg** “red-paint”, **uppåttrend** “upward-trend”, **skrivmaskin** “write-machine” (Holmberg 1992)
- Dutch: **kleerkast** “close-closet”, **slaappil** “sleep-pill”, **sneltrein** “fast-train”, **achterdeur** “back-door” (De Belder 2013b)  
(Both Holmberg and De Belder identify these non-heads as roots.)  
(De Belder: such complex nouns exist in the oldest text.)

- Complex verbs

- English: **overrun**, **babysit**, **stirfry**
- German: **verachten** “despise”, **misstrauen** “mistrust”
- Chinese: **shǒuzhí** “hand-plant”, **mànpǎo** “slow-run”
- Japanese: **tottsuku** “take-attach; cling to”, **seou** “back-carry”  
(These non-heads are presumably also roots.)

Akt could be the unifying category for these prefixal modifiers.

- The flexibility of categorial features is also reflected in a special type of categorizer, i.e. the defective categorizer.
- It adjoins an extra root to the non-defective categorizer and enables two roots to be spelled out in one categorizer phase.
- It greatly enhances the word-creation capacity of human language without introducing new features to the system (MMM).

# Conclusion. . . and a third type?

In this talk, I have

- raised the question of categorial feature flexibility,
- presented two types: **categorizer flavoring** and **defective categorizer**.

Two parts of the categorial feature template  $\text{Cat}[X:\text{VAL}]$ .

- Defective categorizer:  $\text{Cat}[(X)]$
- Categorizer flavoring:  $[X: (\text{VAL})]$

They may together yield a third type of flexibility.

- Multiple  $x$  flavors  $\rightarrow$  multiple Akt-positions.

# References I

- Acedo-Matellán, V. & C. Real-Puigdollers (2014). Inserting roots into (functional) nodes. In *Linguistic Analysis*, 39(1-2), 125–68.
- Adger, D., & Svenonius, P. (2011). Features in minimalist syntax. In Boeckx, C. (ed.) *The Oxford Handbook of Linguistic Minimalism*, 27–51. OUP.
- Alexiadou, A. (2014). Roots don't take complements. In *Theoretical Linguistics* 40 (3/4), 287–297.
- Baker, M. (2003). *Lexical categories: Verbs, Nouns and Adjectives*. CUP.
- Biberauer, T. (in press). Particles and the Final-over-Final Constraint. In Biberauer, T. et al. (eds.) *The Final-over-Final Constraint*. MIT Press.
- Biberauer, T. (2016). Going beyond the input. LAGB2016 handout.
- Borer, H. (2005). *Structuring Sense*. OUP.
- Chomsky, N. (1970). Remarks on nominalization. In Jacobs, R. Rosenbaum, P. (eds.) *Reading in English Transformational Grammar*, 184–221. Waltham: MA.
- Chomsky, N. (2013). Problems of projection. In *Lingua*, 130, 33–49.
- Cuervo, M. (2003). Datives at large. PhD dissertation. MIT.
- De Belder, M. (2013a). Collective mass affixes. In *Lingua*, 126, 32–50.
- De Belder, M. (2013b). The root and nothing but the root. Ms.
- Embick, D. (2010). Localism and globalism in morphology and phonology. Ms.
- Harley, H. (1995). Subjects, events and licensing. PhD dissertation. MIT.

- Holmberg, A. (1992). Properties of non-heads in compounds: A case study. In *Working Papers in Scandinavian Syntax*, 49, 27–57.
- Kayne, R. (1994). *The Antisymmetry of Syntax*. MIT Press.
- Lowenstamm, J. (2008). On little n,, and types of nouns. In Hartmann, J. et al. (eds.) *Sounds of Silence. Empty elements in Syntax and Phonology*. Elsevier.
- Marantz, A. (2001). *Words*. WCCFL. Santa Barbara.
- Marantz, A. (2013). Verbal argument structure. In *Lingua*, 130, 152–168.
- Panagiotidis, P. (2014). *Categorial Features*. CUP.
- Pesetsky, D., & Torrego, E. (2007). The syntax of valuation and the interpretability of features. In Karimi, S. et al. (eds.) *Phrasal and Clausal Architecture: Syntactic Derivation and Interpretation*, 262–294.
- Richards, N. (2010). *Uttering Trees*. MIT Press.
- Roberts, I., & Roussou, A. (2003). *Syntactic Change: A Minimalist Approach to Grammaticalization*. CUP.
- Song, C. (2016). A Minimalist study of complex verb formation. Ms.
- Song, C. (to appear). Prosodically-driven Morphosyntactic Change? COPiL 10.
- Shi, Y. (2002). *The Establishment of Modern Chinese Grammar*. John Benjamins.