**On the many ways of being a base numeral: Numerals 10, 100, and 1000 in Polish and English**

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### Introduction

**Introducing base numerals**
- Simplex numerals combine to form complex numerals: *three hundred and two* (composed of 3, 100, and 2)
- A subset of simplex numerals are designated *base numerals*: they license mathematical operations (e.g. addition, multiplication).

1. **two hundred and five** (205) 2. **two seven** (27)

| (1) two hundred and five | (2) two seven and (and) five |

- Corbett (1978): Higher numerals (=base numerals) are more nominal.

3. **a hundred books**
4. **a five books** (see Ionin & Matushansky 2018 for discussion on this point)

**Research questions:**
- What types of base numerals do we find syntactically?
- What role does grammaticalization play in the form of base numerals?

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### Types of base numerals

**Preliminary: Decomposing simplex numerals**
- Do numerals have roots?

1. Numerals 10, 100, and 1000 are syntactic bases: they combine with a silent root.

- Unlike other numerals, it has no morphological realization.

2. Various: Classifiers in Japanese numeral constructions serve to convert numeral roots into modifiers (thereby allowing them to quantify).

- Wągier (2010): Non-classifier languages (Polish) also have an additional functional head (Card) which converts a numeral root into a modifier.

**Simplex numerals:** Card + Numeral root (focusing on the syntax, not the semantics)

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### 2. Syntactic bases

- English 100 and 1000 are syntactic bases: they combine with a silent morpheme: -BASE (see also Kayne 2010’s morpheme -NSFX).

- Evidence for —BASE:
  - i. 100 and 1000 need a, while other numerals do not (15).
  - ii. This difference disappears when the numeral is modified (16).

1. a. **a hundred books**
2. b. *a seven books*, *a ten books*, *a fifteen books*, *a fifty-nine books*
3. c. **a one hundred books**
4. a. **a good one**
5. c. **a good seven**
6. iii. English Card-ROOT usually spells-out together (17a). When there is an intervener (-BASE, adjective, 17b.c), spell-out is interrupted, triggering a default form for Card: *a(n)* (see also discussion in Lyons 1999, Klockmann 2017, Ionin & Matushansky 2018)

**Evidence: (17a)**
- Simplex
- Modified simplex
- Base

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### 3. Lexicalized bases

- Polish 10, 100, and 1000 are lexicalized bases: these are grammaticalized morphemes, which produce a base-like result. In Polish, their form depends on the root they combine with.

**Morphemes**
- **-ty**
- **-dziesiąt**

**Evidence: (18)**
- six-teen
- seven-teen
- +teen
- **-set**

**Evidence: (19)**
- dwa-dziesiąt
- >pięćdziesiąt
- kilka-pięćdziesiąt
- kilka-set

**Note:** There is still a root for 10 in English and 10 and 100 in Polish, but it is **not** considered a base in the linguistic system; apparent base numerals arise from the existence of grammaticalized morphemes (from a stage when they were bases).

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### Grammaticalization

**Numerical system development** (von Mengden 2008):
- Naming of sub-countable quantities (1-4) and eventually other quantities
- Serialization (forming complex numerals) + some grammaticalization
- Adding new base numerals to the system

**Hypothesis:** Suppose 10, 100, 1000 entered the language as nouns (7).
- Eng/Pol and Pol 100 grammaticalized into base morphemes.
- A morpheme -BASE was innovated, as Eng 100/1000 lost its N status.

**Lexicalized bases:** Reduction/fossilization of form + reanalysis?
- Old Polish 10/100 were nominal, with a similar morphosyntax to 1000 today (Dziubała-Szrejbrowska 2014); base function has lexicalized.
- Old English 10 was already lexicalized, but traceable to numeral 10 for -lyme (*-teen*), and likely also for -(ly) *(‘-ly’*) (von Mengden 2010).

**Syntactic bases:** Base function incorporated into the numeral

**Conclusions**
- There are at least three types of bases syntactically: nominal bases, syntactic bases, and lexicalized bases.
- These seem to represent a potential grammaticalization path, from noun to morpheme (e.g. a value-augmenting morpheme or -BASE morpheme)

**Open questions:**
- What is the semantics of —BASE?
- What allows nominal bases to function as bases?
- Why does Polish have nominal bases, but English not?

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### References