An empirical study of universals of nominal classification systems

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ERC project "Grammatical Universals"
Structure

1. Definition of different nominal classification systems
2. Language sample
3. Earlier universals and testing results
   (1) Implications concerning language type
   (2) Implications concerning word order
   (3) Implications concerning number and case
   (4) Implications concerning marker on pronoun
   (5) Implications concerning verb inflections
   (6) others
4. Conclusions
Structure

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2. Language sample
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1. Definition

nominal classification system

- marker occurs on num. and dem. → num.clf system
- marker occurs on adnom. possessor → poss.clf system
- marker occurs elsewhere → gender system

- adnominal gender
- argument gender
- pronoun gender
- "normal" gender
1. Definition

**nominal classification system**

- marker occurs elsewhere → gender system

(1) Màíhíki (South America: Tupian)

\[ \text{íti} -\text{nì} \text{ tāï-se} -\text{dadi} \text{ háí-djàara} \]

\[ \text{discourse.dem-CL:plant} \text{ fall-REL.PAST} -\text{CL.place} \text{ big-CL:lake} \]

\[ \text{néè} -\text{hó} \]

\[ \text{make -2STATE} \]

'The place where the tree fell became the sea.' (Farmer 2019)

(2) Cocama-Cocamilla (South America: Tupian)

\[ \text{uri} \text{ tsenu ikian yawara=\textit{kana}=uy tana ku=kuara} \]

\[ \text{3SG.M hear DEM.M dos=PL.M=PAS1 1PL.M farm=INE} \]

"She heard the dogs in our farm."

\[ \text{ay tsenu ajan yawara=nu=uy penu ku=kuara} \]

\[ \text{3SG.F hear DEM.F dos=PL.F=PAS1 1PL.F farm=INE} \]

"She heard the dogs in our farm." (Vallejos 2016: 42)
1. Definition

marker occurs elsewhere $\rightarrow$ gender system

(1) Màíhìki (South America: Tupian) **gender**

ïti -ni tāi-se -dadi hái-dʒiara
discourse.dem-CL:plant fall-REL.PAST -CL.place big-CL:lake
néè -hô
make -2STATE
'The place where the tree fell became the sea.' (Farmer 2019)

(2) Cocama-Cocamilla (South America: Tupian) **gender**

uri tsenu ikian yawara=kana=uy tana ku=kuara
3SG.M hear DEM.M dos=PL.M=PAS1 1PL.M farm=INE
"She heard the dogs in our farm."

    ay tsenu ajan yawara=nu=uy penu ku=kuara
3SG.F hear DEM.F dos=PL.F=PAS1 1PL.F farm=INE
"She heard the dogs in our farm." (Vallejos 2016: 42)
## 2. Language sample

<table>
<thead>
<tr>
<th>macro area</th>
<th>l.family</th>
<th>%</th>
<th>present sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>59</td>
<td>12.3</td>
<td>12</td>
</tr>
<tr>
<td>Eurasia</td>
<td>46</td>
<td>9.6</td>
<td>10</td>
</tr>
<tr>
<td>Papunesia</td>
<td>138</td>
<td>28.7</td>
<td>29</td>
</tr>
<tr>
<td>Australia</td>
<td>39</td>
<td>8.1</td>
<td>8</td>
</tr>
<tr>
<td>North America</td>
<td>82</td>
<td>17.0</td>
<td>17</td>
</tr>
<tr>
<td>South America</td>
<td>117</td>
<td>24.3</td>
<td>24</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>481</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

(Miestamo et al. 2016)
2. Language sample: overview
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- **languages with no nominal classification system (29/92≈32%)**
- **languages with gender system (45/92≈49%)**
- **languages with numeral classifier system (4/92≈4%)**
- **languages with two systems (gender + gender2) (5/92≈5%)**
- **languages with two systems (gender + num.clf) (7/92≈8%)**
- **languages with two systems (gender + poss clf) (2/92≈2%)**
2. Language sample: overview

- "Numeral classifiers are rare overall, but cluster along the Pacific rim" (Nichols 1992: 200).

- "According to the mixed logistic regression, languages spoken in the Circum-Pacific area were significantly more likely to have numeral classifiers than languages spoken outside this area" (Sinnemäki (forthcoming)).
2. Language sample: overview

Languages with no nominal classification system (29/92≈32%)

Languages with gender system (46/92≈50%)

Languages with numeral classifier system (4/92≈4%)

Languages with two systems (gender + gender2) (3/92≈3%)

Languages with two systems (gender + num.clf) (8/92≈9%)

Languages with two systems (gender + poss clf) (2/92≈2%)

Num.clf systems cluster along the Pacific rim while gender systems are all over the world.
2. Language sample: gender

- Normal gender: 38/58 ≈ 66%
- Pronoun gender: 7/58 ≈ 12%
- Normal + argument gender: 2/58 ≈ 3%
- Normal + normal gender: 1/58 ≈ 2%
- Argument gender: 5/58 ≈ 9%
- Adnominal gender: 3/58 ≈ 5%
- Argument + argument gender: 1/58 ≈ 2%
- Normal + normal gender: 1/58 ≈ 2%

Map of languages with gender markers:
- Defaka
- Tidore
- Yale
- Wardaman
- Berik
- Ama (Papua)
- Motuna
- Komzo
- Ichishkiin
- Molale
- Yakima
- Hup
- Hixkaryana
- Apurinã
- Pirahã
- Yuracaré
- N/u
- Oneida
- Tunica
- Waoraoni
- Mola

Legend:
- Blue dot: normal gender (38/58 ≈ 66%)
- Green dot: pronoun gender (7/58 ≈ 12%)
- Yellow dot: adnominal gender (3/58 ≈ 5%)
- Purple dot: argument + argument gender (1/58 ≈ 2%)
- Black dot: normal + normal gender (1/58 ≈ 2%)
3. Earlier universals

(1) Implications concerning language type
(2) Implications concerning word order
(3) Implications concerning number and case
(4) Implications concerning marker on pronoun
(5) Implications concerning verb inflections
(6) others
3.1 Implications concerning language type

- U1: IF there is no inflectional gender, THEN morphology is agglutinative, and vice versa (Moravcsik 1994: 37; Renault 1987: 113; new formulated through TUA).

(3) Turkish (Eurasia: Turkic)
Döğ-üş-tür-t-ül-me-yebil-iyor-muş-sunuz-dur.
beat-REC-CAUS-CAUS-PASS-NEG-PSB-IMPF-EV.COP-2PL-GM
'It is presumably the case that you sometimes were not made to fight.' (Göksel & Kerslake 2015:74)
3.1 Implications concerning language type

- U1: IF there is no inflectional gender, THEN morphology is agglutinative, and vice versa (Moravcsik 1994: 37; Renault 1987: 113; new formulated through TUA).

- U2: IF there is grammatical gender, THEN morphology is flexive (Meinhof 1936: 17).

(4) Motuna (Papunesia: South Bougainville)

\[
\text{ana } \text{nga-na} \quad \text{kuraisa...hoo } \text{poo'ki}
\]

DEM.F 1SG.POSS-F woman ART.M baby

\[
\text{muuko-o-ra-na.}
\]

give.birth.to-3O.3A-PERF-F

'That woman (=wife) of mine…gave birth to the baby.' (Onishi 1994:69)
3.1 Implications concerning language type

• U1: IF there is no inflectional gender, THEN morphology is agglutinative, and vice versa (Moravcsik 1994: 37; Renault 1987: 113; new formulated through TUA).

• U2: IF there is grammatical gender, THEN morphology is flexive (Meinhof 1936: 17).

• U3: IF a language is isolating (with bound morphology lacking), THEN there tend to be noun classifiers rather than noun classes. IF there is agglutination or flexion (in languages with rich inflectional systems), THEN there tend to be noun classes rather than noun classifiers (Dixon 1986: 109).
3.1 Implications concerning language type

- U3: IF a language is isolating (with bound morphology lacking), THEN there tend to be noun classifiers rather than noun classes. IF there is agglutination or flexion (in languages with rich inflectional systems), THEN there tend to be noun classes rather than noun classifiers (Dixon 1986: 109).

(5) Mandarin Chinese (Eurasia: Sino-Tibetan)

sān  gè  rén
three  NUM.CLF.human human
'three humans'
Universals on nominal classification systems
Implications concerning language types

Nominal classification systems
- gender
- num.clf
- genders
- gender&num.clf
- gender&poss.clf
- no_systems

Language types:
- agglutinating
- flexive
- isolating
- synthetic
- polysynthetic
- NA

Count:
- Nominal classification systems
Universal on nominal classification systems

Implications concerning language types

U1: no inflectional gender $\leftrightarrow$ agglutinative morphology

U2: grammatical gender $\rightarrow$ flexive morphology

U3:
  - isolating: noun classifiers $>$ noun classes
  - agglutination or flexion: noun classes $>$ noun classifiers
Universals on nominal classification systems
Implications concerning language types

U1: no inflectional gender <---> agglutinative morphology
U2: grammatical gender --> flexive morphology
U3:
    isolating: noun classifiers > noun classes
    agglutination or flexion: noun classes > noun classifiers
Universals on nominal classification systems
Implications concerning language types

U1: no inflectional gender $\leftrightarrow$ agglutinative morphology
U2: grammatical gender $\rightarrow$ flexive morphology
U3:
  - isolating: noun classifiers $>$ noun classes
  - agglutination or flexion: noun classes $>$ noun classifiers

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language_type
- agglutinating
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U1: no inflectional gender $\leftrightarrow$ agglutinative morphology
U2: grammatical gender $\rightarrow$ flexive morphology
U3:
- isolating: noun classifiers $\rightarrow$ noun classes
- agglutination or flexion: noun classes $\rightarrow$ noun classifiers

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- gender
- num.clf
- genders
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Language types:
- agglutinating
- flexive
- isolating
- synthetic
- polysynthetic
- NA

Count

18
Implications concerning language types

U1: no inflectional gender $\leftrightarrow$ agglutinative morphology
U2: grammatical gender $\rightarrow$ flexive morphology
U3:

- isolating: noun classifiers $>$ noun classes
- agglutination or flexion: noun classes $>$ noun classifiers

U3: agglutination or flexion: gender $>$ num.clf

Nominal classification systems

- gender
- num.clf
- genders
- gender&num.clf
- gender&poss.clf
- no_systems
3.2 Implications concerning word order

- U4: IF basic order is SOV, THEN gender affixes on nouns (if any) are suffixed. IF there are prefixed gender affixes, THEN basic order is VO (i.e. not SOV) (Cutler et al. 1985: 729; Hawkins & Gilligan 1988: 223).

(6) Alamblak (Papunesia: Sepik)

\[
\begin{align*}
\text{nan-ho} & \quad \text{wura-}t & \quad \text{fufr-an-}t. \\
1\text{SG-GEN} & \quad \text{foot-}3\text{SG.F} & \quad \text{cut-}1\text{SG-}3\text{SG.F}
\end{align*}
\]

'I cut my foot.' (Bluce 1984: 171)
3.2 Implications concerning word order

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- U5: There is a universal principle that in numeral classifier languages, a classifier concatenates with a quantifier, locative, demonstrative, or predicate to form a nexus that cannot be interrupted by the noun which is classified (Greenberg 1972: 28; Allan 1977: 288).
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Implications concerning word order

Universals on nominal classification systems

Marker on nouns
- gender_noun.no.affix
- gender_noun.prefix
- gender_noun.suffix
- no.systems
- num.clf_noun.no.affix
- num.clf_noun.suffix
- poss.clf_noun.no.affix
Implications concerning word order

Universals on nominal classification systems

U4:
SOV --> gender_noun.suffix
gender_noun.prefix --> VO

Marker on nouns
- gender_noun.no.affix
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- num.clf_noun.no.affix
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- poss.clf_noun.no.affix
Universals on nominal classification systems

Implications concerning word order

U4:
SOV --> gender_noun.suffix
gender_noun.prefix --> VO
Universals on nominal classification systems

Implications concerning word order

U4:

SOV → gender_noun.suffix

gender_noun.prefix ↔ VO

Marker on nouns:
- gender_noun.no.affix
- gender_noun.prefix
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U4:
SOV --> gender_noun.suffix
gender_noun.prefix --> VO
Universals on nominal classification systems

Implications concerning word order

U4:

SOV → gender_noun.suffix

gender_noun.prefix → VO
Implications concerning word order

Universals on nominal classification systems

U4:

SOV → gender_noun.suffix
gender_noun.prefix → VO
Implications concerning word order

Universals on nominal classification systems

U4:

SOV → gender_noun.suffix

gender_noun.prefix → VO

U.num.clf.1: Numeral classifiers tend to appear in SO languages.
Implications concerning word order

Universals on nominal classification systems

U4:

\[ \text{SOV} \rightarrow \text{gender_noun.suffix} \]
\[ \text{gender_noun.prefix} \rightarrow \text{VO} \]

U.num.clf.1: Numeral classifiers tend to appear in SO languages.
Implications concerning word order

Universals on nominal classification systems

U4:
- SOV $\rightarrow$ gender_noun.suffix
- gender_noun.prefix $\rightarrow$ VO

U.num.clf.1: Numeral classifiers tend to appear in SO languages.

U.sov: Languages without any nominal classification systems tend to have word order SOV.
Implications concerning word order 2

U.num.clf.1: Numeral classifiers tend to appear in SO languages.

U.sov: Languages without any nominal classification systems tend to have word order SOV.
U.num.clf.1: Numeral classifiers tend to appear in SO languages.

U.sov: Languages without any nominal classification systems tend to have word order SOV.
Implications concerning word order

U.num.clf.1: Numeral classifiers tend to appear in SO languages.

U.sov: Languages without any nominal classification systems tend to have word order SOV.
Implications on markers

Universals on nominal classification systems

Marker on noun modifiers
- gender_modifier.no.affix
- gender_modifier.prefix
- gender_modifier.suffix
- num.clf_modifier.prefix
- num.clf_modifier.suffix
- poss.clf_modifier.suffix
- no.systems
- NA
Universals on nominal classification systems

Implications on markers
Universals on nominal classification systems

Implications on markers

Oneida

Barasano

Marker on noun modifiers

- gender_modifier.no.affix
- gender_modifier.prefix
- gender_modifier.suffix
- num.clf_modifier.prefix
- num.clf_modifier.suffix
- poss.clf_modifier.suffix
- no.systems
- NA
Universals on nominal classification systems
Implications on markers

U.num.clf.2: Numeral classifiers tend to appear after numerals.

Marker on noun modifiers
Universals on nominal classification systems
Implications on markers

U.num.clf.2: Numeral classifiers tend to appear after numerals.
U.num.clf.1: Numeral classifiers tend to appear in SVO languages.

Marker on noun modifiers
- gender Modifier Prefix
- gender Modifier Suffix
- Numeral Classifier Prefix
- Numeral Classifier Suffix
- Possessive Classifier Suffix
- No systems
- NA

Oneida
- gender Modifier Prefix
- gender Modifier Suffix
- Numeral Classifier Prefix
- Possessive Classifier Suffix

Barasano
- gender Modifier Prefix
- gender Modifier Suffix
- Numeral Classifier Prefix
- Numeral Classifier Suffix
- Possessive Classifier Suffix

Word order marker on noun system
- gender Modifier Prefix
- gender Modifier Suffix
- Numeral Classifier Prefix
- Numeral Classifier Suffix
- Possessive Classifier Suffix
- No systems
- NA
Universals on nominal classification systems
Implications on markers

U.num.clf.2: Numeral classifiers tend to appear after numerals.
U.num.clf.1: Numeral classifiers tend to appear in SVO languages.

Marker on noun modifiers
- gender_modifier.no.affix
- gender_modifier.prefix
- gender_modifier.suffix
- num.clf_modifier.prefix
- num.clf Modifier.suffix
- poss.clf Modifier.suffix
- no.systems
- NA

Word order: marker noun system
- gender_noun.no.affix
- gender_noun.prefix
- gender_noun.suffix
- no.systems
- num.clf_noun.no.affix
- num.clf_noun.suffix
- poss.clf_noun.no.affix

Oneida
Barasano
Universals on nominal classification systems

Implications on markers

U.num.clf.2: Numeral classifiers tend to appear after numerals.
U.num.clf.1: Numeral classifiers tend to appear in SVO languages.

OV is harmonic with postpositions while VO is harmonic with prepositions… prepositions are harmonic with NG and postpositions with GN (Greenberg 1963: 98–99).
Universals on nominal classification systems

Implications on markers

U.num clf.2: Numeral classifiers tend to appear after numerals.

U.num clf.1: Numeral classifiers tend to appear in SVO languages.

OV is harmonic with postpositions while VO is harmonic with prepositions… prepositions are harmonic with NG and postpositions with GN (Greenberg 1963: 98–99).
3.3 Implications concerning number and case

- **U6**: IF a target agrees in case, THEN it also agrees in number and gender. IF a target agrees in gender, THEN it also agrees in number (Linfer 1992).

- **U7**: IF there is the category of gender, THEN there is always the category of number (Greenberg 1963: 95, #36).

- **U8**: IF numeral classifiers are included in the dominant mode of forming quantification expressions, THEN plural marking on nouns will not be obligatory (Sanches 1973: 4).

- **U9**: IF plural is weakly developed, THEN there are numeral classifiers (Serebrennikov 1974: 294).
3.3 Implications concerning number and case

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Implications concerning number and case

Universals on nominal classification systems
Universals on nominal classification systems
Implications concerning number and case

U6: case < gender < number
U7: gender < number
Universals on nominal classification systems
Implications concerning number and case

U6: case < gender < number
U7: gender < number
Universals on nominal classification systems

Implications concerning number and case

U6: case < gender < number

U7: gender < number
Universals on nominal classification systems
Implications concerning number and case

U6: \text{case} < \text{gender} < \text{number}

U7: \text{gender} < \text{number}

number.case$has_case

- no
- yes
- NA

no.number_gender
number_no.nc
number_gender
number_gen.num
number_gen.poss
number_num.clf
number_genders
3.4 Implications concerning marker on pronoun

• U10: IF any constituent other than anaphoric pronouns agrees in gender and/or number, THEN anaphoric pronouns agree in gender and/or number (Moravcsik 1978: 350).

• U11: IF there are gender categories in the noun, THEN there are also gender categories in the pronoun (Greenberg 1963: 96, #43).
3.5 Implications concerning verb inflections

- U12: IF the verb inflects for person-number or for gender, THEN it also inflects for tense-mood (Greenberg 1963: 93, #10).

- U13: IF verbs agree in person, THEN they are likelier not to agree than to agree in gender (Plank 1994: 53).*

- U14: IF verbs agree in gender, THEN they are likelier to agree than not to agree in person (Plank 1994: 53).
3.6 Others

• U15: The higher the (simple) cardinal numerals, the unlikelier they are to agree in gender (Corbett 1991: 134).

• U16: In numeral classifier languages: When concrete objects are counted, the numeral always occurs with the appropriate classifier (Greenberg 1974: 83).
4. Summary

1. Language clustering: Num.clf systems cluster along the Pacific rim while gender systems are all over the world.
4. Summary

1. Language clustering: Classifier languages cluster along the Pacific rim while gender languages are all over the world.

2. IF there is agglutination or flexion (in languages with rich inflectional systems), THEN there tend to be noun classes rather than noun classifiers (Dixon 1986: 109).
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5. U.sov: Languages without any nominal classification systems tend to have word order SOV.
References

Haspelmath, Martin. 2018. Toward a new conceptual framework for comparing gender systems and some so-called classifier systems. Talk at Stockholm University
Merci de votre attention!

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