

Ø-Agreement in Turkana

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Goals

- ▶ Develop a formalism which captures the interaction of \emptyset -agreement and scales as directly as possible
- ▶ Account for Quirky Inverse Marking in Turkana

Turkana Plural Suffixes

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

- = Overt Plural Suffix
■ = No Overt Plural Suffix

Turkana Hierarchy-Based Competition

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

- = Overt 1st Person Agreement ∅ 3rd Person Agreement
- = Overt 2nd Person Agreement ∅ 3rd Person Agreement
- = Overt Subject Agreement ∅ Object Agreement

Turkana Quirky Inverse Marking

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

■ = inverse k-
■ = ∅

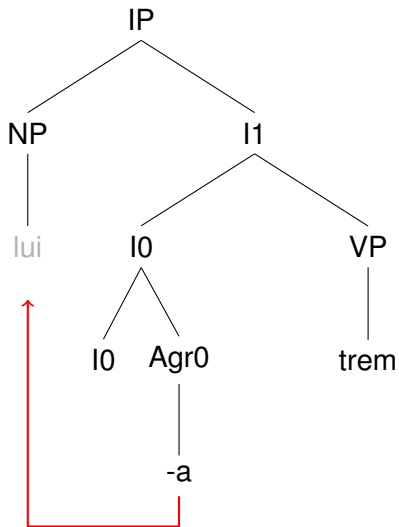
Structure of the Talk

- ▶ (Preliminaries)
- ▶ Number Suffixes
- ▶ Person Prefixes
- ▶ Inverse Prefixes

Basic Ideas

- ▶ Morphosyntactic Features must be realized by morphs
- ▶ Morphs can be \emptyset , \emptyset -morphs are preferred
- ▶ \emptyset must be licensed by Licensing Conditions
- ▶ Licensing Conditions derive from scales by schemata
- ▶ Scales and schemata are universal,
Licensing Conditions are language-specific,

Pro Licensing in Syntax (Rizzi, 1986)



Grammatical Architecture

- ▶ **Realizational Morphology:**

Morphology interprets abstract morphosyntactic features

(Halle & Marantz, 1993; Stump, 2001)

- ▶ **Piece-based System:**

Heads are spelled out by morpheme-like Vocabulary Items

(Halle & Marantz, 1993; Trommer, 2001)

- ▶ **Special Mechanism:**

VIs can be made invisible to Phonology after Insertion

Grammatical Architecture

| | | |
|------------------------------------|---------------|--------------------------|
| Input: | [+1-3] | (Morphosyntactic heads) |
| Vocabulary Insertion: | a:[+1] i:[-3] | (Vocabulary Items) |
| Ø-Licensing | a:[+1] i:[-3] | (Licensing Conditions) |
| Phonological Interpretation | a | (Phonological Structure) |

Prominence Scales

Person: $\left\{ \begin{array}{c} +1 \\ +2 \end{array} \right\} \succ +3$

Number: $\left\{ \begin{array}{c} \text{Plural} \\ \text{Dual} \end{array} \right\} \succ \text{Singular}$

Grammatical Function: Subject \succ Object

Case: Unmarked \succ Marked

Entailment Scales

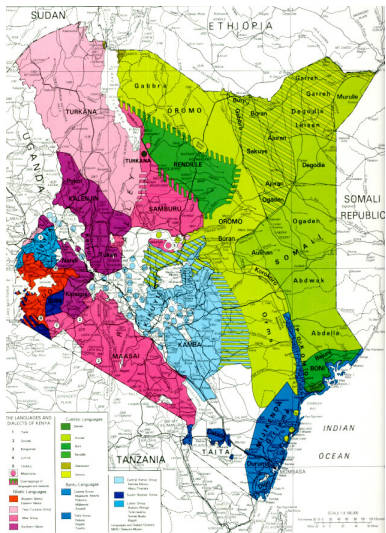
Person: $\left\{ \begin{array}{c} +1 \\ +2 \end{array} \right\} \succ -3$

Number: Dual \succ Plural

Turkana

- ▶ Eastern Nilotic Language spoken by $\approx 350,000$ speakers in the east of Lake Turkana in Kenya
- ▶ Complex tonal and segmental morphology
- ▶ Main empirical source: Dimmendaal (1982)

Turkana



Turkana Verb Agreement

| | | | Object | | | | | | |
|---------|---|----|-----------------|-----------------|-----------------|-------------|-------------|---------------|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | k-a- | a- | | |
| | | pl | | | | k-i- | k-i- | | |
| | 2 | sg | k-i- -te | | | | | i- -te | |
| | | pl | | | | | | i- -te | |
| | 3 | sg | k-a- -te | k-i- -te | k-i- -te | ε- | | | |
| | | pl | | | | | | | |

- = Number Suffixes
- = Inverse Prefix
- = Person Prefixes

Turkana Number Suffixes

| | | | Object | | | | | | |
|---------|---|----|--------|----|-----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | -∅ | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | -te | | -te | | | | |
| | 3 | sg | | | | | | | |
| | | pl | -te | | | | | | |

Turkana Number Suffixes

| | | | |
|----------------|----------|----|-----|
| Subject | 1 | sg | -∅ |
| | | pl | |
| | 2 | sg | -te |
| | | pl | |
| | 3 | sg | ∅ |
| | | pl | -te |

-te ↔ [+pl]

Problem: Why is plural of 1st person ∅?

∅-Licensing

- ▶ A vocabulary item is phonologically interpreted as ∅ iff it is ∅-licensed
- ▶ A vocabulary item is ∅-licensed iff there is at least one licensing condition which ∅-licenses it or one of its morphosyntactic features

Cumulative Complexity Licensing

Schema:

| | |
|-------------------|--|
| Condition: | F_1, F_2, \dots, F_n are maximal in S_1, S_2, \dots, S_n |
| Form: | F_2, \dots, F_n license $\emptyset F_1$ of the same input head |

$[+p|]$ is maximal in $[+p|] \succ [-p|]$

$[+1]$ is maximal in $\left\{ \begin{array}{l} [+1] \\ [+2] \end{array} \right\} \succ [+3]$

Licensing Condition:

| |
|--|
| $[+1]$ licenses $\emptyset [+p]$ of the same input head |
|--|

$[+1+p|]$

Spellout: Number

| | | 1pl | 2pl | 3pl |
|---------------------|---------|---------|---------|---------|
| | | [+1+pl] | [+2+pl] | [+3+pl] |
| Insertion: | | -te | -te | -te |
| Ø-Licensing: | [+1+pl] | -te | -te | -te |
| | | | -te | ta |

Person Marking in Intransitive Forms

| | | | |
|----------------|----------|----|----|
| Subject | 1 | sg | a- |
| | | pl | |
| | 2 | sg | l- |
| | | pl | |
| | 3 | sg | ε- |
| | | pl | |

a ↔ [+1]

l ↔ [-3]

ε ↔ [+3]

Problem 1: Why is **a-** zero in 1pl forms?

Cumulative Complexity Licensing

Schema:

| | |
|-------------------|--|
| Condition: | F_1, F_2, \dots, F_n are maximal in S_1, S_2, \dots, S_n |
| Form: | F_2, \dots, F_n license $\emptyset F_1$ of the same input head |

$[+1]$ is maximal in $\left\{ \begin{array}{l} [+1] \\ [+2] \end{array} \right\} \succ [+3]$

$[+p|]$ is maximal in $[+p|] \succ [-p|]$

Licensing Condition:

$[+p|]$ licenses $\emptyset [+1]$ of the same input head

$[+p|+1]$

Spellout: Intransitive Person

| | | 1pl | 2sg |
|---------------------|---------|-------------|------------|
| | | [+1-3+pl] | [+2-3-pl] |
| Insertion: | | a-i- | i- |
| Ø-Licensing: | [+pl+1] | a-i- | – |
| | | i- | i- |

Person Marking in Intransitive Forms

| | | | |
|----------------|----------|----|----|
| Subject | 1 | sg | a- |
| | | pl | I- |
| | 2 | sg | |
| | | pl | |
| | 3 | sg | |
| | | pl | |

a ↔ [+1]

I ↔ [-3]

ε ↔ [+3]

Problem 2: Why is I- zero in 1sg forms?

Entailment Licensing

Schema:

| | |
|-------------------|---|
| Condition: | Feature F_1 entails feature F_2 |
| Form: | Overt F_1 licenses $\emptyset F_2$ of the same head |

[+1] entails [-3]

Licensing Condition:

Overt [+1] licenses \emptyset [-3] of the same head

[+1-3]

Spellout: Intransitive Person

| | | 1sg | 2sg | 3sg |
|---------------------|--------|-------------|-----------|-----------|
| | | [+1-3-pl] | [+2-3+pl] | [+3-pl] |
| Insertion: | | a-i- | i- | e- |
| Ø-Licensing: | [+1-3] | a-i- | – | – |
| | | a- | i- | e- |

Interaction of Entailment and Complexity Licensing

| | | 1sg | 1pl | 2sg |
|---------------------|----------|-------------|-------------|-----------|
| | | [+1-3-pl] | [+1-3+pl] | [+2-3-pl] |
| Insertion: | | a-i- | a-i- | i- |
| ∅-Licensing: | [+pl+1] | – | a-i- | – |
| | [+1][-3] | a-i- | – | – |
| | | a- | i- | i- |

⇒ **Crucial Ordering of Licensing Conditions**

Turkana Hierarchy-Based Competition

| | | | Object | | | | | | |
|---------|---|----|--------|------|------|----|------|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | k-a- | | a- | | |
| | | pl | | | k-i- | | k-i- | | |
| | 2 | sg | k-i- | | | | i- | | |
| | | pl | | | | | ε- | | |
| | 3 | sg | k-a- | k-i- | k-i- | | ε- | | |
| | | pl | | | | | | | |

Turkana Hierarchy-Based Competition

| | | | Object | | | | | | |
|---------|---|----|--------|------|------|----|------|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | k-a- | | a- | | |
| | | pl | | | k-i- | | k-i- | | |
| | 2 | sg | k-i- | | | | i- | | |
| | | pl | | | | | | | |
| | 3 | sg | k-a- | k-i- | k-i- | | ε- | | |
| | | pl | | | | | | | |

Turkana Hierarchy-Based Competition

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

- = Overt 1st Person Agreement ∅ 3rd Person Agreement
- = Overt 2nd Person Agreement ∅ 3rd Person Agreement
- = Overt Subject Agreement ∅ Object Agreement

Generalizations

- ▶ Either subject or object trigger person agreement, but not both
- ▶ 1st and 2nd person argument always trigger agreement in the context of a 3rd-person argument
- ▶ Otherwise the subject triggers agreement

Superiority Licensing: Person

Schema:

| | |
|-------------------|--|
| Condition: | $F_1 \geq F_2$ for scale S |
| Form: | Overt F_1 in H_1 licenses $\emptyset F_2$ in H_2 |

$[+1] \succ [+3]$ and $[+2] \succ [+3]$

Licensing Conditions:

| |
|--|
| Overt $[+1]$ in H_1 licenses $\emptyset [+3]$ in H_2 |
| Overt $[+2]$ in H_1 licenses $\emptyset [+3]$ in H_2 |

$[+1][+3]$ and $[+2][+3]$

Superiority Licensing: Grammatical Function

Schema:

| | |
|-------------------|--|
| Condition: | $F_1 \geq F_2$ for scale S |
| Form: | Overt F_1 in H_1 licenses $\emptyset F_2$ in F_2 |

[+Subject] \succ [+Object]

Licensing Condition:

Overt [+S] in H_1 licenses \emptyset [+O] in H_2

[+S][+O]

Spellout: 1sg ↔ 3sg

| | | 1sg → 3sg | | 3sg → 1sg | |
|---------------------|----------|---------------------|-------------------|-------------------|---------------------|
| | | [+1-3] _s | [+3] _o | [+3] _s | [+1-3] _o |
| Insertion: | | a-i- | e- | e- | a-i- |
| Ø-Licensing: | [+1-3] | a-i- | e- | e- | a-i- |
| | [+1][+3] | a-i- | e- | i-e- | a- |
| | [+2][+3] | | - | | - |
| | [+S][+O] | | - | | - |
| | | a- | | a- | |

Spellout: 2sg ↔ 3sg

| | | 2sg → 3sg | | 3sg → 2sg | |
|---------------------|----------|---------------------|-------------------|-------------------|---------------------|
| | | [+2-3] _s | [+3] _o | [+3] _s | [+2-3] _o |
| Insertion: | | i- | e- | i- | e- |
| Ø-Licensing: | [+1-3] | - | - | - | - |
| | [+1][+3] | - | - | - | - |
| | [+2][+3] | i- | e- | e- | i- |
| | [+S][+O] | - | - | - | - |
| | | i- | | | i- |

Spellout: 1sg \leftrightarrow 2sg

| | | 1sg \rightarrow 2sg | | 2sg \rightarrow 1sg | |
|---------------------|------------|-----------------------|------------|-----------------------|-------------|
| | | $[+1-3]_s$ | $[+2-3]_o$ | $[+2-3]_s$ | $[+1-3]_o$ |
| Insertion: | | a-i- | i- | i- | a-i- |
| Ø-Licensing: | $[+1-3]$ | a-i- | i- | i- | a-i- |
| | $[+1][+3]$ | | – | | – |
| | $[+2][+3]$ | | – | | – |
| | $[+S][+O]$ | a-i- | i- | i- | a-i- |
| | | a- | | i- | |

Turkana Quirky Inverse Marking

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

■ = inverse k-

Is this Accidental Homophony?

No.

Other Nilotic languages show basically the same pattern
even though the morphophonological details are different

(Cysouw, 1998)

Quirky Inverse in Karimojong (Novelli, 1985)

| | | | Object | | | | | | |
|---------|---|----|--------|----|------|----|------|------|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | aka- | | a- | | |
| | | pl | | | ɔkɔ- | | | iki- | |
| | 2 | sg | iki- | | | ɪ- | | | |
| | | pl | | | | | itɔ- | | |
| | 3 | sg | ākā- | | | | ɛ- | | |
| | | pl | ɔkɔ- | | | | | | |
| | | | ɛkɛ- | | | | | | |

Quirky Inverse: Analysis

- ▶ **k-** is an inverse/complex marker (specifying 2 feature structures) and at the same time a subject plural marker
- ▶ It is inserted in all transitive contexts, but phonologically \emptyset in direct configurations
- ▶ It is inserted in all plural subject contexts, but phonologically \emptyset when cooccurring with number suffixes

Necessary Condition for the Appearance of k-

- ▶ there is agreement with a plural argument **or**
- ▶ there is agreement with two singular arguments

Question: Why should this be a natural class?

The Iconic Representation of Number (Trommer, 2006)

Singular Plural



(in a two-way number system)

Representation of k-

| | | | O | | | | | | | |
|---|---|----|---------|----------|---------|----------|----------|----------|----------|------|
| | | | 1 | | 2 | | 3 | | ∅ | |
| | | | sg | pl | sg | pl | sg | pl | | |
| S | 1 | sg | | | | [•] [•] | [•] [••] | [•] [•] | [•] [••] | [•] |
| | | pl | | | | [••][•] | [••][••] | [••][•] | [••][••] | [••] |
| | 2 | sg | [•] [•] | [•] [••] | | | | [•] [•] | [•] [••] | [•] |
| | | pl | [••][•] | [••][••] | | | | [••][•] | [••][••] | [••] |
| | 3 | sg | [•] [•] | [•] [••] | [•] [•] | [•] [••] | [•] [•] | [•] [••] | [•] | |
| | | pl | [••][•] | [••][••] | [••][•] | [••][••] | [••][•] | [••][••] | [••] | |

k- ↔ [•]_s [•]

Possible Insertion of k-

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

■ = Insertion of k- according to lexical entry

Actual Realization of k-

| | | | Object | | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|--|
| | | | 1 | | 2 | | 3 | | ∅ | |
| | | | sg | pl | sg | pl | sg | pl | | |
| Subject | 1 | sg | | | | | | | | |
| | | pl | | | | | | | | |
| | 2 | sg | | | | | | | | |
| | | pl | | | | | | | | |
| | 3 | sg | | | | | | | | |
| | | pl | | | | | | | | |

- = k- inserted and overt
■ = k- inserted and ∅

A Reminder: Turkana Number Suffixes

| | | | |
|----------------|----------|----|-----|
| Subject | 1 | sg | -∅ |
| | | pl | |
| | 2 | sg | -te |
| | | pl | |
| | 3 | sg | ∅ |
| | | pl | -te |

-te ↔ [+pl]

Realization of k-

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

- = k- inserted and overt
- = k- inserted and ∅ (in the context of plural -te)
- = k- inserted and ∅

Entailment Licensing

Schema:

| | |
|-------------------|---|
| Condition: | Feature structure F_1 entails feature structure F_2 |
| Form: | Overt F_1 licenses $\emptyset F_2$ of the same head |

$[\bullet\bullet]$ entails $[\bullet][\bullet]$

Licensing Condition:

Overt $[\bullet\bullet]$ licenses $\emptyset [\bullet][\bullet]$ of the same head

$[\bullet\bullet\bullet]$

Spellout: Number and Inverse

| | | 1pl | 2pl | 3pl |
|---------------------|--------|---------------|---------------|---------------|
| | | [+1●●] | [+2●●] | [+3●●] |
| Insertion: | | k- -te | k- -te | k- -te |
| ∅-Licensing: | [+1●●] | k- -te | – | – |
| | [●●●●] | – | k- -te | k- -te |
| | | k- | -te | -te |

Realization of Intransitive k-

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

■ = k- inserted and overt

■ = k- inserted and ∅ (entailment licensing)

Realization of k-

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

- = k- inserted and overt
- = k- inserted and ∅ (by entailment licensing)
- = k- inserted and ∅

Direct Licensing

Schema:

| | |
|-------------------|--|
| Condition: | M is complex, C_1, C_2 congruent scale contrasts |
| Form: | Linking under C_1, C_2 licenses \emptyset M |

$[+1] \succ [+3]$ and $[+S] \succ [+O]$ are congruent scale contrasts

$[+2] \succ [+3]$ and $[+S] \succ [+O]$ are congruent scale contrasts

$[+3] \succ [+3]$ and $[+S] \succ [+O]$ are congruent scale contrasts

Licensing Conditions:

| |
|---|
| Linking under $[+1][+3]/[+S][+O]$ licenses $\emptyset [\bullet][\bullet]$ |
| Linking under $[+2][+3]/[+S][+O]$ licenses $\emptyset [\bullet][\bullet]$ |
| Linking under $[+3][+3]/[+S][+O]$ licenses $\emptyset [\bullet][\bullet]$ |

$$[\bullet][\bullet]_{\substack{[+1][+3] \\ [+S][+O]}}$$

$$[\bullet][\bullet]_{\substack{[+2][+3] \\ [+S][+O]}}$$

$$[\bullet][\bullet]_{\substack{[+3][+3] \\ [+S][+O]}}$$

Spellout: 1sg \leftrightarrow 3sg

| | | | |
|-----------------------|---------------------|--|----------------|
| | | | [+1•+S][+3•+O] |
| 1sg \rightarrow 3sg | Insertion: | | k- [•] [•] |
| | Ø-Licensing: | [•][•] ^{[+1][+3]} _{[+S][+O]} | k- [•] [•] |
| | | [•][•] ^{[+2][+3]} _{[+S][+O]} | – |
| | | [•][•] ^{[+3][+3]} _{[+S][+O]} | – |
| | | | |

| | | | |
|-----------------------|---------------------|--|----------------|
| | | | [+3•+S][+1•+O] |
| 3sg \rightarrow 1sg | Insertion: | | k- [•] [•] |
| | Ø-Licensing: | [•][•] ^{[+1][+3]} _{[+S][+O]} | – |
| | | [•][•] ^{[+2][+3]} _{[+S][+O]} | – |
| | | [•][•] ^{[+3][+3]} _{[+S][+O]} | – |
| | | | k- |

Spellout: 2sg \leftrightarrow 3sg

| | | | |
|---|---------------------|--|-----------------------|
| | | | [+2•+S][+3•+O] |
| 2sg \rightarrow 3sg | Insertion: | | k- [•] [•] |
| | Ø-Licensing: | [•][•] ^{[+1][+3]} _{[+S][+O]} | — |
| | | [•][•] ^{[+2][+3]} _{[+S][+O]} | k- [•] [•] |
| | | [•][•] ^{[+3][+3]} _{[+S][+O]} | — |
| | | | |

| | | | |
|---|---------------------|--|-----------------------|
| | | | [+2•+S][+1•+O] |
| 3sg \rightarrow 2sg | Insertion: | | k- [•] [•] |
| | Ø-Licensing: | [•][•] ^{[+1][+3]} _{[+S][+O]} | — |
| | | [•][•] ^{[+2][+3]} _{[+S][+O]} | — |
| | | [•][•] ^{[+3][+3]} _{[+S][+O]} | — |
| | | | k- |

Spellout: 1sg \leftrightarrow 2sg

| | | | |
|-----------------------|---------------------|--------|--|
| | | | [+1•+S][+2•+O] |
| 1sg \rightarrow 2sg | Insertion: | | k- [•] [•] |
| | Ø-Licensing: | [•][•] | ^{[+1][+3]} ^{[+S][+O]} — |
| | | [•][•] | ^{[+2][+3]} ^{[+S][+O]} — |
| | | [•][•] | ^{[+3][+3]} ^{[+S][+O]} — |
| | | | k- |

| | | | |
|-----------------------|---------------------|--------|--|
| | | | [+2•+S][+1•+O] |
| 2sg \rightarrow 1sg | Insertion: | | k- [•] [•] |
| | Ø-Licensing: | [•][•] | ^{[+1][+3]} ^{[+S][+O]} — |
| | | [•][•] | ^{[+2][+3]} ^{[+S][+O]} — |
| | | [•][•] | ^{[+3][+3]} ^{[+S][+O]} — |
| | | | k- |

Spellout: 1pl \leftrightarrow 3sg1pl \rightarrow 3sg

| | | |
|---------------------|--------|--|
| | | [+1●●+S][+3●+O] |
| Insertion: | | k:[●+S][●] k:[●+S][●] |
| Ø-Licensing: | [●][●] | [+1][+3] [+S][+O] k:[●+S][●] k:[●+S][●] |
| | [●][●] | [+2][+3] [+S][+O] — |
| | [●][●] | [+3][+3] [+S][+O] — |
| | | k |

3sg \rightarrow 1pl

| | | |
|---------------------|--------|------------------------|
| | | [+3●+S][+1●●+O] |
| Insertion: | | k:[●+S][●] |
| Ø-Licensing: | [●][●] | [+1][+3] [+S][+O] — |
| | [●][●] | [+2][+3] [+S][+O] — |
| | [●][●] | [+3][+3] [+S][+O] — |
| | | k |

Realization of Transitive k-

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

- = k- inserted and overt
■ = k- inserted and ∅ (direct licensing)

Realization of Intransitive k-

| | | | Object | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 2 | sg | | | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | | | | | | | |
| | | pl | | | | | | | |

■ = k- inserted and overt

■ = k- inserted and ∅ (entailment licensing)

Realization of k- (Intransitive and Transitive)

| | | | Object | | | | | | | |
|---------|---|----|--------|----|----|----|----|----|---|--|
| | | | 1 | | 2 | | 3 | | ∅ | |
| | | | sg | pl | sg | pl | sg | pl | | |
| Subject | 1 | sg | | | | | | | | |
| | | pl | | | | | | | | |
| | 2 | sg | | | | | | | | |
| | | pl | | | | | | | | |
| | 3 | sg | | | | | | | | |
| | | pl | | | | | | | | |

- = k- inserted and overt
■ = k- inserted and ∅

Types of Licensing

| | Licensor | Ø-Licensee | Conditions |
|------------------------------|----------------------|-------------------|-------------------------------|
| Cumulative Complexity | High | High | same head different scales |
| Superiority | High | Low | different heads same scale |
| Direct | Congruent Linking | Complex Marker | different heads same scale |
| Entailment | High | Low | same head same scale |

Summary

- ▶ Transfer of \emptyset -Licensing to Morphology
- ▶ Maximally Simple Linking of Scales and \emptyset
- ▶ Natural Account of Quirky Inverse in Turkana

Toposa

| | | | Object | | | | | | |
|---------|---|----|--------|-------|-------|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | à-kà- | | à- | | |
| | | pl | | | kì- | | | | |
| | 2 | sg | | ì-kì- | | | ɪ- | | |
| | | pl | | | | | | | |
| | 3 | sg | | à-kà- | | | è- | | |
| | | pl | | | | | | | |

Teso

| | | | Object | | | | | | |
|---------|---|----|--------|-----|----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | ka- | | a- | | | |
| | | pl | | ki- | | | | | |
| | 2 | sg | ki- | | | i- | | | |
| | | pl | | | | | | | |
| | 3 | sg | ka- | ki- | | ε- | | | |
| | | pl | | | | | | | |

Maasai

| | | | Object | | | | | | |
|---------|---|----|--------|----|-----|----|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | áá- | | á- | | |
| | | pl | | | kí- | | | | |
| | 2 | sg | kí- | í- | | | ɪ- | | |
| | | pl | | | | | | | |
| | 3 | sg | áa- | é- | kí- | | é- | | |
| | | pl | | | | | | | |

Päkot

| | | | Object | | | | |
|---------|---|----|-----------|------------|----------|-----------|----|
| | | | 1 | | 2 | | sg |
| | | | sg | pl | sg | pl | |
| Subject | 1 | sg | | | -i:ni: | -a:kwa | |
| | | pl | | | -e:ca:ni | -e:ca:kwa | |
| | 2 | sg | -a:ne:ni: | -e:ca:ni | | | |
| | | pl | -a:nikwa | -e:ca:kwa: | | | |
| | 3 | sg | -a:nin | -e:ca: | -i:ni: | -a:kwa: | |
| | | pl | | | | | |

Nandi (Creider & Creider, 1989:98)

| | | | Object | | | | | | |
|---------|---|----|--------|------|------|------|----|----|---|
| | | | 1 | | 2 | | 3 | | ∅ |
| | | | sg | pl | sg | pl | sg | pl | |
| Subject | 1 | sg | | | -í:n | -á:k | | | |
| | | pl | | | | | | | |
| | 2 | sg | -á: | -e:c | | | | | |
| | | pl | | | | | | | |
| | 3 | sg | -â | -ê:c | -îñ | âk | | | |
| | | pl | | | | | | | |