The Necessity of an Articulated Functional Domain: Evidence from the Acquisition of Functional Morphology in child Swahili

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Outline of the talk
- Functional categories are omitted frequently in child language acquisition
- Split-INFL Hypothesis has influenced acquisition in significant ways.
   - Various theories that presuppose split-INFL
   - Acquisition research supporting split-INFL
- My theoretical assumptions: Giorgi & Pianesi's Scatter Theory
- Adult Swahili marks Agr, T & Mood, although T and Mood are in complementary distribution.
- T and Mood form a *syncretic* category.
- Child Swahili data showing that T and Mood come into the system at the same time
- Agreement emerges separately
- Conclusion

1.0 The Acquisition of Functional Categories

There has been a tremendous amount of research on the acquisition of T, Agr, Aspect, Number. Less has been done on Mood (one notable exception: Hyams 2002; 2004). The essential finding from all this research is that children omit functional categories fairly frequently (Brown, 1973; Lightfoot, 1984; Radford, 1990; Sano & Hyams, 1994; Wexler, 1998; amongst many others).

(1)   *Determiner omission*
    a.   Paula play ball   English   (Radford, 1990)
    b.   Papa heeft ook trein   Dutch   (Schaeffer, 1995)
          Daddy has also train
          'Daddy also has a train'

(2)   *Copula Omission*
    a.   I in the kitchen   English   (Becker, 2000)
    b.   Da rote ball   German   (Salustri &
          there red ball   Berger-Morales, 2001)

(3)   *Auxiliary Omission*
    a.   baby talking   English   (Radford, 1990)
    b.   doggy barking   English   (Radford, 1990)

(4)   *Subject-Verb Agreement Omission*
    a.   It only write on the pad   English   (Brown, 1973)
    b.   Cromer have some   English   (Brown, 1973)

2.0 The Split-INFL Hypothesis' and Acquisition Research.
2.1 Acquisition Research relying on the Split-INFL Hypothesis

In order to account for this omission of functional elements in child language, various researchers have argued for the underspecification of some functional category (or categories). Below is a non-exhaustive list of research that postulates the underspecification of one or more functional categories:

AGREEMENT:	Clahsen *et al.*(1996); Ingham (1998)
TENSE:	Wexler (1994); Harris & Wexler (1996)
AGREEMENT & TENSE:	Schütze (1997)
NUMBER:	Hoekstra & Hyams (1998)
ASPECT (grammatical):	Gavruseva (2000); Wagner (2001)
And the Truncation Hypothesis:	Rizzi (1994); Haegeman (1994)

→   All of these theories presuppose that there are multiple functional categories to begin with and that children are somehow failing to represent one or more of the functional categories.

2.2 Acquisition Research supporting the Split-INFL Hypothesis

Guasti & Rizzi (2002) use acquisition data to argue for a split INFL.   *Do* in negative contexts occurs optionally with agreement while *do* in interrogative contexts occurs obligatorily with agreement in child English:

(5)	a.	Daddy doesn't go.	Agreement on do is <u>optional</u>
	b.	Daddy don't go.	in negative contexts.

(6)	a.	Why doesn't he go?	Agreement on do is <u>obligatory</u>
	b.	@ Why don't he go?	in interrogative contexts.
		(@ = unattested in child transcripts)	

1. If agreement features are checked → morphological agreement is obligatory
2. If agreement features are unchecked → morphological agreement is optional
3. interrogative *do* raises through Agr (checking features) and then into C. Thus Agr features are checked and morphological agreement is obligatory.
4. Negative *do* raises to a position lower than Agr and agreement features are not checked and thus morphological agreement is optional.
5. This shows that the two *do*'s occur in different positions, one above Agr and one between Agr and T, thus showing that there are two distinct positions in the IP domain

Thus language acquisition has not only made use of the Split-INFL hypothesis, it has been complicit in its propagation.

3.0 Assumptions and Framework

(i)   A Universal inventory of functional categories.

I loosely follow Cinque (1999) in assuming that there is a universal inventory of categories available to each language.

2. The overt expression of a category requires syntactic feature checking.

3. Languages differ in how they encode functional categories.
   (a) Languages differ as to which (if any) categories they express. For example, some languages such as English and Italian encode tense, but other languages such as Indonesian and Mandarin do not.
   (b) Languages that encode the same categories may encode them differently, as outlined below.

In Italian, Tense and Agreement are encoded as separate morphological heads:
(7) *Am – av – o*
   Love–past–1st person $\rightarrow$ Tense & Agreement expressed

This is because of two separate (or *scattered*) heads in the syntax that license the two functional morphemes:
(8)
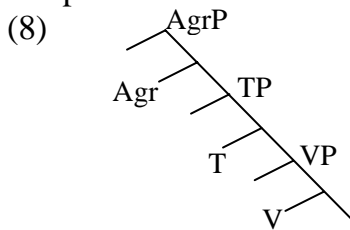
In English, on the other hand, Tense may be expressed (9a), or Agreement (9b), but never both (9c):
(9) a. John loved Mary $\rightarrow$ Tense expressed
    b. John loves Mary $\rightarrow$ 3rd person singular Agreement expressed
    c. *John loveds Mary $\rightarrow$ Tense & Agreement never expressed

The reason that English does not express both Tense and Agreement at the same time is because English has a *syncretic* category (Giorgi & Pianesi, 1997; see also Bobaljik & Thráinsson, 1998 for a similar proposal):
(10)
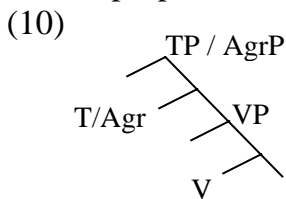
Thus languages differ as to which categories (from the inventory of universal categories provided by UG) they encode as well as whether they encode those categories as either scattered categories (as in the Italian case) or syncretic categories (as in the English case).

4.0 Adult Swahili

Swahili is an eastern Bantu language spoken in Kenya, Tanzania, and parts of neighboring countries. Swahili exhibits typical Bantu agglutinative morphology, with the minimal indicative verbal complex shown in (11, see Ashton, 1944; Vitale, 1981; Krifka, 1995):

MINIMAL SWAHILI VERBAL COMPLEX
(11) Subject Agreement – Tense – Verb – Indicative Mood

3

Subject   Verbal Complex   Object

(12) Juma   a - na - m – pend - a   Mariam
      Juma   SA$_{3s}$-Pres- OA$_{3s}$- like - IND Mariam
      'Juma likes Mariam'

Table 1. SA Paradigm in Swahili

1st person singular	Ni-
2nd person singular	U-
3rd person singular	A-
1st person plural	Tu-
2nd person plural	Mu-
3rd person plural	Wa-

Table 2. Some Tense markers in Swahili

| Tense/Aspect Morpheme	Meaning
li	past
na	present on-going/habitual
ta	future
ka	Narrative, resultative
me	present perfect
sha	present perfect completive
ki	conditional
nga	hypothetical
ku	infinitival

(from Deen, 2002)

Mood is marked as a suffix on the verbal complex, and alternates three ways: indicative [a], subjunctive [e], and negative [i]. Negation is not important for our purposes, and so I shall put it aside.

(13) a.   a – li – ni – imb – i – **a**   wimbo   INDICATIVE
           SA$_{3s}$-past-OA$_{1s}$-sing-APPL-IND   song
           'He/she sang me a song'

      b.   Lazima u – ni – imb – i – **e**   wimbo   SUBJUNCTIVE
           must   SA$_{2s}$-OA$_{1s}$-sing-APPL-SUBJ   song
           'You (really) must sing me a song'

Importantly, T and Subjunctive are in complementary distribution.

(14) a.   A – ta – fik – a kesho?   [+T] INDICATIVE
           SA$_{3s}$–fut–arrive–IND tomorrow
           'Will he arrive tomorrow?

      b.   * A – fik – a kesho?   [-T] INDICATIVE

      c.   Ni – fik – e kesho?   [-T] SUBJUNCTIVE
           SA$_{1s}$–arrive–SUBJ tomorrow
           'Should I arrive tomorrow?'

      d.   *Ni – ta – fik – e kesho?   [+T] SUBJUNCTIVE

I propose that in Swahili T and Mood form a syncretic category.
(15)

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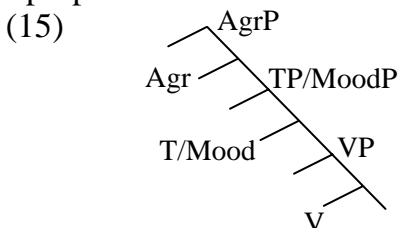
5.0 Acquisition Data

The data was collected over a period of 11 months in Nairobi, Kenya from four children of varying ages and levels of grammatical maturity:

Table 3. Age, number of recordings and MLU for each child

Child	Age range	No. of recordings	MLU
Haw	2;2 – 2;6	7	1.54–2.46
Mus	2;0 – 2;11	23	1.52–3.57
Fau	1;8 – 2;2	10	2.97–3.93
Has	2;10 – 3;1	5	3.15–4.23

Table 4. Number of indicative, subjunctive, negative verbs in early Swahili.

Stage	Indicative	Subjunctive	Negative	Total
1	210	9	19	238
2	295	7	11	313
3	460	50	76	586
4	377	37	22	436

Swahili children produce clause types of the following kind:

(16) a. Full Clause   SA – T – V
       b. [-SA] Clause   Ø – T – V
       c. [-T] Clause   SA – Ø – V
       d. Bare Stem   Ø – Ø – V
       e. Root Infinitive   INF – V

Table 5. Proportion of different clause types in stages 1 though 4

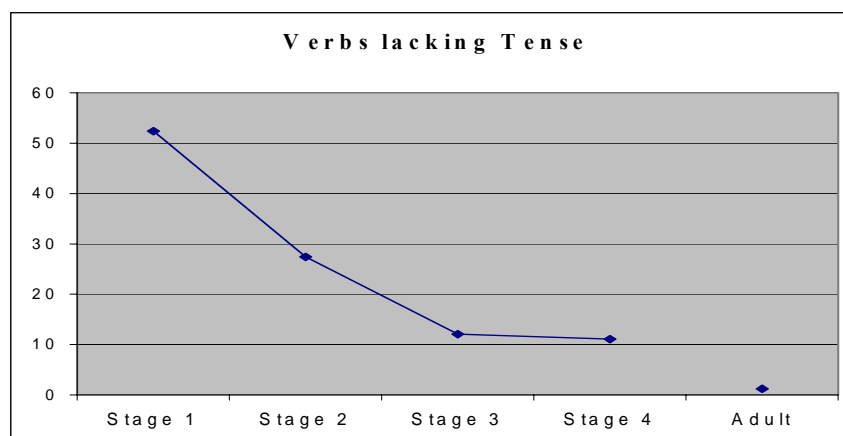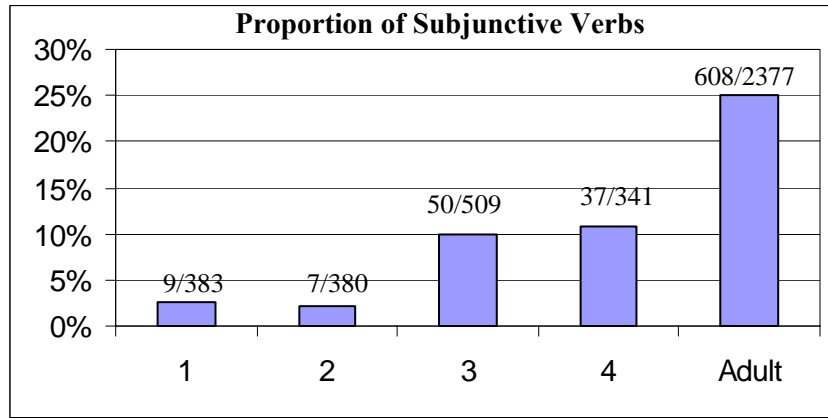| Stage	Full clause	[-SA] clause	[-T] clause	Bare stem	RI	Total
	SA-T-V	Ø-T-V	SA-Ø-V	Ø-Ø-V	INF-V	
1	18% (39)	29% (60)	20% (42)	32% (67)	0.9% (2)	210
2	20% (58)	52% (154)	8% (25)	19% (55)	1% (3)	295
3	51% (235)	36% (166)	5% (21)	7% (34)	0.9% (4)	460
4	60% (225)	28% (104)	7% (26)	4% (15)	1.8% (7)	377

Figure 1

Figure 2

Table 6. Types/tokens of verbs expressing irrealis mood and particular meanings expressed

	Stage 1	Stage 2	Stage 3	Stage 4
Types*	8	5	29	21
Tokens	9	7	50	37
Irrealis meanings	Desire Request Suggestion	Desire Request	Desire Possibility Request Permission Suggestion	Desire Possibility Request Permission Suggestion

* Note: data in stages 1 and 3 come from 2 children, while data in stages 2 and 4 come from one child.

These data point to <u>Stage 3</u> as the point at which:
      a. Tense becomes obligatory, and
      b. Mood begins to be used more productively.

This stands in contrast to the developmental path of Subject Agreement, which takes considerably longer to be acquired. The reasons for this are important, but not for the question of the existence and independence of an agreement projection in the functional domain that is distinct from TP/MoodP.
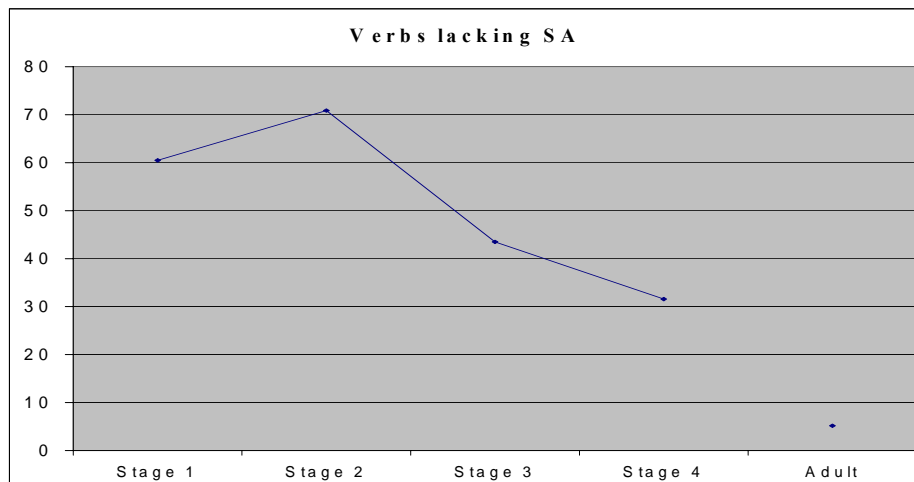

Figure 3

6

<u>Summary of the Swahili facts</u>
1. Children omit SA and T seemingly independently and optionally.
2. Children do not omit the Mood final vowel, although this is probably due to phonological factors.
3. Tense and Mood emerge in child speech at approximately the same time.
4. SA emerges in child speech considerably later.

6.0 Conclusion

There are several reasons why these data bear on the question of whether an articulated functional domain is necessary for the analysis of human language. First, Swahili is a language that clearly marks at least three of these functional categories (SA, T and Mood) with overt morphological markers. Second, the fact that these morphemes occur in the positions that correspond to the hierarchical position posited by Cinque is additional evidence for the existence of distinct functional projections. Third, the fact that in acquisition, some of these markers are acquired earlier than others suggests differences in position and/or status of these elements. Finally, the fact that tense and mood emerge in the child grammar at the same time re-enforces the view that TP and MoodP are a syncretic category in the syntax. Once the child has acquired this category, TP and Mood emerge together.

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