

Number and Markedness: A View from Dagaare

Semantic theories of number debate whether the plural or the singular is the unmarked number, currently Sauerland et al. (2005) and Farkas and de Swart (to appear) take respective sides of the debate. The former favor a weak (unmarked) plural motivated by inference patterns under negation and in questions like “Do you have children?”, where an answer about *one or more* is required, and take the inclusive reading (*atoms* \cup *sums*) as basic. The latter favor a strong plural (*sums*) based on markedness patterns: following Horn’s division of pragmatic labor, the unmarked singular aligns with an unmarked meaning (*atoms*), the morphologically marked plural aligns with a marked semantic meaning (*sums of atoms*), while inclusive readings are obtained via pragmatic mechanisms within a bi-directional OT framework. This talk contributes results from recent fieldwork on Dagaare (Gur; Niger-Congo) which possesses an inverse number marking system proving problematic for both sides of the debate. The data demonstrate that the cross-linguistic facts are more complicated than if only the singular *or* plural were unmarked, rather markedness is conditioned upon a nominal’s level of individuation. Then, applying the logic of both strong and weak plural analyses shows the strong plural analysis has better empirical traction in such systems.

Inverse Number in Dagaare: Dagaare possesses a single morpheme *-ri* which sometimes marks the plural interpretation and sometimes the singular, depending on the noun, as shown by the near-minimal pair below:

Singular	Plural	Stem	Gloss
bie	biiri	bi-	‘child’
biri	bie	bi-	‘seed’

This inverse marking pattern cannot be aligned with a mass/count distinction: mass terms fall in a separate paradigm, combining with a distinct distributive plural marker *-nee* and singulative marker *-ruu*, depending on the noun. Clearly this system does not align with standard semantic operators for plural formation, nor is the singular or plural consistently unmarked, therefore, what governs this system? Systematic evaluation of the lexicon shows that general semantic principles, namely those associated with individuation, play the organizing force in the nominal system of Dagaare, implying that markedness of a number category is relative to the level of individuation of a noun.

Individuation and Number: The count/mass distinction is often related to a notion of individuation, designating a conceptual divide between objects (individuated and count) and substances (non-individuated and mass), which in English and many other languages aligns with the capacity to accept plural marking. Recent psycholinguistic work (Middleton et al. 2004) has shown different factors of individuation (distinguishability, canonical mode of interaction with entity) to lead to reliable behavioral differences in assigning count or mass syntax. Such factors apply across the nominal domain and pattern in a scalar fashion rather than dichotomously. Thus, a plausible hypothesis is that individuation plays a determinate role in Dagaare’s number system: the more likely the entity is to be viewed as individuated, the more likely the singular will be unmarked and *-ri* will mark the plural, while the more likely the entity is to be viewed as coming in groups or non-individuated, the more likely the plural will be unmarked and *-ri* will mark the singular. The lexicon assembled in the field validated this hypothesis, displaying quantitatively reliable distributional asymmetries in appropriate semantic domains: nearly all higher level animates, trees, tools and individualized body parts (‘head’) were unmarked

in the singular (average of 90%), whereas insects, vegetation and paired/collective body parts have a majority of nouns for which the plural is unmarked (average of 65%).

Formal Analysis: I consider two options following the weak and strong plural analyses. *Hypothesis 1* (H1): The weak plural analysis of English plurals claims that the plural is unmarked, denoting closure under join, while the singular, designating atoms is more specific. When the singular form is used, the plural interpretation is excluded by pragmatic blocking. The same inferences motivating the weak plural analysis were elicited in Dagaare, thus one can analyze *-ri* when marking the plural similarly to the English plural, designating closure under join, with the singular interpretation disallowed by blocking. By parity, and to give *-ri* a uniform interpretation, for lexically plural nouns where *-ri* marks the singular, it must also yield the entire semi-lattice, viz. closure under meet, with the plural interpretation disallowed by blocking. Thus, *-ri* is uniformly analyzed as the closure of the space under join and meet.

Hypothesis 2 (H2): The strong plural analysis permits to treat *-ri* as a form of negation of the lexical denotation of the base, i.e. *-ri* returns the complement with respect to the domain of the base noun, viz. the relevant join semi-lattice. Thus, *-ri* applied to a lexically singular noun, with atomic reference, will yield a plural denotation, the closure of the atoms under join less the atoms themselves, and by parity *-ri* applied to a lexically plural noun will yield a singular denotation.

These two hypotheses can be distinguished by behavior under negation, which was one of the primary motivations for the weak plural analysis. In Dagaare, as in English, the negation of the plural interpretation excludes the truth of the singular. H1 predicts that negation of elements marked by *-ri*, as it serves as a closure operator, will correctly exclude the singular and plural. Acceptability patterns from Dagaare however martial against H1, where only the unmarked form is acceptable for inherently plural terms:

- (1) N da ba da bie/*biri (zaa)
 1st.pro NEG buy Past seed.PL/seed.SG (any)
 I didn't buy (any) seeds.

In contrast, H2 does not tie the inclusive reading to any form, but predicts it arises via pragmatic reasoning in parallel to English, an explanation also in principle available here.

Outlook: The markedness pattern determining Dagaare's number system—nouns canonically low in individuation/appearing in collections correlating with an unmarked plural—fits into a larger cross-linguistic picture. Similar semantic domains motivate singularive/collective classes, e.g. in Welsh, skew morphological processes such as leveling (Tiersma 1982), and arise even in token frequency in English—a corpus study I conducted on the COBUILD corpus revealed that such domains (insects/paired body parts) are relatively unmarked in the plural by 3-1 in terms of usage frequency. This distinction also conditions some of the inference patterns which have been foundational for the weak plural analysis, e.g. paired/collective body parts accord with inclusive plural reading, but those which are canonically singular do not, as shown by *Does Mary have big eyes/#noses?*—under the standard weak plural analysis both should be acceptable. In sum, this evidence shows that individuation should be able to interact with other principles of grammar of number. I conclude by lightly extending the BiOT analysis of Farkas and de Swart, conjoining their number markedness hierarchy with an individuation hierarchy via harmonic alignment and deriving the necessary markedness patterns.