New Insights on Universal Quantifiers in Javanese

Intro. The current literature suggests that in Eastern Javanese, an Austronesian language, *saben* is a strictly prenominal distributive quantifier, while *kabeh* is a collective quantifier (Soemarmo, 1979). I extend the current literature by providing data that shows the following additional readings of *kabeh* and *saben* and suggest that verbal semantics allow for the readings of distributive coercion with *saben* and subject-distributivity with *kabeh*. Data was collected from a native Eastern Javanese speaker from a field methods course.

	saben	***kabeh***
Distributive	✓	*Subject-distributivity*
Collective	*Distributive coercion*	✓
Cumulative	✗	✓

***Saben*.** New data supports the claim that *saben* is distributive (1a) but also shows that it can be interpreted collectively for motion verbs (1b). *Saben* has a fixed position, occurring before the noun.

(1a) Saben wong (*saben) mangan kue
ALL person ALL AV.eat cake
"Each person eats cake"

(1b) Saben wong mlebu omah
ALL person AV.enter house
"Every person entered the house"

For either case, we can model *saben* as a distributive quantifier with atomic restrictions.

(2) $[\![\text{saben}]\!] = \lambda P \lambda Q.\forall x[P(x) \wedge \text{Atom}(x) \rightarrow Q(x)]$

The preferred interpretation for (1b) is that each person is individually entering a home. There is also an additional reading where all people enter a home together, which is felicitous. Assuming that $[\![\text{mlebu}]\!] = \lambda x.\lambda e.[\text{enter}(e) \wedge \text{THEME}(e)=x]$, *saben wong mlebu* will produce a joint motion reading (Krifka, 1998) since all events may overlap in time.

When *saben* occurs before a collective-only verb, it is interpreted as a case of distributive coercion. The collective-only verb *ngumpul* (gathered) is collective with *kabeh* (3a) but *distributively coerced* with *saben* (3b).

(3a) Kabeh wong ngumpul
ALL person AV.gather
"Every person gathered"

(3b) Saben wong ngumpul
ALL person AV.gather
"Each person individually came to a gather point"

We can assume that collective-only verbs require a non-atomic subject. Thus, the meaning of *ngumpul* would be $[\![\text{ngumpul}]\!] = \lambda x.\lambda e.[\text{gather}(e) \wedge \text{AGENT}(e)=x \wedge \neg\text{Atom}(x)]$. This causes a clash between *saben wong* and *ngumpul*. A distributive coercion operator is required over events. We assume a distributive event operator such that each x_i is an atomic part of x in (4) (Krifka, 1992).

(4) $[\![\text{DIST}_{\text{event}}]\!] = \lambda P.\lambda x.\lambda e.[\exists e_1 \oplus \cdots \oplus e_n[n \geq 2 \wedge \forall i[P(x_i)(e_i)]]]$

Combined with *ngumpul*, this gives us a reading such that there are multiple events of gathering, each with its own individual.

Kabeh. The quantifier *kabeh* is interpreted as collective (3a, 5a) but can be interpreted as distributive in individual-biased verbs (5b). The interpretation remains the same whether *kabeh* occurs before the noun, after the noun. If *kabeh* appears at the end of the sentence and the agent has the clitic *=(n)e*, *kabeh* will retain the same reading.

(5a) Kabeh wong ngangkat lemari
ALL person AV.lift cupboard
"Every person lifted a cupboard (together)"

(5b) Kabeh wong nganggo sepatu
ALL person AV.wear shoe
"Each person wears shoes"

We can see that *kabeh* does not require any restrictions on atomicity. Its interpretation is dependent on the predicate (6). Therefore, for a model of *n* individuals in the domain of entities that satisfy P(x) in context *C,* we can assign the following meaning to *kabeh*.

(6) $[\![\text{kabeh}]\!] = \lambda Q \lambda P.[Q(\coprod_C P(x)]$

For individual-biased verbs such as in (5b), we propose the subject-level distributivity operator in (7) such that y⊏x denotes that y is an atomic element from x, following Link (1983) and Landman (2000).

(7) $[\![\text{DIST}_{\text{subject}}]\!] = \lambda P.\lambda x.[\forall y[y \sqsubset x \rightarrow P(y)]$

The subject-level distributive operator allows *kabeh* to function collectively and distributively depending on the verb. Importantly, *kabeh* can also be used in a cumulative reading (8).

(8) Kabeh wong ngangkat limang truk
ALL person AV.lift five truck
"All the people lifted five trucks (in total)."

The meaning of *kabeh* in (6) requires no modification to account for the cumulative reading. Instead, we apply Krifka's (1992) cumulative reading to the verb *ngangkat* such that each event of a truck being lifted is done by one or more people, and there are five lifting events in total. Importantly, *saben* does not have a cumulative reading.

Consequences. The atomicity requirement on *saben* can explain the ungrammaticality of reduplicated plurals (Soemarmo, 1979) shown in (9). The reduplicated noun is a plural entity, and the verb "go" will not have a subject distributivity operator because it is compatible only with *kabeh*.

(9) *Saben bocah-bocah / arep lunga
ALL children will go
"*Every children will go"

(10) Wong=e nganggo sepatu kabeh
person=DEF AV.wear shoes ALL
"All the people wore shoes"

Furthermore, the example in (10) with clitic =(n)e suggests that *kabeh* associates with the salient agent in actor voice (AV), contributing more information about the properties of salience in syntax.

Conclusion. The present study has showcased new interpretations of *kabeh* and *saben* in Eastern Javanese that have not been previously documented. We accounted for these readings with subject-distributivity and event-distributivity operators without affecting the standard denotations of collective and distributive quantifiers.

References

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