Bangla Plural Classifiers
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Abstract

This paper investigates the expression of plurality in Bangla. Like other languages that use classifiers in cardinal constructions, Bangla does not mark the singular-plural distinction on the noun. However, like other classifier languages, Bangla has expressions that convey reference to pluralities: -*gulo* and –*ra*. The first can combine with nouns that denote animate as well as inanimate entities, while the other only combines with animate nouns. The first entails reference to more than one entity while the other seems to merely implicate plural reference. The first is incompatible with kind reference but the other is, for the most part, the preferred form for reference to kinds. A formal account of their semantics is provided, analyzing them both as classifiers and relating them to an analysis of the basic classifier –*TA* used in cardinal constructions. The analysis of –*ra* is somewhat tentative since there some of the key facts remain unclear at this point.

Key Words: Bangla/Bengali, classifiers, kind terms, plurality, mass-count, (in)definiteness

Section 1: Background on Bangla

In this section we introduce the basic facts about nominal reference in Bangla, noting its status as a classifier language, in a region not generally known for this phenomenon. We also summarize here the details of the analysis of Bangla classifiers that is adopted in this paper.

1.1. About Bangla

Bangla, also known as Bengali, is an Indo-Aryan language spoken primarily in India and Bangladesh. One of the distinguishing features of Bangla is that it has a rich classifier system, something that is not canonically associated with languages of South Asia. As Masica (1976) puts it:

"The use of numeral classifiers or 'counter words'…links certain languages mainly on the eastern side of India with the languages of East and Southeast Asia. In this case, the features in the Indian languages concerned are marginal instances of a phenomenon that seems clearly to have its center in Southeast Asia"

It is worth emphasizing though that Bangla is not an outlier in having classifiers. There is a sizeable number of languages in the region, from different language families, where classifiers are attested. Sutradhar (2006) gives the following list. From Indo-Aryan: Bangla (aka Bengali), Asamiya (aka Assamese), Oriya, Bihari, Nepali, Sinhala. From Dravidian: Telugu (listed by Masica, not in Sutradhar), Malto, Kolami, Parji, Kui-Kuwi, Kurux. From Tibeto Burman: Ahom, Apatani, Bodo, Dimasa, Garo, Kokborok, Rabha, Mishmi, Karbi, Rangboli, Chtiya, Mikir, Empeo/Kachcha Naga, Lotha Naga. From Austro-Asiatic: Khasi, Pnar, Korowa, Kharia.

And finally, from the contact language group: Nagamese, Bishnupuriya. Whether this list is exhaustive or not, it is sufficient to establish that classifiers, while not an areal feature characterizing South Asia, are by no means a marginal phenomenon for languages of the region.

This paper focuses primarily on Bangla, and specifically on the expression of plurality in the language. In order to empirically and theoretically frame the discussion, I start by discussing the basics of the Bangla classifier system. As we can see from (1), the noun phrase displays some of the standard properties associated with such languages. It does not allow numerals to combine directly with a noun, thereby obfuscating the mass-count distinction. Thus, discrete objects, such as students and books, behave like liquid substances, such as tea, in requiring phrases that mediate between the numeral and the noun. Furthermore, the form of the noun does not change regardless of whether singular or plural reference is intended:[1]

1a. kal   *Ek *(Ta)   /du *(-To) chatro* eSechilo
          Yesterday one   CL   two   CL   student came
          "Yesterday a student / two students came."
  b.   onu *Ek *(Ta) / du *(-To) boi*   kineche
          Anu   one   CL   two   CL book bought
          "Anu bought a book/two books."
  c.   onu *Ek / du *(peala) ca* kheyeche
          Anu   one two cup   tea ate
          "Anu drank a cup of / two cups of tea."

In addition to *–TA* there are other classifiers in the language including some that have a more restricted use. The following is not an exhaustive list but it shows the range of classifiers attested in the language:

2a.   –Ta/To/Te   general classifier
  b.   –jOn   classifier restricted to humans
          -khana   classifier restricted to inanimate count nouns
          –khani   classifier restricted to mass nouns
  c.   -gulo   general plural classifier
          –ra   plural classifier restricted to animate count nouns

The two markers of plurality given in (2c) are the topic of this paper. In the rest of this section, however, I will summarize the analysis of *–TA* proposed in Dayal (2012) since the analysis of *–gulo* and *–ra* to be presented here use that as a starting point.[2]

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[1] *–Ta* is used with *Ek* 'one', *-To* with du 'two' and *-Te* with *tin* 'three'. I use *–TA* to refer collectively to these morphological variants. Important references for Bangla classifiers include Dasgupta (1983, 1985), Bhattacharya (1999a, 1999b), Dasgupta and Bhattacharya (1993) and Ghosh (2001). For more recent work on the topic, see Simpson et al (2011), Chacón (2011), Biswas (2011, 2013) and Jiang (2012),, most of which appeared after the first draft of the present paper had been written. I have therefore been unable to fully incorporate insights from them.
[2] Dayal (2012) is partly based on fieldwork conducted as part of a course on *(In)definiteness and Genericity* taught by Ayesha Kidwai and myself in Spring 2010 at Jawaharlal Nehru University, Delhi (India). Participants in that class included Diti Bhadra, Shiladitya Bhattacharya, Atanu Saha, Anu Beshears, Raj Lakshmi Singh, Aravind Kumar, Janani Kandhadai, Hima S., Jyoti Iyer, Bipasha Patgiri, Akansha Bansal, Thoibi Oinam, Manji Bhadra and Madhav Gopal.

1.2. Bangla Bare Nominals

Chierchia (1998), in the first serious proposal about cross-linguistic variation in the mapping of nominal forms to meaning, argued that classifier languages should freely allow bare arguments and that such arguments should denote kind terms (see also Krifka 1995). Bangla supports this generalization about bare arguments:

3a. jatayat-er   Sahoj   madhyom holo *gaRi*
    Transport-GEN convenient means   be   car
     "Cars are a convenient mode of transport."
  b. pancodOS SOtabdi-te   *boi*   chapa Suru hoichilo
     fifteenth   century-LOC book printed start happened
     "Books started to be printed in the 15th century."

In the above, the bare NPs *gaRi* 'car' and *boi* 'book' are fully acceptable and denote at the kind level. In (4) we see that they are also acceptable in generic/characterizing statements: [3]

4a. *gaRi* peTrol e cole
    Car petro on run
     "Cars run on petrol."
 b. ami roj   rate *boi* poRi
    I   every night book read
     "I read books every night."

Finally, they can occur in episodic statements where they have the weak indefinite readings expected of kind denoting terms.[4] (5a) asserts that no cars were seen and (5b) that no books were bought ($\neg\exists$ reading). Neither of them allows a strong reading for the bare plural in which the existential associated with it takes wide scope ($\exists\neg$ reading):

5a. ami *gaRi* dekhi ni
    I   car saw   not
    "I didn't see cars."
 b. ami *boi* kini ni
    I   book buy not
    "I didn't buy books."

In order to explain these facts, I follow the approach to bare nominals in Carlson (1977) and its later developments in Carlson (1989), Chierchia (1998) and Dayal (2004).[5] The following

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[3] An anonymous reviewer raises the possibility of pseudo-incorporation, in the sense of Dayal (2011b) being critical in these examples. Note that in (4a) the bare nominal is in subject position where incorporation is not expected to play a role. Other examples of this kind can be readily constructed to rule out an incorporation-based source.
[4] Anticipating the discussion in section 3, the acceptability of bare NPs in episodic statements does not extend to animate nouns.
[5] See Krifka et al (1995) for a survey of work on this topic till the early nineties and Dayal (2011a) for a survey of subsequent developments. See also Jiang (2012).

are some of the essential features of the theory of cross-linguistic variation proposed by Chierchia (1998):

6a. Set of type shifts: *nom* (∩):$<s<e,t>> \rightarrow <s,e>$

> For any property P and world/situation s, $^\cap P = \lambda s \, \iota P_s$,
>
> if $\lambda s \, \iota P_s$ is in K, undefined otherwise, where P_s is the extension of P in s and K is the set of kinds.

> *iota* (ι): $<e,t> \rightarrow e$
>
> > $\lambda P \, \iota P_s$, if there exists a unique maximal entity in P, undefined otherwise.

> *pred* (∪): $<s,e> \rightarrow <e,t>$
>
> > $\lambda k_{<s,e>} \, \lambda x \, [x \leq k_s]$

> ∃: $<e,t> \rightarrow <<e,t>,<<e,t>t>>$
>
> > $\lambda P \, \lambda Q \, \exists x \, [P(x) \wedge Q(x)]$

7a. Ranking of Type Shifts from $<e,t>$ to $<s,e>/<e>/<<e,t>t>$:

> {nom, iota} > ∃ (as modified in Dayal 2004)

  b. <u>Blocking Principle</u> (Type Shifting as Last Resort):

> For any type shifting operation π and any X: * $\pi(X)$ if there is a determiner D s.t. for any set X in its domain, $D(X) = \pi(X)$.

  c. <u>Derived Kind Predication (DKP)</u>: If P applies to objects (ie. ordinary individuals) and *k* denotes a kind, then $P(k) = \exists x \, [^\cup k(x) \wedge P(x)]$.

  d. Avoid Structure: Apply SHIFT at the earliest possible level.

In addition to the above, Chierchia posits a parametric difference between languages, whereby individual languages choose between argumental and predicative meanings to be instantiated at the NP level: [+/- arg, +/- pred]. A classifier language like Mandarin Chinese is taken to be [+arg, -pred], which has the following consequence. All nouns must have argument level meanings at the level of NP, something that follows straightforwardly if they are kind terms: [NP car$_{<s,e>}$/book$_{<s,e>}$]. Since an NP can have an argumental meaning, the principle of structural economy in (7d) rules out a DP projection for kind terms. It is thus predicted that bare nominals should occur freely and give rise to the readings associated with kind denoting terms.[6]

Applying these principles to the examples under discussion, we get the desired results:

8a. convenient-mode-of-transport($^\cap$car)

  b. Gen s, x [$^{\cup\cap}$car(s)(x)] [run-on-petrol(s)(x)]

  c. ¬ saw-yesterday($^\cap$car) =*DKP*⇒ ¬ $\exists x$ [$^{\cup\cap}$car(x) ∧ see(speaker,x)]

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[6] In this paper I follow this general approach, though there are specific points that are open to debate. See Dayal (2012, 2013) for some discussion.

Since the bare NP *gaRi* 'car' is a kind term, it can directly function as an argument of the kind level predicate in (3a), as shown in (8a). In (8b), the logical representation of (4a), the predicate calls for an object level term, which triggers the type-shifting operator *pred*. The sentence being a characterizing one, we get the requisite quantificational structure which makes a statement about instantiations of the kind: the sentence is true iff for most/all typical situations with a car, the car runs on petrol. Finally, in episodic statements we see the full effect of DKP. We get existential quantification over instances of the kind.[7] An important feature of the neo-Carlsonian system is that repair of the sort mismatch occurs at the point where a kind-denoting bare NP combines with an object-level predicate. This entails that the ∃ quantifier introduced by DKP necessarily takes narrow scope with respect to other operators in the sentence. In the case of (5a), for example, the sort mismatch is between the predicate *see* and the kind term *car*. As shown in (8c), the existential associated with DKP has narrower scope than negation. This gives us the correct scopal relation between negation and the bare NP.

A word about the choice of framework may be in order at this point. An important aspect of the neo-Carlsonian approach is the view that the indefinite reading of kind denoting bare nominals is due to its being a kind term rather than a true indefinite. As amply demonstrated in Carlson (1977), the readings of English bare plurals cannot be subsumed under the readings of ordinary indefinites. English counterparts of (5) show that bare plurals lack one reading that indefinites have but more telling are examples like (9), which show that the divide goes deeper. The bare plural in (9a) allows for different rabbits to be killed during the two hour period, a plausible *Adv > ∃* reading. This differentiated scope reading is unavailable for the indefinite, requiring the same set of rabbits to undergo killing for two hours, an *∃ > Adv* reading. Similarly, for (9b):

9a. Max killed some rabbits/rabbits for two hours.
 b. Some mice/Mice entered the room two times.

The view that English bare plurals are kind denoting individuals allows them to be direct arguments of verbs. When DKP mediates the sort adjustment that is needed, ∃ enters at a point below all other operators. The same does not hold of indefinites whose semantics can be taken to involve the ∃ type shift and which seems to take scope above low adverbial operators. There may well be ways of capturing these facts in other frameworks, but to the best of my knowledge this issue has not been explored in as much depth elsewhere. As such, I will adopt the neo-Carlsonian approach in analyzing the data here and leave it to the reader to determine if the essential insights about Bangla to be presented below can be captured in other semantic frameworks.

1.3. Definiteness in Bangla

We have seen that the data in (3)-(5) are tractable under an approach that treats Bangla bare NPs as kind denoting terms. Let us now address the issue of definite and strong indefinite readings, both of which seem to require the mediation of classifiers. Bangla does not have a

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[7] See Dayal (2013) for an approach to episodic readings that does not involve ∃ quantification of any kind.

definite determiner, which is not surprising for a classifier language. In fact, Chierchia (1998) had taken this to be an essential property of such languages, a property his theory was designed to capture. A kind denoting bare nominal can shift to predicative meaning through the application of *pred,* with subsequent applicaton of *iota* yielding a definite reading for it. This accounts for the definite readings of Mandarin bare nominals (Yang 2001). Bangla bare NPs, however, do not have definite readings. In this respect it is different from Mandarin and more like Cantonese which requires the projection of classifiers in order to express definiteness (Cheng and Sybesma 1999). Bangla differs from Cantonese, however, in also requiring syntactic movement of NP, in addition to the projection of classifiers, for such readings. To see this, consider two possible variants of a numeral phrase:

10a. du   To lal boi
      Two CL red book
      "Two red books"
  b. lal boi   du   To
     red book two CL
     "The two red books"

11a. [$_{DP}$ two$_i$ ([$_{CardinalP}$ t$_i$) [$_{CLP}$ To   [$_{NP}$ red book]]]]
  b.   [$_{DP}$ [$_{NP-i}$ red book] D$_{+Def}$ [$_{CardinalP}$ two [$_{CLP}$ To   [$_{NP}$ t$_i$]]]]]

As the examples in (10) show, Bangla allows the numeral plus classifier to either precede or follow the NP. I follow Bhattacharya (1999a, 199b) in analyzing (10a) as the base structure, with subsequent NP raising yielding the order in (10b).[8] In (11a) I take the numeral to be in DP, possibly after raising from a lower position, c-commanding a classifier that takes NP as complement. In (11b), the numeral is in a position below DP and the NP raises to Spec of a +def DP.

        Demonstratives and possessors optionally precede numerals, classifiers and the NP, as shown below:

12a. (amar) (ei) tin   Te lal boi
       My   this three CL red book
   b. (amar) (ei) lal boi   tin   Te
       My   this red book three CL
       "These three red books of mine."

        Turning now to matters of interpretation, I show in Dayal (2012) that the base order allows for weak as well as strong indefinite readings while the NP raised order yields the definite reading. In this I depart from Bhattacharya who analyzes the semantic reflex of NP raising in terms of specificity. The availability of partitive specificity vs. anaphoricity, and referential vs. quantificational readings are among the diagnostics used in Dayal (2012) to establish the relevant distinction:

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[8] My understanding of these facts is also informed by the analysis of Bangla classifiers in Dasgupta (1983, 1985), Dasgupta and Bhattacharya (1993) and Ghosh (2001). Biswas (2013) characterizes –*TA* etc. as number markers and posits null classifiers in the noun phrase.
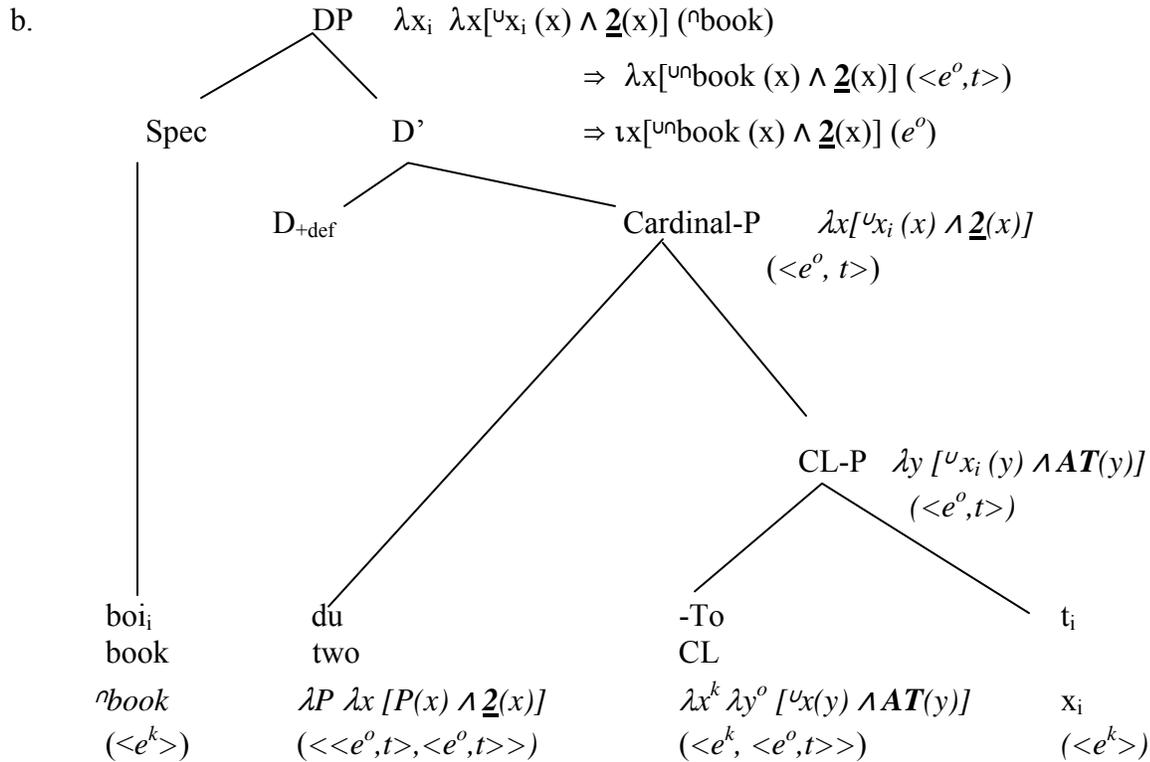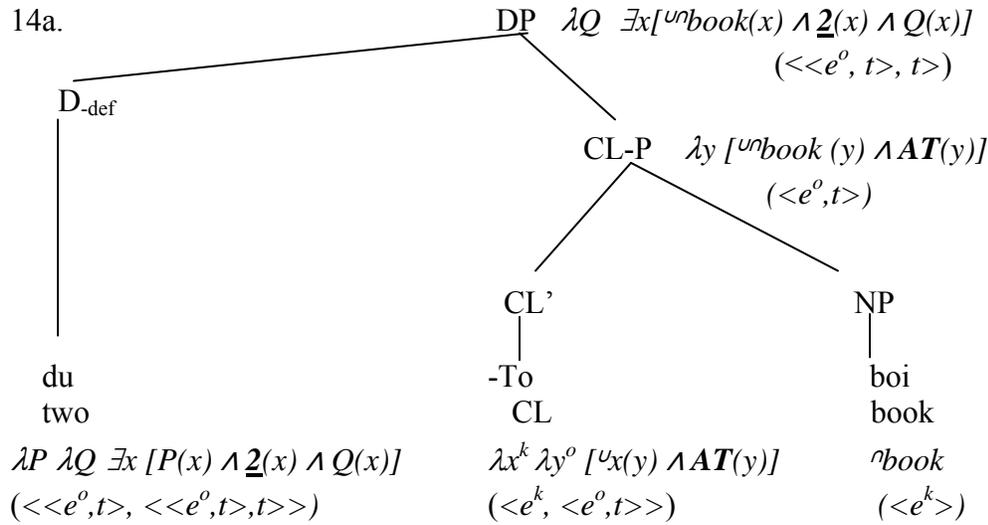
13a. There were three students. Two students/The three students were talking to each other.
   b. If two students/the two students come, I will teach.
   c. Every student read every paper on two topics/the two topics.

In the example in (13a), the indefinite *two students* in the second sentence is intended to refer to a subset of the students introduced in the first sentence. *The three students*, on the other hand, refers back to the full set of students previously introduced. In order to get the first reading, Bangla uses the base order; in order to get the second reading, it uses the NP raised order. The indefinite in (13b) has two potential readings, a quantificational reading in which the speaker declares an intention to teach as long as the number of students exceeds one. The other is the referential or specific indefinite reading in which any number of students may come but teaching depends on the presence of two particular students that the speaker has in mind. The referential reading of indefinites is crucially different from the definite reading in that the latter requires there to be a set of exactly two students salient in the discourse, equally identifiable by the speaker and hearer. Again, the Bangla base order allows for the two readings available to the indefinite in English, while the raised order corresponds to the reading available to the definite in English. Finally, (13c) has an intermediate scope reading for *two topics,* so that the topics can vary with students. This is unavailable for *the two topics.* Not surprisingly, the base order in Bangla allows for the intermediate scope reading, while the raised order is restricted to a fixed set of two topics (see Dayal 2012 for relevant references). On diagnostics such as these, then, NP raising is correlated with definiteness.
   I should note that correlating NP raising with definiteness is not a radical claim. What may be new, however, is the type of evidence used to establish the nature of the definiteness involved. It is particularly significant in analyzing the pair of examples in (12) above where the demonstrative can either precede the numeral-CL-NP complex or the NP-numeral-CL complex. The first order is possible regardless of how many entities of the relevant sort are in the context, while the second order is only possible if there are exactly as many entities as the numeral involved. One is hard put to separate these orders in terms of morpho-syntactic features referring to specificity or definiteness but an analysis in terms of uniqueness and maximality captures the facts. In the next section I present full derivations to show how the effects noted here can be derived compositionally, referring the reader to Dayal (2012) for motivation and discussion.

1.4. Deriving (Strong) Indefinite and Definite Readings

Let us start with (10a), which is interpreted as shown in (14a), and (10b), interpreted as shown in (14b). I use superscript *k* and *o* to make explicit whether reference to kinds or objects/instances, in the sense of Carlson (1977), is intended:

14a.

DP $\lambda Q \ \exists x[^{\cup\cap}book(x) \wedge \mathbf{2}(x) \wedge Q(x)]$
$(<<e^o, t>, t>)$

D$_{-def}$

CL-P $\lambda y [^{\cup\cap}book (y) \wedge \mathbf{AT}(y)]$
$(<e^o,t>)$

CL'   NP

du   -To   boi
two   CL   book
$\lambda P \lambda Q \ \exists x [P(x) \wedge \mathbf{2}(x) \wedge Q(x)]$ $\lambda x^k \lambda y^o [^{\cup}x(y) \wedge \mathbf{AT}(y)]$ $^{\cap}book$
$(<<e^o,t>, <<e^o,t>,t>>)$ $(<e^k, <e^o,t>>)$ $(<e^k>)$

b.

DP $\lambda x_i \ \lambda x[^{\cup}x_i (x) \wedge \mathbf{2}(x)] (^{\cap}book)$

$\Rightarrow \lambda x[^{\cup\cap}book (x) \wedge \mathbf{2}(x)] (<e^o,t>)$

$\Rightarrow \iota x[^{\cup\cap}book (x) \wedge \mathbf{2}(x)] (e^o)$

Spec   D'

D$_{+def}$ Cardinal-P $\lambda x[^{\cup}x_i (x) \wedge \mathbf{2}(x)]$
$(<e^o, t>)$

CL-P $\lambda y [^{\cup}x_i (y) \wedge \mathbf{AT}(y)]$
$(<e^o,t>)$

boi$_i$ du   -To   t$_i$
book   two   CL
$^{\cap}book$ $\lambda P \lambda x [P(x) \wedge \mathbf{2}(x)]$ $\lambda x^k \lambda y^o [^{\cup}x(y) \wedge \mathbf{AT}(y)]$ x_i
$(<e^k>)$ $(<<e^o,t>,<e^o,t>>)$ $(<e^k, <e^o,t>>)$ $(<e^k>)$

Let me touch briefly on three essential points in these derivations. I have assumed the standard view that a classifier is a function from kinds to instantiations of the kind. In the case of the general classifier *-TA*, these instantiation sets are restricted to atomic entities, here indicated through the predicate **AT.**

The second point to note is that I treat the numeral as ambiguous between existential generalized quantifiers (cf. 14a) and predicate modifiers (cf. 14b). And related to this is the fact that I derive the definite reading through the application of the set of ranked covert type-shifts in (7a). Here is how these two moves work together to yield the right empirical generalizations.

Allowing a generalized quantifier meaning for a numeral in D yields an indefinite argumental meaning in (14a).[9] In (14b), on the other hand, the numeral is inside the cardinal phrase where it is interpreted as a predicate modifier. The NP is raised to Spec DP to value the +def feature on D. The trace of the raised NP is interpreted as an indexed variable of the type e^k. Once the raised NP meaning is lowered into the base position through lambda conversion, we get a predicative meaning for the phrase. It now needs to undergo covert type shift to become an argumental type. The two higher ranked type shifts are *nom* and *iota*. *Nom* is undefined for singular terms (cf. Dayal 1992 and Chierchia 1998) and since the CL-P is, in essence, a singular term, it cannot undergo this type-shift. This leaves *iota* as the only available option.[10] Thus, we get an unambiguously indefinite reading for the base order and an unambiguously definite reading for the derived order, as desired.

The final point to note is the interpretation of the numeral, indicated in the derivations above as **2**. I am assuming here the account in Ionin and Matushansky (2006) and using bold-face and underlining as a short-hand for the following:

15a. $[\![n]\!] = \lambda P_{<e,t>} \lambda x_e \exists S_{<e,t>} [\prod(S)(x) \wedge |S| = n \wedge \forall s \in S \; P(s)]$

b. $[\![two]\!] = \lambda P_{<e,t>} \lambda x_e \exists S_{<e,t>} [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S \wedge \forall s \in S \; P(s)]$

A number *n*, in this view, is a function from the set denoted by the common noun to a set of plural individuals *x*, divisible into *n* non-overlapping individuals s, such that their sum is *x*, and each *s* has the common noun property. That is, a numeral draws on a partition of individuals and picks out those (plural) individuals x for which there is a cover S. A set S is a cover of x iff x is the sum of all members of S ($\sqcup S = x$) and $\forall z, y \in S \; [\; z=y \vee \neg \exists a \; [\; a \leq_i z \wedge a \leq_i y]]$. Assuming a situation with three books, a, b and c, we have the following schematic representation of individuals and covers. The cover for each individual in (16c) is aligned immediately below it for perspicuity:

16a.
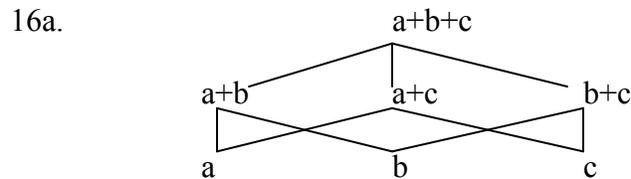
b. $[\![book]\!] = \{a,b,c\}$

c. $[\![two \; book(s)]\!] = \{a+b, \qquad b+c, \qquad a+c\}$

d. Covers: $\qquad \{a,b\} \qquad \{a,c\} \qquad \{b,c\}$

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[9] We know, of course, that a generalized quantifier interpretation may not be best way to capture the special properties of specific indefinites. However, the general point I am making here will transfer over to alternative implementations.

[10] An alternative that would yield almost the same results would be to posit a null +def determiner, as long as such a move could be made compatible with the interpretive possibilities available in the system of covert ranked type-shifts subject to blocking.

The important aspect of this account for our purposes is that numerals are defined in such a way that they only take atoms into account. Since the common noun property is assumed to hold of the members of the set S, rather than of the plural individual directly, semantic pluralization of the common noun is not required.[11] This is in contrast to an alternative view, deriving from Link (1983), where numeral phrases are predicative terms that hold of individuals with the relevant number of atomic parts: $\lambda P \, \lambda x \, [|\lambda y \, [y \leq_i x \wedge AT(y)| = n \wedge P(x)]$. Under this alternative view, the denotation of *two books* would be the same as in (16c), but would require semantic pluralization of the common noun. This is because the individuals themselves have to be in the denotation of the common noun, not the members of their cover.[12]

It should be obvious, then, that Ionin and Matushansky's approach to cardinal constructions is ideally suited for a classifier language like Bangla. Let us flesh out the interpretation of the numeral in (14), starting first with the raised version in (14b). The trace of the raised NP is a variable of type e^k and the classifier yields the set of atomic entities in its instantiation set: $\lambda y \, [^{\cup}x_i \, (y) \wedge AT(y)]$. When the numeral combines with this set, we get the interpretation in (17a). When the variable x_i is abstracted over and the meaning of the NP is lowered into the position of the trace, we get a set of plural individuals x, that are the sum of two non-overlapping individuals s, each of which is an atomic book (17b). As discussed earlier, this set undergoes covert type shift by *iota*, which is defined if there are exactly two books in the situation. The contribution of the *Cl+NP* is underlined below for perspicuity:

17a. $[\![\text{du-To } t_i]\!]$ $= \lambda x_e \, \exists S \, [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S \, [\underline{{}^{\cup}x_i \, (s) \wedge \mathbf{AT}(s)}] \,]$

  b. $[\![\text{boi}_i \text{ du-To } t_i]\!]$ $= \lambda x_e \, \exists S \, [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S \, [\underline{{}^{\cup n}\text{book} (s) \wedge \mathbf{AT}(s)}] \,]$

The base order, as shown in (14a), has a generalized quantifier treatment of the numeral. Under the current approach to numerals, this requires adjusting their meaning in the following way:

18a. $[\![\text{du}]\!]$ $= \lambda P \, \lambda Q \, \exists x_e \, \exists S \, [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S \, P(s) \wedge Q(x)]$

  b. $[\![\text{du-To boi}]\!]$ $= \lambda Q \, \exists x_e \, \exists S \, [\prod(S)(x) \wedge |S| = 2 \wedge \forall s \in S \, \underline{{}^{\cup n}\text{book} (s) \wedge \mathbf{AT}(s)} \wedge Q(x)]$

The generalized quantifier *du* 'two' takes the denotation of the classifier phrase as its first argument: $\lambda y \, [^{\cup n}\text{book} (y) \wedge AT(y)]$ and yields a set of properties Q that some plural individual x has, a garden variety existential. The novelty is merely in the way the first argument is built up. As mentioned earlier, the reason for interpreting numerals as generalized quantifiers is to ensure that a *numeral+Classifier+NP* does not undergo covert type shift by *iota*. (18) shows that Ionin

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[11] See Ionin and Matushansky for implications of this proposal for an analysis of plural morphology in languages like English.

[12] Ionin and Matushansky show that such an approach leads to contradiction with complex cardinals like *twenty three* and *two hundred*.

and Matushansky's essential insight, that counting is based upon a set of atomic entities, can be preserved in this extension of the system.[13]

Before concluding our discussion of Dayal (2012), let me briefly include the analysis of the pair of examples involving demonstratives. In doing so, I will revert for ease of exposition to the short-hand for expressing the semantic contribution of numerals. I start with the base order first:

19a. [$_{DP}$ ei [$_{Cardinal-P}$ du [$_{CL-P}$ -To [$_{NP}$ boi]]]]
       This   two   CL   book

  b. $[\![$ei$]\!]$ $= \lambda P \, \iota x \, [P(x) \wedge x = y]$

  c. $[\![$du-To boi$]\!]$ $= \lambda x \, [\underline{\mathbf{2}}(x) \wedge {}^{un}\text{book}(x)]$

  d. $[\![$ei du-To boi$]\!]$ $= \iota x \, [\underline{\mathbf{2}}(x) \wedge {}^{un}\text{book}(x) \wedge x = y]$

I assume that a lexical demonstrative, being definite, can value the +def on D. The meaning of a demonstrative is close to that of a definite determiner in that it also encodes *iota*. In addition, however, it contains an indexical element (see Kaplan 1989, Robinson 2005 and Wolter 2006, among others). (19d) will be defined as long as there are exactly two books in the domain that are identical to the (plural) individual being pointed at, for example. This is entirely compatible with there being more than two books in the given situation.

The NP-raised version is plausibly analyzed as DP-adjunction. This requires an extension of the semantics we already have in place:

20a. [$_{DP}$ ei [$_{DP}$ boi$_i$ du-To t$_i$]]
       This   book two CL

  b. $[\![$boi$_i$ du-To t$_i$$]\!]$ $= \iota z [{}^{un}\text{book}(z) \wedge \underline{\mathbf{2}}(z)]$

  c. $[\![$ei boi$_i$ du-To t$_i$$]\!]$ $= \lambda P \, \iota x \, [P(x) \wedge x = y] \, (\mathbf{\textit{IDENT}} \, (\iota z [{}^{un}\text{book}(z) \wedge \underline{\mathbf{2}}(z)]))$

$$\Rightarrow \iota x \, [\lambda y[y = \iota z [{}^{un}\text{book}(z) \wedge \underline{\mathbf{2}}(z)]](x) \wedge x = y]$$

$$\Rightarrow \iota x \, [x = \iota z [{}^{un}\text{book}(z) \wedge \underline{\mathbf{2}}(z)] \wedge x = y]$$

We take the meaning of the demonstrative to be as given in (19b) and the meaning of the inner DP to be as given in (14b). As it stands, the two cannot combine. However, if we tap into the *IDENT* type-shift from Partee (1986), we get the result in (20c).[14] It denotes the unique plural individual with two properties, the property of being identical to the unique *book* with two atomic parts and the property of being identical to what is being pointed at. That is, (20a) would be undefined in any situation with more than two books. Thus although both (19a) and (20a) would both be classified as definite, they have distinct presuppositions that turn on the scope of the *iota* operator associated with the demonstrative. We have thus derived in a principled

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[13] In Dayal (2012) I show that treating numerals as generalized quantifiers when they occur in D and as predicative terms when they occur inside Cardinal-P does not lead to the problems noted by Ionin and Matushansky for an approach in which numerals always denote generalized quantifiers.

[14] A reviewer raises a concern about the consequences of importing a new type-shift for these structures. While I share this concern, I believe it could only be used in DP adjoined structures since e^o meanings are only available at DP in Bangla. The point, however, is well-taken and merits a closer look.

manner a distinction that we noted as problematic for accounts characterized purely in terms of morpho-syntactic features.

1.5. Section Summary

We have seen in this section that Bangla adds an interesting dimension to our understanding of classifier languages. While bare nominals show the expected behavior with regard to kind level and weak indefinite readings, it does not display canonical behavior with respect to definiteness. Even though there is no lexical definite determiner in the language, definiteness requires projection to the DP level. I have summarized an analysis of these core facts regarding bare nominals within the neo-Carlsonian framework. I have also presented an analysis of the core facts regarding nominals with the general singular classifier –*TA*. With this background, we are now in a position to consider the expression of plurality in this language. Towards that end, we will first consider nominals with –*gulo* in section 2, arguing that –*gulo* can be plausibly analyzed as the plural counterpart of –*TA*. We will then turn to the other marker of plurality, –*ra* in section 3. Its status as a plural classifier is more nuanced, as we will see.

Section 2: The Plural Marker *-gulo*

In this section we look at the marker –*gulo*, which is typically associated with plurality and definiteness. We claim that it is the plural counterpart of –*TA*, thus encoding in its meaning reference to plural individuals only. Definiteness, on the other hand, is shown not to be an intrinsic property of –*gulo* marked nominals but one that is derived through a ranked set of covert type shifts, as in the case of –*TA*. As such, a –*gulo* phrase is not in and of itself incompatible with indefiniteness. We also consider the extent to which this analysis can explain other properties of –*gulo* marked nouns.

2.1. –*Gulo* as the Plural Counterpart of -TA

The primary claim I will make about –*gulo* is that it is a classifier, in line with Dasgupta (1983, 1985), Dasgupta and Bhattacharya (1993), Bhattacharya (1999a, 1999b) and Ghosh (2001). Semantically, it differs from –*TA* along the dimension of number. [15] Instead of extracting the atomic individuals out of the instantiation set of a kind, it extracts the non-atomic individuals. That is, it delivers strict plurality as opposed to the strict singularity of –*TA* marked nominals:

21a $[\![\text{-gulo}]\!] = \lambda x^k \lambda y\, [^\cup x(y) \wedge \neg \mathbf{AT}(y)]$

 b. $[\![\text{-TA}]\!] = \lambda x^k \lambda y\, [^\cup x(y) \wedge \mathbf{AT}(y)]$

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[15] We will see in section 3 that there are some restrictions on –*gulo*. For example, when it combines with certain nouns, like *mohila* "lady", it adds a pejorative connotation to it and is generally considered unacceptable. I am indebted to Biswas (2013) for bringing this to my attention.

In a situation where there are three students, a, b and c, for example, a *–TA* marked nominal and its *–gulo* marked counterpart will denote disjoint sets, as shown in (22a)-(22b), respectively and a sentence like (23a) will be interpreted as (23b). I gloss –gulo as CL_G:

22a. ⟦-TA-chatro⟧ = {a, b, c}

  b. ⟦-gulo chatro⟧ = {a+b, b+c, a+c, a+b+c}

23a. chatro-gulo   aSbe
      Student-CL_G will-come
      "The students will come."

  b.

$$⟦CL\text{-}P⟧ = λx[^{∪}x_i(x) ∧ ¬AT(x)]$$

$$⟦DP⟧ = λx_i\, λx[^{∪}x_i(x) ∧ ¬AT(x)]\, (^{∩}student)$$
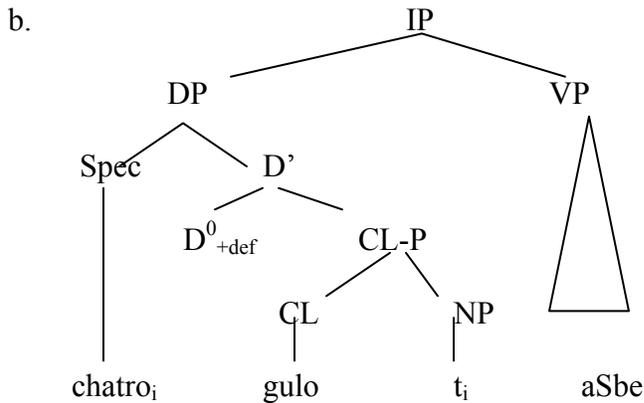
$$⇒ λx[^{∪∩}student(x) ∧ ¬AT(x)]$$

$$⇒ ιx[^{∪∩}student(x) ∧ ¬AT(x)]$$

$$⟦IP⟧ = ⟦VP⟧(⟦DP⟧) ⇒ came(ιx(^{∪∩}student(x) ∧ ¬AT(x)))$$

$$⇒ came(a+b+c)$$

As shown above, the final stage in the interpretation of the noun phrase involves covert-type shift by *iota*. Thus, the DP denotes the maximal plural individual *student* salient in the context if there is such a plurality and is undefined otherwise. This accords with intuitions and the treatment is analogous to that of *–TA* marked nominals discussed in section 1.

        That the –gulo phrase is a strictly plural definite with a presupposition of existence can be made explicit in discourse or satisfied through accommodation. In (24a), the plural definite in the second sentence refers back to the books introduced in the first sentence. The same is not possible in (24b), where the antecedent is a single book. In (25) there is no discourse antecedent available so accommodation is needed. Not surprisingly, *boi-gulo* turns out to be infelicitous when the location is a flower shop but perfectly acceptable if the location is a book store. The

former obviously does not facilitate accommodation of a set of books for the *–gulo* phrase to be linked to:[16]

24a. ami tin Te boi kinlam. boi-gulo dami
      I three CL book bought. Book-CL$_G$ expensive
      "I bought three books. The books were expensive."
  b. ami Ek Ta boi kinlam. *boi-gulo dami
      I one CL book bought. book-CL$_G$ expensive
      "I bought a book. The book was expensive."

25a. # phuler dukane boi-gulo DanDike rakha chilo
      flower-Gen shop-to book-CL$_G$ right-at kept was
      "In the flower shop, the books were kept to the right."
  b. boi-er dukane boi-gulo DanDike rakha chilo
      book-Gen shop-to book-CL$_G$ right-at kept was
      "In the book shop, the books were kept to the right."

Note that we are not treating *–gulo* as allowing both singular and plural individuals in its denotation, with plurality arising as an implicature due to the presence of the unambiguously singular *–TA* nominal. One piece of evidence supporting this is its behavior under negation. In contexts with no books or only one book, (26) is judged to be infelicitous:[17]

26. ami boi-gulo kini ni
      I book-CL$_G$ bought not
      "I didn't buy the books."

The treatment of *–gulo* given in this section captures the plurality and definiteness typically associated with *–gulo* marked phrases. It is worth highlighting that while plurality is built into the meaning of the classifier, definiteness enters indirectly via the covert type shift *iota*. In the next sections we will consider some further data to see if the analysis of-gulo presented here holds up.

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[16] The situation with *–TA* nominals is as would be expected. It is unacceptable in (24a) but acceptable in (24b). Examples parallel to (25) can be constructed to show accommodation, adjusting of course for the uniqueness of singular terms.

[17] Biswas (2011) claims that there is a contrast between English bare plurals and Bangla *NP-gulo* in a dialogue like (i), with bare plurals being infelicitous and the *NP-gulo* being felicitous. This would follow if bare plurals are include singular and plural individual while *NP-gulo* only includes plural individuals:

i. Speaker A: Please bring your children to the party.
   Speaker B: I can't come then, I have only one child.

I was not able to replicate this with the two consultants I asked. One found them both equally unacceptable, the other found a very weak contrast but volunteered that the dialogue would be fully acceptable with *–ra*. I am setting this aside as a diagnostic for now, pending further investigation.

2.2. –gulo's Status as a Classifier

We have seen that –*gulo* is acceptable with NP raising and shown how it can be interpreted. In fact, -*gulo* is unacceptable without NP raising, as shown in (27a). In both respects its behavior is parallel to that of –*TA*, supporting its treatment as a classifier:

27a. *gulo boi
        CL$_G$ book
        "books"
   b. *Ta boi
         CL book
         "a book"

I follow earlier authors in taking NP raising to be triggered by the need of the Bangla classifier to cliticize to a host on its left. If there is no demonstrative or numeral on the left, NP raising becomes obligatory. When there is an available host, however, the NP stays in its base position. Both versions in (28), for example, are equally acceptable. We will return to the possible semantic consequences of this optionality later but for now, we simply note that this optionality is again similar to what we saw in section 1 with respect to -*TA* and demonstratives:

28a. SOb boi   gulo
        all   book CL$_G$
        "All the books"
   b. SOb gulo boi
        all   CL$_G$ book
        "All the books"

As is also well-known, a property that does separate –*gulo* from –*TA* is its incompatibility with numerals, as shown in (29). This is a property of –*gulo* which does not fit the canonical profile of a classifier and therefore calls for an explanation:

29a. *boi   tin   gulo
        Book three CL$_G$
        "The three books."
   b. *tin   boi   gulo
        three book CL$_G$
        "Three books"
   c. $[\![$ boi$_i$ tin-gulo t$_i$ $]\!]$ = $[\![$ tin-gulo boi $]\!]$ =

$$\lambda x_e \; \exists S \; [\textstyle\prod(S)(x) \wedge |S| = 3 \wedge \forall s \in S \; [^{\cup n}\underline{book \; (s) \wedge \neg AT(s)]} \;]$$

Recall that in the account of numerals adopted in section 1, counting looks at atoms but the way in which –*gulo* has been defined, there are no atoms in the extension of the CL-P. The cover S of a plural individual has only atomic individuals in it, but this means that the condition ¬*AT* cannot hold of them (29c). Numeral constructions, with or without NP raising, are therefore doomed to turn out false because of this. This, I submit, is the source of the deviance of –gulo in

cardinal constructions.[18] Note that the incompatibility of –*gulo* and numerals would not follow directly in a theory that builds up the meaning in such a way that the common noun property holds of plural individuals directly.

Returning to the properties that align –*gulo* with the basic classifier –*TA*, we note that neither of them seems to function as predicate nominals. One explanation for this may be in terms of structural economy (cf. 7d). In a context in which a simple predicative term is needed, a kind denoting NP can undergo a covert application of *pred* to yield the set of instantiations of the kind. In (30), for example, $^{\cup n}$*student* would be the set of students in the situation. This means that a bare NP will be preferred over a DP with –*gulo* or –*TA* in this position:[19]

30a. *onu ar uma chatro-gulo
   Onu and Uma student-CL$_G$
   "Onu and Uma are (the) students."
  b. *onu chatro-Ta
   Onu student CL
   "Onu is (the) student."
  c. onu ar uma chatro
   Onu and Uma student
   "Onu and Uma are students."

Before ending this subsection, it is worth discussing another well-known property of –*gulo* marking. Some speakers can accept –*gulo* in association with a proper name, provided that the context establishes the existence of a set of individuals with that name:

31a. ghosh-gulo eSechilo
   Ghosh-CL$_G$ came
   "The Ghoshes came."
  b. $\lambda x [^{\cup n}$named-'Ghosh'$(x) \wedge \neg AT(x)]$

Treating proper nouns as predicates of individuals so-named is a fairly standard way of handling such constructions. The question of interest is why this should be less readily acceptable than the corresponding English noun phrase *the Ghoshes*. I do not have much to say about this, except to note that it may have something to do with the fact that we are not dealing with a natural kind term in this case. Since the Bangla NP must denote kinds, while an English NP can denote a predicate of objects, there is a little extra work to do in Bangla than in English.

2.3. –*gulo* and (In)definiteness

In the examples we have considered so far, –*gulo* phrases have a definite interpretation. In this respect, -*gulo* is reminiscent of the Chinese plural marker –*men,* which has been treated as denoting a plural definite (see Kurafuji 2004, for example). Ghosh (2001), in fact, explicitly

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[18] See Gajewski (2002) for a proposal about ungrammaticality due to inevitable contradiction.
[19] An alternative explanation in terms of the definiteness of an NP raised construction would suggest that they would be acceptable in equatives such as *Anu and Uma are the Committee members*. However, the Bangla counterpart of this is unacceptable (Ghosh 2001).

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makes the connection between them. However, the analysis I have provided here does not treat definiteness as integral to the meaning of *–gulo* but as deriving from covert type-shift after NP raises to Spec of a +def DP. This raises the possibility that if raising did not occur, a *–gulo* phrase could have an indefinite reading. The examples with the universal quantifier, repeated below as (32), do not settle the question since the quantifier can itself be classified as definite:

32a. SOb chatro-gulo
 b. SOb gulo chatro
   "All (the) students."

A better example verifying the possibility of an indefinite interpretation is given in (33). The verb of possession does not support a definite interpretation and the universal is ruled out. An indefinite quantifier like *Onek* 'many', however, is perfectly acceptable in this position, turning the CL-P into a generalized quantifier of type $<<e^o,t>,t>$:[20]

33a. * amar SOb-gulo bondhu ache
    my all-CL$_G$ friend be
    "I have all (the) friends."
  b. amar Onek–gulo bondhu ache
    my   many-CL$_G$ friend be
    "I have many friends."

The example in (33b) is particularly relevant because it contrasts with (34a). The data in (34b)-(34c) show a similar variation based on (in)definiteness for *–TA* marked noun phrases:

34a. *amar bhai-gulo   ache
    my   brother-CL$_G$ be
    "I have brothers."
  b. *amar bhai-Ta   ache
    my   brother-CL be
    "I have a brother."
  c. amar Ek-Ta   bhai   ache
    my   one-CL brother be
    "I have a brother."

    We have seen fairly strong evidence, then, that *–gulo* phrases are like *–TA* phrases in not being necessarily definite. Let us now take a closer look at issues related to *–gulo* and quantifiers. As discussed by Dasgupta (1983, 1985) along with *SOb* 'all' and *Onek* 'many', *kOtok* 'some' can also combine with *–gulo*. However, of these three only *SOb* 'all' can co-occur with NP-raising. The syntactic analysis I assume for the two structures is given in (35a)-(35b):

35a. [$_{DP}$ kOtok/Onek/ SOb [$_{Cl-P}$ gulo [$_{NP}$ boi]]]   "some/many/all books"
  b. [$_{DP}$ *kOtok/*OnEk/SOb [$_{DP}$ boi$_i$ [$_{Cl-P}$ gulo [$_{NP}$ t$_i$]]]   "*some/*many/all books"

---

[20] Since there is a lexical quantifier in D which makes the DP a generalized quantifier, covert type shift by *iota* is ruled out. Thus this structure is unambiguously indefinite.

(35a) is the basic nominal structure where the semantics of the quantifier determines (in)definiteness. The adjoined structure in (35b) draws on the account of a similar variation between the demonstrative and –*TA* proposed in Dayal (2012), and discussed in section 1.

The first question we have to consider is the interpretation of the three possibilities in (35a). Under straightforward assumptions about the meaning of these quantifiers, we get the following:[21]

36a.   c. $⟦kOtok⟧$ ($⟦gulo\ boi⟧$)

$\Rightarrow \lambda P\ \lambda Q\ \exists x\ [P(x) \wedge Q(x)]\ (\lambda x[^{un}book(x) \wedge \neg AT(x)])$

$\Rightarrow \quad \lambda Q\ \exists x\ [^{un}book(x) \wedge \neg AT(x) \wedge Q(x)]$ "some books"

   b. $⟦OnEk⟧$ ($⟦gulo\ boi⟧$)

$\Rightarrow \lambda P\ \lambda Q\ \exists x\ [P(x) \wedge |P|{>}n \wedge Q(x)]\ (\lambda x[^{un}book(x) \wedge \neg AT(x)])$

$\Rightarrow \quad \exists x\ [^{un}book(x) \wedge \neg AT(x) \wedge |\lambda x[^{un}book(x) \wedge \neg AT(x)]|{>}n \wedge Q(x)]$ "many books"

   c. $⟦sOb⟧$ ($⟦gulo\ boi⟧$)

$\Rightarrow \lambda P\ \lambda Q\ \forall x\ [P(x) \rightarrow Q(x)]\ (\lambda x[^{un}book(x) \wedge \neg AT(x)])$

$\Rightarrow \quad \lambda Q\ \forall x\ [[^{un}book(x) \wedge \neg AT(x)] \rightarrow Q(x)]$ "all books"

In (36a) we have the basic meaning of an existential quantifier taking as its first argument the set of non-atomic instantiations of the kind *book*. In (36b) we have the additional condition that the instantiation set be larger than some contextually salient number *n*. It perhaps bears highlighting that there are no presuppositions attached to these two determiners. The DPs do not have to mean *the several/the many books* or even *several/many of the books*. Finally, in (36c) we get the universal reading.

We now consider the possibilities for DP adjunction, given in (35b). Our first task is to rule it out for the two indefinite quantifiers. We can do this by restricting DP adjunction of quantifiers to those whose definiteness feature matches that of the inner DP[22]. The second task is to provide a compositional semantics for the universal quantifier, which is acceptable with DP adjunction. This is given below:

37. $⟦sOb⟧$ ($⟦[_{DP}\ boi_i\ gulo\ t_i\ ]⟧$)

$\Rightarrow \lambda P\ \lambda Q\ \forall x\ [P(x) \rightarrow Q(x)]\ (\textbf{\textit{IDENT}}(\iota z[^{un}book(z) \wedge \neg AT(z)]))$

$\Rightarrow \quad \lambda Q\ \forall x\ [\ \lambda y\ [y= \iota z\ [^{un}book(z) \wedge \neg AT(z)]]\ (x) \rightarrow Q(x)]$

$\Rightarrow \quad \lambda Q\ \forall x\ [x= \iota z\ [^{un}book(z) \wedge \neg AT(z)] \rightarrow Q(x)]$

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[21] I assume for (36b) that the cardinality of a set of plural individuals is established by counting their atomic individual parts.

[22] Biswas (2013) also imposes a restriction on DP adjunction having to do with matching of +animate features in connection with –*ra* marking.

When the inner DP combines with the determiner *SOb,* type-shift by *IDENT* allows the *iota*-shifted DP to become type $<e^o,t>$ again. This set is necessarily a singleton, its only member being the maximal plural individual that instantiates the kind *boi* 'book': {a+b+c} if there are three books a, b and c in the domain. But it is of the right type to be the first argument of the universal quantifier. As (37) shows, the full DP denotes the set of properties Q that this maximal individual has.

Recall that in the case of the general classifier *–TA* and variation with respect to the demonstrative, there is a clear presuppositional difference between the two orders. The DP adjoined structure *ei boi du-To* "this book 2-CL" is only defined in contexts with exactly two books while the simpler structure *ei du-To boi* "this 2-CL book" allows for more books than the two being pointed at. One might well ask if there is similarly a concrete difference between the two versions of *SOb* "all" and *–gulo.* Although my investigations have not so far led to a clear empirical generalization, I will try to convey a sense of the sort of factors that seem to play a role in the choice of orders:[23]

38a. Situation 1: There are ten individuals, all girls, all tall.
  b. Situation 2: There are six girls and four boys, only the six girls are tall.
  c. Situation 3:
        There are six girls and four boys, all the girls are tall, two of the four boys are tall.
  d. Situation 4: There are six girls and four boys, everyone is tall.

39a. SOb gulo mei lOmba   *base order*   Sit 1^{OK}; Sit 2*
        all   CL$_G$ girl tall
  b. SOb mei gulo lOmba   *adjunction*   Sit 1$^{\%}$; Sit 2^{OK}
        all   girl CL$_G$ tall
        "All the girls are tall."

When presented with the first two situations, both consultants who were asked preferred (39a) over (39b) as a description of situation 1 and both accepted (39b) but rejected (39a) for situation 2. The judgments shifted in situations 3 and 4 in a way that made it clear that more work is needed at the empirical level to fully understand the pragmatics of these structures. Final analysis of this paradigm must therefore be left for later.

2.4. *–gulo and Reference to Kinds*

We have classified *-gulo* as a general classifier, on a par with *–TA*, but our discussion so far has focused on object-level count nouns. In this section and the next we will extend the discussion to kind and mass terms and see whether the behavior of *–TA* and *–gulo* marked nominals fits in with what we have proposed so far.

The following clearly establish that *–gulo* is unacceptable with kind-level predicates as well as in generic sentences:

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[23] It is possible that some differences may emerge when collective vs. distributive readings are probed further. In a situation with three books, *a, b* and *c*, for example, (36c) will quantify over the set {a+b, a+c, b+c, a+b+c} while (37) will quantify over the set {a+b+c}.

40a.# DoDo-gulo bilupto
    Dodo-CL$_G$ extinct
    "Dodo are extinct."
  b.# Dinosor-gulo bilupto
    Dinosaur- CL$_G$ extinct
    "The dinosaurs are extinct."
  c. # pakhi-gulo oRe
    Bird- CL$_G$ fly
    "Birds fly."

The -*gulo* marked nominals in (40) must refer to contextually salient entities, which is incompatible with the intended kind level predication. Of course, they can refer to contextually salient sub-kinds to yield taxonomic readings (*the dinosaur sub-kinds are extinct*). This option can redeem (40b)-(40c), but not (40a) since there are no known dodo subkinds. This shows clearly that the covert type shift *nom* does not apply to a –*gulo* phrase. We would like to know why this should be so.

Recall that in the framework we are following, covert type shifts are ranked: {*nom, iota*} > ∃. The motivation for this particular ranking comes from two related facts, discussed in Dayal (2004). The first is that languages like Hindi and Mandarin Chinese allow bare NPs to refer to kinds as well as to contextually salient entities. The second reason is that bare NPs in these languages exhibit obligatory narrow scope with respect to other scope bearing expressions, a characteristic of kind-denoting terms rather than of noun phrases that undergo ∃-type shift. The first fact shows that *nom* and *iota* do not compete with each other and should be ranked at the same level. The second fact shows that ∃ is not tapped in these languages. In the context of the present discussion the question of relevance is why *nom* is not available to make the sentences in (40) acceptable. There are two possible explanations for this and I will briefly sketch each of them.

We know that *nom* is sensitive to number. It is defined in such a way that if it applied to a singular term, it would have to denote a unique singular entity in every world (cf. 6):

41a. *nom (dodo$_{SING}$) ⇒ λs ıx [$^{\cup n}$dodo(s)(x)]

  b. *nom* (dodos$_{PL}$)   ⇒ λs ıx [$^{\cup n}$dodo(s)(x)]

  c. *nom (dodo-gulo) ⇒ λs ıx [$^{\cup n}$dodo(s)(x)]

The requirement of uniqueness has been argued to clash with our concept of kinds (Dayal 1992, 2004, Chierchia 1998), which we expect to be instantiated by different numbers of individuals in different situations.[24] The requirement of variation in size can therefore be thought of as a presupposition on the domain of *nom,* and can be used to rule out (41a). The English plural term includes both atomic and plural entities and allows for precisely this variation in size and can

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[24] In fact, there can be situations in which there are no instantiations of the kind at all and we do not want the kind term to be undefined in such situations. This is stipulated in the definition of *nom*, but see Dayal (2013) for an alternative.

therefore undergo *nom*, as shown in (41b).[25] The claim is that *nom* is also blocked from applying to a *–gulo* phrase because the requirement of strict plurality is too restrictive for a kind term.

The fact that kind terms should not only have singleton instantiation sets is well-established; that they should not have only plural instantiation sets has been claimed previously by Nomoto (2012). Note that this explanation for the absence of kind-reference would not have been available to us had we chosen to treat *–gulo* as denoting both singular and plural individuals and derived the plurality associated with it as an implicature that arises because of the presence of the unambiguously singular classifier *–TA*.

A second possible explanation for the inapplicability of *nom* to *–gulo* phrases could be that the bare NP is itself kind denoting. Based on the principle of structural economy, there is no motivation to project more structure to derive the same meaning. We will explore this line of explanation further in section 3, when we consider the plural marker *–ra*. Both explanations, the one in terms of undesirable semantic restrictions and the one in terms of structural economy, apply as much to *–TA* phrases as to *–gulo* phrases but, as we will see, the first of these provides a more straightforward explanation of facts related to *–ra* marking.[26]

To complete this discussion, it should come as no surprise that even though a *–gulo* phrase cannot refer to kinds, it can be anaphoric to a kind term. The situation is parallel to plural definites in English:

42a. *DoDo-gulo   bilupto
       Dodo-CL$_G$ extinct
       "Dodos are extinct."
   b. ami tin   dhOroner   ca kinechilam. ca-gulo bhalo chilo.
       I   three types-Gen tea bought.   tea-CL$_G$ good was
       "I bought three types of tea. The teas (three types of tea) were good."

43a. * The dinosaurs are extinct.
   b. Many types of dinosaurs roamed the earth. But at some point the dinosaurs became extinct.

In these contexts, the *–gulo* phrase or the plural definite does not tap into *nom* at all but is interpreted via a covert or lexically encoded *iota* type-shift. It is simply that the plural entity salient in the discourse that they are identified with involves reference at the level of kinds.

2.5. Mass Nouns and -Gulo

A final aspect of the semantics of *–gulo* worth exploring further is its relation to the mass-count distinction. I have analyzed *–TA* and *–gulo* as yielding disjoint sets, *-TA* a set of atoms and *–gulo* a set of non-atoms, on the basis of nouns that can safely be thought of as count nouns. As has been clear since Cheng and Sybesma (1999), however, the mass-count distinction is very much there even in classifier languages that seem on the surface to be impervious to it. It therefore makes sense to ask how the grammar of Bangla encodes this distinction and whether

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[25] Earlier, I mentioned the position of Ionin and Matushansky that the plural morpheme in English cardinal constructions does not indicate semantic plurality. In the case of full DPs, however, number is interpreted so that a plural bare NP denotes both atomic and plural individuals.
[26] To anticipate, one would have to justify the extra structure on the basis of the presupposition of animacy that *–ra* encodes.

–*gulo* and –*TA* are sensitive to it. In this section, we therefore turn to nouns denoting liquids and substances and study the behavior of these two classifiers in relation to them.[27]

Consider (44) in which the second sentence has a mass noun *bhaat* "rice" with a definite reading referring back to the bowls of rice mentioned in the first sentence. Our earlier account of –*TA* as extracting atoms from its common noun argument cannot be imported directly since we're not dealing with a count noun with a salient set of atomic entities. Similarly, it is not immediately obvious how –*gulo*, as defined on non-atoms, would apply to what appears to be the mass domain. Furthermore, whether we use –*TA* or –*gulo*, reference is to the same quantity of rice salient in the discourse. So the basic question that arises is how the atomic and non-atomic restrictions of the two classifiers play out in this case:[28]

44. Tebile   tin   baTi bhat chilo. bhat-Ta /bhat-gulo gOrom chilo
     Table-on three bowl rice   was   rice-TA   rice- CL$_G$ hot   was
     "There were 3 bowls of rice on the table. The rice was hot."

Chierchia (2010) proposes that although count and mass nouns both have a set of atoms in their domain, the sets have distinct character (see also Rothstein 2010 for a related proposal). There is a natural individuation for discrete entities like books and boys but not for milk or rice, which has the consequence that a plural count domain will be individuated in the same way across all contexts while the plural mass domain will be individuated in different ways in different contexts. That is, there is a set of *stable* atoms for a count domain but a set of *unstable* atoms for a mass domain. Partitions must be brought into play to impose a structure on the mass domain and make it possible to count. Chierchia argues that direct number-noun combinations are impossible in classifier languages because nouns in such languages are kind denoting and need to be turned into properties first, via classifiers of type $<e^k,<e^o,t>>$. He divides the set of classifiers into three different types, those that are based on the set of stable atoms, those that use partitions (container words, for example), and those that use measure functions (*kilo* or *liter*, for example). Classifiers based on stable atoms, like –*TA* and –*gulo* in Bangla, are expected to work well with kinds that have discrete entities in their instantiation sets. This is what we have seen so far in our discussion of classifiers.[29] Our concern now is with how these two classifiers interact with mass nouns which do not have a set of stable atoms.

Chierchia shows that the notion of atoms for mass terms can be relativized to a context. So un (44) we have the following structure for *bhaat* "rice", where the bowls of rice provide the basis for determining the set of atoms:

45.

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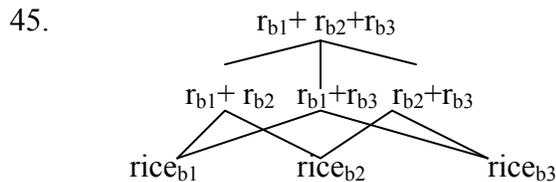
[27] Some of the facts in this section were first discussed by Dasgupta (1983, 1985).
[28] There seems to be some variation in judgments on whether one can use the container phrase *baaTi-gulo* "bowl-CL$_G$" in place of *bhaat-gulo* "rice-CL$_G$" to refer to the substance in the bowls. I leave further discussion of this issue for another occasion.
[29] Note though that because –*gulo* yields a set of non-atoms it does not lend itself to counting, as we have discussed previously.

It is now easy to see how *bhaat-gulo* can be interpreted. We first have the set of non-atoms *bhaat gulo = { r_{b1}+ r_{b2}, r_{b1}+r_{b3}, r_{b2}+r_{b3}, r_{b1}+ r_{b2}+r_{b3}}*. When *iota* applies to it, we get reference to the maxima: r_{b1}+ r_{b2}+r_{b3}. In order to interpret *bhaat-Ta*, on the other hand, we lump together the rice in the individual bowls, erasing the partition provided by the three bowls and have the singleton set *rice,* which is the individual aggregate of the rice in the three bowls. When *iota* applies to this we again get reference to the same quantity of rice.

These two ways of interpreting mass nouns yield the same results in the case of (44), but they diverge in other cases:

46a. Tebile   Ek   baTi bhat chilo.   bhat-Ta /*bhat-gulo gOrom chilo
       Table-on   one   bowl   rice   was   rice- CL   rice- CL$_G$ hot   was
       "There was 1 bowl of rice on the table. The rice was hot."

Here the context does not allow for a structure like (45) for the mass noun and *–gulo* is undefined. The context, however, is compatible with the requirements of *–Ta*, as we see. The situation is similar to what we find in English:

47a. I ordered three bottles of beer. The beer was warm/The beers were warm.
   b. I ordered a bottle of beer. The beer was warm / *The beers were warm.

As Chierchia notes, it is not possible to impose a plural structure on a mass domain but it is possible to erase a linguistically provided partition and impose a singular structure on it.

A final interesting difference, due to Dasgupta (1983, 1985) and discussed also by Ghosh (2001), is the following, where the choice of classifier seems to yield a semantic distinction:[30]

48a.   Onek Ta kaj

     Q   cl work   'a lot of work'

   b. Onek gulo kaj

      Q   cl   work   'many works [tasks]' / 'a lot of works [tasks]'

49a.   Onek Ta jOl

      Q   cl   water   'a lot of water'

   b. Onek gulo jOl

      Q   cl   water   'many (drops/puddles) of water'

This is consistent with what we have said about the structure of the mass domain and what we know about the relation between *many* and *much*. In the case of *–gulo* what is asserted as

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[30] One of my consultants found the phrase in (49b) awkward, at least when uttered out of the blue.

exceeding some threshold is the cardinality of the contextually supplied/non-stable atoms of work/water; in the case of *–Ta* reference is to a single quantity of work/water, whose size measures above the norm. The plurality requirement of *–gulo*, one might say, forces a count interpretation on an otherwise mass domain. This is consistent with our earlier observations and the analysis of the two classifiers as differing along the dimension of number.

2.5 Section Summary

In this section I have analyzed *–gulo* as a classifier that takes a kind term and yields a set of strictly plural individuals. It can combine with quantifiers, universal as well as indefinite, that are defined for such pluralities or it can trigger NP raising. With such raising, a *–gulo* phrase comes to have a definite reading, undergoing *iota* shift. Because of its restriction to strict pluralities *NP-gulo* does not undergo *nom* type shift. *–gulo*, like *–TA*, typically combines with count nouns. When it does combine with mass nouns, its plurality requirement must be met by an appropriate partition of the mass domain. Aside from details specific to the encoding of definiteness in Bangla, the analysis of *–gulo* for the most part draws on well-established views on plurality and classifiers.

Section 3: The Plural Marker *–ra*

Bangla has a second marker of plurality which differs from *–gulo* in significant ways. In this section we will take a closer look at the properties of *–ra* marked nominals and present an account of them that tries to capture these properties. We note, however, that more empirical work is needed before a definitive account of *–ra* can be given. This is in part due to the fact that *–ra* has not been investigated to the same extent as *–gulo* in previous literature. Nevertheless, as I hope to show, even a partial understanding of *–ra* is useful in enhancing our knowledge of the role of number in classifier systems.

3.1. A Kind-Classifier Analysis of -ra

The basic observation we start with is that *-ra* is restricted to animates. Our first task, therefore, is to capture this restriction. Requirements of this type are not unusual for classifiers, which typically specify the shape and size of the nouns they combine with. We can model these requirements as presuppositions. (50a) is the proposed meaning for *–ra* and (50b) for *–jOn*, another classifier that is restricted to animates:[31]

50a. $⟦–ra⟧ = \lambda x^k: \forall z,s [z \leq_i x_s \rightarrow \text{animate}_s(z). [x]$ $<e^k, e^k>$

  b. $⟦-jOn⟧ = \lambda x^k: \forall z,s [z \leq_i x_s \rightarrow \text{animate}_s(z). \lambda z [[^\cup x(z) \wedge \mathbf{AT}(z)]$ $<e^k, <e^o,t>>$

  c. $[_{DP} NP_i [_{CL-P} –ra [_{NP} t_i]]]$

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[31] I follow the convention in Heim and Kratzer (1998), where presuppositions are represented within a colon and a period. Here x_s is the extension of the kind at the relevant index, which denotes the maximal plural individual of the relevant type (cf. 6).

In (50a), I treat *–ra* as a classifier which, like *–TA* and *–gulo*, takes as its first argument a kind term. It differs from them in being defined only for animate kind terms. That is, it includes the presupposition that in any situation s, every individual part of the extension of the kind must be animate. It also differs from standard classifiers in denoting the identity function on the kinds that satisfy this presupposition. In (50b) we have a meaning for *–jOn*, a classifier that encodes the same presupposition as *–ra* but, like *–TA*, yields a set of atomic entities. If *–ra* is a classifier we can assume the syntactic structure in (50c), as we have done for other classifiers in Bangla. And as in those cases, NP raising would be triggered by the need for the classifier for a host on the left.

There is an alternative that yields virtually the same results that is worth mentioning here. Instead of treating *–ra* as an identity function on animate kinds, we could take it to be a function from kinds to instantiation sets:

51a. $[\![\text{-ra}]\!] = \lambda x^k: \forall z, s\ [z \leq_i x_s \rightarrow \text{animate}_s(z)].\ ^\cup x$ $\langle e^k, \langle e^o, t \rangle \rangle$

  b. $[\![[\text{NP}_i\text{-ra } t_i]]\!] = nom\ (^\cup [\![\text{NP}]\!]\ )$ e^k

  c. $[\![[\text{NP}_i\text{-ra } t_i]]\!] = iota(^\cup [\![\text{NP}]\!]\ )\ e^o$

The proposal in (51a) has the advantage that *–ra* has the same type as other classifiers we have been looking at by tapping into *pred*. The difference is that *–ra* does not sift out atoms or non-atoms from the instantiation set of the kind. Once the NP raises to Spec of DP and its meaning is lowered into the base position, it undergoes covert type shifts. Unlike the sets produced by other classifiers, NP-ra can undergo kind formation via *nom* precisely because it includes singular as well as plural entities in its domain. Note, however, that it can also undergo type-shift by *iota*, which as we will see in section 3.2 may not necessarily be problematic. For now, however, I will continue to treat *–ra* as a function to kinds, in keeping with the proposal in (50a).

Let us consider the consequences of the view that *–ra* is an identity function on animate kinds. The first point of note is that *–ra* marked phrases are predicted to behave like kind terms. This prediction is robustly borne out. Consider the following where *–ra* marked nominals serve as arguments of kind level predicates and also as arguments of object level predicates in generic statement. I gloss *–ra* as CL$_R$:[32]

52a. posTmasTar-ra   shighroi bilupto hoye jabe
       Mailman-CL$_R$ soon.   extinct will-be
       "Mailmen will soon become extinct."
   b. DoDo-ra / Dinosor-ra   bilupto
       dodo-CL$_R$ / Dinosaur-CL$_R$ extinct
       "Dodos/Dinosaurs are extinct."

53a. chele-ra   meye-r theke beSi   SoktiSali
       boy-CL$_R$ girl-CL$_R$ than more strong
       "Boys are stronger than girls."

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[32] In certain positions *–ra* has a morphological variant *–der*.

b. pakhi-ra oRe
   bird-CL_R fly
   "Birds fly."

.

      In episodic contexts too they show predictable behavior. Consider a situation in which a speaker is describing to a friend her new place of residence. The friend has just been told: *I live in a very nice town. There is a park close to my dorm.* This is clearly a presentational context where there are no individuals in the common ground. The animate nouns are all marked by *–ra*:

54. ami kal   park-Tay gechilam. bacca-ra Ekdike   khelchilo.
  I   yesterday park-to   went.   Child-CL_R on one side were playing
  purush-ra ar   mohila-ra   hatchilo.   pheriwala-ra badam bikri korchilo.
  Man-CL_R and woman-CL_R were walking   hawker-CL_R nuts   sale   were-doing
  kukur-ra doure beracchilo.
  Dog-CL_R were running around
 "I went to the park yesterday. Children were playing on one side. Men and women
   were walking. Hawkers were selling peanuts. Dogs were running around."

      All of the above properties follow under the view that *–ra* marked nominals are kind terms. Since such nominals are already of argumental type $<e^k>$, no further type shift is required in order for them to function as arguments of a kind-level predicates. The shift to object-level meanings required in generic contexts uses *pred,* as we have assumed for kind terms generally. Similarly, in episodic contexts we expect DKP to play its usual role. That is, *NP-ra* so far seems to be the Bangla counterpart of the English bare plural, restricted to animates.
      In spite of the plausibility of this account, there is one respect in which a –ra marked nominal does not behave like a kind term. Consider the following variant of (54) where the speaker mentions men and women walking, hawkers selling nuts, dogs running around but wants to say that there are no children there. She cannot use (55a) to express this but must instead use a quantified expression as in (55b):

55a *ami bacca-ra dekhi   ni
    I   child-CL_R see-pres.1stP   neg
    "I didn't see children."
  b. ami kono bacca dekhi   ni
    I   any   child   see-pres.1stP   neg
    "I didn't see any children."

This is quite different from English bare plurals which are known to have narrow scope existential readings in the context of negation.
      The puzzle posed by these data is the following. If *[DP NP-ra]* is a kind term, the sentence in (55a) should have the interpretation in (56a), but that is not the case. If it is a simple indefinite, it should not be acceptable with the kind level predicates in (52), based on what we know about indefinites in other languages. The analysis I have proposed takes the behavior in (52) as determining the basic meaning of *–ra* nominals, which leaves the data in (55a) in need of an explanation. Although there is no clear explanation for the unexpected behavior of –ra under

negation that I can give at this time, I would like to suggest that the presupposition of animacy may be a contributing factor:

56a. $\neg$ see (I, children) =DKP$\Rightarrow$ $\neg$ $\exists x$ [$^{\cup n}$child(x) $\wedge$ see(I,x)]

   b. $\neg$ see (I, children) =DKP$\Rightarrow$ $\neg$ $\exists x$: x $\leq_i$ $^{\cap}$child$_s$ $\wedge$ animate(x). [$^{\cup n}$child(x) $\wedge$ see(I,x)]

   c. $\exists x$ [$^{\cup n}$child(x) $\wedge$ $\neg$see(I,x)]

If we assume that DKP also includes a presupposition of animacy, as shown in (54b), the presupposition would arguably project above negation, leading in effect to a presupposition of existence. The predicted reading, then, would be that there exist some instantiations of the kind *children* in the context and that the speaker didn't see any of them. As far as I can tell, this 'pseudo-definite' reading seems to match speakers' intuitions. It is crucially distinct from the wide scope indefinite reading in (56c) which asserts that there exist some children that the speaker did not see, but leaves open the possibility that there may be others that might have been seen. One cannot follow (55a) with the statement, *but I saw some children*, as one could if *bacca-ra* were an ordinary indefinite. The presupposition of existence is not easily met in the context of (54), leading to the judgment of unacceptability. However, there are other contexts in which a negative sentence with a –ra nominal is felicitous. Suppose that invitations for an event have been sent out to adults and children but when the responses come in, the speaker finds that no one is bringing their children to the event, she can use –ra marking: *bacca-ra aSbe na* "(the) children will not come". This is what (56b) attempts to capture. I am aware, of course, that this is too schematic to count as a proper explanation but I will leave it as suggestive of a line of inquiry that may be worth pursuing.

3.2. NP-ra vs. NP–gulo

A kind analysis for –ra marked nominals does not guarantee a plural interpretation, in contrast to the strictly plural interpretation that we have claimed for –gulo marked nominals. This is because a kind can be instantiated by one or more entities in a given situation. At the same time, a –ra nominal does seem to convey plurality in episodic contexts in much the same way as a bare plural does in English. To see this, let us return to the context in (51)-(52). Suppose that there is only one woman walking in the park. In such a context, *mohila-ra* would be as infelicitous, as the bare plural *women* would be in English. If the semantics of kind terms does not guarantee plurality, however, it is legitimate to ask what the source of the plurality we associate with kind terms might be.

      It has been argued by Zweig 2009, for example, that the plurality of bare plurals is an implicature, not part of their literal meaning. Under this view, strictly speaking, (57a) would be true even if only one dog were barking, but due to the presence of the unambiguously singular term *a dog*, the bare plural ends up implicating plural reference. Evidence that the bare plural denotes singular as well as plural individuals comes from negative contexts like (57b), as well as from question answer pairs like (55c):

57a. Dogs are barking.
  b. Dogs are not barking.
  c. Do you have children? Yes, I have one.

While (57a) implicates that more than one dog is barking, (57b) does not. It would be false to utter (57b) even if only a single dog were barking. Similarly, one can answer the question in (57c) in the affirmative even if one has only one child. In the interests of space, I will set aside the details of the explanation for the absence of the implicature in (57b)-(57c) and focus on the empirical generalizations as that will suffice for present purposes.

      The same can be claimed for *NP-ra*, namely that its plural interpretation is due to the availability of the indefinite form *Ek-Ta-NP* "one-CL-NP". As we have already seen, the negation test is not reliable for *–ra* marked nominals. Neither is it easy to use the question-answer test, since the Bangla counterpart of the predicate *to have* does not take *–ra* marked nominals. However, there is evidence that establishes that *–ra* nominals are like bare plurals in implicating rather than entailing plurality. The following is true even if there are occasions on which only a single student complains to the principal:

58. roj   SOkale   chatro-ra   hedmasTar-er kache naliS korte jay.
    Every morning.LOC students-CL$_R$ principal-GEN close complaint does
    "Every morning students go to the Principal to complain."

      What we see, then, is a number of respects in which a *–ra* marked nominal behaves differently from a *–gulo* marked nominal: acceptability in kind-level/generic statements as well as the potential for indefinite and non-plural interpretations. There are, however, two respects in which they converge. Neither of them is acceptable with numerals and neither can function as predicate nominals. We have already proposed an explanations for the *-gulo* facts in section 2. The explanation for the incompatibility of *–ra* and numerals follows straightforwardly under the view that they are kind terms of type e^k. Recall that we are taking numerals to combine with nominals of type $<e^o,t>$.[33] Similarly, its unacceptability as a predicate nominal can be explained under the view that predicate nominals are NPs, while *–ra* projects a classifier phrase, which in turn necessitates further structure for the classifier's host, resulting in a DP. That is, the account for the unacceptability of *–TA* and *–gulo* as predicate nominals also applies to *–ra*.

      A final feature on which *–gulo* and *–ra* marked nominals can be compared has to do with definiteness. We have seen above that *–ra* nominals can be used in contexts where there is no presupposition of familiarity. We now turn to the question of whether they can also have definite interpretations, and if so, whether this presents a problem for their analysis as kind terms.

      In an earlier version of this paper, I had claimed that *–ra* marking is antithetical to definiteness, based on examples like (59a):

59a. tin-Te   bacca aSbe.   *bacca-ra / ^{OK}bacca-gulo oikhane boSbe
    Three CL child will come. Child-CL$_R$ / child-CL$_G$ there   will-sit
    "Three children will come. The children will sit there."
  b. tin-Te   mohila aSben.   mohila-ra / *mohila-gulo oikhane boSbe
    Three CL lady will come. lady-ra /   lady-CL$_G$ there   will-sit
    "Three ladies will come. The ladies will sit there."

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[33] If we were to adopt the proposal in (49a) we would have to give a different explanation for its incompatibility with numerals (see Ionin and Matushansky 2006 and Bale and Kanjian 2009 for relevant discussion).

Biswas (2013), however, notes that an anaphoric reading for *–ra* is not ruled out in (59a), but rather that it is merely dispreferred due to the availability of the *–gulo* marked variant. In support of her claim, she presents the example in (59b), where a *–gulo* marked nominal is ruled out because of pejorative connotations. While the reasons for the unacceptability of *–gulo* with human denoting nouns of a high register are not clear to me at this time, the consequence of its unacceptability for *–ra* marking is quite obvious. When a *–gulo* phrase can be used, it is preferred over a *–ra* phrase for anaphoric reference. We therefore need to examine how the possibility of anaphoric reference in these cases meshes with the status of *–ra* nominals as kind terms.

We know that English bare plurals cannot be anaphorically linked, as shown in (60a) but this is not so in languages which do not have a lexical definite. I demonstrate with data from English and Hindi the pattern of judgment that Chierchia's *Blocking Principle* (cf. 7b) was meant to capture:

60a. Three children came in. *(The) children sat down.
  b. kuch bacce   andar aaye. bacce   baiTh gaye
       some children inside came   children sat down
       "Some children came in. The children sat down."

While the view that bare plurals have indefinite interpretations is intuitively easy to grasp, there is a closer affinity between kind terms and definites than is usually recognized. This point is argued at some length in Dayal (2013) for English bare plurals but to present those arguments here would take us beyond the scope of the present work. Instead I will focus on Hindi and Mandarin Chinese where bare nominals are known to allow both kind reference and definite interpretations. These two languages can be taken to differ in whether the common noun is predicative or argumental, in terms of Chierchia (1998). Let us assume that in Hindi, NPs start out as type $<e^o,t>$ and, lacking overt determiners, freely undergo *nom* and *iota*. In Mandarin, however, the NP must denote an argumental type, as proposed by Krifka (1995) and Chierchia (1998), specifically of type e^k. Chierchia implicitly, and Yang (2001) explicitly, argue that the definite reading involves a type shift from e^k to $<e^o,t>$, with subsequent applicaton of *iota* turning it into e^o. However, as pointed out in Dayal (2011), there is a shorter route to definiteness within Chierchia's system (see also Trinh 2011 and Jiang 2012). If we simply take the extension of the kind at the relevant index, we can get the maximal plural individual that instantiates the kind at that index.[34] Let us assume this is what happens in Mandarin.

Against this background, let us return to Bangla and ask first of all if a bare NP can have a definite reading. The answer, as we established in sections 1 and 2, is that definiteness is achieved through NP raising over a classifier. That is, Bangla requires the projection of a DP for this purpose. Now, in contexts in which plural definite reference is intended, there will potentially be two DP candidates, *NP-ra* and *NP-gulo*, since they can both can have definite readings, albeit by different routes:[35] *NP–gulo* through the application of *iota* and NP-ra through extensionalization of the kind. A preference for NP-gulo whenever it is acceptable is predicted because *NP-gulo* is unambiguously definite (shifting only via *iota*) while *NP-ra* can be indefinite (when the kind term is subjected to DKP) or definite (when the kind term is extensionalized).

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[34] This is also what I have assumed in defining the presupposition of *–ra* in section 3.1.

[35] Note that in the basic episodic case, *NP-ra* has a plurality implicature. So if a singular definite interpretation is intended the available options are *NP-TA* or *NP-jOn*.

The proposal that –ra is an identity function on animate kind terms, therefore, need not be set aside on the basis of the new data regarding anaphoricity introduced by Biswas.

3.3. Associative -ra

I have argued that –ra is a classifier, and as such, takes an NP complement. This does not take into account what is known as the associative use of –ra, where it combines with proper names and pronouns: *ghosh-ra*, for example. Recall that –gulo also could combine with a proper name, but the two cases involve distinct interpretations. While *ghosh-gulo* refers to a plurality of individuals named *Ghosh*, *ghosh-ra* refers to a set of individuals that includes *Ghosh*.[36] Associative –ra poses the following questions. If a proper name is a DP, how can a classifier combine with it? If –ra is defined on kind terms, how can it combine with a proper name?

Starting with the syntactic question first, Chacón (2011), and following him, Biswas (2013) propose the following structure:[37]

61a. [$_{ra-P}$ DP$_i$ -ra   [$_{DP}$ t$_i$]]
   b. [$_{DP}$ NP$_i$ D$_{[+def]}$ [$_{NP}$ t$_i$]]
   c. [$_{DP}$ D$_{[-def]}$ [$_{NP}$ NP]]

Under their view, *-ra* is the head of a *–ra* Phrase that takes DP as complement, forcing the DP to move to its Spec. If NP raising occurs within DP, –raP is interpreted as definite (61b). If the NP stays in its base position, -raP is interpreted as indefinite (61c). An alternative that would be consistent with the analysis of –ra as a classifier would be to allow proper names to occur in NP, at least in [+arg] languages in which NPs can have argumental meanings: *[$_{DP}$ [$_{NP}$ Ghosh]$_i$ [$_{CL-P}$ –ra [$_{NP}$ t$_i$]]]*. I will not go into an evaluation of these two possible syntactic approaches and turn instead to the semantics of associative -ra.[38]

I can think of two ways of capturing the meaning of associative *-ra*. In (62a) I treat it as a function from individuals to generalized quantifiers. It denotes the set of properties that includes some plural individual that the *–ra* marked person is a part of. Alternatively, we can posit the meaning in (62b), which is a function from individuals to sets of plural individuals that the *–ra* marked person is a part of. This would, then, be expected to undergo type shift by *iota* and refer uniquely to a plural individual salient in the discourse. The animacy presupposition is encoded in both versions but they differ on the issue of (in)definiteness. As far as I can determine, the facts favor (62b):[39]

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[36] I had assumed that in the case of ghosh-gulo, we start with a predicative meaning for the proper name, which may correlate with it being an NP, and then turn it into a kind term.

[37] I am relying on Biswas (2013) since I have not had a chance to read Chacón (2011b) myself.

[38] One question that immediately arises, for example, is why –raP cannot take a DP with a demonstrative in it but see Biswas (2013) for discussion of such restrictions.

[39] Just as in the case of kind denoting/indefinite –ra (cf 58), the associative variant in (i) also allows for the occasional singular entity:
  i. roj   SOkale   ghosh-ra   hedmasTar-er   kache naliS korte jay.
     Every morning.LOC Ghosh-CL$_R$ principal-GEN close complaint does
    "Every morning students go to the Principal to complain."

This, however, I take to be a general property of plural definites (see Brisson (1998) and Lasersohn (1999), among others).

62a. $[\![\text{-ra}]\!] = \lambda x^o \, \lambda Q \, \exists X: \forall z \, [z \leq_i X \rightarrow \text{animate}(z). \, [\, x \leq_i X \wedge Q(X)]$ $<e^o, <<e^o,t>t>>$

b. $[\![\text{-ra}]\!] = \lambda x^o \, \lambda X: \forall z \, [z \leq_i X \rightarrow \text{animate}(z). \, [x \leq_i X]$ $<e^o, <<e^o,t>>$

A proper name like *Ghosh*, for example, is obviously expected to satisfy the animacy presupposition. We have captured the effect of plurality by building in the individual part-of relation into the meaning of *-ra*. Note, however, that the semantics allows for the group to consist only of the individual named because $\leq$ instead of proper inclusion is used. I assume that plurality is an implicature that arises because of the possibility for singular reference with the simpler structure for the proper name, though changing to $<$ instead would be trivial. Note finally that this set cannot undergo *nom* because it is too grounded to a particular individual (see Chierchia (1998) for relevant discussion). The associative use and the kind denoting use of *–ra* are related but obviously not identical.

3.4. Optionality of -ra

In this final section I will turn to the issue of optionality in *–ra* marking, an aspect of the Bangla system that remains in need of further exploration. Our discussion of associative *–ra* establishes the possibility of the following options, where the simpler structure denotes simply the individual while the complex structure adds a dimension of plurality to the meaning:

63a. [NP ghosh]
 b. [DP ghosh$_i$ [CL-P –ra [t$_i$]]]

We may therefore ask whether a similar variation is possible with common nouns. And here the findings become somewhat murky. In discussing this issue, I will focus on nouns denoting non human animates first before considering those denoting human animates.

Take the following examples, which seem to show that the bare form and the *–ra* marked form are in free variation:

64a. Dinosor-ra / Dinosor bilupto
    Dinosaur-CL$_R$ dinosaur extinct
    "Dinosaurs are extinct."
 b. Singho-ra / Singho biponno
     Lion-PL   lion   endangered
     "Lions are endangered."
 c. kukur-era / kukur buddhiman hoy
      Dog-PL   dog   intelligent be
     "Dogs are intelligent."

In contrast to (64), however, there are cases where *–ra* marking seems obligatory. The following are examples of sentences where the bare form would be either strongly dispreferred or outright unacceptable:

65a. pakhi-ra oRe
   bird-PL fly
   "Birds fly."
 b. aajkal   rastay   berono   kOstokor. kukur-era carpaSe ghoraphera korche
    these days road-LOC coming out difficult. Dog-CL$_R$ all over roaming   do
    "Its hard to go out these days. Dogs are roaming around all over."[40]

Interestingly, such examples can improve with minor modifications. Thus, (66), as opposed to (65a), is impeccable. This contrast is reminiscent of a similar contrast between English bare plurals and English definite generics. While bare plurals are generally acceptable when uttered out of the blue, singular definite generics often require context to become acceptable (see Dayal 2004 for relevant discussion):

66. pakhi akaS-e   oRe nijer baSa-r   khoje
    bird   sky-LOC flies self's nesting-place-GEN search
    "The bird flies in the sky in search of its nesting place"

67a.* The bird flies.
   b. The bird flies far and wide in search of a nesting place.

We could take our cue from English and suggest that the Bangla bare NP is like the definite singular generic in English and the Bangla *NP–ra* is like the bare plural. This would not be entirely implausible if we take the variation between the two to be similar to what we have proposed for associative *–ra* in (63) above, where the unmarked form denotes simply a single individual while the *–ra* marked form implicates a larger plurality. However, this line of inquiry makes a prediction that is not quite borne out.

      Dayal (2004) analyzes the singular definite generic as referring to a unique atomic kind-level entity.[41] An important property of such terms, as opposed to bare plurals, is that the relationship between the kind and its instantiations is semantically opaque.   Predication can be to the kind, but there is no corollary of *DKP* to facilitate predication to instantiations of the kind. Generic statements like (68a) are acceptable because we can predicate the object level property *being friendly* to the atomic kind directly. In episodic statements like (68b), however, we cannot tap into DKP and predicate the property of *be barking* to some instantiation of the kind *dog*. (68b) is a normal definite that is defined on properties of ordinary individuals:

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[40] The version with "carpaSe kukur ghurche" is acceptable. The relevance of this is seen in the discussion of (69).

[41] Briefly, common nouns are taken to denote in the ordinary individual domain as well as in the taxonomic domain. The claim is that when *the* combines with a singular common noun under its taxonomic reading, the atomic kind term is derived. If the domain of quantification is the sub-kinds of mammals as in (iii), for example, only a single entity in this set satisfies the predicate LION in (ii):

i. The lion is likely to become extinct.
ii. Become-extinct (ιX[LION(X))
iii. U$_C$ = {LION, WHALE, DOG}
iv. *LION'* = {LION}

68a. The dog is a friendly animal.
  b. The dog is barking.

If the difference between bare and –*ra* marked nouns in Bangla turned on number we would predict a similar difficulty for bare nominals to have DKP induced readings in episodic contexts. Though I found initial evidence in support of this, further probing revealed that at least for some speakers this fact does not hold. The following are acceptable as answers to a question that does not presuppose the existence of birds or dogs, an indefinite reading: *What's happening outside?*

69a. baire   pakhi dakche
       outside   bird   calling
       "Birds are singing outside."
  b. baire   kukur douradouri korche
       outside dog   running around
       "Dogs are running around outside."

An alternative approach to these data might be to posit a null counterpart of –*ra* and take the crucial difference to turn on the property of being human. We can then re-analyze Bangla nouns as involving the following two structures:[42]

70a. $[_{DP}$ NP$_i$ $[_{CL-P}$ $\varnothing_{non-human}$ / -ra$_{human}$ $[_{NP}$ t$_i]]]$ $<e^k, e^k>$
  b. $[_{DP}$ NP$_i$ $[_{CL-P}$ –TA / -gulo $[_{NP}$ t$_i]]]$ $<e^k, <e^o,t>>$

The null classifier and –*ra* would denote the identity function kinds, non-human and human respectively. The standard classifiers would denote functions from kinds of any type to the relevant instantiation sets. They would then require covert type shift by *iota* to become type e^o, with *nom* blocked as discussed in section 2. Under this view, bare nominal arguments would also be DPs, albeit with a null classifier. The apparent optionality of –*ra* for non-human animates could then be attributed to the variable status of animals in the human/non-human hierarchy.

While plausible enough, this line of explanation also faces some obstacles. It suggests that –*ra* marking should be obligatory for human denoting nouns. And to some extent this seems to hold. It is generally accepted that bare human denoting nouns are unacceptable in episodic contexts. For any of the intended readings of (71a), some classifier would have to be used, *-TA* or *-gulo* for the definite, *Ek-TA* or *-ra* for the indefinite. And my investigations also suggest that the same is true in kind-level statements. (71b) differs from the earlier examples in requiring *-ra*:

71a.* chatro   oddhapOk-der sathe kOtha bolche
        student professor-CL   with talking
        "A/The/Some student is /students are talking to professor."
  b.* posTmasTar shighroi bilupto hoye jabe
        Postman   soon.   extinct will-be
        "Mailmen will soon become extinct."

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[42] This still allows bare nominals in predicative positions to be NPs, rather than DPs.

The ungrammaticality of (71a) would follow from the fact that all Bangla nouns have a classifier and there is no null classifier for human denoting nouns.

The problem, of course, is that the data are not quite as clear as this would suggest. Biswas (2013), for example, gives (72a)-(72b) as acceptable without –ra, but not (72c). She distinguishes (72b)-(62c) as having *characterizing human* vs. *characterizing capacity* readings:

72a. chatro / DakTar Obolupto (hoye gEche)
    Student doctor extinct become
    "Students/Doctors are extinct."
  b. puruS SoktiSali (hOn)
    man powerful be
    "Men are powerful."
  c. * DakTar SOhomorni (hOn)
      doctor compassionate be
      "Doctors are compassionate."

My investigation into these and other such facts have not led to clear generalizations. Overall, the consultants I checked with seem to require *–ra* marking with kind level predicates but allowed for some optionality in generic sentences. The problem I see at this point is two-fold. It is not clear to me exactly what factors determine optionality in generic statements and what the source of a bare nominal in generic statements can be if they are not acceptable in kind level statements or in episodic contexts. It is entirely possible that there is a difference in dialects that is obfuscating the generalization, but further theory construction has to await further empirical work. However, what we have seen so far should be enough to establish the need for a deeper investigation into this phenomenon.

3.5. Section Summary

In this section I have analyzed the plural marker *–ra* as a classifier whose primary function is to check whether the kind term it combines with denotes animates. The acceptability of *–ra* marked nominals in kind and generic contexts was argued to follow from this. Its compatibility with presentational contexts as well as its number neutral interpretation also was ascribed to it. Some unexpected aspects of its meaning, such as its inability to take scope under negation, and restrictions on its definite readings were also partially addressed. Finally, problems in determining whether and to what extent *–ra* marking is obligatory or optional were discussed but a final analysis was left for the future.

Section 4: Conclusion

The discussion of Bangla in this paper adds to the recent body of work on the expression of plurality in classifier languages (see Jiang 2012 and references cited there). As in other languages that use classifiers in cardinal constructions, there is no marker of number on the Bangla noun and the two markers of plurality discussed here do not combine with numerals. However, Bangla differs from other classifier languages as far as (in)definiteness and reference

to kinds is concerned. Definiteness/indefiniteness is not inherent to either marker, but follows the general pattern for the expression of (in)definiteness in Bangla. One of the markers does not allow for reference to kinds, a feature that is not typologically unusual. The other marker of plurality, however, does lend itself to kind related readings and this, I believe, is less characteristic of such markers.

Acknowledgments

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