

Polarity Sensitive *Any* in Bengali

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**I. The Dual Nature of Negative Polarity *Any*:
A Perspective from Bengali**

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Abstract.

Bengali uses two different sets of morphemes for the negative polarity *any*. One set consists of expressions morphologically related to the existential *some*. The other set consists of expressions morphologically related to an overt emphatic particle meaning *even*. Lahiri (1998) proposed that Hindi polarity morphemes similar to the ones in Bengali are singular, non-specific referential terms. I propose that treating the Bengali polarity morphemes in this way allows us to explain why they are licensed in subject position unlike polarity morphemes in many other languages (e.g. English). In particular, I propose that due to their singular, non-referential status, Bengali polarity morphemes become syntactically negative with wide scope negation. The agreement between a semantically non-negative element (e.g. a Bengali polarity morpheme) and a semantically negative element (e.g. negation) in the structure constitutes evidence in favor of the agreement – based approach to polarity in Chierchia (2011).

1. Introduction.

The grammaticality of *any* is sensitive to a wide class of structures. In (1a), we see that *any* is grammatical under sentential negation and ungrammatical in a simple affirmative sentence like (1b).

(1) Negative sentences

- a. I will not drink *any* soup.
- b. *I will drink *any* soup.

Similarly, in (2a) we see that *any* is licensed in the scope of a negative quantifier like *nobody*, but not in the scope of a positive quantifier like *somebody* in (2b).

(2) Scope of a negative quantifier

- a. Nobody brought *any* cookies.
- b. *Somebody brought *any* cookies.

However, the distribution of *any* is not restricted to the scope of sentential negation or the scope of a negative quantifier. *Any* is grammatical if it occurs in the antecedent of a conditional (as in 3a) or in the first argument of *every* (4a); and ungrammatical in a minimally different sentence in which it occurs in the consequent of the conditional (3b) or in the second argument of *every* (4b). So the grammaticality of *any* is sensitive to where it appears in a structure.

(3) **Antecedent of conditionals**

- a. If there are *any* books in the house, John will be happy.

Consequent of conditionals

- b. *If John is happy, there are *any* books in the house.

(4) **First argument of *every***

- a. Every student who read *any* classic, wrote well.

Second argument of *every*

- b. *Every student who wrote well, read *any* classic.

Any, in fact, has a wider distribution. The examples in (5) – (11) show that contexts licensing *any* include questions, *too* constructions, *before* clauses, the comparative forms of adjectives, constructions with *only*, adversative predicates (like *be sorry*) and quantifiers like *less than n*.

(5) **Yes-No Questions**

Did you have *any* fruit?

(6) ***Too***

- a. John thinks he is too smart to have *any* trouble.
b. *John thinks he is smart enough to have *any* trouble.

(7) ***Before* clauses**

- a. John died before he could have *any* medicine.
b. *John died after he could have *any* medicine.

(8) **Comparative forms of adjectives**

- a. He is taller than *any* basketballer.
- b. *He is so tall that *any* basketballer.

(9) **Only**

- a. Only John has *any* interest in teaching.
- b. *Even John has *any* interest in teaching.

(10) **Adversative predicates**

- a. I am sorry I had *any* cookies.
- b. *I am glad I had *any* cookies.

(11) **Quantifiers like *less than n***

- a. Less than three children had done *any* skiing.
- b. *Many children had done *any* skiing.

A major discovery of modern linguistics has been the discovery that a property relating to entailment patterns distinguishes the environments in which elements such as *any* are grammatical from environments in which they are ungrammatical – a discovery primarily due to Fauconnier (1975) and Ladusaw (1979, 1992), and further articulated by Zwarts (1996). The environments which license expressions such as *any* entail ‘subset’ inferences (12b), as opposed to ‘superset’ inferences (12a).

$$(12) \quad \{x : x \text{ eats blueberry cheesecake}\} \subseteq \{x : x \text{ eats cheesecake}\}$$

a. superset inferences

b. subset inferences

i. If I am depressed, I eat cheesecake. = ψ

If I eat cheesecake, I feel happy. = ϕ

↑entails

↓entails

i¹. If I am depressed, I eat blueberry cheesecake. = ϕ

If I eat blueberry cheesecake, I feel happy. = ψ

ii. Everyone eats cheesecake. = ψ

Everyone who eats cheesecake, loves it. = ϕ

↑entails

↓entails

ii¹. Everyone eats blueberry cheesecake. = ϕ

Everyone who eats blueberry cheesecake, loves it. = ψ

iii. Somebody ate cheesecake. = ψ

Nobody ate cheesecake. = ϕ

↑entails

↓entails

iii¹. Somebody ate blueberry cheesecake. = ϕ

Nobody ate blueberry cheesecake. = ψ

Any piece of language which expresses a property can be compared with a piece of language which describes a sub-property or super-property. For example, *blueberry cheesecake* expresses a sub-property of *cheesecake* since the set of blueberry cheesecakes is a subset of the set of cheesecakes. In other words, *blueberry cheesecake* is a hyponym of *cheesecake* and *cheesecake* is a hypernym of blueberry cheesecake. In (12), the direction of the arrow indicates what logically entails what. In (12a), the inference goes from a smaller set to a larger one (i.e. superset inference). Contexts which give rise to such a pattern have been dubbed Upward Entailing (UE). Contexts such as (12b) reverse this pattern so that the inference goes from a larger set to a smaller one (i.e. subset inference) have come to be known as Downward Entailing (DE).

So there is a correspondence between a context being DE and it licensing elements such as *any*. Following Fauconnier (1975), contexts which license an element such as *any* share a logical property with *not*. A logical feature of *not* is that it reverses inferences from properties to super-properties as in (13a), creating entailments from properties to sub-properties as in (13b).

- (13) a. I have a dog. = ψ
 ↑entails
 I have an Alsatian. = ϕ
- b. I do not have a dog. = ϕ
 ↓entails
 I do not have an Alsatian. = ψ

Where *not* creates entailments from properties to sub-properties it is DE with regard to its argument, the predicate. ‘Being DE’ can be viewed as ‘being negative’, with such negativity manifesting itself variously in the syntax or morphology of the construction. In that the distribution of items like *any* appears to be sensitive to the presence of negativity in this precise semantic sense, they constitute examples of ‘Negative Polarity’ (NP) or ‘Negative Polarity Items (NPIs)’ or ‘Polarity Sensitive Items’ (PSIs) in natural language.

A general logical property of DE (i.e. negative) contexts is that embedding ‘ α logically stronger than β ’ within a DE element ϕ reverses strength to make $\phi(\beta)$ logically stronger than $\phi(\alpha)$. ϕ is logically stronger i.e. more informative than ψ because ϕ must be true in a proper subset of the situations/worlds in which ψ is true. In other words, ϕ rules out more ‘live options’ (Chierchia 2011) than ψ . So *I have an Alsatian* is compatible with fewer situations than *I have a dog*; and *I don’t have a dog* is compatible with fewer situations than *I don’t have an Alsatian*.

Negative sentences, the scope of negative quantifiers, the first/left argument of *every*, and *too*, are NPI contexts with an uncontroversial DE character. Whether questions give rise to DE contexts, and why they license NPIs even if they have a DE semantics, is open to debate. We assume that questions do give rise to DE contexts if we consider rhetorical questions in the sense of expectation of a negative answer (Chierchia 2011). The DE semantics of *before* clauses, and comparative forms of adjectives (Kennedy 2005) is assumed, though less unequivocally. The scope of DE operators like *few* are viewed as ‘weak’ negative contexts (Zwarts 1998). The antecedent of conditionals, and constructions with emotive factives (such as *surprised*) or constructions with *only*, are DE taking their context dependency into account (Heim 1984, Krifka 1995, Chierchia 2004). Beyond these assumptions, an analysis of problematic DE contexts is outside the limits of this paper.

Negative polarity *any* is constrained in its syntactic distribution to DE contexts. Unlike English, Bengali uses two different sets of morphemes for the negative polarity *any*. One set of morphemes is morphologically related to existential *some*; I call these the ‘some’ morphemes. The other adds an overt emphatic particle meaning *even* to either an indefinite corresponding to *one*, or a predicate indicating *a little*; I call these the ‘even’ morphemes. The ‘some’ morphemes and the ‘even’ morphemes are akin to the Hindi morphemes in Lahiri (1998) in that they are singular, non-specific referential terms. With wide scope negation, these singular, non-specific referential terms are able to function as negative quantifiers cum NPIs, even in subject position. However, while the ‘some’ morphemes pattern *any* in occurring across a wide variety of DE contexts, the ‘even’

morphemes are restricted to a subset of DE contexts. The next section (Section 2) describes the formation and contexts of occurrence of the Bengali morphemes for Negative Polarity *any*. More specifically, it examines the distributional contrast between the two sets of morphemes in terms of the difference between DE contexts subject to Strawson entailment (von Stechow 1999) and DE contexts characterized by classical entailment. The section on the Bengali data is followed by Section 3 which is devoted to developing a principled account for the observed distributional pattern. To this end, the paper adopts the agreement-based approach to polarity in Chierchia (2011) which seeks to generate the attested diversity in the polarity system through the interaction of a particular lexical semantics and other structural elements, without reference to licensing operators. Section 4 summarizes, and indicates the scope for future research.

2. Data.

2.1. The formation of the ‘even’ morphemes in Bengali for NP *any*.

In the basic case, PSIs are seen to be very weak indefinites, morphologically related to the first numeral, or to an existential like *some* or to a wh-(interrogative) expression. Many languages build NPIs by adding an overt emphatic particle or focal element, which typically means *even* or *also* to an indefinite corresponding to *one*, *some*, or a wh-expression (i.e. interrogative element).

Tagalog (G.Scontras personal conversation) has an example of an NPI construction formed by adding a focal element *kahit* ‘even’ to an indefinite corresponding to the wh-expression *ano* ‘what’.

- (14) Hindi ako nagbasa ng kahit ano.
 not I read CASE even what
 ‘I did not read anything’.

Hindi builds NPIs by adding the overt emphatic particle *bhii* ‘even’/ ‘also’ to an indefinite, for example, *koi* ‘someone’ (Lahiri, 1998).

- (15) Koi bhii nahiin aayaa.
 someone even/also not came
 ‘No one came’.

Bengali is part of the family of Indo Aryan languages with classifiers. The geographical proximity of the Indo Aryan languages with classifiers, and the Tibeto-Burman languages of South Asia, translate into a genetic link with the languages of East Asia which are known to have classifier systems. In Bengali, an NPI used for *any* can be formed by adding an emphatic particle or focal element meaning *even* to the word for *one*. The form in (16) displays the morphological makeup of the idiomatic phrase *ek-ta-o* ‘even one’, taken from a productive paradigm of Bengali NPIs.

- (16) *ek* ‘one’ + *ta* (general classifier for count nouns) + *o* ‘even’ = *ek-ta-o*

(17a.i) shows the morphological makeup of the positive existential quantifier *ek-ta* ‘one’. (17a.ii) shows that *ek-ta* has singular, non-specific reference – *ek-ta* refers to some tooth, without specifying the tooth being referred to.

- (17) a. i. *ek* ‘one’ + *-ta* (general classifier for count nouns) = *ek-ta* ‘one/a’.

- ii. Ek-ta dat baki ache.
 one-CL tooth left is
 ‘One/A tooth is left’.

Upon adding an emphatic particle or focal element *o* ‘even’ to *ek-ta* ‘one’, we get the NPI used for *any* in Bengali. (17b) illustrates the NPI behavior of *ek-ta-o* ‘even one’, which is ungrammatical in plain UE contexts (17b.ii) and grammatical in DE ones (17b.iii).

Negative bias in questions is the chief diagnostic for the wide range of NPIs that are, like *ek-ta-o* always carriers of emphasis. (17b.iv) illustrates how *ek-ta-o* yields a negative bias in questions. Thus because *o* (‘even’) is what makes *ek-ta-o* an emphatic NPI (17b), the particle *o* is emphatic both in form and function.

b. i. *ek* ‘one’ + *ta* (general classifier for count nouns) + *o* ‘even’ = *ek-ta-o*

ii. **Ek-ta-o* dat baki ache.
 one-CL-even tooth left is
 *‘Even one tooth is left’.

iii. *Ek-ta-o* dat baki nei.
 one-CL-even tooth left not
 ‘No tooth is left’.

iv. *Ek-ta-o* dat ki baki ache? [Negative bias]
 one-CL-even tooth Q left
 ‘Is even one tooth left?’ = ‘Are any teeth left?’

Emphatic or focus particles like *o* ‘even’ imply a contextually specified probability scale. ‘Even p’ conveys that ‘p’ is the least likely among the relevant set of alternatives; that is, ‘p’ is less likely than ‘q’ with respect to some contextually relevant probability measure. Such a probability dimension, combined with its association with the smallest numeral, make *ek-ta-o* ‘even one’ unambiguously scalar. Its association with the lowest non-null position on a scale is also what underlies its similarity with what are called minimizers in English which, like *ek-ta-o* ‘even one’, also somehow describe minimal amounts/intensities. *Lifting a finger*, for example, means something like ‘taking the least eventful course of action’. Expressions like *raise an eyebrow*, *lift a finger*, *move a muscle*, *budge an inch*, *give a damn*, *sleep a wink* intuitively suggest a degree dimension, making minimizers unequivocally scalar. One may, for example, not do anything at all; but if one does do something, one typically does something beyond ‘lifting a finger’. On a scale of perception, there is a sort of threshold of intensity below which the state/action is imperceptible and beyond which it becomes perceptible. Put another way, these degree expressions are associated with a presupposition of anti-exhaustivity. *Ek-ta-o* ‘even one’ denotes the same as the numeral *one*, but is limited to contexts in which *one* is too little to be true by itself. In other words, *ek-ta-o* denotes the same as the numeral *one* but only in worlds *w* and with respect to properties *P* and *Q* such that either no *P* or more than one *P*

has/does Q. In uttering *if John has even one hair on his head*, we indicate that John's head either has no hair or has little hair which is, nevertheless, more than a solitary strand. In other words, *ek-ta-o* 'even one' is restricted to worlds in which anti-exhaustivity holds with respect to *one*.

Like *ek-ta-o* 'even one', 'lift a finger' is also ungrammatical in plain UE contexts and grammatical in DE ones (18). Another element that is common to both the scalar NPIs, which distinguishes them from *any* in English, is an extra element of emphasis. This is evident in questions. *Ek-ta-o* 'even one' and *lift a finger*, and stressed *any* are negatively biased in ways that unstressed *any* is not (19-22).

- (18) a. John didn't lift a finger to help me.
 b. *John lifted a finger to help me. (√ on non-idiomatic reading only)
- (19) Was there any girl in school? [Neutral: no expectation]
- (20) Is EVEN ONE left? = Are ANY left? [Negative bias: negative answer expected]
- (21) Did John LIFT A FINGER to help you? [Negative bias: negative answer expected]
- (22) Was there ANY girl in school? [Negative bias: negative answer expected]

The contrast between unstressed *any* in (19) on the one hand, and emphatic NPIs of the Bengali type (20), minimizers in English (21) and stressed *any* (22) on the other, is expected on Krifka's account (1994) which treats NPIs with an explicit *even* and stressed *any* as one natural class opposed to unstressed *any*. Emphatic NPIs of the Bengali type incorporate an explicit *even*; and the similarity between (20) and (21) suggests that an *even* like element must be present in the semantics of minimizers. The basic intuition about what explains this generalization about the semantics of minimizers, introduced by Heim (1984) and discussed in Lahiri (1998), is beyond the scope of this paper.

Indefinites (i.e. existentials) are inherently scalar terms, for they naturally belong to quantifier scales. But *ek-ta-o* ‘even one’ (and *lift a finger*) belong to a class of scalar NPIs which acquire NPI behavior through reference to a scalar value which is much more direct than we find in *any*. They are also more emphatic.

The communicative role of the *ek-ta-o* paradigm for *any* is emphasis of the lowest non-null point on a cardinal scale. A cardinal scale lends itself to count nouns. The function of *ek-ta-o* in (23) is to communicate the absence of eating even one apple when several apples were on offer.

- (23) Ami **ek-ta-o** apple kha-i ni.
 I one-CL-even apple eat-PST-1 not
 ‘I did not eat **EVEN ONE** apple’.

Ektu-o, in which *ektu* corresponds to ‘a little’ and *o* means ‘even’, functions similarly to *ek-ta-o* in emphasizing the lowest non-null point, but on a measure scale. A measure scale is relevant for uncountable nouns such as ‘wine’ or ‘information’. The function of the *ektu-o* paradigm for *any* in (24) is to communicate the absence of intention to drink the bare minimum amount of soup that qualifies as soup drinking.

- (24) Ami **ektu-o** soup kha-bo na.
 I little-even soup eat-FUT-1 not
 ‘I will not drink **EVEN A LITTLE** soup’.

2.2. The formation of the ‘some’ morphemes in Bengali for NP *any*.

Bengali, unlike English, has neither the negative determiner *no*, nor negative pronouns like *nobody*, *nothing* or *none* to function as negative quantifiers. Positive existential quantifiers meaning *somebody/something/some Noun* in (25) which have singular, non-specific reference, are recruited under sentential negation to incorporate semantically meaningful negation as negative quantifiers.

(25)

Positive existential quantifier in subject position	Morpho – semantic variation
<i>Keu</i> : Someone/Somebody	[+HUMAN]
<i>Keu keu</i> : Some people	[+HUMAN]
<i>Kichu</i> : Something Some Noun (plural)	[-HUMAN, -ANIMATE]
<i>Kichu kichu</i> : Some things/Some Noun (plural)	[-HUMAN, -ANIMATE]
<i>Kono</i> : Some Noun	[±HUMAN, ±ANIMATE]
<i>Kono kono</i> : Some Noun (plural)	[±HUMAN, ±ANIMATE]
<i>Koek</i> : Some Noun (plural)	[±HUMAN, ±ANIMATE]

(Chakraborty 2011)

Quantifiers which have a [+HUMAN] semantic feature (e.g. *keu*, *keu keu*; or *kau-ke* in the Dative case) do not occur in the determiner/specifier position of any other noun in a Noun Phrase (26a) but rather themselves form pronominal Noun Phrases as in (26b).

(26) a. **Keu bachcha ama-ke bhalobash-e.*
 someone child I-ACC love-3
 *‘Some child loves me’.

b. *Keu ama-ke bhalobash-e.*
 some I-ACC love-3
 ‘Someone loves me’.

Quantifiers which have a [±HUMAN] or [-HUMAN] feature (such as *kichu*, *kichu kichu*, *kono*, *kono kono*, *koek*) can act as a determiner/specifier to another noun within a Noun Phrase, and assume the feature corresponding to the lexical head (or noun) within the Noun Phrase to decide the resultant semantic features of the Noun Phrase; for example (27).

(27) a. *Kichu chatro ash-be.*
 some student come-FUT-3
 ‘Some students will come’.

- b. Kono chatro ash-be.
 some student come-FUT-3
 ‘Some student will come’.

Kichu variants (e.g. 28a), but not *kono* (e.g. 28b) or *koek* ones, can be used as an independent Noun Phrase. *Kono* or *koek* variants are always used as a determiner to another quantifier or another noun in a Noun Phrase. If the classifier *-ta* is suffixed to, for example, *kono* then the form *kono-ta* ‘some’ is used independently in the overt structure but actually denotes another covert Noun Phrase.

- (28) a. Kichu hO-be.
 something happen-FUT-3
 ‘Something will happen’.

- b. *Kono ash-be.
 some come-FUT-3
 *‘Some will come’.

Kichu has singular morphology when used as an independent Noun Phrase, but *kichu* as a determiner/specifier to another noun within a Noun Phrase and *kichu kichu* have a plural reference. Full reduplication is chiefly used with attributive adjectives and with relative and interrogative pronouns.

An interesting syntactic feature in Bengali is that a maximum of four quantifiers (unrepeated) can be combined in the specifier position within a single Noun Phrase even when an overt Noun or lexical head is absent. The resultant meaning of these ‘combination’ Noun Phrases is equivalent to the meaning of the first member of the ‘combination’. Thus we get combinations like *kono kichu* (‘anything’). However, not all possible combinations are allowed; for example, *kichu kono* (‘some some’) is unacceptable.

Apart from the conspicuous morphophonemic change in the indefinite pronoun *keu* in the Direct/Nominative case to *kau-ke* in **the Oblique/Objective/Dative case**, the other indefinite pronouns do not change much in the Oblique case (29).

(29) a. *Keu-ke bOl-o.
 someone-ACC tell-IMP
 *‘Tell someone’.

b. Kau-ke bOl-o.
 someone-ACC tell-IMP
 ‘Tell someone’.

‘THE SOME’ MORPHEMES IN BENGALI AS NEGATIVE QUANTIFIERS.

In Bengali, indefinite pronouns *keu*, *kau-ke* ‘someone’, *kichu* ‘something’, or *kono Noun* ‘some Noun’ - which are used as positive existentially quantified pronouns or positive existential quantifiers in subject position or object position - refer to a single, non specific referent *x* which undergoes the state/action described by the verb (the predicator). This is shown by the (a) examples in (30) - (33). In the overt syntactic structure, the verb is the syntactic element which is negated. Negation of the verb nullifies the existence of even one *x* to signify ‘not one’ undergoing the state/action described by the verb/predicate. Therefore, though the quantifier is not structurally negated, the scope of negation is not limited to the verb but extends to the quantifier (Chakraborty 2011). In the (b) examples in (30) - (33), the wide scope interpretation gives the actual meaning of the negative sentence in Bengali.

(30) a. Keu ama-ke bhalobash-e.
 someone I-ACC love-3
 ‘Someone loves me’.

$\exists x (B(x,a))$

There is at least one *x* for which it’s true that *x* loves *a*.

b. Keu ama-ke bhalobash-e na.
someone I-ACC love-3 not

Wide scope negation: 'No one loves me'.

$\sim \exists x (B(x,a))$

It is not the case that there is at least one x such that x does a.

- (31) a. Thanda kau-ke posha-i.
cold someone-ACC suit-3
'The cold suits someone'.

$\exists x (P(a,x))$

There is at least one x such that a suits x.

b. Thanda kau-ke posha-i na.
cold someone-ACC suit-3 not

Wide scope negation: 'The cold suits no one'.

$\sim \exists x (P(a,x))$

There is not even one x such that a suits x.

- (32) a. Kichu por-eche.
something fall-PRF-3
'Something has fallen'.

$\exists x (P(x))$

There is at least one x for which it is true that x has fallen.

b. Kichu pOr-e ni.
something fall-PRF-3 not

Wide scope negation: 'Nothing has fallen'.

$\sim \exists x (P(x))$

It is not the case that there is at least one x such that x has fallen.

- (33) a. Kono bachcha kOrola bhalobash-be.
 some child bittergourd love-FUT-3
 ‘Some child will love bittergourd’.

$\exists x (C(x) \& B(x,a))$

There is at least one x such that x is C and it is true that x loves a.

- b. Kono bachcha kOrola bhalobash-be na.
 some child bittergourd love-FUT-3 not
 Wide scope negation: ‘No child will love bittergourd’.

$\sim \exists x (C(x) \& B(x,a))$

There is no x such that x is C and x will love a.

2.3. The distribution of the Bengali morphemes for NP *any*.

To recapitulate, *keu/kichu/kono/kau-ke* do not have negative morphology. But *keu* ‘someone’, *kichu* ‘something’ (when used as an independent Noun Phrase), and *kono* *Noun* ‘some Noun’, and *kau-ke* ‘someone’, have singular, non-specific reference. Under sentential negation, therefore, *keu/kichu/kono/kau-ke* behave like negative quantifiers. At the same time, *keu/kichu/kono/kau-ke* are grammatical across the gamut of DE contexts that license NPIs (34-44).

The ‘some’ morphemes in Bengali clearly do the work of NP *any*. Accordingly, they are used in the scope of sentential negation, in the scope of negative quantifiers, and in questions, as illustrated by the examples in (34-36).

- (34) Ami **kono** apple kha-i ni.
 I any apple eat-PST-1 not
 ‘I did not eat **any** apple’.

- (35) Keu **kichu** chinta kor-lo na.
 no one anything thought do-PAST-3 not
 ‘No one thought **anything**’.

(36) JOhn ki **kono** fOl kh-eyeche ?
 John Q any fruit eat-PRF-3
 ‘Did John have **any** fruit?’

‘Some’ morphemes in Bengali for NP *any* also occur freely in the restrictors of universal quantifiers (37a) and in the antecedent of conditionals (38a) – two other very common NPI-licensing environments cross-linguistically; and are ungrammatical in the nuclear scope (second argument) of universal quantifiers (37b) and the consequent of conditionals (38b).

(37) a. Prottek lok je **kono** buddhi rakh-e o-ke pOchondo kOr-e.
 every person who any sense have-INF him-ACC like do-INF
 ‘Every person who has **any** sense likes him’.

b. *Prottek lok je o-ke pOchondo kOr-e **kono** buddhi rakh-e.
 every person who him-ACC like do-INF any sense have-INF
 ‘Every person who likes him has **any** sense’.

(38) a. Jodi John **kono** nalish kor-eche, o bol-be.
 if John any complaint do-PRF-3 he say-FUT-3
 ‘If John voiced **any** complaints, he would say so’.

b. *Jodi o bol-be, John **kono** nalish kor-eche.
 if he say-FUT-3 John any complaint do-PRF-3
 ‘If he would say so, John voiced **any** complaints’.

Other NP *any* contexts where the ‘some’ morphemes in Bengali occur include *only* constructions (39) and adversative predicates (40).

(39) Shudu JOhn **kono** nalish kor-eche.
 only John any complaint do-PRF-3
 ‘Only John voiced **any** complaints’.

(40) Ami **kono** potrokar-der thaka atk-iyechi.
 I any journalist-PL be-INF prohibit-PRF-1
 ‘I have prohibited **any** journalists from being there’.

The ‘some’ morphemes in Bengali also have a meaning similar to NP *any* in *too* sentences (41) and *before* clauses (42), and with comparative forms of adjectives (43).

(41) JOhn bhab-e ki she **kono** class-e jawa-r jonno beshi chalak.
 John think-3 that he any class-LOC go-GER for too clever
 ‘John thinks he is too clever to go to **any** classes’.

(42) John **kichu** khawa-r age chol-e-ja-be.
 John anything eat-GER before go-PRF-3
 ‘John will go before eating **anything**’.

(43) **Kono** chOla phera pooro bosh-e thaka-r tulongai bhalo.
 any walk around complete sit-INF stay-GEN compared to better
 ‘**Any** activity is better than being completely sedentary’.

In addition, ‘some’ morphemes in Bengali for NP *any* are grammatical in so-called ‘weak’ negative contexts (Zwarts 1998) such as the scope of DE operators like *few* or *less than n* (44).

(44) a. Olpo koek-ta bachcha **kono** Onko kor-te cheshta kor-lo.
 a little some-CL children any sum do-INF attempt do-PST-3
 ‘Few children attempted **any** sums’.

b. Teen theke kom bachcha **kono** skiing kor-eche.
 three than less children any skiing do-PRF-3
 ‘Fewer than three children have done **any** skiing’.

In view of these facts, we can conclude that the ‘some’ morphemes in Bengali have a distribution similar to NP *any*, occurring in a wide range of DE contexts.

In contrast to NPIs like *any* and the ‘some’ morphemes in Bengali for *any*, the ‘even’ morphemes in Bengali for NP *any* appear in a subset of DE environments. To reiterate, use of the ‘even’ morphemes in each of the NP *any* licensing environments in (45) - (55) gives a reading similar to NP *any*.

The ‘even’ morphemes in Bengali for NP *any* are grammatical under sentential negation (45), and in the scope of negative quantifiers like *no one* (46) and in questions (47); though they are less felicitous in the left argument of *every* (48).

(45) Ami **ek-ta-o** apple kha-i ni.
 I one-CL-even apple eat-PST-1 not
 ‘I did not eat **EVEN ONE** apple’.

(46) Keu **ektu-o** chinta kor-lo na.
 no one little-even thought do-PAST-3 not
 ‘No one thought **EVEN A LITTLE**’.

(47) JOhn ki **ek-ta-o** fOI kh-eyeche ?
 John Q one-CL-even fruit eat-PRF-3
 ‘Did John have **EVEN ONE** fruit?’

(48) Prottek lok je **ektu-o** buddhi rakh-e o-ke pOchondo kOr-e.
 every person who little-even sense have-INF him-ACC like do-INF
 ‘Every person who has **EVEN A LITTLE** sense likes him’.

The ‘even’ morphemes in Bengali corresponding to NP *any* can also occur in *too* sentences (49), and with *before* clauses (50) or comparative forms of adjectives (51).

(49) JOhn bhab-e ki she **ek-ta-o** class-e jawa-r jonno beshi chalak.
 John think-3 that he one-CL-even class-LOC go-GER for too clever
 ‘John thinks he is too clever to go to **EVEN ONE** class’.

(50) John **ektu-o** khawa-r age chol-e-ja-be.

John little-even eat-GER before go-PRF-3

‘John will go before eating **EVEN A LITTLE**’.

- (51) **Ektu-o** chOla phera pooro bosh-e thaka-r tulonai bhalo.
little-even walk around complete sit-INF stay-GEN compared to better
‘**EVEN A LITTLE** activity is better than being completely sedentary’.

The ‘even’ morphemes in Bengali for NP *any* are less than acceptable in constructions with *only* (52) or adversative predicates (53), in the left argument of conditionals (54) and in the scope of DE operators such as *few* or *less than n* (55).

- (52) *Shudu JOhn **ek-ta-o** nalish kor-eche.
only John one-CL-even complaint do-PRF-3
‘Only John voiced **EVEN ONE** complaint’.

- (53) *Ami **ek-ta-o** potrokar-er thaka atk-iyechi.
I one-CL-even journalist-GEN be-INF prohibit-PRF-1
‘I have prohibited **EVEN ONE** journalist from being there’.

- (54) *Jodi JOhn **ek-ta-o** nalish kor-eche, o bol-be.
if John one-CL-even complaint do-PRF-3 he say-FUT-3
‘If John voiced **EVEN ONE** complaint, he would say so’.

- (55) a. *Olpo koek-ta bachcha **ek-ta-o** Onko kor-te cheshta kor-lo.
a little some-CL children one-CL-even sum do-INF attempt do-PAST-3
‘Few children attempted **EVEN ONE** sum’.

- b. *Teen theke kom bachcha **ektu-o** skiing kor-eche.
three than less children little-even skiing do-PRF-3
‘Less than three children have done **EVEN A LITTLE** skiing’.

ANTIADDITIVITY AND THE BENGALI MORPHEMES FOR NP *ANY*.

The ‘some’ morphemes and the ‘even’ morphemes reveal an intriguing difference in their distribution. While the ‘some’ morphemes are, like NP *any*, grammatical in a wide range of DE contexts, the ‘even’ morphemes have a restricted distribution. The subset of DE environments that do not license the ‘even’ morphemes constitutes a natural subclass of DE functors which has been characterized as ‘Downward Entailing (DE) but not Antiadditive (AA)’. This suggests that the DE contexts licensing the ‘even’ morphemes are individuated by antiadditivity.

$$\gamma \text{ is antiadditive} = \gamma (\alpha \vee \beta) \Leftrightarrow \gamma (\alpha) \wedge \gamma (\beta) \text{ (where ‘}\Leftrightarrow\text{’ is mutual entailment)}$$

Zwarts (1998)

AA is a stronger property than DE in that every AA item is also DE but many DE items are not AA. An example of how AA works in sifting licensing contexts is given in (56).

- (56) a. i. No one smokes or drinks.
ii. No one smokes and no one drinks.
b. i. At most five students smoke or drink.
ii. At most five students smoke and at most five students drink.

The sentences in (56a) entail each other. Those in (56b) do not. In a situation with eight students in which only four smoke and only four drink, (56b.ii) would be true, but (56b.i) would be false (for more than five students smoke or drink).

Sentential negation and quantifiers like *no one*, or the left argument of *every*, are examples of AA functions. *Few*, *at most n* or *less than n* or (under certain assumptions) the left arguments of conditionals are examples of functions that are DE but not AA.

NPIs like *any* and the ‘some’ morphemes in Bengali that are acceptable within the scope of any DE operator have come to be known as ‘weak’; while those that require AA contexts (like the ‘even’ morphemes in Bengali) have been dubbed ‘strong’. NP *any* (and the ‘some’ morphemes in Bengali for NP *any*) are licensed even in contexts which are not obviously DE. This is illustrated with an *only* construction in (57). However, the ‘even’

morphemes in Bengali for NP *any* are not licensed in contexts which are not obviously DE. This is explained through the conditional in (58). In both (57) and (58), the distributional contrast between the ‘some’ morphemes and the ‘even’ morphemes is explained through the role of presuppositionality.

THE BENGALI MORPHEMES FOR NP ANY AND THE ROLE OF PRESUPPOSITIONALITY.

Meaning can be seen to have three dimensions:

- (i) a pure truth conditional component;
- (ii) a presuppositional component; and
- (iii) an implicature component.

In (57), (57a) does not seem to entail (57b) though (57a) licenses items like *any*, violating the traditional view of DE contexts as licensors of NPIs.

- (57) a. Only John had **any** complaints.
b. Only John had a complaint about his socks.

It turns out that many of the contexts in which an NPI appears to be licensed by a non-DE item, are presuppositional. Following Karttunen and Peters (1979), the presuppositional component of the meaning of (57b) is taken to be that *John had a complaint about his socks*.

According to von Stechow (1999), presuppositional elements are context dependent items: they require that their presuppositions be met in their context of use. Their context dependency must be taken into consideration in assessing entailment relations. This leads von Stechow to argue for a notion of entailment that is more general than the classical one and takes presuppositions into account; specifically a notion of S-entailment (Strawson-entailment), which follows Strawson's (1952) classic proposal. A proposition *p* entails proposition *q* iff for any world *w* such that *p* is true in *w* and *q* is defined in *w*, *q* is also true in *w*.

Following Strawson (1952) and von Stechow (1999), we argue that even if we know (57a) is true, we still cannot conclude (57b) without knowing if its presupposition is true. If we know that it is true, then on finding out that (57a) is true, we conclude that (57b) is also true. That is, items have a non-DE presupposition but a DE assertive component.

Following Krifka (1995) and Chierchia (2004), we take constructions with *only* to be DE (and licensing items like *any*) considering only the DE assertive (i.e. truth conditional) component of their meaning.

However, presupposition triggers cannot license NPIs such as the ‘even’ morphemes. *Even* has an additive presupposition that some other alternative must be true. *Ek-ta-o* (‘even one’) is a degree expression associated (like minimizers) with a presupposition of anti-exhaustivity. *Ek-ta-o* denotes the same as the numeral *one*, but is limited to contexts in which *one* is too little to be true by itself. In other words, *ek-ta-o* denotes the same as the numeral *one* but only in worlds *w* and with respect to properties *P* and *Q* such that either no *P* or more than one *P* has/does *Q*; that is, *ek-ta-o* is restricted to worlds in which anti-exhaustivity holds with respect to *one*. This feature excludes items like *ek-ta-o* ‘even one’ from contexts which license items like NP *any* considering only the truth conditional component of their meaning. This is illustrated in (58).

- (58) a. *If John had **EVEN ONE** complaint, he would say so.
b. If John had even one complaint about his socks, he would say so.

The ‘even’ morpheme in (58a) cannot be licensed by S-entailment because the presuppositional component of the meaning of *John had even one complaint about his socks* has two parts - one, that John had no complaint about his socks and two, that John had more than one complaint about his socks. Therefore, even if we know that (58a) is true, we still cannot conclude that (58b) is also true because the presupposition that *John had no complaint about his socks* prevents S-entailment.

Any (and the ‘some’ morphemes) can be licensed in contexts such as an *only* construction through S-entailment by considering only the DE assertive (i.e. truth conditional) component of the meaning of the *only* construction (57a-d). The ‘even’ morphemes

cannot; they can only be licensed in contexts that are DE considering meaning in all its dimensions. Following von Stechow (1999), it can be said that the ‘even’ morphemes are sensitive, not to S-entailment, but to classical entailment (with AA characterized in terms of classical entailment). As a result, the ‘some’ morphemes for NP *any* in Bengali have a more liberal distribution vis-a-vis the ‘even’ morphemes, though both sets of morphemes are similar in that they are recruited as negative quantifiers to begin with.

3. Analysis.

3.1. An agreement-based approach to polarity.

The previous section examined the occurrences of the Bengali morphemes for Negative Polarity *any* and formulated the generalizations capturing their distribution. The remainder of the paper is devoted to presenting a principled account for this pattern. To this end, the paper adopts the agreement-based approach to polarity, embedded within a more general theory of scalar implicatures, in Chierchia (2006, 2011). This approach builds on insights in Kadmon and Landman (1993), Krifka (1995), Lahiri (1998) and Rooth (1985, 1992). Its main hypothesis is that all members of the polarity system share the property of being (weak) indefinites (i.e. existentially quantified elements) which obligatorily activate (scales of) alternatives (of various types). These, by hypothesis, must result in some form of meaning enrichment or strengthening; which intuitively suggests the rationale for the use of polarity items. This intuition is turned into a ‘grammatical’ constraint, implemented in a compositional way. It is assumed that strengthened interpretations can be generated via a grammatical device – the insertion of an exhaustivity operator – which is essentially a covert counterpart of the focus sensitive operator ONLY (O) or a null counterpart of the focus sensitive operator EVEN (E). The theory posits that the alternatives activated by polarity items trigger the insertion of an exhaustivity operator, a syntactic process. The exhaustivity operator responsible for strengthening applies to a proposition p and the set of its (propositional) alternatives (degree or scalar and subdomain) and negates all alternatives which are not entailed by p (i.e. negates all alternatives stronger than p). The polarity item is licensed if the result of exhaustification is semantically and syntactically coherent.

The idea that polarity items activate subdomain alternatives is explained through the example in (59). Even though *any*, as an example of a polarity item, shows no overt signs of emphasis in its morphology, it easily acquires it, when compared with plain indefinites in contrastive focus situations. A way to capture this is by assuming that *any* obligatorily activates subdomain alternatives. Under contrast, (59b) is perceived as stronger than (59a).

- (59) a. I don't have [_{NP/D}'eggs].
b. I don't have any_D eggs.

The activation of subdomain alternatives captures the contrast between (59a) and (59b) under Rooth's anaphoric theory of contrastive focus. Rooth's theory requires that the 'antecedent' of the contrast (59a) be a member of the focus value of the contrastively stressed counterpart, namely (59b). The focus value of (59b) must include its lexically activated alternatives; it follows that the anaphoric condition can be guaranteed to be met only if D' - the domain associated with the bare plural in (59a) - is a subset of D, the domain associated with *any*. As a consequence, (59b) comes out as stronger and less exception tolerant than (59a).

Exhaustification of alternatives results in a contradiction in UE contexts in the case of NPIs like *any* (60).

- (60) a. There are any_D cookies left (where D = things in the kitchen).

The subdomain alternatives in this case would be (60b).

- b. There are cookies left on the kitchen table,
There are cookies left in the oven....

Exhaustification requires that all non-entailed alternatives be false. In this case, none of the alternatives are entailed by the assertion and must be false. This results in a contradiction (60c).

- c. There are cookies left in the kitchen but
there are no cookies left on the kitchen table,
there are no cookies left in the oven....

Thus exhaustification results in contradiction in UE contexts and NPIs are ungrammatical in them.

Exhaustification of alternatives results in semantic coherence of NPIs only in DE contexts – where all alternatives are entailed by the assertion. In other words, it is only in DE contexts that the assertion is always the strongest alternative and there are no stronger alternatives to exhaustify. This is illustrated in the next section through the licensing of the Bengali morphemes for NP *any* in DE contexts.

3.2. An agreement-based account for the Bengali NP *any* morphemes.

Due to their singular, non-referential status, the ‘some’ morphemes and the ‘even’ morphemes act as negative quantifiers under sentential negation. In other words, these Bengali morphemes become syntactically negative with wide scope negation; which creates the DE context for semantic coherence of these morphemes as NPIs, even in subject position.

In (61), the positive existential quantifier *keu* ‘someone’ has singular non-specific reference; that is, it refers to some individual or other who comes. Similarly in (62), *ek-ta* ‘one’ has singular, non-specific reference; its function is to communicate that some tooth or other is left. In (63) and (64) we see *keu* and *ek-ta-o* in a negative context. (63) constitutes a case of wide scope negation where the scope of negation is not limited to the verb (*ash-e na* ‘come not’) but extends to the quantifier (*keu* ‘someone’) to give a ‘not anyone = nobody’ reading. In (64), negation of the verb (*baki nei* ‘left not’) nullifies the existence of *ek-ta-o dat* ‘even one tooth’ to signify ‘not even one tooth = no tooth’ undergoing the state described by the verb/predicate. Although the quantifiers - *keu* ‘someone’ in (62) and *ek-ta-o* ‘even one’ in (63) are not structurally negated, the scope of negation in each case is not limited to the verb but extends to the quantifier.

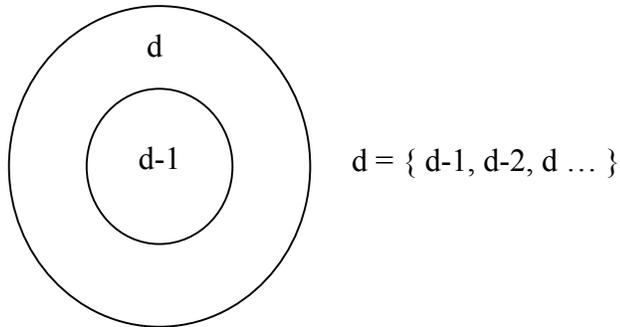
- (61) Keu ash-e.
 someone come-INF
 ‘Someone comes’.
- (62) Ek-ta dat baki ache.
 one-CL tooth left is
 ‘One/A tooth is left’.
- (63) Keu ash-e na.
 anyone come-INF not
 ‘Nobody comes’.
- (64) Ek-ta-o dat baki nei.
 one-CL-even tooth left not
 ‘No tooth is left’.

In line with the framework adopted by the paper, the Bengali NP *any* morphemes are taken to be indefinites – that is, existentially quantified elements which obligatorily activate alternatives. Like all indefinites, the ‘some’ morphemes activate scalar alternatives, which are numerical as in *two, three* Like all polarity items, they activate subdomain alternatives. Quantificational domains do not play a major role in NPIs of the ‘even’ morpheme. *Ek-ta-o* ‘even one’ (and *ektu-o* ‘even a little’) associate with the lowest non-null position on a scale of perception. Both evoke alternatives of the form ‘perception position greater than x’ where x denotes the lowest non-null position (that *ek-ta-o/ektu-o* occupy). *Ek-ta-o* and *ektu-o* evoke alternatives as in (65).

- (65) ALT (*ek* ‘one’): {two, three.... }
 ALT (*ektu* ‘a little’): {‘some’, ‘much’, ‘all’.... }

Such an interpretation involves a degree scale. Degree semantics (cf., e.g. Kennedy 2005) dictates that a degree d incorporates degree d-1 where d-1 is a proper subset of d as in (66). If, for example, I doze off for ten minutes (say d), it automatically implies that I dozed off for nine (d-1) minutes.

(66)



In (67), the alternatives that *ek-ta-o* ‘even one’ associates with are other, linearly ordered, cardinality predicates. In (67), the original assertion is the strongest member of the alternative set. The absence of even one tooth is consistent with the absence of more than one tooth. EVEN - exhaustification (67c) does not lead to contradiction. Therefore, the ‘even’ morpheme for NP *any* is grammatical, even in the subject position, in (67).

(67) **Ek-ta-o** dat baki nei.

one-CL-even tooth left not

‘No tooth is left’.

a. Lexical meaning

What is left does not have perception position 1 or more.

b. Alternatives

What is left does not have perception position 2 or more.

c. $E [\neg [ek-ta_{OD} \text{ dat baki nei.}]]$

The alternatives generated by *keu* ‘someone’ in (68) are contextually supplied properties. The assertion in (68) activates alternatives, with each one of the alternatives entailed by the assertion. That the entailments of a proposition are an inextricable part of its truth conditional content is reinforced by the inability of ONLY to exhaustify away entailments. Exhaustification returns the original assertion, making the ‘some’ morpheme for NP *any* grammatical, even in the subject position, in (68).

(68) **Keu** ash-e na.
 anyone come-INF not

‘Nobody comes’.

where D, say = ‘to the countryside’.

SC-ALT (**keu**): { two, three ... }

D-ALT (**keu**): {on farms, on country estates, in country gardens ... }

O [\neg [keu_D ash-e na.]]

In sum, agreement between a semantically non-negative element and a semantically negative element allows the semantically non-negative element (the ‘some’ morphemes and the ‘even’ morphemes in Bengali) to function as NP *any*, even in subject position.

For *any*, no reconstruction of the subject below negation is assumed. The subject occurs in a UE context leading to semantic incoherence as in (69).

(69) *Anybody does not come.

O Anybody_D [\neg [come]]

English does not follow the Bengali example because it has true negative quantifiers (e.g. *nobody*) and not positive quantifiers with singular, non-specific reference which become syntactically negative with wide scope negation to act as negative quantifiers cum NPIs.

Taking stock, Bengali positive existential quantifiers with singular, non-specific reference become syntactically negative with wide scope negation and are recruited as negative quantifiers cum NPIs, even in subject position. The process of their agreement with O (or E) manifests overtly a form of agreement that is covert with English NPIs which do not double as negative quantifiers.

4. Summary and Conclusions.

Due to their singular, non-referential status, the Bengali positive existential quantifiers become syntactically negative with wide scope negation. The agreement between a semantically non-negative element and a semantically negative element allows the semantically non-negative element to play a dual role as negative quantifier cum NPI, even in subject position. Two sets of morphemes - the ‘some’ morphemes and the ‘even’ morphemes - do the work of NP *any* in Bengali. The ‘some’ morphemes occur in a wide range of DE contexts; the ‘even’ morphemes appear in a subset of DE environments individuated by antiadditivity characterized in terms of classical entailment. Assuming that their alternatives are obligatorily active and, therefore, must be factored into meaning, the observed distributional pattern is derived from the interaction between essentially two parameters of variation:

- (i) the types of alternatives (degree or scalar and subdomain) these items activate and
- (ii) the way these alternatives are factored into meaning (via E or O).

In the case of the ‘even’ morphemes, where the scale is linearly ordered by entailment (and the low end is too small to obtain by itself), E is selected, resulting in emphatic NPI behavior. Otherwise O is selected, resulting in non-emphatic NPI behavior as in the case of the ‘some’ morphemes. The value of this approach lies in the potential it has to generate the attested diversity in the polarity system through the interaction of a particular lexical semantics and other structural elements, without reference to licensing operators.

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7. Abbreviations.

The following abbreviations have been used in the glosses: CL = classifier; INF = infinitive; GER = gerund; PRS = present; PST = past; FUT = future; PRF = perfect; 1 = first person; 2 = second person; 3 = third person; ACC = accusative; GEN = genitive; IMP = imperative; Q = question marker; SBJ = subject.

The following convention has been adopted for transcribing Bengali vowel sounds: O indicates [ɔ]; o indicates [ɔ]

II. Free Choice *Any* and Epistemic Modality: A Perspective from Bengali

Free Choice *Any* and Epistemic Modality: A Perspective from Bengali

Abstract.

Free Choice Items like *any* are thought to freely co-occur with modal expressions (e.g. Vendler 1967). Bengali provides a challenge to this generalization. I argue that only epistemic modals are compatible with Bengali Free Choice Items corresponding to *any*; deontic modals and imperatives are not. I build on Chierchia's (2011) unitary approach to polarity to predict these facts. In particular, I derive the properties of the Free Choice Items from the interaction between their meaning and the lexical semantics of operators in their local context. Accounting for the properties of Bengali Free Choice *any* not only leads to a better understanding of the possible connections between Free Choice Items and modality, it also contributes to our understanding of other dependent indefinites whose distributions are also determined by (different types of) modality.

1. Introduction.

Whether English has one *any* or two is a long-standing debate (Horn 2005 and references therein for a history of the issue). However, a widespread characterization of *any* is that it admits two uses - a Negative Polarity (NP) use and a Free Choice (FC) one. As a Negative Polarity Item (NPI), *any* occurs in Downward Entailing (DE) or NP environments; where it is interpreted as an existential element and patterns with NPIs, as in (1a).

(1) a. John does not have **any** patience.

As a Free Choice Item (FCI), *any* occurs in modal non-DE positive or FC contexts with a quasi-universal meaning (1b); though this does not, in any way, imply that FC *any* is lexically associated with a universal. FC *any* occurs in modals of possibility as in (1bi), in modals of necessity as in (1bii), in epistemic modals (1bi, 1bii) and in deontic modals (1biii), as well as in imperatives (1biv).

- b. i. You may take **any** class on topology that is offered by the college.
- ii. You must take **any** class on topology that is offered by the college.
- iii. You can/must finish **any** pending work by tomorrow.
- iv. Take **any** class on topology.

MODALITY.

The common strategy in the literature on Polarity Sensitive Items (PSIs), of subsuming a wide number of contexts of occurrence under some common description, has led to the generalization that FCIs are sensitive to modality (e.g. Vendler 1967).

According to Portner (2005), the meaning of modal statements, for example, with modal verbs *may* or *must*, depends on:

- (i) alternate possible worlds;
- (ii) identification of which possible worlds are relevant to the truth of the statement.
- (iii) a specification (i.e. accessibility relation) for each world of what possible worlds are relevant to the truth of the statement in that world.

(2a) is true because John ate the cookies in those possible worlds where certain facts hold true. These facts - for example, cookies are kept in the cookie jar in the kitchen, there are no cookies in the kitchen, the cookies were oatmeal cookies, only John eats oatmeal cookies – together entail that John ate the cookies. That is, the set of worlds in which cookies are kept in the cookie jar in the kitchen, there are no cookies in the kitchen, the cookies were oatmeal cookies and only John eats oatmeal cookies, is a subset of the set of worlds in which John ate the cookies. In other words, in every world in which the relevant facts are true, John ate the cookies.

- (2) a. John must have eaten the cookies.

(2b) is true because a daughter is allowed to do anything a son does, in morally good possible worlds. However, what is morally good differs, for example, between cultures.

So the truth of (2b) in, for example, world A is decided with respect to the worlds which are morally good according to the standards of world A. But the truth of (2b) in another world, say world B, would be decided with respect to worlds which are morally good according to the standards of world B. That is, we need a specification of world-to-world relations or accessibility relations for each world, of what possible worlds are relevant to (2b) being true in that world.

(2) b. A daughter must be allowed to do anything a son does.

Epistemic accessibility relations or epistemic modals (2a) pertain to the speaker's beliefs/information state (cf. Hacquard 2006, Yalcin 2007) based on a body of evidence. Deontic accessibility relations, on the other hand, pick out worlds which ought to be, in view of some system of rules (needs, desires, goals, etc.). It is reasonable to assume that deontic modals (2b) are, as a result, interpreted with respect to circumstantial evidence (Falaus 2008, 2009).

May, a possibility modal as in *I may be there*, says that me being there is a possibility and the possibility of me not being there exists as well. *I must be there*, where *must* is a necessity modal, says that me being there is a necessary conclusion.

In (3a), FC *any* appears in the scope of modals of possibility. (3a) is grammatical because worlds with a class (of topology) in them can be extended into 'class (on topology)' worlds in which the subject takes the class. (3ai) implies permission to take one class, it doesn't matter which. (3aii) implies that you can take a class of topology, it doesn't matter which, from the classes on topology that are already being offered. (3aiii) means that you can take a class on topology, it doesn't matter which, from the classes of topology that are likely to be offered next semester.

(3) a. i. Possibility modal:

You may take **any** class.

ii. Epistemic possibility modal:

You may take **any** class on topology that is offered by the college.

iii. Deontic possibility modal:

You may take **any** class on topology that is offered by the college next semester.

The licensing of FC *any* in the scope of modals of necessity is not disallowed - (3bii) and (3biii) are grammatical - though the interaction between the universal force of FC *any* and the modal base is crucial. (3bii) and (3biii) are grammatical but (3bi) is not. (3bi) is ungrammatical in light of the fact that there are many worlds with a class in them that cannot be extended to class-worlds in which the subject takes the class even if required to do so by the context. Licensing by a subordinate clause, such as a relative clause, dubbed *subtriggering* by LeGrand (1975), gives (3bii) and (3biii). (3bii) and (3biii) are grammatical because *subtriggering* restricts the number of worlds that need to be extended to worlds in which the subject takes the class; so worlds with a class of topology in them can be extended into ‘class on topology’ worlds in which the subject takes the class.

b. i. Necessity modal:

*You must take **any** class.

ii. Epistemic necessity modal:

You must take **any** class on topology that is offered by the college.

iii. Deontic necessity modal:

You must take **any** class on topology that is offered by the college next semester.

FC *any* is also grammatical in imperatives as in (3c).

c. Imperative:

Take **any** class on topology.

It is argued that the two uses of *any* are conceptually distinct. The argument, based on the way *any* behaves in ‘there’ sentences, is illustrated in (4).

Indefinites are grammatical in the postcopular position of ‘there’ - sentences (4a); universals (4b) and definites (4c) are not.

- (4) a. There is **a** cookie left.
- b. *There is **every** cookie left.
- c. *There is **the** cookie left.

Any is ungrammatical in (4d) because it can only be interpreted universally in a positive ‘there’ - sentence (4d), which is a context that excludes universal construals, as seen in (4b) with the universal quantifier *every*. *Any* is grammatical if we insert negation, the prototypical NPI licenser (2e), to give a $\neg \exists$ interpretation (i.e. *it is not the case that there is a cookie left*).

- d. *There is **any** cookie left.
- e. There isn’t **any** cookie left.

Embedding (4d) in the consequent of a conditional (4f) gives an ungrammatical sentence; embedding (4d) in the antecedent of a conditional (4g) gives a grammatical one.

- f. *If we look in the jar, there is **any** cookie left.
- g. If there is **any** cookie left, it is in the jar.

(4g) – a case of NP *any* – is expected to be grammatical under the Fauconnier/Ladusaw generalization that the antecedent of conditionals shares with negation the property of being DE. But (4g) cannot constitute a case of FC *any* because the positive ‘there’ - sentence (4d) which is embedded in (4g) is ungrammatical/disallows an FC use of *any*. Therefore, the facts in (4a-g) justify two conceptually distinct uses of *any*.

The familiar argument based on the way *any* behaves in ‘there’ sentences provides some justification for the view that NP and FC uses of *any* are to be conceptualized differently (even if *any* admits both uses). Though the use of morphemes that cover NP and FC environments is widespread across languages, the use of a paradigm of FCIs

morphologically distinct from that of NPIs (as in Bengali) is not an isolated phenomenon crosslinguistically. The next section (Section 2) illustrates the formation of the Bengali morphemes for FC *any* as domain widening existential items. Since the addition of a wh-determiner widens the domain associated with the positive existential quantifier, the wh-determiner is viewed as an FC morpheme. Furthermore, since the positive existential quantifier has singular, non-specific reference and the FC morpheme widens the domain to denote the set of the maximum possible number, the formation of the FC morpheme is seen to imply a hierarchy of quantificational domains. Section 3 explains Bengali FC *any* in terms of a hierarchy of quantificational domains which incorporates progressively higher levels in terms of larger domains. The occurrences of Bengali FC *any* are examined to formulate the generalizations capturing its distribution. This section is followed by a principled account for the observed distributional pattern. To this end, the paper adopts an alternative-based theory which maintains a unitary semantics for all types of polarity items by assuming an obligatory association with alternatives in their lexical meaning (Chierchia 2006, 2011). Section 4 introduces the main assumptions underlying this unitary approach to polarity. In Section 5 an alternative-based semantics is shown to capture the distributional restrictions of Bengali FC *any*. Section 6 summarizes and suggests directions for future research.

2. The internal structure of the Bengali morphemes for FC *any*.

English uses the same morpheme for *any* in NP and FC contexts. Bengali, however, lexicalizes the distinction between NP *any* and FC *any*. Morphologically, the Bengali FCI's corresponding to *any* can be deconstructed into two parts: a wh-determiner, distinct from the headed relative wh-elements, and the existential. The addition of *je* [[±HUMAN, ±ANIMATE] or *ja* [-HUMAN, -ANIMATE] converts the existential sense of *some* into a universal sense. *Je keu* ('whoever'/'anyone') and *ja kichu* ('whatever'/'anything') are used as independent DP constituents while *je kono* ('any Noun Phrase') is only used as a determiner. The internal structure of the 'some' morphemes in Bengali, which have a meaning similar to FC *any*, is illustrated in (5), with the FC morpheme glossed with *wh*.

$$\begin{aligned}
g(\mathbf{D}) &\subseteq \mathbf{D} && (\mathbf{D} \text{ is the set of possible individuals}) \\
[[\mathbf{kono\ purush}]]^{w,g} &= \{x: x \text{ is a man in } w \ \& \ x \in g(\mathbf{D})\} \\
\text{For } [[\alpha]]^{w,g} &\subseteq D_e.: \\
[[\mathbf{je- \alpha}]]^{w,g} &= \{x: \exists g' [x \in [[\alpha]]^{w,g'}]\} \\
[[\mathbf{je- [kono_D\ purush]}]]^{w,g} &= \{x: \exists g' [x \text{ is a man in } w \ \& \ x \in g'(\mathbf{D})]\} \\
&= \{x: x \text{ is a man in } w\}
\end{aligned}$$

Kono ‘some’ has singular non specific reference, and corresponds to the notion of the ‘contextually weakest predicate’; Lahiri (1998). In other words, *kono* ‘some’ intersects a noun with the weakest predicate supplied contextually. The FC morpheme *je* widens the domain to denote the set of the maximum possible number of men. *Kono* ‘some’ and *je kono* ‘any’ can thus be seen in terms of a hierarchy of quantificational domains.

3. A hierarchy of quantificational domains.

Keu (‘someone’) and *je keu* (‘whoever’/‘anyone’), *kichu* (‘something’) and *ja kichu* (‘whatever’/‘anything’) and *kono Noun* (‘some Noun’) and *je kono Noun* (‘any Noun’), signify progressively higher levels in a sort of hierarchy of quantificational domains in terms of a larger domain. Overt indefinite morphology triggers an intermediate level in this hierarchy of quantificational domains (Chierchia 2004). In (7) and (8), the scalar implicatures generated by the indefinite *ekta* (‘one’) play a role in restricting the size of the domain. This intermediate level corresponds to what are called **\exists -FCIs or FCIs with unmistakable existential force** (Chierchia 2011). These are distinct from the next higher level in the hierarchy of quantificational domains, which corresponds to **\forall -FCIs or FCIs with predominantly universal force**.

You may eat any one fruit may be paraphrased as *You may eat a fruit, any fruit*. Similarly, *You must eat any one fruit* may be paraphrased as *You must eat a fruit, any fruit*. Dayal (2004) christens such occurrences of *any* as a case of supplementary *any*. According to Dayal, the antecedent clause without *any*, that is, *You may/must eat a fruit* suggests eating of a fruit in at least one accessible world in the modal base. The supplementary clause,

that is, (*You may/must eat any fruit*), implies universal force, as well as another modal which draws on the modal base provided by the antecedent clause. The supplementary clause suggests for each fruit a world where that fruit is the one eaten. In a possibility modal as in (7), while it cannot be predicted which fruit, if any, will be eaten in the actual world, only one fruit can be eaten. In the necessity modal construction in (8), while it cannot be predicted which fruit will be eaten in the actual world, the antecedent clause forces every world in the modal base to contain at least one fruit that is eaten. FC *any* is grammatical with the necessity modal in (8) because the scalar implicatures generated by the indefinite *ekta* ‘one’ restrict the number of worlds that need to be extended to worlds in which the fruit is eaten.

(7) Tumi **je kono** ekta fOI kh-ete paro.
 you wh some one fruit eat-INF able-2
 ‘You may eat **any** one fruit’.

(8) Toma-ke **je kono** ekta fOI kh-ete hO-be.
 you-ACC wh some one fruit eat-INF happen-IMP
 ‘You must eat **any** one fruit’.

A DISTINCTION BETWEEN \exists -FCIs and \forall -FCIs.

That a distinction between \exists -FCIs and \forall -FCIs is justified, is illustrated in (9). Following LeGrand (1975) and Ladusaw (1979), we utilize conditionals as an example of a context in which the \exists -FC (9a) and the \forall -FC (9b) contribution of *any* is evident.

(9) a. Jodi **keu** ei project-ta shambhla-te par-e, to Ram par-be.
 if some this project-CL take care-INF able-3 then Ram able-FUT-3
 ‘If **anyone** can handle this project, Ram can’ = ‘If it is the case that there is any (some) person who can handle this project, then Ram can’.
 (Narrow scope existential interpretation)

b. Jodi **je keu** ei project-ta shambhla-te par-e, to Ram par-be.

if wh some this project-CL take care-INF able-3 then Ram able-FUT-3
 ‘If **anyone** can handle this project, Ram can’ = ‘If it is the case that any
 (every) person can handle this project, then it follows that Ram can’.
 (Normal wide scope universal interpretation)

In (9a), *any* has existential force and gives a *Ram rocks* kind of reading. In (9b), *any* has universal force to give a *Ram is your average Joe* sort of reading. (9) – a DE context – can support FC readings because a DE context applies to a whole class rather than to particular members of the class (Dayal 1998). *I don’t have a dog* entails for all dogs that I do not have them.

SUBTRIGGERING IN AFFIRMATIVE EPISODIC CONTEXTS AND NECESSITY MODALS.

With \forall -FC *any*, the domain of quantification involves the widest possible set of individuals consistent with the descriptive content. The presupposition of a sentence with an FC *any* phrase in it is that predication could hold of members of the set FC *any* quantifies over. This results in presupposition failure in contexts like non-negative episodic contexts like (10a). When a statement q with presupposition p is uttered in a context where p is not true, it is a case of presupposition failure. A sentence cannot have a domain that includes possible individuals and predicate something purely episodic of those individuals; as (10a) does, with a bounded time interval *kalke* ‘yesterday’ restricting the set of situations. ***Subtriggering*** (or licensing by a subordinate clause) can enable a universal-like interpretation and ensure grammaticality. The conflict is resolved in (10b) with the interval of the relative clause (the *je... o-der* construction) in sync with that of the main clause.

(10) a. *Kalke John je kono mohila-r shonge kotha bol-lo.
 yesterday John wh some woman-GEN with word say-PST-3
 ‘Yesterday John talked to **any** woman’.

b. Kalke John je mohila-der dekh-lo o-der shonge kotha bol-lo.
 yesterday John wh woman-CL see-PST-3 word with word say-PST-3

‘Yesterday John talked to **any** woman that he saw’.

Postnominal modifiers, specifically postnominal adjuncts (11b), but not prenominal modifiers (11a), serve as subtriggers for FC *any*.

(11) a. *Jodge **je** pagol khuni-ke paglagarod-e path-alo.

judge wh insane muderer-ACC asylum-LOC send-PAST-3

‘The judge sent to the asylum any insane murderers’.

b. Jodge **je** khuni-ke pagol bhab-lo **o-ke** paglagorod-e path-alo.

judge wh murderer-ACC insane think-PAST-3him-ACC asylum-LOC send-PAST-3

‘The judge sent to the asylum any murderer who he thought was insane’.

The temporal/spatial specification introduced by the relative clause (the *je... o-ke* construction) allows the quantificational set to be narrowed down enough to avoid a presupposition clash. Postnominal modifiers, which are phrasal according to Sadler and Arnold (1994) provide such specification; prenominal modifiers, which are lexical, do not.

Subtriggering ensures grammaticality in the case of necessity modals as well, by moderating the interaction between the universal force of FC *any* and the modal base. In the possibility modal in (12), we cannot predict which books, if any, will be read in the actual world. But the (ungrammatical) necessity modal in (13a) requires each book to be taken in each world, returning the full set of books in the actual world. (12) is grammatical because worlds with a book in them can be extended into book-worlds in which the subject reads the book. (13a) is ungrammatical because there are many worlds with a book in them that cannot be extended to book-worlds in which the subject reads the book even though the context demands it. Licensing by the relative clause (i.e. *subtriggering*) gives the grammatical necessity modal in (13b). (13b) is grammatical because *subtriggering* restricts the number of worlds with a book in them that need to be extended to book-worlds in which the subject reads the book; so worlds with a book in them can be extended into book-worlds in which the subject reads the book.

(12) Tumi **je kono** boi por-te par-o.
 you wh some book read-INF able-2
 ‘You may read **any** book’.

(13) a. *Toma-ke **je kono** boi por-te ho-be.
 you-ACC wh some book read-INF happen-IMP
 *‘You must read **any** book’.

b. **Je** boi tumi ano, **toma-ke** por-te hO-be.
 wh book you bring-2 you-ACC read-INF happen-IMP
 ‘You must read **any** book you bring’.

Bengali differs from English in subtriggered cases such as in (10b), (11b) or (13b) in that what looks to be *subtriggering* in Bengali is actually a correlative (the *je ... o-der/o-ke* construction), which clearly alternates in contexts in which Bengali FC *any* does not appear.

IMPERATIVES, AND DEONTIC AND EPISTEMIC MODALS.

Further empirical investigation reveals other interesting contrasts between English and Bengali in the distributions of FC *any*.

Despite the similarity in meaning (both widen the domain to denote the set of the maximum possible number), the distributions of FC *any* in English and in Bengali do not overlap in the case of imperatives; as illustrated by the ungrammaticality of *je kono* in the imperative in (14) which licenses *any*. In the imperative in (14), the speaker is understood to have direct access to all the possible books in the quantificational domain. The speaker does not leave open the possibility that one book (of the set of possible books) is not an option for reading.

(14) ***Je kono** boi pOr-o.
 wh some book read-IMP

(‘Read **any** book’.)

Further, examples (15) and (16) indicate that, unlike English FC *any*, Bengali FC *any* does not occur under deontic modals (15) though it is grammatical in epistemic modals (16). In the deontic modal in (15), the assertion is based on a certainty, *ami jani* ‘I know’, which constitutes direct evidence supporting my assertion. Accordingly, I do not leave open the possibility that one cupboard (of the set of possible cupboards) is not an option for the book to be in.

(15) *Ami jani boi-ta **je kono** cupboard-e ho-te par-e.
I know book-CL wh some cupboard-LOC happen-INF able-3
(‘I know that the book could be in **any** cupboard’.)

In the epistemic modal in (16), the assertion is based on an uncertainty: *ami joto door jani* ‘as far as I know’, the book could be in one of the cupboards of the set of possible cupboards. But because I do not know for certain that this is so, my assertion leaves open the possibility that one cupboard (of the set of possible cupboards) is not an option for the book to be in. As a result, direct/further evidence could eventually contradict my assertion.

(16) Ami joto door jani, boi-ta **je kono** cupboard-e ho-te par-e.
I as far know book-CL wh some cupboard-LOC happen-INF able-3
‘As far as I know, the book could be in **any** cupboard’.

Put another way, *je kono* is incompatible in contexts such as imperatives and deontic modals which establish the truth of the proposition, but compatible with contexts such as epistemic modals which do not establish the truth of the proposition. A property of *je kono* in epistemic modals is an uncertainty/indirectness component which conflicts with situations (e.g. in imperatives and deontic modals) in which direct evidence settles the truth of the proposition. To use an analogy, if we see Jill going up the hill we cannot say *whether Jill is going up the hill is anybody’s guess*.

In its acceptability in **epistemic modals** and exclusion from **imperatives** and **deontic modals**, Bengali FC *any* resembles Romanian *vreun* (17).

- (17) a. Poate sa fie **vreun** restaurant turcesc in cartier.
 may SBJ be-3SG **vreun** restaurant Turkish in neighborhood
 ‘There might be **some** Turkish restaurant in the neighborhood’.
- b. Ia *vreo carte.
 take **vreun** card
 (‘Take **some** card’.)
- c. *Pot sa trimit **vreun** articol până mâine.
 can SBJ write-1SG **vreun** article by tomorrow
 (‘I can send **some** paper by tomorrow’.)

Morphologically, the Romanian determiner *vreun* (and its feminine form *vreo*) is a complex variant of the standard indefinite article *un* (masculine) / *o* (feminine), combined with the morpheme *vre-* (from the Latin verb *volere* ‘want’), which occurs with singular countable nouns. The discussion on Romanian *vreun* follows Falaus (2008, 2009). In using an epistemic modal, the speaker is not only conveying something about her beliefs/information state, she is also communicating that she has only indirect evidence for her claim. This in turn means that when the speaker uses an epistemic modal, the hearer is entitled to make the inference that the speaker cannot rule out the (unlikely) possibility that the proposition is false. Items such as *vreun* (and, for our purpose, Bengali FC *any*) are only compatible with contexts (such as epistemic modals) where the truth of the embedded proposition is not established, as in (17a). Items such as *vreun* (and Bengali FC *any*) are incompatible with contexts which establish a certain fact to hold; the deviance of *vreun* (and in our case, Bengali FC *any*) in imperatives (17b) and in deontic modals (17c) derives from this mismatch.

It can be said that Bengali FC *any* contrasts with English FC *any* in the extent of variation (‘freedom of choice’) among the members of the restriction set. Following the intuition in Falaus (2009), which builds on a proposal in Alonso-Ovalle and Menendez-Benito (2008,

2010), the paper submits that in the case of Bengali FC *any*, ‘*some, but not necessarily all*’ alternatives qualify as possible options. This is illustrated by the continuation in (18) which is grammatical with Bengali FC *any* though it explicitly excludes one possible ‘choice’, *rannaghOrer cupboard* ‘the kitchen cupboard’. This is consistent with the stance that Bengali FC *any* is only compatible with contexts where the truth of the embedded proposition is not established. In (18) the assertion is based on indirect/uncertain evidence; *John joto door jane* ‘to the best of John’s knowledge’, the book could be in one, any one of the cupboards in the house, barring the kitchen cupboard. Due to the indirectness/uncertainty component of the evidence (the assertion is based on what John thinks is true), the possibility that the book is not found where John says it could be, cannot be ruled out. Imperatives (19) and deontic modals (20) require that *all* relevant alternatives in the domain of quantification constitute possible values for the existential claim; this is illustrated by the ungrammaticality of Bengali FC *any* in (19) and (20). Both indicate direct evidence/direct access, distinct from the indirectness signal carried by the epistemic modal in (18), which settles the truth of the proposition and the inclusion of all possible ‘choices’ in the quantificational domain. The semantics of imperatives and deontic modals can be said to be consistent with a ‘total variation’ inference, as opposed to a ‘partial variation’ inference triggered by epistemic modals in which one of the domain alternatives stands a chance of being false.

- (18) John joto door jan-e boi-ta bari-r **je kono** cupboard-e ho-te
 John as far know book-CL house-GEN wh some cupboard-LOC happen-INF
 par-e, kintu rannaghOr-er cupboard-e ho-te par-e na.
 able-3 but kitchen-GEN cupboard-LOC happen-INF able-3 not
 ‘To the best of John’s knowledge, the book could be in **any** cupboard in the house, barring the kitchen cupboard’.

- (19) ***Je kono** boi pOr-o.
 wh some book read-IMP
 (‘Read **any** book’.)

- (20) *Aami jani boi-ta bari-r **je kono** cupboard-e ho-te par-e.
 I know book-CL house-GEN wh some cupboard-LOC happen-INF able-3
 ('I know that the book could be in **any** cupboard in the house'.)

The account thus far supports a correlation between the type of modality (epistemic or non-epistemic) and extent of variation (partial or total) of the FCI. Epistemic modals, due to an indirectness/uncertainty component in their meaning, are compatible with the partial variation meaning associated with items such as *je kono* 'any' in which one of the domain alternatives stands a chance of being false. Imperatives and deontic modals enforce total variation and disfavor Bengali FC *any*. In the rest of the paper, I adopt a unitary approach to polarity to derive a principled account for the distributional restriction of Bengali FC *any*.

4. A unitary approach to polarity.

The use of different morphemes for NP and FC contexts is not an isolated phenomenon crosslinguistically. Throughout Romance, for example, NPIs are separate from FCIs. Equally, the use of morphemes that uniformly cover NP and FC environments, as in English, is also widespread across languages. This raises the question of whether a 'double role' phenomenon like in English represents some form of lexical ambiguity, or whether a unitary account across polarity environments, negative and non-negative, is possible. The frequency of the 'double' role phenomenon (cf. Haspelmath 1997) weakens the lexical ambiguity stance and suggests that NP and FC environments must form contiguous regions in our logical space.

A unitary approach to polarity is strongly favored, both on empirical and conceptual considerations. The identification of licensing generalizations for classes of PSIs (or lexical stipulations that build such generalizations into the lexical semantics of an entry), have been an indispensable contribution of past research (for example, Ladusaw 1979, Linebarger 1987, Giannakidou 1997, Zwarts 1998). The challenge before current research is to identify a generative matrix of how a particular lexical semantics interacts

with other structural elements to generate polarity sensitive structures, and how this defines the communicative role of PSIs; without reference to licensing operators.

AN ALTERNATIVES + EXHAUSTIFICATION APPROACH.

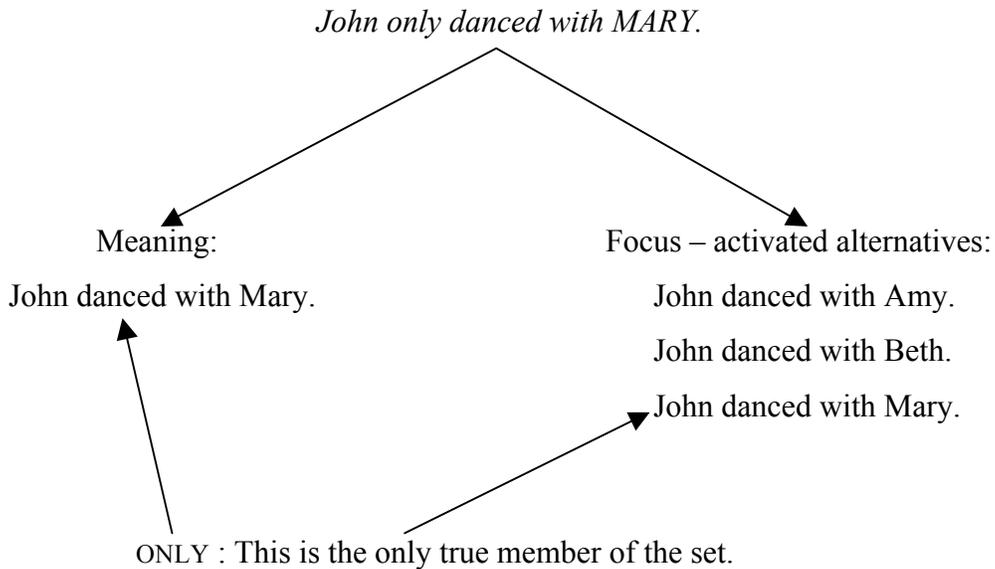
To this end, the paper adopts the unitary approach to polarity, embedded within a more general theory of scalar implicatures, in Chierchia (2006, 2011). This approach builds on insights in Kadmon and Landman (1993), Krifka (1995), Lahiri (1998) and Rooth (1985, 1992). Its main hypothesis is that all members of the polarity system share the property of being (weak) indefinites (i.e. existentially quantified elements) which obligatorily activate (scales of) alternatives (of various types). These, by hypothesis, must result in some form of meaning enrichment or strengthening; which intuitively suggests the rationale for the use of polarity items. This intuition is turned into a ‘grammatical’ constraint, implemented in a compositional way. It is assumed that strengthened interpretations can be generated via a grammatical device – the insertion of an exhaustivity operator – which is essentially a covert counterpart of the focus sensitive operator ONLY (o) or a null counterpart of the focus sensitive operator EVEN (E). The theory posits that the alternatives activated by polarity items trigger the insertion of an exhaustivity operator, a syntactic process. The exhaustivity operator responsible for strengthening applies to a proposition p and the set of its (propositional) alternatives (degree or scalar and subdomain) and negates all alternatives which are not entailed by p (i.e. negates all alternatives stronger than p). The polarity item is licensed if the result of exhaustification is semantically and syntactically coherent.

The distribution of polarity items simply follows from the interaction between two interconnected factors: (i) the nature of alternatives and (ii) the modes of exhaustification. Depending on the types of alternatives polarity items introduce (e.g. degree or scalar and subdomain), and the way exhaustification proceeds, one can derive the properties of the various subclasses of polarity items (e.g. emphatic and plain NPIs, ‘universal’ and existential FCIs or NPI/FCIs). A concise introduction to this approach follows.

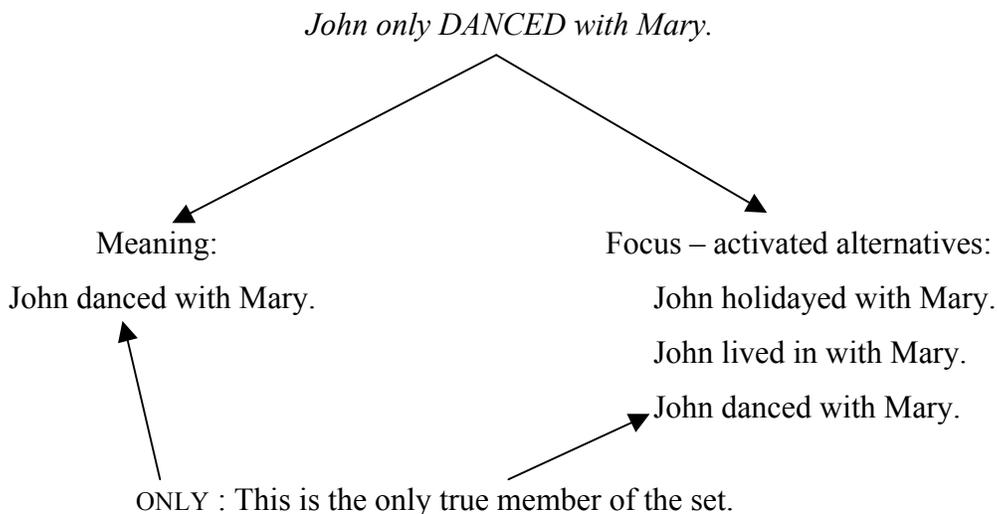
THE BEHAVIOR OF ANY AS AN INTERPLAY BETWEEN ALTERNATIVES AND EXHAUSTIFICATION (CHIERCHIA 2011).

FOCUS ACTIVATES ALTERNATIVES. Focus essentially indicates that what is said is drawn from a set of alternatives that might have been said in its stead. The focus-activated alternatives are generated by replacing the focused object, for example, *MARY* in (21) or *danced* in (22), with others of the same type drawn from some contextually salient domain; for example, *Amy* and *Beth* in (21) or *holidayed* or *lived in* in (22).

(21) John only danced with *MARY*.



(22) John only *DANCED* with Mary.



FOCUS ACTIVATES ALTERNATIVES THAT MUST BE OPERATED OVER BY ALTERNATIVE – SENSITIVE OPERATORS. Focal stress (marked in capitals) drives the truth conditions of a sentence. It

does so by driving which alternative the exhaustifying adverbial ONLY associates with. ONLY applied to the assertion states that the assertion and its entailments are the only true members of the set of active alternatives. A phonologically null counterpart of ONLY can drive exhaustification covertly. If a question such as (23) is answered with A1, it is usually understood exhaustively as A2.

- (23) Q. Who did John dance with?
A1. John danced with Mary.
A2. John only danced with Mary.

Such a phonologically null operator with essentially the same meaning as *only*, is assumed to be freely available; and can be used to exhaustify a statement when appropriate; Groenendijk and Stokhof (1984).

The other main focus-sensitive operator is EVEN. (24b) suggests use of a null counterpart of EVEN.

- (24) a. Is the drought in Sudan severe?
b. Yes. You know [THE WELLS]_F are dry.
c. Even the wells are dry.

The assertion (with focal stress on the subject) in (24b) is interpreted as (24c), requiring the alternative-sensitive operator EVEN (for *only* would result in a contradiction) which requires that the assertion be the least likely among the relevant alternatives.

THE INHERENT FOCAL FEATURE OF ANY IN SITUATIONS OF CONTRASTIVE STRESS.

According to Chierchia (2011), *any* carries an inherent focal feature F, one that may remain phonologically unrealized (25a), which predisposes *any* to emphasis or exception intolerance. This inherent focal feature is spelt out when *any* is contrasted with other indefinites. *Any* is an ordinary indefinite in contexts without any special stress condition or emphasis of any sort as in (25a). It is perceived as stronger when stressed (25b), or contrasted with other existentials as in (26).

- (25) a. There wasn't **any** mathematician in the class.
 b. There wasn't **ANY** mathematician in the class.
- (26) a. The prodigy had never attended **a** formal school.
 b. The prodigy had never attended **any** formal school.

In non-contrastive environments, members of the pair in (26) are perfectly interchangeable. (26a) is uncontroversially a negative existential statement. But (26b) feels more emphatic (or less exception tolerant) when compared with (26a).

This perception (of the predisposition of *any* to emphasis/exception intolerance vis-à-vis other existentials) is reinforced in situations where contrastive stress is required. Dialogue I, modeled on an example by Chierchia (2011) is natural; Dialogue II is not.

- (27) Dialogue I
- i. Speaker A : Do you have **a** fur coat?
 - ii. Speaker B : No.
 - iii. Speaker A : Maybe a faux fur one?
 - iv. Speaker B : I don't have **ANY** fur coats.

Dialogue II

- v. Speaker A : Do you have **any** fur coats?
- vi. Speaker B : No.
- vii. Speaker A : Maybe a faux fur one?
- viii. Speaker B : * I don't have **A** fur coat.

There does not appear to be a truth conditional difference between the members of the pair in (26). The assumption underlying the representations is that existential statements (as all quantified statements) come with a contextually supplied domain variable that determines the range of the quantifier. Such a variable is notated as 'D' for individuals and 'T' for time intervals.

- (28) a. $\neg\exists x\in D$ [formal school(x) \wedge the prodigy attended x]

It is not the case that there are x [x are places around here]
 such that x are formal schools and the prodigy attended x

- b. $\neg \exists t \in T \exists x \in D$ [formal school(x) \wedge the prodigy attended x at t]

It is not the case that there is some time t [t a part of the prodigy's life span till
 now] and some place x [x some place the prodigy attended] such that x is a
 formal school and the prodigy attended x at t]

- c. $\neg \exists t \in T$ [the prodigy attended formal school at t]

ANY'S ATTITUDE TO DOMAINS.

The reason behind the emphatic behavior of *any* under contrastive stress seems to lie in its attitude to domains. (29b) is stronger/less exception tolerant than (29a) if the domain associated with *any* macaws in (29b) is broader than the one associated with macaws in (29a) so as to include, say, more marginal specimens of the relevant kind such as singing macaws, given that macaws are not known to be songbirds. Two distinct D-variables-D in (29a) and D' in (29b) – are used because typically D-variables of quantifiers are independent of one another; their value has to be retrieved from the context.

- (29) a. There aren't [_{NP, D} macaws] left.

$$= \neg \exists x \in D [\text{macaws}(x) \wedge \text{left}(x)]$$

There aren't things [say, in the wild] which are macaws and are left (alive).

- b. There aren't [_{DP, D'} **any** macaws] left.

$$= \neg \exists x \in D' [\text{macaws}(x) \wedge \text{left}(x)]$$

There aren't things [in the wild or domesticated] which are macaws and are left (alive).

- c. $D \subseteq D'$

In Chierchia's (2011) analysis, the inherent focal feature of *any* signals that when we compare a sentence with *any* to a similar one without *any*, the domain associated with *any* – D' in (29b) – cannot be smaller than that of its comparison class – D in (29a); that is, the alternatives with which a statement involving *any* can be contrasted must involve existentials with smaller domains.

The reason why Dialogue II in (27) is deviant is not because the indefinite article cannot be contrastively stressed, for in the appropriate circumstances, it can.

(30) I don't have A fur coat; I have THREE fur coats.

According to Rooth's (1985, 1992) proposal on contrastive focus, a contrastively focused item must find among its focal alternatives some element in the surrounding discourse distinct from the assertion itself. In other words, contrastive focus acts like an anaphoric component that seeks an antecedent in the context.

Applying Rooth's approach to (31):

(31) a. Speaker A: Do you have **any**_{D1} fur coats?
b. Speaker B: *I do not have **A**_{D2} fur coat.

In (31), though the indefinite article is contrastively stressed, it cannot find among its focal alternatives some element in the surrounding discourse distinct from the assertion. This is because the focal alternatives activated by contrastively stressing the indefinite article are of the same type; that is, positive quantifiers, and not domain alternatives.

(32) {I do not have a_{D2} fur coat, I do not have two_{D2} fur coats, ...,
I do not have every_{D2} fur coat}.

Contrastively stressing the indefinite article does not activate domain alternatives because D-variables are covert elements and cannot, by definition, be activated by stress.

It is impossible to construe D₁ in (31a) so as to make it a member of a set of focal alternatives. This violates Rooth's anaphoric constraint.

As we see from (29), contrastive stress on *any* highlights its inherent focal feature; which is associated with subdomain alternatives. Therefore, we derive the observation that *any* activates subdomain alternatives, motivated by how *any* acts vis-as-vis a plain

indefinite in situations of contrastive stress (though when it is not contrastively stressed, it is interchangeable with a plain indefinite). So while D – alternatives cannot in general be activated via stress, through *any* they can – as a consequence of its lexical semantics.

Applying Rooth’s approach to (33):

- (33) a. Speaker A: Do you have **a**_{D1} fur coat?
 b. Speaker B: I do not have **ANY**_{D2} fur coats.

Given the constraint on *any*’s alternatives, the domain variable associated with *a fur coat*, marked as D1 in (33a), can range over some subset of the one associated with *any fur coats*, marked as D2 in (33b). This readily explains the naturalness of the dialogue in (33).

EXHAUSTIFICATION OF ACTIVATED ALTERNATIVES.

Applying Rooth’s approach to focus, if *any* comes with active alternatives, they must be ‘used up’ or exhaustified; that is, operated on by alternative-sensitive operators to arrive at the intended meaning. Since O, the null counterpart of *only*, is a standard device for exhaustifying, the semantics for *any* always involve ONLY.

Then,

- (34) a. Assertion
 There aren’t **any**_{F,D} macaws left.
 b. Truth conditional import of (34a)
 $\neg \exists x \in D [\text{macaws}(x) \wedge \text{left}(x)]$
 c. Alternatives by virtue of the lexical constraint on *any* entailed by the assertion
 $\{\neg \exists x \in D' [\text{macaws}(x) \wedge \text{left}(x)]: D' \subseteq D\}$
 d. Logical Form of (34a)
 O_C [There aren’t **any**_{F,D} macaws left]
 where C = the set of focal alternatives.

The entailments of a proposition are part of its truth conditional content and cannot be separated from it. This is reflected in the fact that ONLY can never exhaustify away entailments. So the result of exhaustifying (34b) is equivalent to the assertion, which is thus a grammatical, plain negative existential statement. This result ensues in the local environment of a DE operator, for all such environments license subset inferences.

When *any* does not occur within the scope of a DE operator, for example, in a simple positive sentence, ungrammaticality ensues.

- (35) a. *There are **any**_D macaws left.
 b. $\exists x \in D$ [macaws(x) \wedge left (x)]
 [where D, say = things in the world]
 c. $\{\exists x \in D' \text{ [macaws(x) } \wedge \text{ left (x)]: } D' \subseteq D\}$
 d. There are macaws left in South America.
 There are macaws left in the Amazon basin.

If grammatical, the sentence would be a plain existential meaning (35b). But it activates the alternatives in (35c) which, given the construal assumed for D, is interpreted as (35d), with each one of the alternatives entailing the assertion. Active alternatives trigger exhaustification. Exhaustification via a covert counterpart of ONLY must eliminate all of them (as they are not entailed by the assertion).

Then,

- (36) a. O_C [There are **any**_D macaws left] =
 b. There are macaws left in the world but
 there are no macaws left in South America and
 there are no macaws left in the Amazon basin.

This is contradictory, making (35a) ungrammatical.

Adopting the framework introduced in this section, I propose an alternative-based account to derive the properties of Bengali FC *any*, a method which is demonstrated to lend itself to Bengali NP *any* as well. In line with the framework adopted by the paper,

the Bengali polarity morphemes are taken to be indefinites – that is, existentially quantified elements which obligatorily activate alternatives. Like all indefinites, they activate scalar alternatives, which are numerical as in *two, three, ...*. Like all polarity items, they activate subdomain alternatives. For simplicity, (37) assumes that the relevant domain D contains only three books {a, b, c}. Scalar alternatives consist of subsets made of two elements in D, as in (37a). The scalar alternative which includes all members of D, (a∧b∧c), is omitted to enhance readability; this simplification does not affect the result. The subdomain alternatives are all the minimal subsets as in (37b). The distribution in DE contexts such as (37) can then be derived from the interplay between (a small set of) related options along two dimensions (alternatives and exhaustification).

(37) John **kono** boi pOr-e ni.
 John some book read-PST not
 ‘John did not read **any** book’.

- | | | | | |
|----|--------------------|--------------------|--------------------|--------|
| a. | $\neg(a \wedge b)$ | $\neg(b \wedge c)$ | $\neg(a \wedge c)$ | SC-ALT |
| b. | $\neg a$ | $\neg b$ | $\neg c$ | D-ALT |

Exhaustification applies to the negative proposition in (37), and seeks to eliminate all stronger alternatives. All the alternatives in (37a-b) are entailed by the assertion; that is, there are no stronger alternatives. Hence, none of the alternatives are eliminated. The exhaustified assertion is identical to the original proposition. The result is both syntactically and semantically well-formed. We assume that a similar conclusion holds for all DE contexts, where the assertion is always the strongest alternative.

5. An alternative-based account for the Bengali morphemes for FC any.

The distribution in modal contexts as in (38) can also be derived from the interplay between (a small set of) related options along two dimensions (alternatives and exhaustification). Recursive exhaustification has been argued by Fox (2007) to derive FC effects associated with disjunction in modal contexts. Chierchia (2011) exploits the

parallel between disjunction and FCIs like *any* to derive the fact that an existential element like *any* can sometimes acquire a universal-like interpretation through ‘recursive’ exhaustification. The approach is illustrated with the example in (38).

- (38) Tumi **je kono** mishti kh-ete par-o.
 you wh some dessert eat-INF able-2
 ‘You may eat **any** dessert’.

We assume, for the sake of simplicity, that the relevant domain contains only two desserts, cake and ice cream {a, b}. Then the utterance in (38a) has the logical form in (38a’) which gives rise to the FC inference in (38b-b’).

- (38) a. You may eat any dessert, implies
 You may eat the cake *or* the ice cream.
 a’. $\diamond(a \vee b)$
 b. You may eat the cake *and* you may eat the ice cream.
 b’. $\diamond a \wedge \diamond b$

The set of alternatives to the disjunctive statement in (38a) includes the corresponding conjunction (the stronger scalar alternative), as well as each of the disjuncts (Sauerland 2004), as in (38c).

- c. $\diamond(a \wedge b)$ SC-ALT
 $\diamond a$ $\diamond b$ D-ALT

Exhaustification over the sets of alternatives in (38c) will result in a contradictory statement (38d).

- d. $O_{D-ALT} O_{SC-ALT} \diamond(a \vee b) = \diamond(a \vee b) \wedge$
 $\neg \diamond(a \wedge b) \wedge$
 $\neg \diamond a \wedge \neg \diamond b$

This clash can be avoided if we apply ‘recursive’ exhaustification; that is, exhaustification of alternatives that have already been exhaustified. Fox assumes that the set of alternatives against which the original assertion is considered includes the exhaustified versions of each of the disjuncts as in (38ei and 38eii). For example, the exhaustified version of *You may eat the cake* with respect to the assertion *You may eat the cake or the ice cream* can be obtained by attaching O in front of the disjunct, which yields a meaning equivalent to *You may only eat the cake*; that is, *You may eat the cake and you may not eat the ice cream* as in (38ei).

- e. i. $O(\diamond a) = \diamond a \wedge \neg \diamond b$
 ii. $O(\diamond b) = \diamond b \wedge \neg \diamond a$

The exhaustified version of the original assertion ($\diamond a$) indicates that only *a* can hold (and not *b*). Substituting (38e) in (38d), we obtain the enriched meaning in (38f):

- f. $O_{D-ALT} O_{SC-ALT} \diamond(a \vee b) = \diamond(a \vee b) \wedge$
 $\neg \diamond(a \wedge b) \wedge$
 i. $\wedge \neg(\diamond a \wedge \neg \diamond b) = \diamond a \rightarrow (\diamond b)$
 ii. $\wedge \neg(\diamond b \wedge \neg \diamond a) = \diamond b \rightarrow (\diamond a)$

This indicates that one of $\diamond a$ or $\diamond b$ is true; and if one of the two is true, the other also must be (even though *a* and *b* cannot be true together). This gives (38g).

- g. $\diamond b \wedge \diamond a \wedge \neg [a \wedge b]$

(38g) is the free choice inference triggered by *You may eat the cake or the ice cream*: you are not allowed to have both the cake and the ice cream, but each one of them is an allowable option. The enriched meaning obtained by exhaustification is consistent and requires that if some alternative is true, at least some other must be. If there is a world where *a* holds, then there must be some world where *b* holds. This accounts for the ‘one, any one’ reading associated with Bengali FC *any* in modal contexts; it is possible that

you ate a dessert chosen among the members of D, and it could have been any one of them.

In (38), repeated below, *je kono* ‘any’ activates two kinds of alternatives – scalar and subdomain – both requiring exhaustification.

- (38) Tumi **je kono** mishti kh-ete par-o.
 you wh some dessert eat-INF able-2
 ‘You may eat **any** dessert’.

Je kono ‘any’ activates scalar alternatives of the kind *You eat two desserts in D* (where D is the contextually relevant domain of quantification). Assuming three individuals in the relevant domain *a, b, c*, we get:

- (39) Scalar alternatives
 $\diamond(a \wedge b)$ $\diamond(a \wedge c)$ $\diamond(b \wedge c)$ SC-ALT

Exhaustifying over the scalar alternatives, and adding the scalar implicature to the assertion, we obtain (40); interpreted as *You may eat a dessert in {a,b,c} and it is not possible that you eat two desserts*. This meaning component is responsible for the existential interpretation.

$$(40) \quad O_{\text{SC-ALT}}(\diamond(a \vee b \vee c)) = \diamond(a \vee b \vee c) \wedge \neg \diamond(a \wedge b) \wedge \neg \diamond(a \wedge c) \wedge \neg \diamond(b \wedge c)$$

Following Falaus (2009), the derivation of the FC implicature is argued to be the source of the partial (and not total) variation behavior of *je kono* ‘any’. (41) gives the subdomain alternatives activated by *je kono* ‘any’.

- (41) Subdomain alternatives
 $\diamond a$ $\diamond b$ $\diamond c$

(42) gives the set of exhaustified subdomain alternatives, which is argued to include the exhaustified version of the (plain) subdomain alternatives (42i) as well as the total

variation implicature (42ii), which says that every one of the alternatives in D is a possibility.

(42) i. Exhaustified subdomain alternatives

$$\diamond a \wedge \neg \diamond b \wedge \neg \diamond c \quad \diamond b \wedge \neg \diamond a \wedge \neg \diamond c \quad \diamond c \wedge \neg \diamond a \wedge \neg \diamond b$$

ii. Total variation

$$\diamond a \wedge \diamond b \wedge \diamond c$$

The enriched meaning of (38) is computed by putting together the assertion with the negation of the exhaustified alternatives in (43).

$$(43) \quad O(\diamond(a \vee b \vee c)) = \diamond(a \vee b \vee c) \wedge \neg \diamond(a \wedge b) \wedge \neg \diamond(a \wedge c) \wedge \neg \diamond(b \wedge c) \wedge$$

$$i. \quad \wedge \neg(\diamond a \wedge \neg \diamond b \wedge \neg \diamond c) = \diamond a \rightarrow (\diamond b \vee \diamond c)$$

$$ii. \quad \wedge \neg(\diamond b \wedge \neg \diamond a \wedge \neg \diamond c) = \diamond b \rightarrow (\diamond a \vee \diamond c)$$

$$iii. \quad \wedge \neg(\diamond c \wedge \neg \diamond a \wedge \neg \diamond b) = \diamond c \rightarrow (\diamond a \vee \diamond b)$$

$$\wedge \neg (\diamond a \wedge \diamond b \wedge \diamond c)$$

$$(i) + (ii) + (iii) = (\diamond a \wedge \diamond b) \vee (\diamond a \wedge \diamond c) \vee (\diamond b \wedge \diamond c) \Leftrightarrow \text{PARTIAL VARIATION}$$

$$\wedge \neg (\diamond a \wedge \diamond b \wedge \diamond c) \quad (= \neg \text{TOTAL VARIATION})$$

The meaning induced by (43) states that if some alternative is true, at least some other must be. If there is a world where a holds, then there must be some world where b holds or some other world where c holds. To put it differently, at least two of the alternatives a , b and c are true in some world, but *necessarily not all* of them (*partial variation*).

Moreover, at least two alternatives are true in some world, but no more than two are (they cannot all be true). This entails that one of the alternatives is false. This justifies the semantics proposed for Bengali FC *any* in section 3.

6. Summary and Conclusions.

Bengali forms morphemes with a meaning similar to FC *any* through the addition of an FC morpheme to the existential *some* which widens the domain to denote the set of the maximum possible number. In the unified approach to polarity sensitive items developed in Chierchia (2011), a polarity item as a domain widening existential item introduces alternatives (scalar and subdomain), which then expand into propositional alternatives. These trigger the insertion of an exhaustivity operator, which ultimately yields an enriched meaning.

The set of alternatives under the total variation implicature imposed by imperatives and deontic modals cannot meet the requirement that one of the alternatives must be false. This is the source of the conflict with partial variation (or epistemic requirement) imposed by Bengali FC *any*, which entails that one of the alternatives must be false. This predicts that Bengali FC *any* is ruled out under imperatives and deontic modals. This alternative based semantics is attractive in that the properties of the polarity item are derived from the logical interaction of their lexical meaning and the lexical semantics of operators in their local context. Accounting for the properties of Bengali FC *any* in this way not only leads to a better understanding of the nexus between FCIs and modality, it also provides directions for addressing the distributions of other dependent indefinites which are also determined by (different types of) modality.

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9. Abbreviations.

The following abbreviations have been used in the glosses: CL = classifier; INF = infinitive; GER = gerund; PRS = present; PST = past; FUT = future; PRF = perfect; 1 = first person; 2 = second person; 3 = third person; ACC = accusative; GEN = genitive; IMP = imperative; Q = question marker; SBJ = subject; SC-ALT = scalar alternatives; D-ALT = domain alternatives

The following convention has been adopted for transcribing Bengali vowel sounds: O indicates [ɔ]; o indicates [ɔ]