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Authors	Ramchand, Gillian Catriona
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Questions, Polarity and Alternative Semantics

Gillian Catriona Ramchand

University of Oxford

In this paper, I take a fresh look at questions in 'in-situ' languages, and specifically at their semantics. The rethinking of the issue is prompted first of all by a basic empirical problem: Bengali uses the same group of words to express wh-items as it does for negative polarity items and for free-choice 'Any'. Moreover, this is not an isolated or idiosyncratic morphological accident, but is a pattern which is found with great regularity in in-situ languages, many of which are genetically unrelated (Hindi, Japanese, Malayalam). While analyses which attempt to relate the negative polarity use to the other declarative use (free choice any) do exist (Lahiri (1995) for Hindi, Lee and Horn (1992) for English), the relationship to questions has remained unexplored. From the point of view of explanatory adequacy, as well as issues of acquisition and economy of description, a unification of the differing functions of these wh-items seems desirable.

The challenge posed by these data consists in arriving a semantic interpretation for the k-word in Bengali which will make sense of all three of these contexts of use. The intuition is that while the interpretation of the k-word itself is a consistent and unified one, it gives rise to different semantics in the context of (i) the sentence type (declarative, negative or interrogative), (ii) the emphatic particle and (iii) the demonstrative particle.

1. The Data

Question words in Bengali, henceforth k-words, constitute a systematic class of items beginning with 'k', which fill out the whole paradigms of person, place and time in a morphologically transparent way.

<i>kokhon</i>	'when'
<i>kothae</i>	'where'
<i>kon x</i>	'which' -x (inanimate nouns)
<i>ki</i>	'what' (inanimate nouns)
<i>ke/kara</i>	'who' sg/pl (nominative)
<i>kake/kaderke</i>	'who' sg/pl (accusative)
<i>kar/kader</i>	'whose' sg/pl

2.1 Question Formation

The following sentences show a sampling of questions formed using k-words¹.

Neutral declarative

- (1) Tumi kalke bajare moddhe o-ke dekhle.
 you-nom yesterday in the market he/she-acc see-past2nd
 'You saw her yesterday in the market.'

Yes-No Question

- (2) Tumi kalke bajare moddhe o-ke dekhle ki?
 you-nom yesterday in the market he/she-acc see-past2nd Q
 'Did you see her yesterday in the market?'

Questioning the time adverb

- (3) Tumi kokhon bajare moddhe o-ke dekhle
 you-nom when in the market he/she-acc see-past2nd
 'When did you see her in the market?'

Questioning the object

- (4) Tumi kalke bajare moddhe ka-ke dekhle
 you-nom yesterday in the market who-acc see-past2nd
 'Who did you see in the market yesterday?'

Questioning a possessor

- (5) Tumi bajare moddhe kar ma-ke dekhle
 you-nom in the market whose mother-acc see-past2nd
 'Whose mother did you see in the market?'

2.1.1 Negative Polarity

The following sentences show the use of these k-words as negative polarity items. The k-word acquires a particle suffix 'o', and seems to function as a narrow scope existential.

- (6) Tara kon-o boi pORe na.
 They-nom which-emph book read-pres3rd neg
 'They don't read any books.'
- (7) Tara kotha-o jay na.
 They-nom which-emph go-pres3rd neg
 'They don't go anywhere.'

Similarly, for 'ever', we get the k-word corresponding to time plus the emphatic particle, as shown in (8).

¹ In the Bengali examples, R, T refer to retroflex versions of r and t respectively, S is a palatal-alveolar voiceless fricative, and O is a low-mid back rounded vowel. In the glosses, nom=nominative, acc=accusative, 1st/2nd/3rd refer to subject agreement marking, inf=infinitive, emph=emphatic particle, neg=negative marker.

- (8) Tara *kokhon-o* Sekhane jay na.
 They- nom when-emph there go-pres3rd neg
 'They don't ever go there.'

2.3 Free Choice Any Interpretations

Paralleling the double usage of 'any' in English, the k-words in Bengali can also be used in non-negative contexts to express 'free choice Any' interpretations, in imperatives and generic-like contexts. In these cases, however, it is necessary to add the demonstrative particle *je* to achieve the interpretation.

- (9) Je *kao-ke* jiggesh koro
 that who-emph-acc ask do- imperative
 'Ask anyone.'
- (10) Je *kon-o* am Tolo
 that which-emph lift-imperative
 'Take any mango.'
- (11) Je *kon-o* Somoy Thik
 that which-emph time okay
 'Any time is ok.'
- (12) Je *ke-o* Sontoron korte pare
 that which- emph swim do-inf can-pres3rd
 Anyone can swim.

The emphatic particle does have its uses elsewhere in the language. It is generally used in the context of a focused phrase, and has the force of the English adverb 'also'.

- (13) Ami-o aSbo
 I-nom-emph come-fut1st
 'I will come too.'
- (14) Ami Ram-ke-o dekhlam.
 I-nom Ram-acc-emph see-past1st
 'I also saw Ram (in addition to all the other people I saw)'

The classical modes of analysis offer us three disjunctive interpretations for the k-words in Bengali:

- (i) Without an emphasiser, and in purely interrogative contexts, they function as wh-operators.
- (ii) With the emphasiser attached, and in negative contexts, they are negative polarity items.
- (iii) With emphasiser attached, but this time with the addition of a demonstrative particle, they function as wide scope universal quantifiers.

Within the classical analysis, it does not seem possible to give a unified interpretation for the k-word, or a compositional account of the contributions of the emphatic particle and demonstrative.

3. Analysing Question Words as Indefinites

An emerging class of theories involves analysing the *wh*-in-situ element as some type of indefinite (Aoun and Li 1994; Shi 1994; Lahiri 1995, Lee and Horn 1994). This option is initially an attractive one, and one which seems to hold more potential for unifying the different uses of these elements within a language.

However, there are a number of reasons to be suspicious of the free variable analysis for Bengali *k*-words. Firstly, there do not seem to be cases where the *k*-words in Bengali exhibit variable quantificational force, depending on the nature of an adverbial quantifier. While the bare noun is grammatical in (15) below being unselectively bound by the adverbial quantifier 'usually', the interrogative element version is completely out (16).

- (15) BeRal-er SObhabOto lej thake
 Cat-gen usually tail remain-Pres3rd
 'A cat usually has a tail.'
- (16) *Kono BeRal-er SObhabOto lej thake
 what-emph cat-gen usually tail remain-Pres3rd
 'A cat usually has a tail.'

In addition, these elements do not even seem capable of being bound by general existential closure to give specific indefinite readings. In English, one can utter a sentence like (17) below using a simple indefinite.

- (17) Yesterday, a student came to see you. She's a good friend of mine.

However, in Bengali, *k*-words may never be used in this kind of context. While the first sentence is possible (18), the follow up sentence would be infelicitous.

- (18) GoTo kal kon-o ækTa student toma-ke dekhte elo
 yesterday which-emph one student you-acc to see come-past3rd
 'Yesterday a student came to see you'

In fact the *k*-word may only be used in a sentence like (18) in Bengali if the referent is unknown, non-specific, and with the implication that the actual referent is completely irrelevant to the discourse.

While it is clear that the *k*-word in Bengali is not an indefinite in a completely general way, it might nevertheless be possible to analyse it as an indefinite with rather specific restrictions on the nature of the operator which binds it. An analysis which treats the *wh*-in-situ element as a variable in question contexts has recently been proposed for Chinese (Aoun and Li 1994). The analysis involves postulating a non-overt *Qu* operator which binds the variable, and which may itself move at LF, while leaving the *wh*-element in situ.

3.1 Unifying the Negative Polarity and Free Choice Uses

Similarly, the indefinite analysis underlies recent attempts to unify the different interpretations of English 'any' and similar forms in other languages. The analysis pursued is that the negative polarity uses and the 'universal' uses are merely an example of indefinites whose quantificational force depends on their context (Kamp 1981, Heim 1982).

In Lahiri (1995) for example, the Hindi equivalent of 'any' is treated as an indefinite which incorporates the semantics of focus as applied to a scale. A number of different 'any' forms are considered by Lahiri: some consist of a numeral followed by the focus particle and others seem to be made up from a wh-element (a k-word, etymologically related to the Bengali forms) and the focus particle. In either case, the 'any' particle is taken to refer to the extreme value on some scale, with the presupposition that the other values on the scale are less likely than the minimal value (Lee and Horn 1994; Lahiri 1995). Lahiri argues that in non-downward entailing environments, this produces an implicature clash which rules out the use of these indefinites in any other contexts.

Lahiri (1995) himself points out some problems with the analysis as he presents it.

(i) Wh indefinites and numeral indefinites do not have the same distribution or felicity conditions.

ii) It is not clear how to make an entailment analysis carry over to imperatives, where only wh-indefinites are allowed.

(iii) The analysis cannot account for the non-specific indefinite use of the k-word in Bengali, shown in (18) above.

The latter is an upward entailing context which we would predict to be ungrammatical by Lahiri's account. In fact it has the meaning of a non-specific indefinite. Finally, in Lahiri's account, the extension to Wh-in-situ in questions does not follow naturally.

Thus, in maintaining the indefinite analysis for k-words in Bengali, we would have to come up with an explanation for why the k-words are not used more generally as free variables (i.e. why they don't exhibit variable quantificational force), and why they show up only in the contexts that they do. More generally, we must ask why these variables have 'uncertainty' semantics, and why they can't be bound by other quantifiers? Under the variable indefinite analysis, we still have an essentially arbitrary collection of restrictions. So, while the 'variable' analysis is more unified than the classical approach, it still falls short of true explanatory adequacy.

4. An Alternative Semantics for K-words

My analysis builds on the theory developed by Rooth (1985, 1994), the semantic reflex of intonational focus in English and other similar languages is a semantic value which exists in addition to the ordinary semantic value of the sentence. This second type of semantic value, or 'focus semantic value' as it is called, is a set of alternative propositions obtainable by making substitutions in the position of the focused phrase. Thus, the focus semantic value (notated by an 'f' superscript) of a sentence such as (19) below, which contains a focused element, would be the set of propositions shown below.

$$(19) \quad [[\text{S} [\text{Mary}]_{\text{F}} \text{ likes Sue}]]^{\text{f}} = \{ \text{like}(x, \text{s}) \mid x \text{ in } E \}$$

where E is the domain of individuals

Generally, the focus semantic value of a phrase A is notated as $[[A]]^{\text{f}}$, while the ordinary semantic value is notated as $[[A]]^{\text{O}}$. According to Rooth (1994), the ordinary semantic value of a phrase is always an element of the focus semantic value, or rather, the ordinary semantic value is one of the set of alternatives represented by the focus semantic value.

The focus semantic value is required for the truth conditions of focus sensitive adverbs such as 'only', in achieving pragmatic contrast, and in constraining the set used to construct a scale of alternatives used in standard implicatures.

I wish to argue that the construction of a set of alternatives is precisely what underlies the function of the k-word in Bengali, in all its manifestations. The notion of alternative propositions lies at the heart of many different sentence types in these languages. The k-word can be seen as the morphological form which triggers the construction of a set of alternatives, except that in these cases, there will be no equivalent to the ordinary semantic value since the k-word is non-specific.

4.1 Question Contexts

The k-words in Bengali morphologically trigger the construction of a set of alternative propositions in the same way that focus intonation on a word in English does. The difference here is that while focus intonation on a particular DP constructs a focus semantic value, an ordinary semantic value for the sentence is also present based on the actual denotation of the DP. In the case of the k-word utterance, no such ordinary semantic value is present. What is unique about the question utterance is precisely that it does *not* construct specific propositional content. Rather, it directly expresses a set of propositional alternatives. Pragmatically, then, the force of a question is that the interlocutor is presented with a choice situation, and required to provide information as to the identity of those options which actually count as true propositions.

- (20) Ram *kothae* *jacche?*
 Ram-nom where go-ProgPres3rd
 'Where is Ram going?'

By hypothesis, the focus semantic value of the question above would be as shown below.

$$[[\text{CP Ram went } [\text{place}]_F]]^f = \{ \text{went}(\text{Ram}, x) \mid x \text{ in } E \}$$

where E is the set of all locations in the domain of individuals

In Bengali, therefore, the k-word is strictly equivalent to a focus marked DP, except that the actual denotation is unspecific, providing only a general constraint on the domain of individuals it applies to.

- [| *kothae* |] = [*place*]_F
 [| *ke* |] = [*person*]_F
 [| *kokhon* |] = [*time*]_F
 [| *ki* |] = [*thing*]_F
 [| *kon NP* |] = [*NP*]_F

The question given in (20) above, can thus be represented more clearly as in (21).

- (21) Identify the true proposition among the following:

Ram went x_1 place

Ram went x_2 place

Ram went x_3 place

.

.

Ram went x_n place

This is essentially the same as Hamblin's (1973) analysis of questions.

This view works also for yes-no questions in Bengali.

- (22) Ram amTa khello ki
 Ram mango eat-past3rd Q
 'Did Ram eat the mango.'

The most natural assumption might be to take the *ki* as the question operator, as I have glossed it here, but then it is surprising that (unlike Japanese), it is not optional in *wh*-questions. On the other hand, the *ki* particle seems to be in the same syntactic slot as negation, immediately following the tensed verb.

- (23) Ram amTa khello na
 Ram mango eat-past3rd neg
 'Ram didn't eat the mango.'

Under this view, we might assimilate it to the other *k*-words and say that it generates the following two alternatives (arising from substitution into this negation/position functional slot).

- (24) Ram amTa khello \emptyset /na
 Ram mango eat-past3rd (positive)/(negative)
 'Ram ate/didn't eat the mango.'

4.2 Independent Evidence from Intonation

There is independent evidence from intonation that the analysis of *k*-words as alternative inducing elements is on the right track. In a recent paper by Hayes and Lahiri (1991), the intonational structure of Bengali is analysed in some detail and provides an ideal resource for the semantic hypotheses advanced in this paper.

To summarise, the facts from Bengali intonational phonology support a quite direct parallelism between declarative sentences containing elements in narrow focus, and interrogatives containing *k*-words (both *wh*-questions and yes-no questions). In particular, there is a tonal 'contour which always serves to 'outline' the constituent that is in narrow focus. This is true whether the constituent in question is a focused element in a declarative, a *k*-word in a question, (or NegP in a yes-no question). I take this as indirect evidence for the analysis proposed here which claims that *k*-words are precisely the lexical triggers for the construction of non-specific 'alternatives' in Rooth's (1994) sense.

4.3 Negative Polarity and the Non-Specific Indefinite

The k-word is used with the particle suffix 'o' in many downward entailing contexts in Bengali. I repeat a simple example using clausemate negation in (25) below.

- (25) Ram *kotha-o* jay na
 Ram-nom where-emph go-Pres3rd neg
 'Ram doesn't go anywhere'

To understand this construction, we must understand in particular the role of the particle suffix. It is perhaps important to take note of the usage of this particle in other contexts which is that of a 'focus sensitive particle' as we saw in sentences such as (13) and (14) above.

In my analysis, the k-word+emphatic must be interpreted with the 'o' reanalysed as a 'scope' marker for the construction of alternatives (which is now as narrow as the k-word itself). Just as sentences may have a focus semantic value in addition to their ordinary semantic value, DPs may also have a focus semantic value which is a set of alternative individuals. Without the scope marker the whole proposition is the domain for the construction of alternative propositions, the scope marker narrows that to the domain of the DP itself. (These forms are actually lexicalised in Bengali).

$$[[_{DP} \text{ kotha-o}]]^f = \{ x \mid x \text{ a place in } E \}$$

where E is the domain of individuals

Ram didn't go to x_1 place or
 x_2 place or
 x_3 place or
 .
 .
 .
 x_n place.

I am claiming here that the 'disjunction' employed in the representation above is a result of the notion of alternativity itself and is not contributed by any additional linguistic particle. In other words, a sentence which contains a phrase which only has a focus semantic value is equivalent to one which is intuitively equivalent to a narrow scope disjunction of possibilities at the discourse level.

With this narrow scope disjunctive interpretation for 'k-word+o', we can also make sense of the non-specific indefinite usage mentioned earlier.

- (26) Ram *kothao* *gælo*
 Ram where-emph go-past3rd
 'Ram went somewhere or other.'

Ram went to x_1 place or
 x_2 place or
 x_3 place or
 .
 .
 .
 x_n place.

Thus, sentence (26) above means that Ram went to some place or other, but it is left completely open and vague where that was.

To summarise, then, the view of k-words in Bengali as triggers for the construction of a set of semantic alternatives in the sense of Rooth (1994) can also make sense of the negative polarity and non-specific indefinite uses of the 'k-word + emphatic'. The analysis involved interpreting the emphatic marker in this language as a 'scope marker' of a sort, marking out the constituent which is to be the basis for the construction of those alternatives. Because of this function, I will refer to the 'k-word + emphatic' in Bengali as an 'alternative DP'.

4.4 'Free Choice Any' Contexts

Turning now to the free choice any and so-called 'generic' contexts in which the 'alternative DP' appears. We find that 'alternative DPs' show up in sentences which could be analysed as covert generics as in (27) below.

- (27) Je keo Sontoron korte pare
 'je' who-emph swim do-inf can-pres3rd
 'Anyone can swim.'

Lahiri (1995) analyses this type of use with reference to a non-overt generic operator which binds the indefinite. In his analysis, the construction is legitimate because no implicature clash is produced with the generic interpretation (since it is non-upward-entailing). However, it is already an implausible analysis for the Bengali construction shown here because of the obligatory occurrence of the demonstrative particle *je*, since the nominal in question no longer looks like an indefinite at all, and therefore should not be bindable by a non-overt generic operator.

Moreover, the 'alternative DP' also appears standardly in imperatives, in a context where ordinary indefinites are impossible.

- (28) Je kono am Tolo
 that which-emph mango take-imperative
 'Take any mango.'

The problem with imperative contexts is firstly that they are very poorly understood from a semantic point of view. Relating the imperative to truth conditions will be indirect at best. Nevertheless, under the analysis where we interpret the forms in question as 'alternative DPs', we immediately get a formulation which seems to capture the force of the imperative.

Take this₁ or
 this₂ or
 this₃ or
 .
 .
 this_n mango.

In other words, the speaker is articulating a command which embodies an explicit *choice* of mango. In this usage, there is an extra element, namely the word *je*. This has a straightforward interpretation elsewhere in Bengali as a demonstrative DP, usually cataphoric to something later in the linguistic context. The word (not present in Hindi in these contexts) is actually the head of a partitive DP which contains the 'alternative DP' embedded within it. The DP 'je kon-o am' means merely 'one particular one of the alternative set'.² The imperative is a 'choice' construction instructing the interlocutor to choose 'one' mango in particular out of the choice set. Thus, the more accurate representation of the imperative shown above would be as shown below.

Take one of this₁ or
 this₂ or
 this₃ or
 .
 .
 this_n mango.

As I will argue in the next section, the notion of 'choice' here is crucial to understanding the function of the 'alternative DP'. Indeed, rather than being a peripheral construction to which a successful analysis might be extended (as in Lahiri (1995)), the intuition here is that the notion of 'free choice' is primary. In fact, I would argue that the so-called 'generic' contexts (as in (27) above) which are also supposed to contain these words, are not generic contexts at all, but special cases of the 'free choice environment'. In other words, there is a difference between a true generic sentence such as the English (29) below, and a 'free choice' sentence (30).

(29) Doctors will tell you that Vitamin C is good for you.

(30) Any doctor will tell you that Vitamin C is good for you.

Intuitively (30) does not mean quite the same thing as (29). The hypothesis is that (30) is actually a covert imperative/choice sentence and means something like: 'Choose any doctor: that doctor will tell you that Vitamin C is good for you.' The impression of

²The necessity for this particle in Bengali and not in Hindi is plausibly related to Bengali's status as a classifier language, where inanimate nominals are not themselves referential but must be used with a classifier clitic to refer to a specific entity. Whereas the meaning 'one unit of' is readily available without classifier support in languages like English, Bengali requires the use of a partitive construction with the specific 'je' as the head. See Ramchand (1992) for a detailed discussion of the Bengali nominal system.

variables, we find that there are overt operators which function to bind them, and in the absence of overt operators, natural language invokes a default 'existential closure' to bind the variable and construct a definite proposition at the level of discourse representation (Heim 1982; Kamp 1981). Similarly, for k-words there are discourse level strategies that construct definite propositions from input that is in fact quite underdetermined for propositional content.

Specifically, we need to explain why downward entailing environments are legitimate environments for this 'alternative DP'. The answer is quite straightforward—these are precisely the environments which license entailments that will construct a proposition from a non-specific set of alternatives. Consider the defining property of a downward entailing context: the truth of a predicate with reference to a particular set entails the truth of the predicate with reference to any subset of that set. In other words, for clause-mate negation, we find the following sorts of entailments.

(31) John didn't eat fruit today -----> John didn't eat mangoes today.

In particular, if A is a subset of B, in a downward entailing context,
P(A) -----> P(B)

In the case of the 'alternative DP' in Bengali, we have a representation which includes a vague set of alternatives in a standard DP position. This set is just the set of all entities in the context, restricted only according to the nature of the k-word (i.e. whether it is the k-word for people, things, places, times etc.). But this large set contains singleton subsets for each choice of individual entity possible in the context. In other words,

for all x , x a (k)entity in E
{ x } is a subset of [[DP kword-o]]^f

Thus, in a downward entailing environment, the interlocutor can construct, by implication, all the definite propositions corresponding to the insertion of every different entity and set of entities in the context. Therefore, the entailment licensed by the downward entailingness itself suffices to allow the construction of definite propositions. This, I claim is the source of the acceptability, and indeed the general use of 'alternative DPs' in downward entailing environments.

As one might expect, a declarative utterance is infelicitous if it cannot be used to entail a definite proposition. Thus, we find the general use of the 'alternative DP' is not available in non-downward entailing contexts.

Because of the explicitly pragmatic explanation of the use of the 'alternative DP' that I have given, we might expect this prohibition to be lifted under particular, favourable discourse conditions. This, I claim is precisely what underlies the non-specific indefinite usage found in (26). In that situation, we find that the sentence can only be used if the interlocutor is being specifically told that the speaker is unaware of the actual 'place' that Ram has gone to. In such situations, where the uncertainty is explicitly stated as being a feature of the speaker's knowledge state (and not of the world), the interlocutor is allowed to infer a particular entity that would satisfy the proposition (the equivalent of default existential closure for an unbound variable), even though the utterance itself does not sanction that entailment.

Now it becomes clear why k-words should appear in non-declarative contexts. The problem with declarative contexts is that a definite proposition must be expressed. With

interrogative and imperative contexts, no specific proposition is being directly expressed. It is therefore not surprising that these types of sentences would be 'normal' and comfortable linguistic situations in which to use these forms. In particular, if we look at imperatives which offer the interlocutor a pragmatic choice of alternatives, it is not surprising that the 'alternative DP' would be used to express this choice. Because no declarative proposition is being expressed, there is no infelicity involved in using the kword in an imperative. The pragmatics of offering the interlocutor a 'choice' makes the use of a DP which constructs a whole set of alternatives particularly felicitous.

Similarly, with questions, we find the kword (without emphatic particle) being used. This involves the construction of a set of alternative propositions. The pragmatics of questions involves a request to the interlocutor to specify the 'true' alternative propositions within that set. Once again, the lack of 'propositionality' of the k-form is no disadvantage here.

5. Conclusion

To summarise, I have given an account of k-words in Bengali which tries to make sense of all their contexts of use. The analysis has involved an exploitation and extension of Rooth's (1994) 'alternative semantics'. I have argued that k-words in Bengali uniformly trigger the construction of a set of 'alternatives' in this Roothian sense. Without the particle suffix attached, these alternatives are the standard alternative propositions such as are found in Rooth's treatment of contrastive focus. With the suffix attached, I argue for the construction of an 'alternative DP', where the suffix attachment marks the scope of 'alternative construction'. What both these uses have in common is the existence of a 'focus semantic value' in Rooth's terms (or perhaps more generally here, an 'alternative semantic value'), in the *absence* of an actual 'ordinary semantic value'. This fact makes these forms unsuitable for use in standard declarative contexts except under certain linguistic and discourse conditions. I argued that downward entailing contexts specifically provide a linguistic environment which can pragmatically convert this 'alternative semantic value' into definite propositional context. In addition, non-propositional speech acts such as questioning and imperative 'choice' contexts were also found to be felicitous with 'alternative semantic values'.

This account provides a unification of the interrogative contexts with the negative polarity ones in a way that has not been explicitly attempted so far in the literature. It also tries to give an explanation for why these k-words have what I have informally called 'uncertainty' semantics. If the analysis is on the right track, it means that Rooth's (1985, 1994) idea of 'alternative semantics' is rather more important in natural language than perhaps is traditionally assumed. In particular, it means that natural language can possess lexical indefinites specifically designated as triggering alternative semantics. While this is an addition to our linguistic ontology, it seems to provide a simple and elegant account of a wide range of phenomena in languages which contain wh-in-situ elements.

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Centre for Linguistics and Philology,
Oxford University,
Walton Street,
Oxford, OX1 2HG,
England.

gillian.ramchand@linguistics-philology.oxford.ac.uk