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QUESTIONS AND QUESTION-WORD INCORPORATING QUANTIFIERS IN MALAYALAM

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Abstract. The Malayalam conjunctive suffix *-um* and disjunctive suffix *-oo*, when suffixed to (a phrase containing) a ''question word,'' yield (respectively) a universal quantifier and an existential quantifier. A ''question word'' (I assume) signifies a variable (Nishigauchi 1990); and a conjunction/disjunction operator applied to a variable interprets it as an ''infinite conjunction/disjunction'' (the meaning of a universal/existential quantifier). The operator ''applies to'' a question word by ''association with focus'' (Rooth 1985). Malayalam has the disjunctive *-oo* at the end of a question. Universally (I claim), questions contain a disjunction operator generated as the head of ForceP (of the ''more finely articulated C'' of Rizzi 1997). From this position it applies to question words by association with focus, yielding question interpretations that (I show) capture the semanticists' intuition that *wh*-phrases are existential quantifiers. Association with focus yields a satisfactory account of *wh*-in-situ, and I show that it must apply even to *wh*-in-C.

1. Introduction

It has been observed in a wide variety of languages that question words and quantifier expressions show morphological correlations: in some languages they can be identical, in others the former is often found as a proper subpart of the latter. In Mandarin Chinese, superficially, a question word is also a quantifier in certain contexts. In Malayalam, a question word combined with a coordination marker yields a quantifier. Taking the Malayalam case as the more transparent one, this paper offers an explanation of how the quantifier interpretations come about in these morphologically complex forms. The explanation here proceeds from the claim that a conjunction/disjunction operator, when applied to a variable in its domain, interprets it as an infinite conjunction/disjunction.

Questions show a special affinity to disjunction. It is generally conceded that yes/no questions involve at least an implicit disjunction of a clause and its negation. But even constituent questions show, in some languages, some morphological marking for disjunction. Taking (again) Malayalam as the relatively more transparent case, this paper also attempts an explanation of why the disjunction marker ''doubles'' as the question marker in Malayalam.

The investigation of the role of disjunction in questions leads the way to some general proposals about the syntax of questions. The central claim here is that a question is constituted when disjunction is the head of the ForceP in C. I show how the interpretation of questions can be reduced to the interpretation of disjunction. I further identify the interpretation of

disjunction with an operation of ''association with focus'' that has been investigated in the study of the syntax of the focusing particles *only*/*even*.

The paper is organized as follows. In section 2, I show how Malayalam makes quantifiers from question words and connectives, argue that all Malayalam questions have a disjunction marker in C, survey parallel facts in other languages, and propose an explanation of how the quantifier interpretation is obtained from question words and connectives. I also show that the connective-to-question word relation shows no diagnostic of movement. In section 3, I look at the interpretation of disjunction, argue a parallelism with the interpretation of *only*/*even*, and claim that the connective-to-question word relation is an instance of ''association with focus.'' In section 4, I propose a syntactic configuration for questions, show how it yields a question interpretation via association with focus, and argue that the latter operation uniformly deals with *wh*-in-situ and *wh*-in-C. Section 5 is the conclusion.

2. The Syntax and Interpretation of Quantifiers Formed from Question Words

2.1 The Coordination Markers of Malayalam

Let us begin by looking at the marking of coordination in Malayalam. The language has two suffixes, *-um* and *-oo*, to signify (respectively) conjunction and disjunction:

(1) a. John-um Bill-um Peter-um
'John and Bill and Peter'
b. John-oo Bill-oo Peter-oo
'John or Bill or Peter'

The coordination marker must be suffixed to each conjunct or disjunct; it is not omissible:

(2) a. John-*(um) Bill-*(um) Peter-*(um)
b. John-*(oo) Bill-*(oo) Peter-*(oo)

This contrasts with the situation in English where, in a case of multiple coordination, the coordination marker in all but the last conjunct/disjunct is optionally deleted; and in the first conjunct/disjunct, the coordination marker is obligatorily deleted:

(3) a. (*and) John, (and) Bill, *(and) Peter
b. (*or) John, (or) Bill, *(or) Peter

When the conjunct or disjunct is a DP with an overt Case marker, the *-um* or *-oo* comes ''outside'' Case:

(4) a. John-ine-(y)um Bill-ine-(y)um
-ACC-CONJ -ACC-CONJ
b. *John-um-ine Bill-um-ine
-CONJ-ACC -CONJ-ACC
c. John-ine-(y)oo Bill-ine-(y)oo
-ACC-DISJ -ACC-DISJ
d. *John-oo-ine Bill-oo-ine
-DISJ-ACC -DISJ-ACC

In Japanese or Korean, by contrast, the position of the coordination marker vis-à-vis the Case marker seems to be variable.[1]

2.2 Question Word + Coordination Marker Is a Quantifier

What is interesting here is the fact—noted in Madhavan 1988, 1997—that these same coordination markers, when added to question words, yield quantifiers:

(5) a.	aar-um	'anybody'	b.	aar-oo	'somebody'
	who-CONJ			who-DISJ	
	ent-um	'anything'		ent-oo	'something'
	what-CONJ			what-DISJ	
	ewiDe-(y)um	'anywhere'		ewiDe-(y)oo	'somewhere'
	where-CONJ			where-DISJ	
	eŋŋooTT-um	'anywhere'		eŋŋooTT-oo	'somewhere'
	(to) where-CONJ			(to) where-DISJ	
	eppoozh-um	'always'		eppoozh-oo	'at some time'
	when-CONJ			when-DISJ	
	eŋŋine-(y)um	'in any way'		eŋŋine-(y)oo	'somehow'
	how-CONJ			how-DISJ	

[1] The *-um* or *-oo* can (as expected) coordinate also other categories than DP; for example, in (i), PPs are coordinated.

(i) a. John-ine patti-(y)um Bill-ine patti-(y)um
-ACC about-CONJ -ACC about-CONJ
'about John and about Bill'
b. John-ine patti-(y)oo Bill-ine patti-(y)oo
-ACC about-DISJ -ACC about-DISJ
'about John or about Bill'

But interestingly, tensed clauses cannot be coordinated:

(ii) a. *John pooyi-(y)um Bill wannu-(w)um.
went-CONJ came-CONJ
'John went and Bill came.'
b. (*)John pooyi-(y)oo Bill wannu-(w)oo.
went-DISJ came-DISJ
'John went or Bill came.'

(ii b), however, can be interpreted as an alternative question; that is, as 'Did John go or did Bill come?'. In this interpretation the sentence is fine (hence the parentheses around the star).

See Hany-Babu 1998 and Amritavalli 1999 for discussions of this constraint on tensed-clause coordination.

Quite regularly, the adding of the conjunction marker to a question word yields a universal quantifier, and the adding of the disjunction marker to a question word yields an existential quantifier.

The existential quantifiers of (5b) have a more restricted meaning than some of the English words that translate them. They can be used only when the identity of the person or thing being described is not known to the speaker.[2] Thus, (6) is a natural context in which one can use *aar-oo* 'somebody'.

(6) ñaan iruTT-il aar-e-(y)oo toTTu.
I darkness-in who-ACC-DISJ touched
'I touched somebody in the dark.'

But it is difficult to imagine a context that would make (7) acceptable ("#" indicates pragmatic oddness).

(7) # ñaan innale aar-e-(y)oo paricayappeTTu.
I yesterday who-ACC-DISJ met
'I met somebody yesterday.'

(7) becomes acceptable if *aar-oo* is replaced by *oru aaL* 'one person':

(7′) ñaan innale oru aaL-e paricayappeTTu.
I yesterday one person-ACC met
'I met a person yesterday.'

As the English glosses of (6) and (7) show, the English word *somebody* is not sensitive to this distinction.[3]

The universal quantifiers listed in (5a) all exhibit polarity sensitivity: some are negative polarity items (NPIs) (8a), which also have a "free choice" use restricted to modal contexts (8b).

[2] However, there is an existential presupposition. Therefore, the expression is not nonspecific in the sense in which an indefinite NP in an opaque context—for example, *a cook* in (i)—can be nonspecific.

(i) Mary is looking for a cook.

In other words, there is "speaker reference" (in the sense of Partee 1972), although the identity of the thing being referred to is not known to the speaker.

[3] Interestingly, English *somewhere* and *somehow*—which are existential quantifiers that incorporate a question word—possibly exhibit the above-mentioned meaning restriction. Thus, the sentence *John is somewhere in the town* seems to me to imply that the speaker does not know exactly where (in the town) John is; whereas there is no such implication in *John is in some place in the town.* (Jeffrey Lidz, p.c., gives slightly different judgments: he does not get this meaning restriction with *somewhere*, for he can say *I put the book somewhere where you won't be able to find it*; but he gets it with *somehow*, so that the sentence *I fixed this somehow but it is too complicated to describe* strikes him as "bizarre.")

(8) a. ñaan aar-e-(y)um kaND-illa / *kaNDu.
I who-ACC-CONJ saw-NEG saw
'I didn't see / *saw anybody.'
b. awan aar-e-(y)um tall-um.
he who-ACC-CONJ hit-FUT
'He will hit anybody.'

Other forms are restricted to modal contexts (irrespective of whether the sentence is negative). By contrast, the existential quantifiers listed in (5b) are not polarity sensitive, cf. (6) above; nor are quantifiers which do not incorporate a question word.

2.3 The Question Particle -oo

In the last section, I looked at the role of conjunction and disjunction in the formation of quantifiers. I now turn to the role of disjunction in the formation of questions.

Malayalam yes/no questions are formed by adding *-oo* to the clause:

(9) John wannu-(w)oo?
came-DISJ
'Did John come?'

The function of *-oo* here is transparent enough, given that a yes/no question is commonly considered to be a disjunction of a clause and its negation; thus (9) is underlyingly:

(9′) John wannu-(w)oo, illa-(y)oo?
came-DISJ not-DISJ
'Did John come, or not?'

(Larson (1985:242), analyzing English yes/no questions, says that the *or not* part is "optional.")

Constituent questions are not marked with *-oo*:

(10) a. aarə wannu?
who came
'Who came?'
b. awan ewiDe pooyi?
he where went
'Where did he go?'
c. [awan ewiDe pooyi ennə] ñaan coodiccu.
he where went C I asked
'I asked where he went.'

As (10) illustrates, *-oo* does not surface in either matrix or embedded constituent questions. But contrary to this observational fact, I shall argue that constituent questions also have an underlying *-oo*. This (in fact) surfaces

in some archaic, ''literary'' types of discourse; the following is an example from a historical novel.[4]

(11) it-entu kat^{h}a-(y)oo?
this-what story-DISJ
'What story is this?'

Even in the contemporary language, it surfaces in a sentence like:

(12) aarə wannu-(w)oo aa-(w)oo?
who came-DISJ PARTICLE-DISJ
'(I wonder/I ask you) who came?'

(The particle *aa-* seems to be a residue of the copular verb *aak-* 'be'. The set phrase *aawoo* is added to a question to give the meaning 'I wonder/I ask you'. We may note that, despite the translation, the question is not embedded in a syntactic sense; rather it is coordinated with *aawoo*, a literal rendering being 'Who came, or be?'.)[5]

The *-oo* also surfaces in the so-called correlative construction (which is an areal feature of Indian languages):

(13) enn-e aarə nuLLi-(y)oo, awan duSTan aaNə.
I-ACC who pinched-DISJ he wicked-man is
'The person who pinched me is wicked.'
(Lit. 'Who pinched me, he is a wicked man.')

Note that the relativized position in the correlative clause is represented by a question word. The correlative clause contrasts with the so-called gap relative clause, which is like the English relative clause in having a gap for the relativized position—a gap that obeys subjacency (Mohanan 1984)—and in permitting only one position to be relativized. The correlative clause, on the other hand, can relativize any number of positions, that is, can have any

[4] *Raamaraajabahadur* by C. V. Raman Pilla (1918/1983:151). Here are two more examples from an old text (c. fourteenth century):

(i) entu-kil-oo raajya-ttinnu want-a upadrawam?
what-be-DISJ kingdom-DAT came-RELATIVIZER trouble
'What is the trouble that has come to the kingdom?'
(''Ambarriishoopaakhyaanam,'' Narayanapilla 1971:21)

(ii) maharSi nintiruwaDi entu-nimittam-aakil-oo iwiDam nookki ezhunnaLLi?
great-sage (hon. title) what-reason-be-DISJ this-place seeing came (hon.)
'For what reason is it that the great sage has been pleased to come to this place?'
(ibid., p. 32)

[5] A reviewer of this journal points out that there is a close parallel in Serbo-Croatian: one can put *je li* 'is' + 'yes/no question marker' before a question of any sort:

(i) Tko tu radi?
who here works
'Who works here?'

(ii) Je li, tko tu radi?
'Let me ask you, who works here?'

number of question words (like multiple questions) (see (14)); and the positions of these question words are not constrained by subjacency (exactly like question words in constituent questions) (see (15)).

(14) a. aarə aar-e eppooL nuLLi-(y)oo, ayaaL matte
who who-ACC when pinched-DISJ that-person other
aaL-ooDə appooL-tanne kSama coodikk-aTTe.
person-2ND.DAT then-EMPH pardon ask-let
'Who pinched whom when, let that person apologize to the other person right then.'

b. aarə aar-e eppooL nuLLi?
who who-ACC when pinched
'Who pinched whom when?'

(15) a. aarə ezhuti-(y)a kawita waayicc-a kuTTi
who wrote-RELAT poem read (PAST)-RELAT child
karaññu-(w)oo, aa kawi mariccu.
cried-DISJ that poet died
'The child that read the poem which who wrote cried, that poet died.'

b. aarə ezhuti-(y)a kawita waayicc-a kuTTi karaññu?
who wrote-RELAT poem read (PAST)-RELAT child cried
'The child that read the poem which who wrote, cried?'[6]

In (14) and (15), the (a) sentences illustrate the correlative construction and the (b) sentences are constituent questions. The point to note is that there is a complete parallelism between the correlative clause and the constituent question; they are the same structure. The fact, then, that the former ends with an overt *-oo* but the latter doesn't is, I claim, a superficial difference. There is a superficial deletion rule in present-day Malayalam that deletes an underlying *-oo* in constituent questions.[7]

[6] Malayalam prefers to cleft a constituent question, placing (a phrase containing) the question word in the cleft focus:

(15b′) aarə ezhuti-(y)a kawita waayicc-a kuTTi aaNə karaññ-atə?
who wrote-RELAT poem read-RELAT child is cried-NOMINALIZER
'It was the child that read the poem which who wrote that cried?'

But the clefting makes no difference to the point we are making: the question word still has to climb out of two complex NPs if it were to move to the matrix C.

[7] The deletion rule I am proposing was first proposed by C. L. Baker (Baker 1970), who—after noting the question-marker *ka* of Japanese, which appears in both yes/no and constituent questions—writes (p. 211):

> A number of languages which have a question-final particle of this sort for *yes*/*no* questions do not retain it in questions containing other question-words. It could be assumed that in these languages some language-particular rule operates to delete the particle when some constituent within the sentence is questioned.

Baker identifies the question particle with his "Q operator"; this corresponds with my analysis (as will become evident later).

The claim, in other words, is that all Malayalam questions—both yes/no questions and constituent questions—are marked by a clause-final *-oo*. That is, besides being a disjunctive connective, *-oo* is a question particle in the language.

2.4 The Disjunction Marker -oo *and the Disjunction Operator* -oo

Taking stock now, I have noted four functions of *-oo*: (i) a ''plain'' disjunction marker; (ii) a suffixal part of some existential quantifiers; (iii) a particle at the end of the correlative clause; and (iv) a question particle. We may ask: Is this the ''same *-oo*'' in these four functions?

It is necessary (I wish to suggest) to make a distinction between two *-oo*'s. One is the disjunction marker. This *-oo* is simply a form that is used by the language to ''mark off'' each disjunct. It is completely parallel to English *or*.[8]

But in a sentence containing a disjunction, there is also present a disjunction operator. The disjunction operator has obviously got to be in a position where it has all the disjuncts in its c-command domain. Therefore, it cannot be identified with the disjunction marker *-oo* (or in English, with *or*), because the latter has only a single disjunct in its c-command domain. In a sentence like (16) (and also in the English sentence which is its translation), the disjunction operator, I suggest, has no phonetic realization.

(16) ñaan John-ine-(y)oo Bill-ine-(y)oo kaNDu.
I -ACC-DISJ -ACC-DISJ saw
'I saw John or Bill.'[9]

But the *-oo* that appears in existential quantifiers, correlative clauses, and questions, I suggest, is the realization of the disjunction operator. (The claim, in other words, is that Malayalam *-oo*—unlike English *or*, which is always only a disjunction marker—''doubles'' as a disjunction marker and a disjunction operator. Also, that whereas the English disjunction operator is always null, the Malayalam disjunction operator has a phonetic realization in the above-mentioned three functions.) Assuming that this *-oo* is the disjunction operator gives a dividend: it explains how a form like *aar-oo*

[8] I am assuming that a coordination marker takes only a single complement; that is, it is well behaved with respect to binary branching (and X-bar theory); see Munn 1993, Anandan 1993. Following Anandan 1993 (also see Kayne 1994:143), I take *John, Bill, or Peter* to be underlyingly *or John or Bill or Peter*, with the structure:

(i) [[[or John] or Bill] or Peter]

In (i), *or John* is the specifier of the second *or*, and *or John or Bill* is the specifier of the third *or*.

[9] In section 3, I shall suggest that this null operator is generated in the same position in which the focusing particles *only*/*even* are generated.

The need for generating a disjunction operator will not be in dispute. But it is possibly assumed in the literature that *or* itself is the operator, which undergoes LF movement, to generate differences of disjunction scope, for example. But in a framework without LF movement (Kayne 1998), this option does not exist. Even apart from this consideration, there are advantages to assuming a null disjunction operator in English (and in sentences like (16) in Malayalam), which will appear in section 3.

becomes an existential quantifier and how correlatives and questions are interpreted (as demonstrated below).

A simple piece of evidence for postulating two *-oo*'s is that they have different distributions. Whereas a phrase marked by the disjunction marker *-oo* needs another parallel phrase in the clause,

(17) *ñaan John-ine-(y)oo kaNDu.
I -ACC-DISJ saw
'I saw or John.'

a phrase featuring the disjunction operator *-oo* can occur by itself:

(18) ñaan aar-e-(y)oo kaNDu.
I who-ACC-DISJ saw
'I saw somebody.

(17) violates a requirement of the disjunction operator (which in (17), I am saying, has a null phonetic realization) that the set it ranges over should have a cardinality greater than one. In (18), however, the *-oo*, which I claim is the disjunction operator, interprets the question word as an infinite disjunction (as argued below) and thus satisfies its own semantic requirement.

Assuming two *-oo*'s then—a disjunction marker and a disjunction operator—it is necessary to say something further regarding the functions of the disjunction operator *-oo*. I have already suggested that the correlative clause and the question clause are in fact the same structure. I shall therefore treat them as instantiations of just *one* function of this *-oo*, taking the question clause as the paradigm case of this function. It is necessary to explain, then, the seemingly two very different roles of the disjunction operator *-oo*, as a maker of existential quantifiers and as a marker of questions.

Let us contrast (12) (repeated here) with (19). Note that the first disjunct of (12), which is the question, differs from (19) only in the position of *-oo*: *-oo* is at the end of the clause in (12) but suffixed to the question word in (19).

(12) aarə wannu-(w)oo aa-(w)oo?
who came-DISJ PARTICLE-DISJ
'(I wonder/I ask you) who came?'

(19) aar-oo wannu.
who-DISJ came
'Someone came.'

Apparently, the ''suffixed'' *-oo* yields a quantifier; the ''separated'' *-oo* at the end of the clause yields a question.

The *-oo*, however, does not always have to be directly suffixed to the question word to yield a quantifier reading. As we know (see (4)), if there is an overt Case marker on a conjunct/disjunct, the Case marker can and must intervene between the conjunct/disjunct and the connective; and this is true even when the conjunct/disjunct is a question word:

(20) a. aar-e-(y)oo
who-ACC-DISJ
'someone (ACC)'
b. aar-uDe-(y)oo
who-GEN-DISJ
'someone's'

And it is not just the Case marker that can intervene:

(21) a. aar-uDe kuTTi-(y)e-(y)oo naaya kaDiccu.
who-GEN child-ACC-DISJ dog bit
'A dog bit somebody's child.'
b. eetə wiiTT-il-e kuTTi-(y)e-(y)oo naaya kaDiccu.
which house-in-of child-ACC-DISJ dog bit
'A dog bit a child belonging to some house.'

Furthermore, a single connective can turn multiple question words into quantifiers:

(22) eetə wiiTT-il-e aar-uDe kuTTi-(y)e-(y)oo naaya kaDiccu.
which house-in-of who-GEN child-ACC-DISJ dog bit
'A dog bit somebody's child belonging to some house.'[10]

Apparently (then), *-oo* gives a question reading only when it is clause final (i.e., in C); otherwise it yields a quantifier.[11]

2.5 Question Particles and Quantifiers Formed from Question Words in Other Languages

Before I proceed to offer some explanations for the Malayalam data, let us briefly note some parallel facts in other languages. The scenario I have sketched so far (regarding questions and quantifiers in Malayalam) is actually a familiar one to linguists. Huang (1982:241ff.) (and R. Cheng 1984, cited in L. Cheng 1991) noted that in Mandarin Chinese, question words are also used as polarity items. Consider (23) (Huang's example):

[10] The facts are parallel for *-um*; cf. the following parallel sentence:

(i) eetə wiiTT-il-e aar-uDe kuTTi-(y)e-(y)um naaya kaDikk-aam.
which house-in-of who-GEN child-ACC-CONJ dog bite-may
'A dog may bite anybody's child belonging to any house.'

[11] Hany-Babu (p.c.) gives somewhat different judgments. For him, whereas a single *-um* can turn multiple question words into quantifiers, cf. (i) of note 10, a single *-oo* cannot. Thus (22) must be rephrased (for him) as (i).

(i) eet-oo wiiTT-il-e aar-uDe-(y)oo kuTTi-(y)e naaya kaDiccu.
which-DISJ house-in-of who-GEN-DISJ child-ACC dog bit
'A dog bit somebody's child belonging to some house.'

(Apparently, the *-oo* must be affixed to the question word with only a Case marker intervening.) On the other hand, a single *-oo* can license multiple question words in a correlative clause, so that (14a) and (15a) are fine for him. I have no explanation at present for this "dialect difference."

(23) ta bu xiang chi sheme
he not want eat what
a. 'What didn't he want to eat?'
b. 'He didn't want to eat anything.'

Question words can also be interpreted as existential quantifiers (example from Aoun & Li 1993:212):

(24) ta yiwei wo xihuan shenme
he think I like what
a. What does he think I like?
b. He thinks that I like something.

Note that there is no disjunction or conjunction marker anywhere in these sentences; but if Chinese can employ a null marker for disjunction and conjunction (as seems to be the case), the underlying pattern of Chinese may still be similar to that of Malayalam.

The question words that are interpreted as quantifiers—Li (1992) calls them ''indefinite *wh*''—are subject to several types of polarity conditions. The general picture seems to be that they cannot occur in an ''asserted'' clause: they can occur only in contexts ''where the truth value of the proposition is negated, non-fixed, asserted with uncertainty, or inferred tentatively'' (Li 1992:146).

Chinese also has question particles (as is well known): *ma*, the yes/no particle, and *ne*, the particle used in constituent questions. The former is obligatory; the latter is used only in matrix clauses and is optional (Cheng 1991:35). It is unclear to me if either of these particles has anything to do with the meaning of disjunction.

Japanese has two particles, *mo* and *ka*. *mo* is a conjunction marker: *A mo B mo* 'A and B', whereas *ka* is a disjunction marker: *A ka B (ka)* 'A or B' (Nishigauchi 1990:117). A question word suffixed with *-ka* is interpreted as an existential quantifier; a question word in the scope of *-mo* is a universal quantifier; and *-ka* at the end of a clause is a question marker (examples in (25) from Nishigauchi 1990; examples in (26) adapted from Baker 1970):[12]

(25) a. Dare-ka-kara henna tegami-ga todoi-ta.
who-DISJ-from strange letter-NOM arrived
'A strange letter came from somebody.'
b. Dare-ga ki-te mo, boku-wa aw-a-nai.
who-NOM come CONJ I-TOP meet-not
'For all x, if x comes, I would not meet (x).'

[12] About questions, Nishigauchi (1990:18) notes that ''in colloquial speech, *ka* may be replaced by another sentence-ending particle *no*, or even omitted altogether, but this option is possible only in matrix questions.''

(26) a. Kore wa anata-no desu ka?
this as-for yours is DISJ
'Is this yours?'
b. Dare desu ka?
who is DISJ
'Who is it?'

Note that the presence of the disjunction marker at the end of questions—both yes/no questions and constituent questions—is totally transparent in Japanese. This strongly suggests that, universally, disjunction is underlyingly present in the C of all questions.

The question word in the scope of the conjunctive particle is (apparently) not a negative polarity item in Japanese (example from Nishigauchi 1990):

(27) Dare-mo ga nani-ka o tabe-te-iru.
who-CONJ NOM what-DISJ ACC eating-be
'Everyone is eating something.'

In Polish, *czy* is a disjunction marker; for example, *kino czy teatr* 'cinema or theatre' (adapted from Cheng 1990:49). In yes/no questions, *czy* is the question marker and is obligatory (Cheng 1990:48):

(28) a. Czy pan dużo podróżuje?
Q you much travel
'Do you travel a lot?'
b. Nie wie-m czy wyjecha-ć (czy nie).
not know-I whether leave-INFL whether not
'I don't know whether to leave or not.'

Suffixing a particle *-ś* to question words regularly derives existential quantifiers (Cheng 1990:79):

(29)

kto	'who'	*ktoś*	'someone'
gdzie	'where'	*gdzieś*	'somewhere'
kiedy	'when'	*kiedyś*	'sometime'
jaki	'what sort of'	*jakiś*	'some sort of'

Other multiple-*wh*-fronting languages like Hungarian and Bulgarian also derive existential quantifiers from question words by adding an affix. In fact, the ''doubling'' of question words as quantifiers, with or without an overt affix, is attested in a wide variety of the world's languages; see Cheng 1990 for a discussion.[13]

[13] English is no exception, cf. the forms mentioned in note 3: *somewhere, somehow*.

2.6 Explaining the "Question Word–Becomes–Quantifier" Puzzle: The Interpretation of Quantifiers

How do we make sense of the way question words figure in the formation of quantifiers in so many of the world's languages? In this section, I try to answer the specific question: how does a "question word + coordination marker" compositionally yield a quantificational meaning in Malayalam?

First, let us note a fact, actually a consequence of the earlier analysis. In Malayalam, if my claim that constituent questions (too) have an underlying question particle *-oo* is granted, we get an interesting result: a question word cannot occur at all unless it is licensed by *-um* or *-oo*.[14]

(30) a. aarə paRañ̃-aal-*(um), ñaan pook-illa.
who say-if-CONJ I go-NEG
'No matter who tells me to go, I will not go.'
b. enn-e aarə nuLLi-*(oo), awan duSTan aaNə.
I-ACC who pinched-DISJ he wicked-man is
'The person who pinched me is wicked.'

We must look for an explanation of this dependency of the question word (on *-um*/*-oo*).

Transposing a claim of Nishigauchi about Japanese question words (Nishigauchi 1990:12, 201, passim) to Malayalam, let us say that a Malayalam question word (in itself) signifies only a variable, with a range restriction determined by a semantic feature. Thus *aarə* is '$x_{[+person]}$'. Then, in [[*aar*]-*oo*] 'somebody', the disjunctive connective has, for its complement, a variable. Keeping in view only this simplest of cases (for the time being), let us say that a disjunction that takes a variable as complement is interpreted as an infinite disjunction. This is the meaning of an existential quantifier. Similarly, [[*aar*]-*um*] 'anybody', where a variable is the complement of conjunction, is interpreted as an infinite conjunction, that is, a universal quantifier. The connective is crucially involved in giving an interpretation to the variable, which (by itself) cannot be interpreted. Thus the dependency I noted is explained.

The claim is stated as follows:

(31) A conjunction/disjunction operator, when applied to a variable in its domain, interprets it as an infinite conjunction/disjunction.[15]

[14] The situation is similar in Japanese. Cheng (1990:134) quotes Nishigauchi (p.c.) as saying that "if a *wh*-word shows up in a sentence without any of the licensing particles (*-ka* or *-mo*), the sentence is ungrammatical."

[15] (31), which is a universalist claim, needs to be complemented by the observation that parametric differences may arise because of the different lexical content of question words in different languages. The Malayalam question word, I said, contains only a variable and a range restriction. The same claim has been made about the Japanese question word. But the English question word apparently contains, in addition to the above, a syntactic feature that may be indicated as [+Force]. Its function is to ensure that the question word associates itself only with the head of the Force Phrase (ForceP) (Rizzi 1997; see section 4.1 for more details). In effect, the

Regarding this claim, one thing that needs to be immediately made clear is how a conjunction/disjunction operator "applies" to a variable. We have only looked at a form like *aar-oo* in which the variable is the complement of the operator. If the head-complement relation is the syntactic analogue of the function-argument relation, *aar-oo* seems to be an ideal configuration for the functional application of the operator to the variable. But, as I mentioned, the *-um/-oo* need not be directly suffixed to the question word; moreover, several question words in its scope can apparently be given their interpretation by a single operator; see (20)–(22) and (i) in note 10. How does the operator "apply" to the variable(s) in such cases?

If my explanation for the simplest of cases is to carry over to these examples, it would seem that we must move the question words and adjoin them to the head of the operator's complement in the covert component. The operator can now "apply" to the variable and interpret it as an infinite disjunction or conjunction, exactly as in the simplest of cases.[16]

However, I show below a problem with this proposal; subsequently, I suggest an alternative.

2.7 Does the Operator–Question Word Relation Obey the Island Constraints?

An immediate question that arises (with the above-outlined proposal) is whether there is any diagnostic of movement. The tests for Subjacency give negative results. I have already illustrated the absence of complex Noun Phrase effects, see (15). I now show the violation of *wh*-islands. Consider (32).

(32) John [aarə pooy-oo ennə] coodiccu?
who went-DISJ C asked
a. 'Who did John ask whether (he) went?'
b. *'John asked who went.'

This sentence has only the (a) reading; it cannot be interpreted as in (b), that is, as containing an embedded constituent question. This is because, in a constituent question (in present-day Malayalam), the "question marker" *-oo* would be obligatorily deleted; the fact that the *-oo* is not deleted in the embedded clause shows that it is a yes/no question. Because a question word

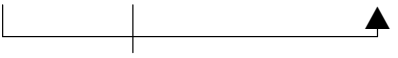
English question word must be interpreted either by the operator that heads questions—the "Q operator" of Baker 1970—or whatever heads the relative clause. (Without this feature, a disjunction operator, which is "null" in English, can be underlyingly present in a sentence like **John saw who* and give it the interpretation 'John saw somebody'.) In Hindi, the *j-* words (*jo, jisko*, etc.), which occur only in correlative clauses, and the *k-* words (*kaun, kyaa*, etc.), which occur in questions, must be distinguished from each other by features (assuming that Hindi correlatives and questions, like Malayalam correlatives and questions, have the same structure).

[16] An alternative would be to move the question words into the specifier position of the operator. However, this or other movement alternatives need not be explored, in view of the evidence against movement given in the next subsection.

contained in a yes/no question clause must be interpreted outside it, *aarə* (in (32)) must be related to an abstract (''deleted'') *-oo* at the end of the matrix clause, and the sentence receives the (a) reading. The point to note is that the only available reading of (32) interprets the question word outside a *wh*-island.[17]

In (32), the question word ''crosses'' an *-oo* in the embedded clause, to relate to an (abstract) *-oo* in the matrix clause:

(32′) John [$_{CP}$ [$_{IP}$ aarə pooy]-oo ennə] coodiccu(-oo)?

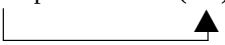


Malayalam also has a clause-final *-um*, in a construction like (30a), repeated here:

(30a) aarə paRañ̃-aal-*(um), ñaan pook-illa[18]
who say-if-CONJ I go-NEG
'No matter who tells me to go, I will not go.'

Here the question word is ''licensed'' by *-um*:

(30a′) aarə paRañ̃-aal-*(um), . . .



Now if there are two question words, both of which are in the scope of *-um*, one of them can ''cross'' *-um* and be licensed by an operator that is farther away—say, the *-oo* of a correlative clause.

(33) eet-or-aaL entə paRañ̃-aal-um awaL keeTT-irunn-illa-(y)oo,
which-one-person what say-if-CONJ she listen-ASP-NEG-DISJ
aa manuSyan maricc-irikkunnu.
that man has-died
'(The person) who, whatever (he) says, she didn't use to listen to, that person has died.'

The licensing of the question words here can be represented as follows:

[17] Malayalam would actually prefer the following cleft construction to (32) (see note 6):

(i) aarə pooy-oo ennə aaNə John coodicc-atə?
who went-DISJ C is asked-NOMINALIZER
'It is whether who went that John asked?'

But this sentence would still be a *wh*-island violation, since 'who' would have to come out of the embedded yes/no question in the cleft focus to move into the matrix C.

[18] The parallel construction in Japanese, with a clause-final *-mo*, is discussed by Nishigauchi (1990:125ff.). I repeat below an example cited earlier:

(25b) Dare ga ki-te mo, boku wa aw-a-nai.
who NOM come CONJ I TOP meet-not
'Whoever may come, I will not meet (him).'

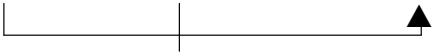
(33′) [eet-or-aaL entə paRañ̃-aal-um] awaL keeTT-irunn-illa-(y)oo, . . .

Similarly, a question word can ''cross'' a closer *-oo*, to be licensed by a farther-off *-um*.

(34) aarə wannu-(w)oo ennə coodicc-aal-um, awar maRupaDi paRay-illa.
who came-DISJ C ask-if-CONJ they reply say-NEG
'No matter for which x, (you) ask if x has come, they will not reply.'

Here, the licensing relation goes like this:

(34′) [aarə wannu-(w)oo ennə] coodicc-aal-um, . . .



In sum, there is no evidence for any *wh*-island effects—nor, as I said, any complex NP effects—in the licensing of question words by a conjunction/disjunction operator.[19]

3. The Interpretation of Disjunction: An Excursus

The absence of island effects would not be an argument against covert movement of the question words, if movement in the covert component is not subject to Subjacency. This latter claim has been a very widely accepted assumption in the current theory, ever since it was argued for by Huang (1982). But let us bear in mind that the crucial evidence cited in its support is

[19] Perhaps I should point out that, whereas all question words have a certain amount of focal stress, question words that are interpreted outside a *wh*-island have very heavy stress. Noting this, Nishigauchi (1990) argues that the ''apparent'' violations of *wh*-islands by question words in Japanese, Korean, and Chinese are actually due to overriding factors like focus interpretation and that *wh*-island effects do obtain in these languages. However, even in English, a *wh*-in-situ that has to be interpreted outside a *wh*-island is heavily stressed:

(i) Who wonders whether Mary loves WHOM?

(It is generally agreed that *wh*-in-situ in English shows no Subjacency effects.)

Mohanan (1984), analyzing Malayalam constituent questions, correlatives, and clefts, described the relation of a question/correlative operator to a question word, and of a focus operator to the focused phrase of a cleft, in terms of an operation he called ''Operator Binding.'' He distinguished this relation from a ''gap-filler'' relation in that the former obeys Pesetsky's (1982) Path Containment Condition whereas the latter obeys islands. (The ''gap-filler'' relation is instantiated in Malayalam by ''gap relatives,'' mentioned earlier.)

The relation we are looking at—namely, that of *-um/-oo* to a question word in its scope—only partially overlaps with Mohanan's Operator Binding. For one thing, clefts do not come within its purview. There seems to be good reason: whereas there can be multiple questions and multiple correlatives, there cannot be multiple cleft foci in a clause:

(i) *kuTTi aaNə aana-(y)e aaNə nuLLi-(y)atə
child COPULA elephant-ACC COPULA pinched-NOMINALIZER
'It was the child that it was the elephant that (he) pinched.'

This suggests that clefts and questions/correlatives do not form a unified phenomenon.

the behavior of *wh*-in-situ.[20] Because I shall be arguing in this paper that the interpretation of questions should be assimilated into the interpretation of disjunction, any appeal to the evidence of *wh*-in-situ would only be circular. Let us therefore see if there is an alternative body of data, and an alternative mechanism for the data, which would give us an insight into how the variable(s) relate to the operator in our Malayalam sentences.

Disjunction, let me note, has the following five properties.

3.1 Scope

The scopal properties of disjunction (discussed in Rooth and Partee 1982, Larson 1985) can be illustrated with a sentence like (35):

(35) Max wants to eat (either) apples or bananas.

Example (35) has a narrow scope reading ('Max doesn't care which, he'd be happy to eat either') and a wide scope reading ('Max wants to eat apples or Max wants to eat bananas—I don't quite know which').

Larson (1985) noted that the optional *either*, if generated, can act as a scope marker. So long as *either* is close to the disjuncts, as it is in (35), the two readings are possible; but if *either* is ''moved away'' from the disjuncts, the ambiguity disappears. Thus (36a) has only the narrow scope reading, and (36b) has only the wide scope reading:

(36) a. Max wants to either eat apples or bananas.
b. Max either wants to eat apples, or bananas.[21]

3.2 Focus

A less well known property of disjunction is that it involves focused constituents. Think of the meaning of disjunction as an assertion that at least one of a given set of entities,[22] if substituted for a variable in an open sentence, yields a true proposition. Thus the meaning of (37a) can be formally represented as (37b).

(37) a. John or Bill came.
b. $\exists x$: $x \in \{j, b\}$ [x came]

[20] The principal other case of covert movement is Quantifier Raising; but this shows island effects (May 1977), so it does not in fact support the ''free LF-movement'' hypothesis.

[21] I assume that *either*—generated close to the disjuncts—moves and adjoins to a null disjunction operator generated in an adverbial position, in sentences like (36a,b); and that that is how *either* becomes a scope marker. (In effect, I am using the landing site of *either* to determine the position in which the disjunction operator is generated.) That there is movement here is suggested by an island effect: as Larson notes, *either* cannot be separated from the disjuncts by a tensed-S boundary:

(i) *Max either thinks that Mary is stupid, or clever.

[22] The set is explicitly given in a sentence like (37a). In cases of ''infinite disjunction'' (of (31)), the set is given by the ''domain of discourse'' (as I shall suggest later).

In (37b), {j, b} is the set of ''substituends.'' Now, the substituends happen to be also the disjuncts in (37a) (i.e., *or* takes as its complement a phrase that denotes just a substituend). But when *or* takes as its complement a phrase that is larger than (properly contains) a substituend—that is, when disjuncts and substituends do not correspond—the latter unmistakably receive focal stress.

(38) a. JOHN came or BILL came.
b. You may eat an APPLE or you may eat a PEAR.

I shall take it that the substituends are always marked for Focus, although the phonetic correlate of focal stress is not always present when the substituends and the disjuncts correspond.

3.3 Multiple Foci

A single disjunction operator can be associated with (''license'') substitution in the positions of several variables in an open sentence. I already illustrated this property in Malayalam; see (14), (15), and (22). I repeat (22) here.

(22) eetə wiiTT-il-e aar-uDe kuTTi-(y)e-(y)oo naaya kaDiccu.
which house-in-of who-GEN child-ACC-DISJ dog bit
'A dog bit somebody's child belonging to some house.'

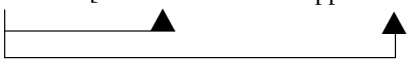
Here, a single *-oo* licenses two variables (question words), *eet*ə 'which' and *aar*ə 'who'.

It is difficult to convincingly illustrate this property in English, owing to the fact that the English disjunction operator is always null. However, consider (39).

(39) Max wants Bill or Pete to eat apples or bananas.

Ignoring other readings, let us look at the reading in which both sets of disjuncts—'Bill or Pete', 'apples or bananas'—have wide scope. (This reading would be suggested by a continuation like '... I don't know who, and I don't know which'.) This reading can be represented as in (39′). (I show *O*, the disjunction operator, in an adverbial position of the matrix clause; see note 21 for some evidence.)

(39′) Max *O* wants [Bill or Pete to eat apples or bananas]



(An alternative movement analysis, on the analogy of Quantifier Raising, might wish to move something—possibly the ''substituends,'' these being focused—into the matrix clause; but as I show now, there is no diagnostic of movement in the present case.)

3.4 Insensitivity to Island Constraints

The boundaries of island configurations can separate a disjunction operator from the disjuncts. I have demonstrated this with regard to the relation between Malayalam *-oo* and the question words; see (15a) for the violation of the Complex NP Constraint and (32) for the violation of the *Wh*-Island Constraint. But to show that this property is not anything confined to the licensing of question words, consider (40).

(40) John knows a man who speaks either GREEK or SANSKRIT (I am not sure which).

(40) has both a narrow and a wide scope reading; the latter is suggested by the possible continuation indicated in parentheses. The mechanism that institutes this reading must ignore a complex NP boundary:

(40′) John *O* knows [$_{NP}$ a man [$_{CP}$ who speaks [either Greek or Sanskrit]]]

3.5 Absence of Minimality Effects

By the absence of minimality effects I mean that *-um/-oo* can license a question word ‘‘across’’ another *-um/-oo.* That is, if a question word is in the domain of two conjunction/disjunction operators, the ‘‘closer’’ one does not make the question word inaccessible to the ‘‘farther off’’ one. I discussed this in section 2.7; example (33) is repeated here.[23]

(33) eet-or-aaL entə paRañ-aal-um awaL keeTT-irunn-illa-(y)oo,
which-one-person what say-if-CONJ she listen-ASP-NEG-DISJ
aa manuSyan maricc-irikkunnu.
that man has-died
‘(The person) who, whatever (he) says, she didn’t use to listen to, that person has died.’

(33′) [eet-or-aaL entə paRañ-aal-um] awaL keeTT-irunn-illa-(y)oo, …

Here, *eetə* ‘which’ is licensed by *-oo*, ‘‘crossing’’ a closer *-um* (which licenses *entə* ‘what’).

In English, consider the reading of (39) in which ‘Bill or Pete’ has narrow scope and ‘apples or bananas’ has wide scope. This reading can be brought out by the continuations indicated here:

[23] There is some overlap of island constraints and minimality effects, because a *wh*-island can be considered an instance of either. Some of the sentences discussed in section 2.6 were presented as violations of the *Wh*-Island Condition. But the sentence repeated here cannot very easily be described as a *wh*-island violation; it is simply an instance of the absence of a minimality effect.

(39′) Max wants Bill or Pete (he doesn't care who) to eat apples or bananas (I don't know which).

This reading can be represented as in (39″).

(39″) Max O_1 wants [O_2 Bill or Pete to eat apples or bananas]

Here, O_1 interprets 'apples or bananas', ''crossing'' O_2, which interprets 'Bill or Pete'.[24]

Now, very similar facts have been noted (and discussed) in the literature about the syntax of the focusing particles *only* and *even*. I describe the facts about *only*; the facts are substantially parallel for *even*.

The meaning of *only* (informally) is that the substitution of a specified entity for a variable in an open sentence yields a true proposition, and substitution of any other entity from a contextually given set yields a false proposition; see Rooth 1985:27ff.

The substituend always has focal stress (cf. the ''focus'' property, in section 3.2, of disjunction). When *only* is superficially close to the substituend, it may show scope ambiguity (example from Taglicht 1984):

(41) They were advised to learn only SPANISH.

(41) can mean either 'They were advised to not learn any other language' (narrow scope reading), or 'They were not advised to learn any other language' (wide scope reading). But when *only* is ''separated from'' the substituend and occupies an adverbial position in the embedded or matrix clause, the ambiguity disappears. Thus (42a) has only the narrow scope reading, and (42b) has only the wide scope reading.

(42) a. They were advised to only learn SPANISH.
b. They were only advised to learn SPANISH.[25]
(Cf. the ''scope'' property, in section 3.1, of disjunction.)

Only can take multiple foci in its c-command domain (example from Rooth 1985):

[24] I wish to leave open the question of how many of the above-described properties apply also to conjunction. (Rooth & Partee [1982] argue that conjunction does not have the scope properties of disjunction.)

[25] I am assuming that in (42a) and (42b), *only* is generated in the adverbial positions it is seen to occupy, and that *only* is an operator; see Kayne 1998 (note 47, passim). (This is unlike *either*, which I claim is just a marker of cardinality and emphasis, and is generated close to the disjuncts.) Crucially, there is no movement in (42a) or (42b): this is suggested by the fact that *only* and the substituend can be separated by island boundaries (see (44)).

For cases like (41), where *only* is superficially close to the focused constituent, I refer the reader to the account given in Kayne 1998. This account involves movement, specifically the movement of the focused constituent to the vicinity of *only*; hence there are island effects:

(i) John knows a man who speaks only SANSKRIT.

(i) does not have a wide scope reading (i.e., it cannot mean that John does not know a man who speaks, say, Greek).

(43) John only introduced BILL to SUE.
(Cf. the ''multiple foci'' property, in section 3.3, of disjunction.)

There are no structural constraints (other than c-command) on the relation between *only* and the focused constituent:

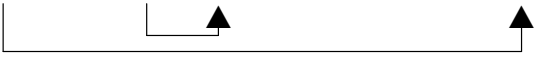
(44) a. John only said that he knew a man who was acquainted with SUE.
b. John only wondered if Bill had spoken to SUE.

Any hypothesized LF movement of the focused constituent to *only* would violate the Complex NP Constraint in (44a) and the *Wh*-Island Constraint in (44b). (Cf. the ''insensitivity to island constraints'' property, in section 3.4, of disjunction.)

Lastly, there is no minimality effect induced by another focusing particle:

(45) a. John even gave only TEN CENTS to MARY.

b. John only said that even MARY doesn't know the TALMUD.



Here, *even* can be related to 'Mary' ''across'' an intervening *only* in (45a); and *only* can be related to 'Talmud' ''across'' *even* in (45b). (Cf. the ''absence of minimality effects'' property, in section 3.5, of disjunction.)[26]

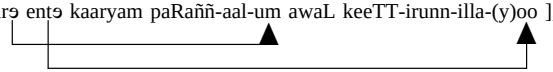
There is (thus) overwhelming evidence for extending the treatment of *only/even* to disjunction. The relation of the particle *only/even* to the focused constituent in its domain has been referred to by the (neutral) term

[26] Let me note that the relations indicated in (45a,b) are ''nested dependencies.'' ''Crossing dependencies'' do not seem to be possible (i.e., in (45a), *even* cannot be related to 'ten cents' and *only* to 'Mary'; and in (45b), *only* cannot be related to 'Mary' and *even* to 'Talmud'.) The same property is exhibited by the licensing of question words by *-um/-oo.* Thus, whereas (33) (with the ''nested dependencies'' indicated in (33′)) is okay, a sentence like (i) is out:

(i) *aarə entə kaaryam paRañ̃ñ-aal-um awaL keeTT-irunn-illa-(y)oo,
who what matter say-if-CONJ she listen-ASP-NEG-DISJ
aa kaaryam namu-kkə carcca ceyy-aam.
that matter we-DAT discussion do-may
'The matter which, whoever spoke (to her about it), she didn't use to listen to, let us discuss that matter.'

The licensing relation in (i) can be represented as follows:

(i′) [aarə entə kaaryam paRañ̃ñ-aal-um awaL keeTT-irunn-illa-(y)oo], . . .



Pesetsky (1982:630–631) argues that English *wh*-in-situ also exhibits the same property. It could therefore be the case that the property of obeying Pesetsky's (1982) Path Containment Condition, which Mohanan (1984) attributes to his Operator Binding relation (see note 19), is a sixth property (besides the five properties I discussed earlier) which the interpretation of disjunction and the interpretation of *only/even* have in common. But I have not studied this property in any detail.

''association with focus.'' Let us adopt this term for disjunction also. I shall henceforth assume that a nonmovement mechanism to institute the disjunction operator's association with focus is possible, along the lines proposed for *only/even*.[27]

I do not propose in this paper to provide a translation algorithm into semantics for disjunction. So, I now need to add very little before concluding the account of my first problem, namely, how *-um/-oo* turns a question word in its scope into a universal/existential quantifier. I restate (31) more explicitly as (46).

(46) A conjunction/disjunction operator can be applied to a focused variable in its domain by association with focus; it then interprets the variable as an infinite conjunction/disjunction.

(We can assume that a question word is always marked for Focus.) A form like *aar-oo* 'somebody', in which the question word is a complement of *-oo*, can now be seen to be only a special case of association with focus. The latter process (as I showed) can apply ''at a distance'' (see (21a,b)) and can in fact apply to multiple question words in its scope (see (22)). Keeping in mind the fact that the meaning of a universal/existential quantifier *is* infinite conjunction/disjunction, I can now claim to have provided a satisfactory answer to the first problem; and that this account readily extends to all the data involving quantifiers that incorporate question words that have been examined.

I now go on to show that the same account (in its essentials) provides also the interpretation of questions.

4. The Syntax and Interpretation of Questions

In this section, I offer an explanation of the *-oo* of Malayalam questions. My explanation takes the form of a universalist claim about the role of disjunction in questions.

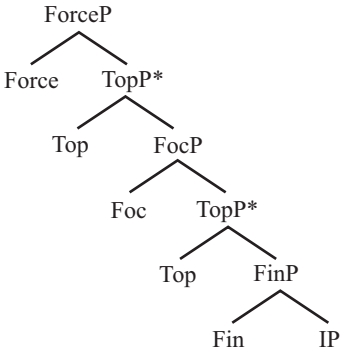
4.1 The Position of the Disjunction Operator in Questions

I argued earlier that all Malayalam questions have a clause-final *-oo*, although this is overt only in yes/no questions. Observationally, this is a ''question marker.'' I also showed a clause-final *-oo* in the correlative clause. In both cases, the *-oo* is (fairly clearly) in C.

Let us assume the ''articulated structure of the complementizer system'' of Rizzi (1997), which proposes the following internal structure for C:

[27] For the term ''association with focus,'' and a nonmovement account of the operation referred to by this term, see Rooth 1985. (Rooth's account is in the Montague Grammar framework.) See also Bayer 1996 for an excellent overview of the issues and some problems for Rooth's, or any nonmovement, account of the facts about the focusing particles; and Kayne 1998, which proposes a very innovative account that possibly obviates Bayer's criticisms of nonmovement accounts.

(47)



The Force Phrase (ForceP) interfaces with the higher structure; it encodes the fact that a sentence is a question, a declarative, an exclamative, a relative, and so forth. At the lower end, the Finiteness Phrase (FinP) interfaces with IP, encoding facts like whether the clause is tensed, subjunctive, infinitival, or other options. The space in between can be occupied by a (single) Focus Phrase (FocP), which can be flanked on either side by any number of Topic Phrases (TopP); both FocP and TopP are optional, being generated only when needed.

The head of the ForceP can be selected by a higher verb. I claim that the disjunction operator of questions is generated as the head of ForceP and that it is the disjunction operator that is selected, when there is a higher interrogative verb that selects a complement. I state my claim as follows:

(48) A question clause has the disjunction operator in the head position of ForceP.

The English form *whether* possibly incorporates the meaning of the disjunction operator; in which case, it is generated as the head of ForceP. However, it can be generated only when there are exactly two disjuncts (cf. *either*); this condition is met only in yes/no questions. Moreover, in present-day English it can be generated only in embedded questions; in matrix yes/no questions, English uses the null disjunction operator. In constituent questions, where the cardinality of the disjuncts is not determinate, *whether* cannot be used; here again, English uses the null disjunction operator. In other words, English has—with the possible exception of *whether*—a null disjunction operator in the head position of ForceP in its questions.[28]

For Malayalam, it is possible to say that the clause-final ''question marker'' *-oo* is the realization of the disjunction operator and that it is generated as the head of ForceP.

[28] If *whether* does not incorporate the meaning of the disjunction operator but simply expresses the cardinality of the disjuncts, we must assume that it is generated as the head of a lower phrase (possibly a Number Phrase), which ForceP takes as its complement.

In earlier stages of English, *whether* could be used in matrix yes/no (or alternative) questions:

(i) Whether doest thou professe thy self, a knave, or a foole?
(Shakespeare, *All's Well That Ends Well* iv.v.23)

4.2 The Interpretation of Questions

The syntactic configuration I am proposing—namely, disjunction as the head of ForceP—is also consistent with what we know about the semantics of questions. Semanticists have always translated question words as existential quantifiers (Hamblin 1973, Karttunen 1977).[29] When this claim is put together with the (Russellian) analysis of existential quantifier as infinite disjunction, it should not be surprising that natural language employs the disjunction operator in the syntactic encoding of questions. We differ from the semanticists only on one point: for us, the question word itself is not a quantifier. The quantifier exists (as it were) in two parts. It is only when the two parts are ''put together'' that we get a quantifier interpretation. And questions differ from ''ordinary'' existential quantifiers (Malayalam *aar-oo*, English 'somebody', 'somewhere') in that in questions, one part—the disjunction operator—is in the ForceP.

The question word, I said earlier, signifies only a variable. It is marked for Focus, a standard assumption now. The disjunction operator relates to the question word by association with focus. It interprets the variable of the question word as an infinite disjunction; see (46). Let me be more specific about this operation. I said that the interpretation of disjunction involves the serial substitution of the entities denoted by two or more focused constituents for a variable in an open sentence.[30] When the focused constituent itself is a variable as is the case in existential quantifiers and questions, I am claiming that the substituends considered are *all* the members of a contextually relevant set.[31] Thus, given a domain of discourse which has just three people—'John', 'Bill', and 'Mary'—the sentence *Who came?* will be interpreted as 'John, or Bill, or Mary came.'[32] (Let us ask a simple-minded question: why is *John or Bill or Mary came* not a question, whereas *Who came?* is? The answer is that the question has a disjunction as its Force, whereas the declarative has [presumably] a definite determiner as its Force.)

[29] Thus Karttunen (1977:19):

> ... for semantic reasons, we make *wh*-phrases equivalent to existentially quantified noun phrases. For example, *who* and *what* ... will have the same translation as *someone* and *something* ...

The ''partition'' view of the semantics of questions (Higginbotham & May 1981, Higginbotham 1993), which regards a question as denoting a partition of the possible states of nature, can also perhaps be accommodated to my account, if the cells of the partition are in fact disjuncts.

[30] See Rooth 1985 (p. 16): ''the meaning of the feature F[ocus] in LF is taken to be that a semantic object with variables in the positions of focused phrases is available.''

In a sentence like 'JOHN or BILL came' (or 'JOHN came, or BILL came'), there are two focused constituents. But disjuncts (as also conjuncts) are represented, as it were, in parallel (an assumption that may be needed anyway for across-the-board extraction); therefore, the two focused constituents correspond to just one variable in the semantic translation. Given that I have not attempted a semantic translation here, I will not go further into this question.

[31] See Rooth 1985 (p. 43ff.) for an explicit way of limiting the range of the variable corresponding to the focused constituent to a contextually relevant set.

[32] Simplifying a little. Actually, the disjuncts will be all the subsets of {John, Bill, Mary} (including the null set; cf. the possible answer, ''Nobody came.'')

Is there a residual meaning in questions, namely a ''request-for-information'' meaning? (Such a meaning could be accommodated if the head of ForceP contained, besides the disjunction operator, ''another'' element.) But I wish to suggest that this meaning is the illocutionary force of questions and that illocutionary force (of all kinds) properly belongs in the area of pragmatics. The question's illocutionary force may be signaled by intonation (or other means). Note that the same structure as that of a question, with a different intonation, is not interpreted as a request for information:

(49) a. No matter who comes, ...
b. No matter whether John comes or not, ...

In Malayalam, a correlative clause has the same structure as a question (as I pointed out), but it is not interpreted as a request for information.

This request-for-information meaning of questions has figured in transformational-generative accounts of questions since the earliest days. In Katz and Postal 1964, *who* and *what* were transformationally derived from '*wh* + someone' and '*wh* + something', where the second part expresses the intuition that there is an existential quantifier here, and the first part (presumably) the ''question meaning.'' Currently, we have a special interpretation rule for *wh*-phrases, which interprets a phrase like *whose picture* as 'for which x, x's picture', where the first part contains the operator and the ''question meaning'' and the second part contains the variable bound by the operator and any extra (pied-piped) material in the phrase. Another rule then deletes all but the first part in the C, and all but the second part in the argument position (Chomsky 1992). But given my account, both these rules can be dispensed with. There is no need to extract an operator, given that the only operator here is the disjunction operator generated in the ForceP; there is no ''question meaning'' that syntax need worry about; and the trace of a question word is a variable simply by virtue of the copy theory of trace.

(Baker's [1970] Q operator, it may be recalled, was not extracted from a *wh*-phrase but an independent element generated in the C. One thing that the present analysis may be said to have done is to identify Baker's Q operator with the disjunction operator.)

4.3 The Interpretation of Wh-*Phrases in C*

Because C has hitherto been considered to be the primary locus of *wh*-interpretation, let us ask the question: how is a *wh*-phrase in C interpreted? Rizzi (1997) suggests that the phrasal movement of *wh* ''into C'' in a language like English is, specifically, to the specifier of a Focus Phrase (FocP) in C. Let us adopt that suggestion. The FocP is in the c-command domain of the head of ForceP; see (47). The simplest thing to say now would be that, irrespective of whether the *wh*-phrase is in C or in situ, the disjunction operator accesses the variable (the question word) in the *wh*-phrase by the same operation, namely association with focus. We can test this

hypothesis by using one of the diagnostics of association with focus, namely its lack of sensitivity to island constraints. As is well known, *wh*-in-situ is insensitive to islands; but let us now try and demonstrate that a question word in C has the same property.

Consider a sentence in which a complex NP has been pied-piped into C:

(50) [The man who read the novel which WHO wrote] was it, that was punished?

(50) is a cleft construction; cf. *It was the man who read the novel which RUSHDIE wrote that was punished*. The cleft focus has been pied-piped into C, as is made amply clear by the subject-auxiliary inversion. What happens now in the C? If I were adopting the *wh*-interpretation rule of Chomsky (1992) that was outlined above, the *wh*-phrase in C would be analyzed into the following bipartite structure:

(51) for which *x*, the man who read the novel which *x* wrote

But we may well ask, how can the interpretation operation extract the operator from within an island *in the C*? And if it can do this in C, why can it not do this when the phrase is in situ (e.g., in a sentence like *Who punished the man who read the novel which WHO wrote?*)?[33]

For my account of questions, a sentence like (50) proves that a question word in C is interpreted by the disjunction operator's association with focus, since the operation shows no sensitivity to islands.

4.4 The Properties of Question Interpretation

I have demonstrated (for the interpretation of questions) only one of the diagnostic properties of association with focus, namely the absence of island effects. It is easy to demonstrate the other properties. Thus, a question word is a focused constituent (as I have already said). Moreover, a single operator can be associated with multiple foci (*O* is the null disjunction operator):

(52) $[_{CP}$ *O* WHO_i $[_{IP}$ e_i gave WHAT to WHOM?]]

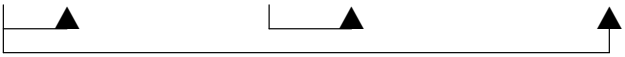
Again, in cases of multiple operators, there is no minimality effect; consider the following example from Baker 1970:

[33] The puzzle that *wh*-in-situ does not show island effects has been sought to be explained by claiming that LF movement pied-pipes a larger phrase that contains the island configuration, and therefore the question word in the island does not need to "cross" the island boundary (Pesetsky 1987, Nishigauchi 1990). We can now see that this proposal does not really address the issue; it only "postpones" the problem to a later step of the derivation. Alternatively, it involves the claim that C is a privileged place in which operations that are not allowed elsewhere in the sentence can take place!

(53) Who remembers where we bought which book?

As Baker noted, *which book* can be understood as ''being associated with'' the embedded or the matrix clause (i.e., it can show scopal ambiguity). In our terms, the question word *which* can be associated with the disjunction operator in the embedded or the matrix C. When it is associated with the matrix disjunction operator, the association ''crosses'' the embedded disjunction operator:

(54) $[_{CP}\ O_1$ WHO remembers $[_{CP}\ O_2$ WHERE we bought WHICH book]]



In sum, there is ample evidence that the interpretation of questions is done by an association-with-focus operation.[34]

[34] I must note that there is a claimed asymmetry between *wh*-phrases and focused constituents that might seem to militate against my claim here. Consider (i) and (ii) (examples discussed in Chomsky 1981).

(i) a. Who thinks that he is in love with whom?
b. *Who thinks that who is in love with him?
(ii) I don't think that JOHN will win.

The (i-a)/(i-b) contrast argues an ECP effect, but this is absent in (ii).

This asymmetry can be explained if we can make the following assumptions: (i) English *wh*-phrases which are now taken to be in situ, are (in fact) in an IP-internal Focus position that is above VP (this Focus position is argued for in Jayaseelan 1999, and several positions above VP to which elements in VP may move are postulated in Kayne 1998; see Kayne op.cit., note 106, for the suggestion that English ''might subject the *wh*-in-situ to focus movement''); (ii) the movement to this position induces obligatory VP-preposing in English (Kayne op.cit.).

For (i-a), the derivation goes as follows:

(iii) a. $\ldots [_{VP}$ is in love with whom]
$\Rightarrow$ movement to Focus
b. $\ldots [_{FocP}$ whom$_i$ F^0 $[_{VP}$ is in love with t_i]]
$\Rightarrow$ VP-preposing
c. $\ldots [_{XP}$ $[_{VPj}$ is in love with t_i] X^0 $[_{FocP}$ whom$_i$ F^0 t_j]]

(Kayne 1998 does not specify the nature of the phrase into which VP preposes. I indicate it as XP here.)

But (i-b) cannot be derived by these movements. The Focus position in C (in English) can only be an escape hatch, not a ''host'' of a *wh*-phrase, unless the *wh*-phrase is interpreted in that C. (I express this restriction by stipulating that the FocP in C must be selected by the question operator.) So, in the absence of a Focus position in the embedded C, the embedded subject *who* will have to move to the Focus position above the matrix VP, and subsequent VP-preposing will not derive (ib):

(iv) a. $\ldots [_{VP}$ thinks that who is in love with him]
$\Rightarrow$ movement to Focus
b. $\ldots [_{FocP}$ who$_i$ F^0 $[_{VP}$ thinks that t_i is in love with him]]
$\Rightarrow$ VP-preposing
c. $\ldots [_{XP}$ $[_{VPj}$ thinks that t_i is in love with him] X^0 $[_{FocP}$ who$_i$ F^0 t_j]]

(It is unclear, however, why the output of (iv) is bad in English.)

As is well known, (ib) improves if there is a ''third'' *wh*-phrase:

(v) Who thinks that who is love with whom?

I said that association with focus (when applying in questions) is indifferent to whether a question word is in C or in situ. Therefore *wh*-movement has no role in the interpretation of questions. It should be seen as focus movement, a more general phenomenon that moves focused constituents of all kinds to focus positions. Many languages move their question words (also other focused constituents) to an IP-internal focus position—for example, Hungarian (Brody 1990), Basque (Laka & Uriagereka 1987), Chadic (Tuller 1992), Malayalam (Jayaseelan 1996, 1999). If my speculations in note 34 are along the right lines, English too should join the ranks of these languages, although of course it also moves its question words to a focus position in C. I speculate that focus movement, like topicalization, may have some functional purpose.

The ''dichotomy'' between *wh*-movement and *wh*-in-situ has been a long-standing problem for linguistic theory. What we may call ''Huang's strategy'' (Huang 1982) assimilated *wh*-in-situ to *wh*-movement by moving the in-situ *wh*-phrase to C in the covert syntax. I have effected a unification in the other direction: I have shown that an interpretation operation that can straightforwardly handle *wh*-in-situ also applies in cases of *wh*-movement.

5. Conclusion

In this paper I have established the identity of Baker's (1970) Q operator as the disjunction operator, a familiar truth-functional operator of logic.

I have shown that the interpretation of disjunction involves an operation that has been studied in some depth in the case of the interpretation of the focusing particles *only* and *even*; this operation has been described under the name ''association with focus'' (Rooth 1985).

The two identifications—the Q operator with the disjunction operator; the interpretation of disjunction with association with focus—yield an account of the interpretation of questions in terms of ''association with focus,'' which handles *wh*-in-situ very satisfactorily, and which I show is necessary even in the interpretation of *wh*-phrases in C.

In the first part of this paper, I also provided an account of some Malayalam quantifiers composed of a question word and a conjunctive/disjunctive connective, explaining how the quantifier interpretation of these forms comes about. The explanation of both the quantifiers and of questions

Similarly, (vi-b) is much better than (vi-a):

(vi) a. ?*Who gave what to you?
b. Who gave what to whom?

In these cases, possibly there is an option of moving a larger phrase—the small VP [$_{VP}$ *what to whom*] in (vi-b), the IP [$_{IP}$ *who is in love with whom*] in (v)—to Focus. (These larger phrases are the smallest phrases containing *all* the *wh*-phrases in VP, it may be noted.)

Now, to explain the asymmetry, we can say that, unlike a *wh*-phrase, a non-*wh* focused constituent does not need to obligatorily move to a Focus position.

was based on a claim that a conjunction/disjunction operator, when applied to a focused variable in its domain by association with focus, interprets it as an infinite conjunction/disjunction.[35]

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[35] Hagstrom 1998—which, unfortunately, I had access to only after writing this paper—argues for LF movement of a question particle (phonetically realized in some languages, e.g., Sinhala; abstract in others) from near the question word to the scope-bearing C. Hagstrom's crucial evidence comes from Sinhala (examples (i) and (ii) from Hagstrom 1998:20, 29).

(i) Siri **mokak dɔ** keruw**e**?
Siri **what Q** did-**E**
'What did Siri do?'

Here, *dɔ* is the question particle, and *-e* is a "scope-marker" in C. If *dɔ* is generated inside an island, the sentence is ruled out; but if *dɔ* is generated outside any island (irrespective of the position of the question word), the sentence is fine:

(ii) a. *oyaa [**kau dɔ** liyɔpu potɔ] kieuw**e**?
you **who Q** wrote book read-**E**
'You read the book that who wrote?'
b. oyaa [**kauru** liyɔpu potɔ] **dɔ** kieuw**e**?
you **who** wrote book **Q** read-**E**
'You read the book that who wrote?'

Hagstrom argues (from this) that *dɔ* moves in the covert component to the position indicated by *-e*.

However, what seems to have been overlooked is that the above sentences are examples of the cleft construction. The parallel Malayalam examples are the following:

(iii) a. *nii [**aarɔ**] **aaNɔ** ezhutiya pustakam waayicc-**atɔ**?
you **who COPULA** wrote book read-**NOM**
'Who was it that you read the book that wrote?'
b. nii [**aarɔ** ezhutiya pustakam] **aaNɔ** waayicc-**atɔ**?
you **who** wrote book **COPULA** read-**NOM**
'The book that who wrote was it that you read?'

My bracketing indicates the "cleft focus," which is marked by the copula in Malayalam (like in Chinese or English). The copula is the matrix verb of the cleft construction; in the SOV word order, it would be adjacent to the C that contains the question operator *-oo*, which in fact appears like a suffix on it. The *-oo* is deleted in constituent questions but surfaces in yes/no questions:

(iv) [nii] aaN-oo pustakam waayicc-atɔ?
you COPULA-Q book read-NOM
'Was it you that read the book?'

Sinhala drops the copula but (interestingly) lets the question operator *dɔ* surface; so that *dɔ* is the marker of the cleft focus in questions, in Sinhala.

In a number of languages—Malayalam, Sinhala, Chinese—the cleft focus together with the copula seems to "float" into the "cleft clause"; in Jayaseelan 1999 I offer an analysis of this phenomenon. But whatever may be the right explanation of it, all that we need to agree on (for our present purposes) is that the phrase that constitutes the cleft focus of a cleft construction is *overtly* moved into its surface position. Therefore, the fact that it shows island effects is not surprising. The Sinhala data, in other words, do not constitute evidence of LF movement in questions.

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