# Negative Polarity and Free Choice Items in Malay: An Exhaustification Account

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## 1  Introduction

In many languages of the world, quantifier phrases are built with wh-words, which are argued by numerous researchers to have no quantificational force of their own; hence, these wh-words are often referred to as indeterminate pronouns in the terminology of Kuroda (1965). For example, indeterminate pronouns in Japanese and Latvian can take on existential, universal, interrogative, negative polarity, or free choice interpretation depending on the operator (or particle) they associate with.

(1)   a.   Japanese (Shimoyama 2006)

| Interrogative | Universal | Existential | NPI any | FC any |
|---|---|---|---|---|
| da're...ka 'who' | dare'-mo | da're-ka | dare-mo | dare-de-mo |
| na'ni...ka 'what' | na'ni-mo | na'ni-ka | nani-mo | nani-de-mo |

b.   Latvian (Haspelmath 1997)

| Interrogative | Existential | NPI any | FC any |
|---|---|---|---|
| kas 'who' | kaut kads | ne-viens | jeb-kads |
| kas 'what' | kaut kas | ne-kas | jeb-kas |

Malay is another language which uses wh-words as indeterminate pronouns.

(2)   Indeterminate Pronouns in Malay

| | |
|---|---|
| apa | *what* |
| siapa | *who* |
| bila | *when* |
| mana | *where/which* |
| mengapa | *why* |
| bagainmana | *how* |

The Malay indeterminate pronouns can take on interrogative, negative polarity, or free choice interpretation depending on the morphological form and particle that is associated with them. For this thesis, I focus on indeterminate pronouns that function as negative polarity items (NPI) and free choice items (FCI) as they share the same morphological form.

## 1.1 Preliminaries: The Morphological Form of Indeterminate Pronouns in Malay

The morphological form of indeterminate pronouns is dependent on its usage. Interrogative phrases in Malay are formed with a wh-word that is combined with a question particle or a bare wh-word. The question particle only attaches to the wh-word when the wh-phrase is fronted as in (3a); when the wh-phrase is left in situ, the wh-phrase is bare as in (3b).

(3)    a.  apa-kah yang    Ali beli?
           what-Q COMP Ali buy

       b.  Ali beli apa?
           Ali buy what

           'What did Ali buy?'[1]

Expressions that behave like NPIs and FCIs are usually made up of a reduplicated *wh*-word combined with the particle *pun*. The morphological form of the NPIs and FCIs vary according to the syntactic position of the NPIs and FCIs. In this thesis, I will only use the full version which is the reduplicated *wh*-word + *pun*. The full paradigm of the morphological form of the NPIs and FCIs can be found in the appendix .

(4)    Morphological Form of NPIs and FCIs

| | |
|---|---|
| anything | apa-apa pun |
| anyone | siapa-siapa pun |
| anytime | bila-bila pun |
| anywhere | mana-mana pun |

Examples of sentences containing NPIs and FCIs are given in (5). To express 'any NP' in Malay, the noun is inserted between the reduplicated wh-word and the particle *pun* as shown in (5b) and (5c).

(5)    a.  Ali tak   beli apa-apa    pun
           Ali NEG buy what-what PRT

           'Ali did not buy anything'

       b.  Ali tak   baca apa-apa    buku pun
           Ali NEG read what-what book PRT

           'Ali did not read any book'

       c.  Ali tak   pergi ke mana-mana gereja pun
           Ali NEG go    to which-which church PRT

           'Ali did not go to any church'

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[1]Unless otherwise noted, all the Malay data are elicited from native Malay speakers. Abbreviations in glosses are as follows: PRT-particle; EXT-existential marker; REL-relativizer; NEG-negation; SG-singular; PL-plural; PASS-passive marker; COMP-complementizer; Q-question particle.

    d.  Ali bersedia berdepan dengan Jamal bila-bila    pun
        Ali ready     face       with    Jamal when-when PRT

        'Ali is ready to face Jamal anytime'

## 1.2   The Puzzle

The puzzle that Malay presents with regards to NPIs and FCIs is the interpretation of these items with respect to the position they appear in. There are two positions where NPIs and FCIs can appear as objects. In the first case, they appear syntactically below their licensor, negation for NPIs and modal/future tense for FCIs. In this case, the NPI has a narrow scope existential interpretation while FCI has a wide scope universal interpretation.

(6)   a.  Ali tak   beli apa-apa    pun
         Ali NEG buy what-what PRT

         'There does not exist an x, such that Ali buys x'
         (Ali did not buy anything)

      b.  Ali akan beli apa-apa    pun
         Ali will   buy what-what PRT

         'For all x, Ali will buy x'
         (Ali will buy anything)

In the second case, the NPIs and FCIs appear syntactically above their licensor. In this case, both NPI and FCI have wide scope universal interpretation.

(7)   a.  Ali apa-apa    pun tak   beli
         Ali what-what PRT NEG buy

         'For all x, Ali did not buy x'
         (Ali did not buy anything)

      b.  Ali apa-apa    pun  akan beli
         Ali what-what PRT will   buy

         'For all x, Ali will buy x'
         (Ali will buy anything)

Furthermore, when NPIs and FCIs appear as subjects, they always have a universal interpretation.

(8)   a.  siapa-siapa pun  tak   datang
         who-who    PRT NEG come

         'For all x, x did not come'
         (Nobody came)

      b.  siapa-siapa pun  akan datang ke majlis perkahwinan Siti
         who-who    PRT will   come    to event  wedding      Siti

'For all x, x will come to Siti's wedding'
(Everyone will come to Siti's wedding)

In the literature, FCI are generally argued to have a universal interpretation (Quine 1960, Horn 1972, Dayal 1998), while NPIs have often been regarded as having an existential interpretation (Ladusaw 1979, Carlson 1980). Malay NPIs appear to have both interpretations of wide scope universal and narrow scope existential depending on its position. Shimoyama (2006) argues that the Japanese NPI *dare-mo*, has to be interpreted as a wide scope universal over negation as the particle *mo* contributes universal force. The Malay NPIs share similarities with Japanese. This opens the question of whether the two interpretations of Malay NPIs can be reduced to just one, as truth conditionally, a wide scope universal over negation is equivalent to a narrow scope existential under negation. Thus, the two questions that this thesis attempts to answer are as follows:

1. What interpretation does the NPIs in Malay have exactly? Existential or Universal?

2. Given that NPIs and FCIs share the same morphological form in Malay, is it possible to provide a unified account for NPIs and FCIs?

In this thesis, I aim to provide an in-depth exploration of the interpretations of NPIs and FCIs in Malay. Taking the interpretations into account, I propose an analysis that the indeterminate pronouns that form the NPIs and FCIs essentially have an existential interpretation while the universal interpretation is derived from a grammatical strengthening process. The proposal is carried out using an exhaustification mechanism, *Exh* as proposed by Fox (2007) and the assumption that these indeterminate pronouns lacks a scalar alternative (namely the universal interpretation).

## 1.3   Organization of the Thesis

The organization of the thesis is as follows. In section 2, I describe the word order pattern and discuss the interpretation of FCIs in Malay. I show that they are generally taken to have a universal interpretation but are not true universal quantifiers. In section 3, I turn to NPIs in Malay and discuss the interpretations of the NPIs in different contexts. I show that NPIs are required to have a universal interpretation when it appears before negation but have an existential interpretation when they are below the scope of negation. In section 4, I briefly discuss the particle *pun* and provide an interim summary of the data. In section 5, I outline my analysis of the NPIs and FCIs and discuss the strengthening mechanism used to obtain the universal interpretation from the existential interpretation. In the final section, I provide a conclusion and discuss open issues remaining for future research.

# 2 Malay FCIs: Universal Interpretation

In the FCI literature, the term FCI is divided between Existential FCIs and Universal FCIs. While the use of FCIs like English *any* refers to Universal FCI, Kratzer and Shimoyama (2002) have shown that some existential indefinites like German *irgendein* also have a FC component, in the sense that they sometimes get a universal interpretation. The Malay FCIs display properties that are parallel to that of English *any* and not Existential FCIs. Malay FCIs can be given a universal paraphrase as seen in the example below. The paraphrase in (9a-b) is given in (9c). The example in (9) also exhibits the basic word order pattern of FCI with the presence of modal verbs. In this case, the FCIs can appear below the modal verb as in (9a) or above the modal verb as in (9b).

(9)  a. Ali boleh baca apa-apa    buku pun  dalam perpustakaan
        Ali can   read what-what book PRT in       library

     b. Ali apa-apa    buku pun  boleh baca dalam perpustakaan
        Ali what-what book PRT can    read in      library

     c. For every book x in the library, Ali can read x
        $\forall x$ [book(x) $\rightarrow$ $\diamond$(read(x)(Ali))]
        'Ali can read any book in the library'

Cross-linguistically, FCIs are found to have universal interpretation but are not like typical 'universal quantifiers' like *every* and *all*. FCIs have a restricted distribution: (i) licensed in possibility sentences (ii) ruled out in episodic and in necessity sentences. Both characteristics which Malay FCIs share as well as seen in (10).

(10)  a. siapa-siapa pun boleh angkat meja itu
         who-who      also can    lift     table this

         'for all x, x can lift this table'
         (Anyone can lift this table)

      b. *siapa-siapa pun  mesti balik   sekarang
         who-who      PRT must  return now

         'Anyone must go back now'

      c. *siapa-siapa pun  akan angkat meja itu  pada jam  dua petang
         who-who      PRT will  lift     table this at    time two afternoon
         esok
         tomorrow
         'Anyone will lift this table at 2 o'clock tomorrow'

As illustrated by (9) and (10), FCIs have obligatory wide scope with respect to possibility modals. Much current research (Dayal 1998, 2004; Giannakidou 2001; Horn 2005; Chierchia 2006; Aloni 2007 etc.) aims to provide an analysis on how to capture the wide scope universal formalizations of FCIs.

One difference that Malay FCIs have that is unlike English *any* is that it can be licensed without the presence of a licensor like a possibility modal or future tense. In this case, the *wh*-word + *pun* can only appear in a Subject-Object-Verb (SOV) order.

(11)  a.  Ali apa-apa    pun  beli
          Ali what-what PRT buy
          'For all x, Ali buys x'
          (Ali bought everything)

      b.  siapa-siapa pun  datang ke majlis perkahwinan Siti
          who-who    PRT come   to even   wedding      Siti
          'For all x, x came to Siti's wedding'
          (Everyone came to Siti's wedding)

      c.  *Ali beli apa-apa     pun
          Ali   buy what-what PRT

In the cases above, my consultants gave translations with the universal quantifier *every* and the sentences are given in past tense. This leads to a temping conclusion that *wh*-word + *pun* in these cases without a licensor are simply universal quantifiers like *every* and *all*. However, I argue that this is not the case and that the indeterminate pronouns in these cases are FCIs that ultimately have a universal interpretation but are not a true universal quantifiers themselves.

The adverb *almost* has been used in the quantification literature as a test for the quantificational force of a DP. At the heart of this test lies the observation that universal quantifiers can be modified by *almost* while an existential cannot. The following examples in Malay using the universal quantifier *semua* and the existential quantifier *sesetengah* illustrate the contrast.

(12)  a.  hampir semua murid   lulus dalam peperiksaan
          almost every  student pass in     exam
          'Almost every student passed the exam'

      b.  *hampir sesetengah murid   lulus dalam peperiksaan
          almost   some        student pass in     exam
          '*Almost some student passed the exam'

Curiously, *hampir* (almost), is not able to modify *wh*-word + *pun* in any given context despite it having a universal interpretation, as seen in the examples below.

(13)  a.  *Ali hampir apa-apa    pun  beli
          Ali   almost  what-what PRT buy
          'Ali bought almost everything'

      b.  *hampir siapa-siapa pun  datang ke majlis perkahwinan Siti
          almost  who-who    PRT come   to event wedding      Siti
          'Almost everyone came to Siti's wedding'

c. *hampir mana-mana  kucing pun  memburu tikus
almost    which-which cat      PRT hunt        mice

'Almost any cat hunt mice'

d. *Ali boleh makan hampir apa-apa    pun
Ali   can   eat      almost  what-what PRT

e. *Ali hampir apa-apa    pun  boleh makan
Ali   almost  what-what PRT can    eat

'Ali can eat almost anything'

The precise working of the *almost*-test are not discussed here and it has been pointed out that the result of this test do not necessarily guarantee universality (McCawley (1981); Horn and Lee (1995); Giannakidou (2001); Giannakidou and Cheng (2006) among others). However, I take the (non)-appearance of *almost* as a descriptive diagnostics that shows that *wh*-word + *pun* can not be treated like 'regular' universal quantifiers such as *every* and *all*. It seems that Malay FCIs ultimately end up with a universal interpretation but are not universal quantifiers themselves. The question of how they obtain their universal interpretation will be discussed in the proposal section of the thesis.

# 3   Malay NPIs: Universal or Existential?

In Malay, it is quite clear that FCIs get a universal interpretation. However, it remains unclear whether Malay NPIs which share the same form, can have a universal interpretation. Cross-linguistically, NPIs have been argued to be interpreted as a narrow scope existential with respect to its licensor (See Ladusaw (1979), Carlson (1980) for English; Lahiri (1998) for Hindi; Cheng (1994) for Chinese). However, recent work by Kim and Sells (2007) for Korean and Shimoyama (2008) for Japanese argues that some NPIs have to be interpreted as a universal. Malay NPIs share some similarities with these languages, thus it would be of interest to see whether the NPIs can also be interpreted universally.

From a semantic point of view, distinguishing between universal and existential for NPIs is not an easy task. The reason being that sentential negation denotes a function that satisfies the De Morgan's equivalence below (see Zwart 1998 and Gajewski 2007 for more details).

(14)    a.  $\neg(P \vee Q) \Leftrightarrow \neg P \wedge \neg Q$

b.  John did not read a book or a magazine $\Leftrightarrow$ John did not read a book and John did not read a magazine

The function in (14), which is known as an anti-additive function, is a subset of the anti-morphic functions described in Zwarts (1998). This case of anti-additivity says

that if a semantic function allows for the equivalence between a disjunction in the scope of negation and a conjunction that outscopes negation, then the same function will also allow the equivalence between an existential in the scope of negation and a universal scoping above negation. The example below illustrates a case of anti-additivity with sentential negation.

(15) $\neg\exists x.P(x) \Leftrightarrow \forall x.\neg P(x)$

    a. Ali tak    nampak siapa-siapa pun
      Ali NEG see      who-who    PRT

    b. Ali siapa-siapa pun  tak   nampak
      Ali who-who    PRT NEG see

    'Ali did not see anyone'

    Interpretation:

      i. It is not that case that there is an $x$ such that Ali sees $x$. $[\neg > \exists]$
      ii. For every $x$, it is not that case that Ali sees $x$. $[\forall > \neg]$

Thus, looking at the simple cases of NPI such as the example above does not give much indication of whether the Malay NPIs are existential or universal. Furthermore, the word order patterns suggests that when *wh*-word + *pun* lies below negation, it gets an existential interpretation, but when it lies above negation, it receives a universal interpretation. A way to evade this problem is to construct more complex examples to the anti-additive context. In the next section, I will discuss Shimoyama's (2008) analysis of Japanese NPI *dare-mo* where she provides evidence that it has a wide scope universal interpretation and not a narrow scope existential interpretation. Shimoyama (2008) creates non-anti-additive contexts for *dare-mo* and shows that it takes wide scope above negation hence it has to be interpreted as a universal to maintain the correct truth conditions.

## 3.1   Shimoyama (2008): Japanese Indeterminate NPIs as Wide Scope Universals

In Japanese, indeterminate NPIs are also built from *wh*-words combined with particles. The particle *mo* contributes universal force such as in *da're-mo*, meaning *everybody* while *ka* contributes existential force such as in *da're-ka* meaning *someone*. The NPI in Japanese is *dare-mo*[2] (anyone), where the *wh*-word combines with *mo*. Thus, *dare-mo* having a narrow scope existential interpretation does not seem consistent with the fact that *mo* contributes universal force. In Shimoyama (2008), she scrutinize the common assumption that indeterminate NPIs in Japanese always have a narrow scope existential interpretation. She provides evidence that indeterminate NPIs in certain contexts can only have a wide scope universal interpretation and argues that they are

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[2] *da're-mo* (everybody) is accented while *dare-mo* (anyone) is deaccented.

always universals.

In Japanese, the licensing environment for indeterminate NPIs is much more limited than that of English *any*. The Japanese NPIs can be licensed by sentential negation as shown in the example below.

(16)  Yoko-ga    gakusei-o    dare-mo  yootaisi-nakat-ta
      Yoko-NOM  student-ACC  who-MO  invited-not-PAST

      'Yoko did not invited ant student'                    (Shimoyama 2008)

However, indeterminate NPIs are not licensed in other contexts where English *any* can be licensed, such as in the restriction of a universal quantifier or by non-clausemate negation.

(17)  a.  *nani-mo yon-da    dono akusei-mo  gookakushi-ta
          what-MO read-PAST which student-MO pass-PAST

          'Every student who read anything passed'

      b.  *Taro-wa  Yoko-ga    dare-mo syootaisi-ta  to    iwa-nakat-ta
          Taro-TOP Yoko-NOM who-MO invite-PAST that say-not-PAST

          'Taro didn't say that Yoko invited anyone'

                                                           (Shimoyama 2008)

Given that these indeterminate NPIs are only licensed by local sentential negation, which creates anti-additive contexts, the difficulty of distinguishing between the wide scope universal interpretation and narrow scope existential interpretation arises. To circumvent the difficulty of the anti-additive context, Shimoyama (2006) constructs non-anti-additive contexts by conjoining an additional quantificational element with sentential negation. A combination of a quantificational element $Q$ and sentential negation $\neg$ creates non-anti-additive functions $Q\neg$ and $\neg Q$. These functions do not validate the equivalence of the anti-additive function in $f(A \vee B) = f(A) \wedge f(B)$. They could be use to determine whether an indeterminate NPI is interpreted as a narrow scope existential or a wide scope universal as $Q\neg\exists \neq \forall Q\neg$ and $\neg Q\exists \neq \forall\neg Q$. Examples of non-anti-additive expressions of the form $Q\neg$ are *mostly* and *rarely* and examples of non-anti-additive expressions of the form $\neg Q$ are *not mostly* and *not always*.

To illustrate the working of this test, I discuss one of Ladusaw's (1979) arguments against analyzing NPI *any* as a wide scope universal. Ladusaw (1979) notices that the adverb *rarely* can be decomposed into 'USUALLY $\neg$', where it contains a negation capable of licensing NPIs. *Rarely* can only embed existential quantifiers and not universal quantifiers. In the example below, 'USUALLY $\neg\exists$' in (1), where the *any* has an existential interpretation, gives the correct meaning while '$\forall$ USUALLY $\neg$' does not.

(18)  The IRS rarely audits anyone.

      Interpretation:

i. USUALLY $\neg\exists x[Person(x)\wedge$ IRS audits $x]$
   It is usually not true that there is someone whom the IRS audits.
   (= The IRS almost always audits no one.)

ii. $\forall x[[Person(x)] \rightarrow$ USUALLY $\neg$ [IRS audits $x]]$
   *Everyone is such that it is usually not the case that the IRS audits him.

Given that *rarely* is atomic and cannot be syntactically decomposed, a representation using universal quantification should be impossible as that would require $\forall$ or *anyone* to intersperse between USUALLY and $\neg$. The unavailability of the meaning in (18ii) led Ladusaw (1979) to conclude that *any* must have an existential interpretation.

The argument that Shimoyama (2008) presents is in a similar vein to Ladusaw's (1979) argument above, but the results point to the opposite conclusion where Japanese NPIs are interpreted as universals. Shimmoyama (2008) uses two adverbs *hudan-wa* (usually-WA) and *taitei* (mostly) which are non-anti-additive function of the form $Q\neg$.

(19) a. nihonzin gakusei-no      dare-mo hudan-wa      sankasi-nakat-ta
   Japanese student-GEN who-mo usually-WA participate-not-PAST

   'For every Japanese student it was usually the case that he or she did not participate.'

   b. kokyaku-no dare-kara-mo    gozentyuu-wa taitei     denwa-ga
   client-GEN who-from-MO morning-wa      mostly call-NOM
   nakat-ta
   not.exist-PAST

   'For every client, it was mostly the case that there was no call from him or her in the mornings.'

   (Shimoyama 2008)

The examples above show that a reading where $\forall > Q\neg$ is possible with Japanese indeterminate NPIs. Thus this indicates that these NPIs have to be interpreted as a universal. In the next section, I use the above test on Malay NPIs and show that in some cases, they too have to be interpreted universally.

## 3.2   Malay NPIs: Evidence for Universal Interpretation

In this section, I use two tests to show that the Malay *wh*-word + *pun* NPI has a universal interpretation in certain contexts. The first test uses non-anti-additive contexts on NPI objects to show that they have to be interpreted as a wide scope universal. The second test uses the scope of negation in other contexts to show that NPIs in subject position also have to be interpreted as a wide scope universal.

Recall from the section above that a sentence containing a non-anti additive function of the form $Q\neg$ with the existence of the reading where $\forall > Q\neg$[3] is evidence that the NPI is interpreted as a wide scope universal. I use the quantificational adverb *biasanya* (usually) to create a non-anti-additive environment. To ensure a non-anti-additive context, the example below shows that *biasanya* has to be interpreted outside the scope of negation.

(20) Ali biasanya tidak pergi ke sekolah
Ali usually    NEG go     to school

'Ali usually does not go to school'
Interpretation:

    i.   It is usually the case that Ali does not go to school (Ali almost never go to school)

    ii.   *It is not the case that Ali usually go to school (He could still be going but very infrequently)

Now, I use the adverb *biasanya* with Malay NPIs when they appear before negation and after negation. The judgments involved are not the most straightforward due to the three scope bearing elements. To help with judgments, I use the following scenario. The relevant scenario is used to disambiguate between narrow scope existential and wide scope universal: Ali attends a lot of events and there are so many people on a list that he has to greet that the same individual is greeted only occasionally. However, Ali still greets people rather frequently. In this scenario, only the wide scope universal reading of the NPI is true while the narrow scope existential reading is false. Thus, if the non-anti-additive sentence can be uttered under the scenario then the NPI has a wide scope universal reading.

(21) Malay NPIs below negation

    Ali biasanya tak    sambut siapa-siapa pun
    Ali usually   NEG greet    who-who    PRT

    'Ali usually does not greet anyone'

    Interpretation:

    i.   USUALLY $\neg\exists[Person(x)\wedge$ Ali greets $x]$
      It is usually not true that there is someone whom Ali greets.
      (= Ali almost always greets no one.)

    ii.   $\forall[[Person(x)] \to$ USUALLY $\neg$ [Ali greets $x]]$
      *Everyone is such that it is usually not the case that Ali greets him.

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[3]$\forall > Q\neg$ violates the immediate scope constraint (Linebarger 1987). However like Japanese, there exists cases where the constraint does not apply.

(22)   Malay NPIs above negation

Ali siapa-siapa pun   biasanya tak    sambut
Ali who-who     PRT usually   NEG greet

'Ali usually does not greet anyone'

Interpretation:

   i.   USUALLY ¬∃[$Person(x)$∧ Ali greets $x$]
        ?It is usually not true that there is someone whom Ali greets.
        (= Ali almost always greets no one.)

   ii.  ∀[[$Person(x)$] → USUALLY ¬ [Ali greets $x$]]
        Everyone is such that it is usually not the case that Ali greets him.

In (21), when the NPI appears below negation in an SVO order, only the existential interpretation is available while the universal interpretation is not. However, this example does not constitute evidence against the universal analysis as $Q¬ > ∃ = Q∀¬$, hence this example is not telling for our purposes. However, in (22) where the NPI appears before negation, the universal interpretation is available while the existential interpretation is questionable. Furthermore, when the NPI is in subject position, the non-anti additive context only yields the wide scope universal interpretation and not existential interpretation.

(23)   NPIs as subjects

siapa-siapa pun   biasanya tak    mengambil bahagian dalam pertandingan
who-who     PRT usually   NEG tak          part      in      competition
nyayian
singing

'Nobody usually takes part in singing competitions'
Interpretation:

   i.   *It is usually not true that there is someone who participates in singing competition.

   ii.  Everyone is such that it is usually the case that he or she did not participate in singing competitions.

The non-anti-additive contexts serve as direct evidence that when the NPI appears before negation or is a subject, the NPI has to be interpreted as a wide scope universal.

In the second test, I show that negation can never scope over subjects that are not NPIs yet subject NPIs are possible as shown in the example below.

(15b)  a. NPIs in subject position

siapa-siapa pun  tak  datang
who-who     PRT NEG come

'For all x, x did not come'
(Nobody came)

b. siapa-siapa pun  tak  beli apa-apa  pun
who-who     PRT NEG buy what-what PRT

'For all x, there does not exists a y such that x buys y'
(Nobody bought anything)

c. *tak  siapa-siapa pun  datang
NEG who-who     PRT come

If Malay NPIs were interpreted as an existential in the immediate scope of negation, then negation should be able to scope over all subjects. Yet this is not the case as seen in the example below.

(24)  satu orang  tak  datang
one  person NEG come

'One person didn't come'

Interpretation:

i. It is the case that one person did not come

ii. *It is not the case that one person came

In the example above, the reading that is obtained is one where *satu* (one) scopes over negation[4] while the converse is not allowed. From this two tests, it is clear that NPIs have to be interpreted as a wide scope universal and not a narrow scope existential in certain context. This begs the question of whether Malay NPIs can be always interpreted as a wide scope universal as Shimoyama (2008) has argued for Japanese indeterminate NPIs. In the next section, I show that this is not the case and I provide cases where *wh*-word +*pun* has to be interpreted as an existential.

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[4]One can argue that *satu orang* (one person) is a positive polarity item (PPI) hence it has to scope above negation. However, the following example show that *satu orang* can appear in the scope of negation showing that it is not a PPI.

(1)  Ali tak  nampak satu orang  di sini
Ali NEG saw     one  person at here

'Ali did not see one person here'

Interpretation:

i. It is not the case that Ali see one person here

ii. *There is one person such that Ali did not see him

## 3.3 Malay NPIs: Evidence for Existential Interpretation

In this section, I show that Malay *wh*-word + *pun* NPIs also have an existential interpretation in certain contexts, hence, the wide scope universal analysis cannot extend to all cases of NPIs. Using non-anti-additive contexts again, I use the adverb *sering* (often) which is of the type $\neg Q$ to show that when NPIs appear after negation, the NPIs has an existential interpretation. The adverb *sering* (often) is necessarily interpreted in the scope of negation as seen in the example below.

(25)  Ali tak   sering makan nasi
      Ali NEG often  eat    rice
      'Ali does not eat rice often'

      Interpretation:

      i.   It is not the case that Ali eats rice often. (He still eats rice but infrequently)

      ii.  *It is often the case that Ali does not eat rice. (If he eats rice, that would be surprising.)

In the examples below, I use *sering* with NPIs above and below negation. The scenario used in this case is similar to the one used before: Ali attends a lot of events and he has a list of people to greet. Since there are so many people, he is unable to greet the same individual more than once but the number of people he greets is still high. In this scenario, only the wide scope interpretation is true while the narrow scope interpretation is false. The reason why there cannot be a scenario where narrow scope existential interpretation is true while wide scope universal interpretation is false is because the narrow scope existential interpretation always entails the wide scope universal interpretation. For example, if it is not often the case that there exist someone such that Ali greets him, then everyone is such that it is not the case that Ali often greets him. However, the wide scope universal interpretation does not entail the narrow scope existential interpretation. Thus, if the sentence cannot be uttered under the scenario then the NPIs has to be interpreted as a narrow scope existential.

(26)  Malay NPIs below negation

      Ali tak   sering sambut siapa-siapa pun
      Ali NEG often  greet    who-who    PRT

      'Ali does not often greet anyone'

      Interpretation:

      i.   $\neg$ OFTEN $\exists x[Person(x)\wedge$ Ali greets $x]$
          It is not often true that there is someone whom Ali greets.
          (= Ali greets no one most of the time.)

    ii.   $\forall x[[Person(x)] \rightarrow \neg$ OFTEN [Ali greets $x$]]
        *Everyone is such that it is not often the case that Ali greets him.

(27)  Malay NPIs above negation

    Ali siapa-siapa pun  tak   sering sambut
    Ali who-who    PRT NEG often  greet

    'Ali does not often greet anyone'

    Interpretation:

      i.   $\neg$ OFTEN $\exists x[Person(x) \wedge$ Ali greets $x]$
         *It is not often true that there is someone whom Ali greets.
         (= Ali greets no one most of the time.)
      ii.  $\forall x[[Person(x)] \rightarrow \neg$ OFTEN [Ali greets $x$]]
         Everyone is such that it is not often the case that Ali greets him.

In (27), the Malay NPI receives universal interpretation, however this example is not telling as $\forall > \neg Q = \neg \exists Q$. However, (26) shows the availability of the narrow scope existential interpretation under a $\neg Q$ function. Hence this constitutes as evidence for an existential interpretation for the Malay NPIs under negation.

Further evidence for existential interpretation of Malay *wh*-word + *pun* NPIs comes from the scope of negation and long distance licensing. Unlike Korean and Japanese which requires clausemate negation to license NPIs, Malay allows long distance licensing of NPIs as seen in (28).

(28)  Siti tak   kata Ali beli apa-apa    pun
      Siti NEG say  Ali buy what-what PRT
      'Siti didn't say that Ali bought anything'

    Interpretation:

      i.   Siti did not say that there exists a thing such that Ali buys it.
      ii.  *Siti did not say that everything is such that Ali buys it.

In this example, *wh*-word *pun* is unable to scope above the negation in the matrix clause and the only interpretation that it can receive is existential.

Another case where Malay NPIs have to be interpreted as an existential is in interrogative environments. Interrogative clauses are neither downward entailing nor contains an overt licensor for NPIs. Yet, the fact that they allow the presence of NPIs has been a long standing puzzle within the NPI literature. In this thesis, I am concerned with the interpretation of Malay NPIs in interrogative clauses and will not discuss the

licensing condition of NPIs in this environment (for a recent discussion on the topic see Guerzoni and Sharvit (2013)). The NPI *wh*-word + *pun* is available in yes-no question as seen in (29).

(29)   a.  ada-kah  kamu suka apa-apa    buku pun?
           EXT+Q you    like  what-what book PRT
           'Did you like any book?'

       b.  ada-kah  kamu suka apa-apa    pun?
           EXT+Q you    like  what-what PRT
           'Did you like anything?'

In Malay, yes-no questions are formed with the existential marker *ada* and in the examples above, the NPIs only have an existential interpretation. Consider the following context:

(30)   a.  **Context**: Ali was given three books to read. He only managed to read one of them. Under this context, the following question is asked:

       b.  ada-kah  kamu baca apa-apa    buku?
           EXT+Q you    read  what-what book
           'Did you read any book?'

Given the context above, the answer to the question in (b) has to be positive, indicating that *wh*-word here is interpreted as an existential. If the *wh*-word here is a universal, then the answer to (b) cannot be positive as only one and not all the books were read. Further evidence of existential interpretation in interrogative clauses comes from embedded question where the existential marker *ada* is required to appear before the NPI as seen in the example below.

(31)   Ali tertanya-tanya jika ada    siapa-siapa yang datang
       Ali wonder          if   EXT who-who    REL come
       'Ali wondered whether anyone came'

The final piece of evidence for existential interpretation comes from 'minimizer NPIs' (even) that are required to be under the scope of negation (Lahiri (1998); Sells (2006)). The following sentence should be weird if Malay NPIs are wide scope universals however, this is not the case.

(32)   tiada       satu orang  pun yang beri apa-apa    pun  datang
       NEG+EXT one  person even REL give what-what PRT come
       'Not even one person who gave anything came'[5]

---

[5]When *pun* does not attach to a *wh*-phrase, it has the meaning of 'even'.

The minimizer NPI (even) needs to be under the scope of negation but a wide scope universal cannot be interpreted under the scope of negation. Thus, the grammaticality of the above sentence indicates that Malay NPIs cannot always be interpreted as a wide scope universal and must be interpreted as a narrow scope existential in context where it is under the scope of negation.

This section of the thesis serves to show that the Malay *wh*-word + *pun* has both wide scope universal and narrow scope existential interpretation. In Malay, the surface position of the NPIs determines the interpretation. Thus, the environments where the NPIs receives either universal or existential interpretation are mutually exclusive. When negation scopes above the NPI or when the NPI is in an interrogative clause, it receives an existential interpretation. When negation scopes below the NPI, either when the object is fronted or the NPI is a subject, it receives a universal interpretation. In the next section, I briefly discuss the role of the particle *pun* and also provide an interim summary of the data.

# 4   The Particle *pun* + An Interim Summary

The particle *pun* appearing in these expressions have not been given much examination in the literature. Cole and Hermon (1998) mentions that *pun* represents an existential quantifier in such constructions but do not provide any further discussion on the issue. In this thesis, I merely provide the facts regarding *pun* and a brief discussion of how it might relate to the interpretation of NPIs and FCIs.

Depending on context, *pun* has an additive interpretation, similar to English *also, too* or a scalar interpretation, similar to English *even*. Thus, the sentence below is ambiguous and requires further context to disambiguate them.

(33)   Ali pun  datang
       Ali PRT come

       'Ali came too' or 'Even Ali came'

This invites a domain widening analysis as argued by Lahiri (1998) for Hindi where the NPI *ek-bhii* (any) is composed of *one+even*. This analysis cannot be extended to Malay as the presence of *pun* is determined by the syntactic position of the indeterminate pronouns.*Pun* is found to be optional when the indeterminate pronoun appears below its licensor (negation for NPIs and modal/future tense for FCIs) but it is compulsory when the indeterminate pronoun is above its licensor.

(34)   FCIs
       a.  Ali boleh makan apa-apa    (pun)
           Ali can    eat      what-what PRT

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b. Ali apa-apa     *(pun) boleh makan
   Ali what-what PRT     can     eat

   'For all x, Ali can eat x'

c. siapa-siapa *(pun) datang ke majlis ini
   who-who     PRT     come    to event  this

   'For all x, x came to this event'

(35)   NPIs

a. Ali tak     makan apa-apa       (pun)
   Ali NEG eat        what-what PRT

   'There isn't an x such that Ali ate x'

b. Ali apa-apa     *(pun) tak     makan
   Ali what-what PRT     NEG eat

   'For all x, Ali did not eat x'

c. siapa-siapa *(pun) tak     datang ke majlis ini
   who-who     PRT     NEG come    to event  this

   'For all x, x did not come to this event'

Furthermore, *pun* is completely disallowed in interrogatives, both yes-no questions and constituent questions.

(36)   a. ada-kah  kamu suka apa-apa       buku (*pun)?
         EXT+Q you    like  what-what book PRT

         'Did you like any book?'

      b. ada-kah  kamu suka apa-apa       (*pun)?
         EXT+Q you    like  what-what PRT

         'Did you like anything?'

      c. siapa-kah yang     sudah baca apa-apa       buku (*pun) di sini?
         who+Q   COMP finish read what-what book PRT     in here

         'Who has finished reading any books here?'

Recall that when the NPI scopes below negation or is in an interrogative clause, it receives an existential interpretation while when it appears above negation, it has a universal interpretation. This generalization seems to connect with the availability of the particle *pun*. It appears that when the *wh*-word is interpreted as a universal, the particle is compulsory, while it is optional or completely prohibited when it is interpreted as an existential. In the next section, I provide an analysis where I try to capture both the existential and universal interpretations of NPIs using a covert exhaustification operator, *Exh*. I speculate that *pun* is linked to this operator and could be an overt lexicalization of *Exh*, however at this point, I do not have any evidence for this speculation. Due to the limited scope of this thesis, I will not discuss *pun* any further and will continue to treat it as part of the indeterminate pronouns. The full

paradigm of *pun* can be found in the appendix and the morphosyntactic details of *pun* is left for future research.

## 4.1   An Interim Summary

NPIs and FCIs in Malay are expressed with indeterminate pronouns, a reduplicated *wh*-word with the particle *pun* attached. While FCIs are generally have an universal interpretation, NPIs can have either universal or existential interpretation depending on where they lie in relation to negation. The interpretations and positions of the NPIs and FCIs relative to their licensors are summarized in the tables below.

Table 1: Malay NPIs

|  | NPI $>\neg$ | $\neg>$NPI | Interrogatives |
|---|---|---|---|
| Interpretation | $\forall$ | $\exists$ | $\exists$ |
| *pun* | obligatory | optional | not allowed |

Table 2: Malay FCIs with modals

|  | FCI $>$modal | modal $>$NPI |
|---|---|---|
| Interpretation | $\forall$ | $\forall$ |
| *pun* | obligatory | optional |

Table 3: Malay FCIs objects without modals

|  | SOV | SVO |
|---|---|---|
| Interpretation | $\forall$ | N/A |
| *pun* | obligatory | N/A |

In the next section, I propose an exhaustification analysis for NPIs and FCIs in Malay given their varied interpretations.

## 5   Proposal: An Exhaustification Analysis for *wh*-word + *pun*

It is clear that *wh*-word + *pun* has both universal and existential interpretations depending on its syntactic position. In the cases of NPIs, when they appear before negation or is in subject position, they have a universal interpretation, otherwise, it has an existential interpretation. In other words, the interpretation of the NPIs can be obtained from surface scope. On the other hand, Malay FCIs always have a universal interpretation.

Given the mutually exclusive relationship between the universal interpretation and existential interpretation of *wh*-word + *pun*, there are two possible strategies for analyzing *wh*-word + *pun*. The first approach would be to analyze them in two distinct systems, one for the universal interpretation and the other for the existential interpretation. However, this approach is not satisfactory as we would need to claim that there are two distinct lexical entries for *wh*-word + *pun*. Furthermore, this strategy would run into trouble with explaining NPI objects as the same object appears in two different environment with different interpretations.

The second approach, which I will be taking, assumes one inherent interpretation for *wh*-word + *pun* while the other interpretation is derived. This allows *wh*-word + *pun* to be accounted for in one system. There are two options for this approach: (i) *wh*-word + *pun* is inherently a universal and the existential interpretation is derived (ii) *wh*-word + *pun* is inherently existential and the universal interpretation is derived. Existential and universal quantifiers form a Horn Scale (Horn 1972) where the universal quantifier forms the logically stronger member. Hence, option (i) would involve a weakening operation while option (ii) is a strengthening operation. For my analysis, I take option (ii) where I argue that *wh*-word + *pun* has an existential interpretation which gets strengthened into a universal one. A justification for this choice is the many strengthening occurrences in natural language but there are hardly any weakening occurrences.

Theoretically, universal quantification can be put in terms of conjunctive while existential quantification, disjunctive (see Keenan and Faltz, 1985; Keenan and Stavi, 1986 for a fully formal version of standard logic extended to universal and existential quantification). The semantic similarity between conjunction/disjunction and universal/existential quantification is highlighted in Keenan and Moss (*to appear*). Conjunction and universal quantification are greatest lower bound operators, differing in that conjunction only takes finitely many arguments while universal quantification is monadic second order taking a set of any cardinality as argument. Similarly, disjunction and existential quantification are least upper bound operators and differs the same way as universal quantification and conjunction. Hence, for our purposes, $\forall$ and $\exists$ can be replaced by a conjunction or disjunction of propositions involving constants. In the literature, it has been argued that disjunction can sometimes be interpreted as conjunction. For example, Higginbotham (1991) considers the following example of disjunction being interpreted as a conjunction.

(37)   John can play chess or checkers (so he will play whichever you please)

      Inferences:
1.   John can play chess
2.   John can play checkers

The inferences in the example above correspond to the two disjuncts which form

the expression $\diamond(p \vee q)$ which is expected to have the meaning $\diamond p \vee \diamond q$, which is weaker than $\diamond p \wedge \diamond q$.[6]

Higginbotham (1991) proposes that *either* is always present with *or*, either covertly or overtly to account for the dual meaning of *or* in the case above. On the other hand, Fox (2007) argues that a disjunction can be grammatically strengthened to a conjunction through an exhaustification process. Further evidence of strengthening in natural language comes from language acquisition. Singh et al. (2012) found that children reject sentences in (38a) if the statement in (38b) is false which is evidence that children are interpreting disjunction as a conjunction.

(38)    a.  The monkey is holding a flower or a book.
        b.  The monkey is holding a flower and a book.

To account for the two interpretations of Malay *wh*-word + *pun*, I propose an analysis where *wh*-word + *pun* is inherently interpreted as an existential which goes through a grammatical strengthening operation to obtain the universal interpretation. I use the *Exh* operator as proposed by Fox (2007) to obtain this result where non weaker alternatives, which are introduced by *wh*-word + *pun* are negated, leaving only the strengthened interpretation. In the next section, I discuss the semantics of *wh*-word + *pun* and the alternatives it introduces. Then, I define the *Exh* operator following Fox (2007) and illustrates the mechanics of it before applying it on the Malay data. Finally, I provide discussion of *Exh* in Malay compared to Hebrew *kol* and English *any*.

## 5.1   The Semantics of *wh*-word + *pun*

Chierchia (2010) argues that NPIs and FCIs should be analyzed as closely as possible to indefinites within a merged system. Since the lexical entry for both NPIs and FCIs in Malay is composed of a reduplicated *wh*-word with the particle *pun*, I argue *wh*-word + *pun* should be treated as a unit and as an indefinite.

In the literature, there are at least three approaches as to how indefinites should be treated. In the first approach, indefinites are represented as variables, as in Heim (1982). The second approach is the alternative semantics approach developed in Kratzer and Shimoyama (2002). In this approach, *wh*-words such as Japanese *dare* (who), denotes sets of individuals which are expanded via pointwise functional application until it meets some operators ($\exists, \forall, \neg$) that can quantify over the set. In the third approach,

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[6]Fox (2007) takes modal verbs to be some kind of existential operators. Thus the following equivalence holds for FCIs under modals:

(1)   $\diamond(p \vee q) = \diamond p \vee \diamond q$

(2)   $\diamond(p \wedge q) = \diamond p \wedge \diamond q$

(1) expresses the free choice possibility while (2) does not.

indefinites are argued to be inherently existentially quantified items. This existential quantificational view of indefinites is proposed in Karttunen (1977) for wh-words and used in Chierchia (2010) in his analysis for the entire polarity system.

Among the three approaches listed, I assume the third approach and argue that *wh*-words in Malay are inherently ∃ items. The main reason for this choice is that *wh*-words can be directly interpreted as an existential quantifier without the need of any extra operators. In the variable and alternative semantics approach, *wh*-words denote a basic meaning, either a variable or a set of alternatives, and can only obtain their quantificational force through some subsequent operator. Thus, in this thesis, I argue that *wh*-words + *pun* has the semantics of an existential which is capable of undergoing the exhaustification mechanism to obtain a universal interpretation.

(39)  $[\![wh - word + pun]\!](p)(q) = \exists x(p(x) \wedge q(x))$
    (for any p,q of type $< e, t >$)

This is similar to Bar-Lev and Margulis (2013) analysis of Hebrew *kol* which they argue to be inherently an existential quantifier but can be strengthened into a universal quantifier.

### 5.1.1   Alternatives of *wh*-word + *pun*

As mentioned before, scalar items such as universal and existential quantification form a scale according to entailment relations where universal quantification is the logically stronger member. Thus, an alternative of existential quantification includes the universal quantification which is the scalar alternative. Putting existential quantification in terms of disjunction $p \vee q$, I adopt Sauerland (2004) proposal that the set of alternatives available for an English disjunctive statement like *p or q* includes the individual disjunct *p*, *q* as well as the scalar alternative *p and q*. Hence, the set of alternatives for existential quantification such as *some* in English would be $\{p, q, p \vee q, p \wedge q \}$.
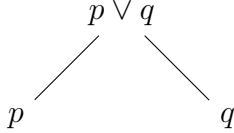
(40)   Alternatives of ∃ (∃ = ∨)

$$p \vee q$$

$$p \qquad q$$

$$p \wedge q$$
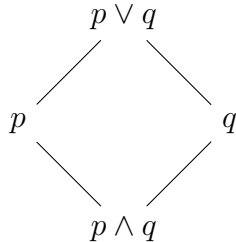
Following Chierchia's (2013) analysis of polarity items, I argue that *wh*-word + *pun* introduces a set of alternatives. Given that I have assumed that *wh*-word + *pun* has the semantics of an existential in the previous section, the set of alternatives should be the same as (). However, a crucial claim that I am making for this proposal is that the

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scalar alternative $(p \wedge q)$ is not included in this set of alternatives for *wh*-word + *pun*. Thus, the set of alternatives for *wh*-word + *pun* is $\{p, q, p \vee q \}$.

(41)   Alternatives of *wh*-word + *pun*

$$p \vee q$$

$$p \qquad\qquad q$$

The reason for keeping the scalar alternative out of the set of alternatives is to save it from being negated by the exhaustification operator that will be introduced in the next section. The exclusion of the scalar alternative from the set of alternatives of disjunction is not an outlandish claim and has been proposed in the literature for child acquisition (Singh et al., 2012), Hebrew *kol* (Bar-Lev and Margulis, 2013) and disjunction in Warlpiri (Bowler 2014).

Singh et al (2013) claims that this limited set of alternatives is due to the inability of children to access the lexicon and include the scalar alternative when generating alternatives to $(p \vee q)$. On the other hand, Bowler (2014) claims that the set of alternatives available to Warlpiri speakers simply falls out from the lexical items that are available to them rather from any inability to access the lexicon. Since Warlpiri has only the single coordinator *manu* (or), speakers do not include any other alternative when they access the lexicon. My argument for *wh*-word + *pun* follows a similar line to Bowler's (2014) claim that the lack of the scalar alternative is due to the lexical items available to Malay speakers. Since *wh*-words are inherently indefinites, the scalar alternative is not included in the set of alternatives. In the next section, I introduce the exhaustification process and apply it to Malay.

## 5.2   Strengthening Mechanism: Exhaustification

Bowler (2014) argues for a pragmatic analysis for Warlpiri construction *P manu Q*, which in embedded contexts, has a disjunctive denotation $(P \vee Q)$ while in unembedded contexts, has a conjunctive denotation $(P \wedge Q)$. She proposed that the coordinator *manu* has a unstrengthened disjunctive denotation which undergoes obligatory pragmatic strengthening to conjunction in the relevant context. In Bar-Lev and Margulis (2013), the Hebrew determiner *kol*, which is traditionally considered a universal quantifier, is argued to be an undercover existential due to having NPI-like behavior. Bar-Lev and Margulis (2013) puts forth a proposal where *kol's* universal interpretation is derived from the strengthening of it's existential interpretation. In both these cases, a covert exhaustification operator is used for strengthening.

Exhaustification is an operation for grammatical strengthening. It has been proposed in the literature for explaining phenomena such as scalar implicatures, free choice inferences and polarity sensitivity (Chierchia (2006, 2013); Fox (2007)). According to Fox

(2007), an exhaustivity operator, *Exh*, is a covert counterpart of *only* which takes two arguments: a proposition (the prejacent) and a set of alternatives (alternatives to the prejacent) and returns the prejacent conjoined with the negation of all alternatives that are non-weaker than the prejacent. This in turn yields the pragmatically strengthened meaning of the assertion. In Fox (2007), *Exh* is a syntactic operator which is optionally present in the syntax and has the ability to recursively apply to its own output. For this thesis, I propose to use *Exh* as a tool to account for the Malay *wh*-word + *pun* data. I show that when *Exh* operates on the set of alternatives introduced by *wh*-word + *pun* outside the scope of negation, it grammatically strengthened $\exists$ to $\forall$. This accounts for the word order pattern as well as the interpretations found with *wh*+ *pun*.

In the following sections, I give the definition of *Exh* following Fox (2007) and illustrate an application of *Exh* on disjunction ($p \vee q$) to obtain exclusive disjunction ($p \oplus q$). After illustrating the basic strengthening mechanism of *Exh*, I show how a recursive application of *Exh* on *wh*-word + *pun* will derive the universal interpretation.

### 5.2.1 *Exh* and a Simple Case of Disjunction

The exhaustivity operator, *Exh*, as proposed in Fox (2007) is a syntactic operator which applies to a set of alternatives and can be applied recursively. In order to avoid contradiction, *Exh* is defined using the notion of Innocent Excludability (IE). IE forces *Exh* to only negate proper subset of non-weaker alternatives and not all of the alternatives. The formal definition of *Exh* with IE is as follows:

**Definition 1** Exhaustivity Operator with Innocent Excludability (IE)

i. $p$ is a proposition and $ALT(p) = \{ q | q$ is an alternative to $p \}$

ii. $[\![Exh]\!] (p) = p \wedge \forall q (q \in IE(p) \rightarrow \neg q)$ (IE is defined below)

**Definition 2** Innocent Excludability (IE)

i. Exclusion
$EXCL(p) = \{ A \subseteq ALT(p) : A \neq \emptyset$ and $\{ \neg q : q \in A \} \cup \{ p \}$ is consistent $\}$

ii. Maximum Exclusion
$EXCL_{max}(p) = \{ A \subseteq ALT(p) : A$ is a maximal set in $EXCL(p) \}$

iii. Innocent Exclusion
$IE(p) = \bigcap EXCL_{max}(p)$

Informally, definition 1 says that the exhaustification of a proposition $p$ and a set of $p$'s alternative if the proposition is true and every alternative member in the set of IE is false. In other words, *Exh* defines sets of negated strengthened meanings based on the alternatives to the prejacent. These sets then gets intersected with the prejacent

which in turn yields a stronger meaning of the prejacent.

In definition 2, *EXCL* is function that takes the prejacent as argument and returns a set of negatable alternatives which shall be refered to as 'excludable' propositions since they can be excluded without contradicting the prejacent. $EXCL_{max}$ returns the maximal sets in *EXCL* and IE returns the intersection of all the maximal sets of excludable propositions. Thus, contradiction is avoided as the proposition that occurs in every one of the sets of excludable proposition is innocently excluded. Using the definitions, I will illustrate an application of *Exh* on inclusive disjunction to obtain exclusive disjunction. *Exh* is a syntactic operator and was used in Fox (2007) to derive the exclusivity implicature of the English disjunctive utterance *P or Q* but here I illustrate the use *Exh* with propositional logic to illustrate the mechanics of it. Before I begin, I provide the truth table of all the propositions involved.

(42)  Inclusive disjunction $= p \vee q$
      Exclusive disjunction $= p \oplus q$

Truth table:

|  | $p$ | $q$ | $p \wedge q$ | $p \vee q$ | $p \oplus q$ |
|---|---|---|---|---|---|
| $w_1$ | T | T | T | T | F |
| $w_2$ | T | F | F | T | T |
| $w_3$ | F | T | F | T | T |
| $w_4$ | F | F | F | F | F |
| sets of worlds | $\{w_1, w_2\}$ | $\{w_1, w_3\}$ | $\{w_1\}$ | $\{w_1, w_2, w_3\}$ | $\{w_2, w_3\}$ |

Following Sauerland's (2004) proposal, the set of alternatives[7] to $p \vee q$ is as follows:

(43)

$$ALT(p \vee q) = \{p, q, p \vee q, p \wedge q\}$$
$$= \{\{w_1, w_2\}, \{w_1, w_3\}, \{w_1, w_2, w_3\}, \{w_1\}\}$$

Applying *Exh* to $ALT(p \vee q)$ gives the following set of sets of excludable propositions.

(44)

$$EXCL(p \vee q) = \{p, q, p \wedge q, \{p, p \wedge q\}, \{q, p \wedge q\}\}$$
$$= \{\{w_1, w_2\}, \{w_1, w_3\}, \{w_1\}, \{\{w_1, w_2\}, \{w_1\}\}, \{\{w_1, w_3\}, \{w_1\}\}\}$$

The set of maximal elements of *EXCL* is as follows:

<hr>

[7]The alternatives are constructed based on the algorithm in Katzir (2008) and Fox and Katzir (2011).

(45)

$$EXCL_{max}(p \vee q) = \{\{p, p \wedge q\}, \{q, p \wedge q\}\}$$
$$= \{\{\{w_1, w_2\}, \{w_1\}\}, \{\{w_1, w_3\}, \{w_1\}\}\}$$

Once $EXCL_{max}(p \vee q)$ is calculated, the set of IE propositions can be derived by intersecting all the sets in $EXCL_{max}(p \vee q)$

(46)

$$IE(p \vee q) = \bigcap \{\{p, p \wedge q\}, \{q, p \wedge q\}\}$$
$$= \bigcap \{\{\{w_1, w_2\}, \{w_1\}\}, \{\{w_1, w_3\}, \{w_1\}\}\}$$
$$= \{\{w_1\}\}$$
$$= \{p \wedge q\}$$

According to definition 1, the proposition $(p \wedge q)$ is innocently excluded, thus is negated and combined with the prejacent resulting in the strengthened $(p \oplus q)$.

(47)

$$Exh(p \vee q) = (p \vee q) \wedge \neg(p \wedge q)$$
$$= \{w_1, w_2, w_3\} \cap \{\{w_1, w_2, w_3, w_4\} - \{w_1\}\}$$
$$= \{w_1, w_2, w_3\} \cap \{w_2, w_3, w_4\}$$
$$= \{w_2, w_3\}$$
$$= p \oplus q$$

In this case, *Exh* only needs to apply once to achieve the strengthened result. Further application to the proposition does not result in any change. In the next section, I provide a schema of a recursive application of *Exh* to the set of alternatives that does not include the scalar alternative and show that this schema can be used for *wh*-word + *pun*.

## 5.3   Schema of recursive application of *Exh*

Having illustrated the application of *Exh* on disjunction, I will first provide a schema of a recursive application of *Exh* on the proposition $p \vee q$ that lacks the scalar alternative in the set of alternatives. In the last section, I claim that *wh*-word + *pun* inherently has the interpretation of an existential quantifier, hence it can be put in terms of the disjunction $p \vee q$. However, *wh*-word + *pun* is unique from a typical existential as it lacks a scalar alternative in its set of alternatives. The schema of the derivation of *Exh* being applied to $p \vee q$ lacking a scalar alternative is as follows. First we apply *ALT* to the proposition $(p \vee q)$.

(48)　Applying $ALT$ to $(p \vee q)$

$$ALT(p \vee q) = \{p, q, p \vee q\}$$

The result of applying $Exh$ to $(p \vee q)$ is as follows:

(49)

$$EXCL(p \vee q) = \{\{p\}, \{q\}\}$$
$$EXCL_{max}(p \vee q) = \{\{p\}, \{q\}\}$$

$$IE(p \vee q) = \bigcap\{\{p\}, \{q\}\}$$
$$= \emptyset$$

$$Exh(p \vee q) = (p \vee q)$$

The set of excludable propositions is $\{\{p\}, \{q\}\}$ since $p$ and $q$ can be negated without contradicting the prejacent $p \vee q$. Since the result of EXCL$(p \vee q)$ are singleton sets, the result of $EXCL_{max}(p \vee q)$ is the same. The intersection of $EXCL_{max}$ is empty hence no IE propositions can be negated and combined with the prejacent. Thus the first application of $Exh$ results with its input.

Though the first application of $Exh$ did not result in any change, the set of alternatives produced by $Alt$ is different from before. The derivation of this second set of alternatives is based on Katzir's (2008) algorithm which allows exhaustified alternatives to be generated. Thus applying $ALT$ the to the output of $Exh(p \vee q)$ gives the following set.

(50)　Apply $ALT$ to $Exh(p \vee q)$

$$ALT(Exh(p \vee q)) = \{Exh(p), Exh(q), Exh(p \vee q)\}$$

The calculation of the values of $Exh(p)$ and $Exh(q)$ are given below:

(51)　　a.　Value of $Exh(p)$

$$EXCL(Exh(p) = \{\{q\}\}$$
$$EXCL_{max}(Exh(p) = \{\{q\}\}$$

$$IE(p) = \bigcap\{\{q\}\}$$
$$= \{q\}$$

$$Exh(p) = \{p \wedge \neg q\}$$

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b. Value of $Exh(q)$

$$EXCL(Exh(q) = \{\{p\}\}$$
$$EXCL_{max}(Exh(q) = \{\{p\}\}$$

$$IE(q) = \bigcap\{\{p\}\}$$
$$= \{p\}$$

$$Exh(q) = \{q \wedge \neg p\}$$

Thus, the alternatives for $Exh(p \vee q)$ is given below.

(52)

$$ALT(Exh(p \vee q)) = \{Exh(p), Exh(q), Exh(p \vee q)\}$$
$$= \{p \wedge \neg q, q \wedge \neg p, p \vee q\}$$

*Exh* applies a second time on this new set of alternatives and the derivation is as follows:

(53)

$$EXCL(Exh(p \vee q)) = \{\{p \wedge \neg q\}, \{q \wedge \neg p\}, \{p \wedge \neg q, q \wedge \neg p\}\}$$
$$EXCL_{max}(Exh(p \vee q)) = \{\{p \wedge \neg q, q \wedge \neg p\}\}$$
$$IE(Exh(p \vee q)) = \bigcap\{\{p \wedge \neg q, q \wedge \neg p\}\}$$
$$= \{p \wedge \neg q, q \wedge \neg p\}$$

$$Exh(Exh(p \vee q)) = (p \vee q) \wedge \neg(p \wedge \neg q) \wedge \neg(q \wedge \neg p)$$
$$= (p \vee q) \wedge (p \rightarrow q) \wedge (q \rightarrow p)$$
$$= (p \vee q) \wedge (p \leftrightarrow q)$$
$$= p \wedge q$$

Thus, two applications of *Exh* to $p \vee q$ that lacks $p \wedge q$ in the set of alternatives results in the strengthened conjunctive meaning $p \wedge q$ which is equivalent to $\forall$. This is the general schema of how *Exh* will be applied to *wh*-word + *pun* in Malay. In the next section, I describe the application of *Exh* to *wh*-word + *pun* in different environments.

## 5.4   Application of *Exh* on *wh*-word + *pun*

According to Fox (2007), *Exh* is optional in the syntax. For the examples in this thesis, I assume that *Exh* is always present within the syntax and is located on the left edge

of the tree. In this section, I discuss the derivation of the two interpretations of NPIs, the first where the NPI scopes above negation and the second when it scopes below negation. I also discuss the derivation of FCIs without the presence of a modal. The derivation follows from the schema in the previous section thus the full derivation will not be shown.

### 5.4.1 *Exh* application with negation

Recall that NPIs in Malay can scope above negation where it receives a universal interpretation and it can scope below negation where it receives an existential interpretation. I will first discuss the case where NPIs scope above negation and I will show the derivation of the sentence in (15b) (repeated below).

(15b)   Ali siapa-siapa pun  tak    nampak
       Ali who-who     PRT NEG see

      'For every $x$, it is not that case that Ali sees $x$'

I assume that the word order of the sentence above is derived from movement of *siapa-siapa pun*. I take *siapa-siapa pun* to be merged below negation initially and then undergo some kind of movement above negation. Thus, the relevant representation of the sentence above is given below.

(54)   *Exh Exh* Ali siapa-siapa PRT $\neg$ nampak
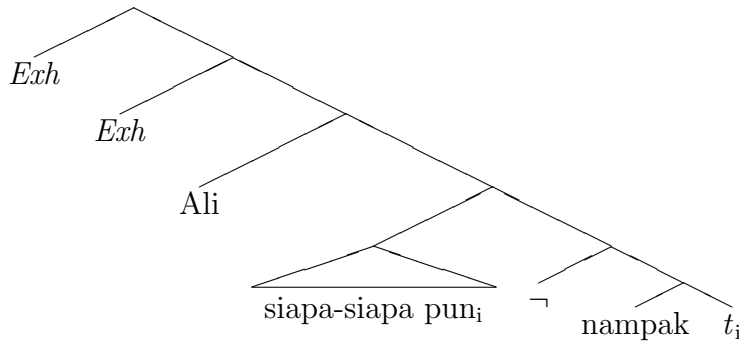


I will be illustrating the derivation with a toy model of two items. The derivation is as follows:

(55)    a. *Exh Exh* Ali who-who PRT $\neg$ see
      b. $D = \{$person 1, person 2$\}$
      c. $p =$ Ali sees person 1
         $q =$Ali sees person 2
      d. $[\![$Ali who-who PRT $\neg$ see$]\!] = \exists x(person(x) \wedge Ali\neg see(x)) \equiv \neg p \vee \neg q$
      e. $ALT([\![Ali\ wh-wh\ PRT\ \neg see]\!]) = \{\neg p, \neg q, \neg p \vee \neg q\}$
      f. $Exh([\![Ali\ wh-wh\ PRT\ \neg see]\!]) = \neg p \vee \neg q$

g. $ALT\ (Exh([\![Ali\ wh-wh\ PRT\ \neg see]\!]))= \{\neg p \wedge q, \neg q \wedge p, \neg p \vee \neg q\}$

h. $Exh(Exh([\![Ali\ wh-wh\ PRT\ \neg see]\!]))= \neg p \wedge \neg q$

In this case, the proposition that *Exh* takes as an argument is equivalent to a wide scope existential as the movement of *siapa-siapa pun* allows it to scope above the negation. Thus, the two application of *Exh* results in the strengthened conjunctive meaning of $\neg p \wedge \neg q$, which is a wide scoping universal.

Next, I show the derivation of NPIs that scope below negation. In this, *wh*-word + *pun* retains its existential interpretation. I show that any number of operation of *Exh* does not change this interpretation. The derivation is shown using example (15a) (repeated below).

(66)  Ali tak  nampak siapa-siapa pun
      Ali NEG see     who-who   PRT

'It is not that case that there is an $x$ such that Ali sees $x$.'

The relevant representation of the sentence is given below.

(56)  *Exh* Ali ¬ nampak siapa-siapa PRT
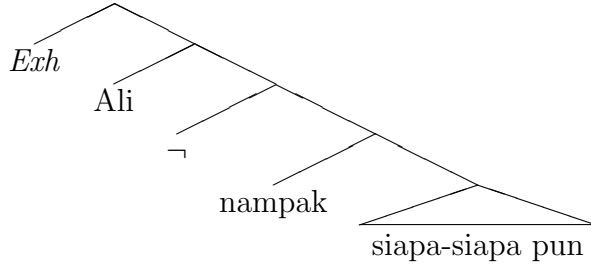


(57)  a.  *Exh* Ali ¬ see who-who PRT

b.  $D = \{$person 1, person 2$\}$

c.  $p =$ Ali sees person 1
    $q =$ Ali sees person 2

d.  $[\![$Ali ¬ see $who-who\ PRT]\!] = \neg \exists(x)(book(x) \wedge Ali\ read(x)) \equiv \neg(p \vee q)$

e.  $ALT([\![$Ali ¬ see $who-who\ PRT]\!]) = \{\neg p, \neg q, \neg(p \vee q)\}$

f.  $Exh([\![$Ali ¬ see $who-who\ PRT]\!])= \neg(p \vee q)$

Applying *Exh* recursively in this case yields the same result as seen below.

(58)  a.  $ALT\ (Exh[\![$Ali ¬ see $who-who\ PRT]\!])= \{\neg p \wedge q, \neg q \wedge p, \neg(p \vee q)\}$

b.  $Exh(Exh[\![$Ali ¬ see $who-who\ PRT]\!])= \neg(p \vee q)$

Under negation, all the alternatives of the prejacent entails the prejacent. Negation over existential quantification is equivalent to universal quantification over negation, which already constitutes the strongest member. Thus, not strengthening occurs if *Exh* is reapplied recursively and *wh*-word + *pun* remains an existential as long as it is in the scope of negation.

### 5.4.2 *Exh* application with modals

FCIs in Malay always have a universal interpretation and are allowed regardless of the presence of a modal. Given that *wh*-word + *pun* has an inherent existential interpretation, two applications of *Exh* are always required for FCIs to strengthened the existential interpretation into a universal interpretation. Fox (2007) takes modals to be an existential operator, thus for the cases with modals, the following equivalences hold for FCIs.

(59)   a. $\diamond(p \vee q) = \diamond p \vee \diamond q$
       b. $\diamond(p \wedge q) = \diamond p \wedge \diamond q$

I show the derivation using the sentence below.

(60)   Ali boleh baca  apa-apa    pantun pun
        Ali can    recite what-what poem   PRT

        'For all x, if x is a poem, Ali can recite x'
        (Ali can recite any poem)

The derivation here is similar to that of the NPIs scoping above negation.

(61)   a. *Exh Exh* Ali boleh baca apa-apa pantun pun
       b. $D = \{\text{poem 1, poem 2}\}$
       c. $p = $ Ali recites poem 1
         $q = $ Ali recites poem 2
       d. $[\![$ Ali $\diamond$ recite wh-wh poem PRT $]\!] = \diamond\exists x(poem(x) \wedge Ali recite(x)) \equiv \diamond(p \vee q)$
       e. $ALT([\![$ Ali $\diamond$ recite wh-wh poem PRT $]\!]) = \{\diamond p, \diamond q, \diamond(p \vee q)\}$
       f. $Exh([\![$ Ali $\diamond$ recite wh-wh poem PRT $]\!]) = \diamond(p \vee q)$
       g. $ALT\,(Exh[\![$ Ali $\diamond$ recite wh-wh poem PRT $]\!]) = \{\diamond p \wedge \neg \diamond q, \diamond q \wedge \neg \diamond p, \diamond(p \vee q)\}$
       h. $Exh(Exh[\![$ Ali $\diamond$ recite wh-wh poem PRT $]\!]) = \diamond p \wedge \diamond q$

This concludes the derivations for the body of the thesis. In this section, I show that by applying *Exh*, as defined in Fox (2007), to the Malay NPIs and FCIs, the correct interpretation of *wh*-word + *pun* can be achieved just with the surface representation. By assuming the presence of *Exh*, we do not have to resort to an ambiguity approach to *wh*+word + *pun* or any covert movement strategy. Thus, both universal and existential interpretations of NPIs and FCIs can be accounted for in a unified manner. In the next section, I provide some discussion of the use *Exh* in Malay compared to Hebrew *kol* and also discuss the possibility of extending this analysis to other languages.

## 5.5 Discussion

The analysis that I have proposed here is similar to the one proposed for Hebrew *kol* by Bar-Lev and Margulis (2013). *Kol* is considered to be truth-conditionally a

universal quantifier as it has prominent interpretation involving universal quantification. However, Bar-Lev and Margulis (2013) argue that it is an existential quantifier as it can appear in downward entailing contexts as well as possibility modal contexts which are environments which existential quantifiers are traditionally found. Thus, they argue that the universal interpretation of *kol* is a result of grammatical strengthening from *Exh*. In this case, Hebrew *kol* looks very similar to Malay *wh*-word + *pun*.

The main difference between Malay *wh*-word + *pun* and Hebrew *kol* is that when *wh*-word + *pun* functions as an NPI, it can either have a universal or existential interpretation depending on where the NPI lies in the tree structure. Hebrew *kol* only has an existential interpretation when it functions as an NPI as it has to remain under negation and there does not seem to be any movement possibility for *kol* to scope above negation. Furthermore, I have shown that *wh*-word + *pun* cannot be considered a true universal quantifier in section 2 while *kol* is taken to be a true universal quantifier. Other than the slight differences between *kol* and *wh*-word + *pun*, the strengthening mechanism using *Exh* can be extended to both cases.

Though this thesis concerns only Malay data, I believe that the analysis can be extended to other languages that share similar features. One of those languages is Malagasy, which is also in the Austronesian family. In Malagasy, NPIs and FCIs are also built with a reduplicated *wh*-word and reduplicated particle. In this case, the particle used is *na* which also serves as disjunction in the language. Furthermore, NPIs and FCIs are often topicalized and appear above their licensor which is similar to the SOV cases in Malay. The data below are from Paul (2005).

(62)  a.  na saka inona na saka inona dia  tsy   mihaza alika
          or cat  what or cat  what TOP NEG hunt   dog
          'No cat hunts dogs'

     b.  na saka inona na saka inona dia    mihaza voalavo
          or cat  what or cat  what TOP hunt   rat
          'Any cat hunts rats'

This opens the question of whether this analysis can be extended to languages such as English which is of a different language family. English *any* functions both as an NPI that has an existential interpretation as well as a FCI that has a universal interpretation. Thus, extending this strengthening analysis to *any* is not a complete outlandish claim. However, a main premise for this analysis to work is that the scalar alternative (universal quantification) is not included in the set of alternatives. For Malay, this premise is supported by the composition of its lexical items. *Wh*-words has traditionally been regarded as some kind of indefinites and having NPIs and FCIs composed of *wh*-words supports the idea that they have inherently existential interpretation that lack the scalar alternative in the set of alternatives. At this point, there is no reason to speculate that English *any* also lack the scalar alternative in its set of alternatives. Thus, it

would be difficult to motivate this analysis for *any*. This concludes the discussion of the analysis. In the next section, I provide a conclusion and discuss remaining open issues that this thesis does not address.

# 6    Conclusion

In this thesis, I explore the indeterminate pronouns in Malay that act as NPIs and FCIs. Both NPIs and FCIs are formed by reduplicating *wh*-words and attaching the particle *pun*. With NPIs, I show that these indeterminate pronouns have universal interpretation when they appear before the licensor and have existential interpretation when they appear after the licensor. On the other hand, FCIs are interpreted as universals. I proposed an account involving exhaustification using the operator *Exh* as proposed by Fox (2007), which can be applied recursively. I argue that *wh*-word + *pun* has an inherent existential interpretation that gets strengthened into a universal interpretation, thus allowing the unification of both NPIs and FCIs under one analysis. Before concluding, I discuss some open issues that still remain to be examined.

## 6.1    Open Issues

A large part of this thesis is devoted to uncovering the interpretation of these indeterminate pronouns and how to account for them. This leaves several open questions that need to be dealt with in future research. The first one concerns the particle *pun*. The particle is optional when the NPI scopes below negation but becomes compulsory when it appears before negation or when it is in subject position. An obvious question would be: What role does *pun* play in the interpretation of NPIs and FCIs. In many languages with indeterminate pronouns, the particles are said to be operators that contribute to the quantificational force of the pronouns. However, in the case of Malay, this idea runs into trouble as NPIs have both universal and existential interpretation and the particle is allowed to appear in both cases. Szabolcsi (2015) proposed that these quantifier particles are not quantificational operators but markers that point to some operators within the sentence. In the case of Malay, it is possible to argue that *pun* is an indicator of the presence of the *Exh* operator. Furthermore, when *pun* is obligatory, it could be a lexicalized version of *Exh*. For now, this remains a speculation and more research is needed before anything can be concluded.

The second open issue concerns the word order pattern of the NPIs and FCIs. Since the meaning of the NPIs and FCIs are ultimately the same in when the NPIs and FCIs objects scopes above or below negation/modal. In this thesis, I assumed that the structure where NPIs and FCIs scopes above negation/modal is derived from movement. The next question to arise is: What type of movement would this be? In syntactic theory, quantifiers can move covertly to take scope from a higher position. In this case,

it seems that the quantifier is moving overtly to escape from under the scope of the licensor so it can be strengthened by the exhaustification operator. One could postulate that this is a case of overt quantifier raising. However, this idea runs into trouble in the cases of long distance licensing when negation is in the matrix scope and SOV order is not permitted for NPI objects. The NPI object is not able to scope above negation in this case but should still be allowed to invert with the verb since it is still license under negation. At this point, I do not have an explanation for this. More research would be needed to extract the details of this case of movement.

The last issue concerns the licensor of NPIs and FCIs. For most cases of NPIs, some form of negation is present within the sentence which makes it into a downward entailing environment. However, NPIs appear in questions as well which neither has negation nor is downward entailing. Furthermore, it is the only case where the particle *pun* is not allowed to appear which remains a curious puzzle to be answered. On the other hand, FCIs do not always need a licensor such as a modal verb. In this case, the FCI object always appear in SOV order and interpreted universally. A possible analysis would be to postulate a covert licensor in this case where the FCI has to scope above it. This remains unanswered for now.

There are still many questions concerning the NPIs and FCIs in Malay that I am interested in such as NPIs in questions and subtrigging in FCIs. I am also interested in cross-linguistics studies of languages that exhibit similar facts to Malay. Furthermore, there is still work to be done to answer the questions raised above. For now, I believe that the exhaustification account is on the right track of capturing both NPIs and FCIs under one analysis. This concludes the thesis.

# 7 Appendix: Word Order, Distribution and Morphological Form of *wh*-word + *pun*

Here, I give a description of word order, morphological forms and distribution of Malay NPIs and FCIs that is not discussed in the main body of the thesis. Malay normally has a strict S(ubject) V(erb) O(ject) order as seen in a normal declarative example below.

(63)   Ali memberitahu Siva bahawa Siti sakit
       Ali inform       Siva that    Siti sick
       'Ali informed Siva that Siti is sick'

In Malay, NPIs and FCIs are the only cases (that I can think of) that has the object coming before the verb.

(64)   a. Ali apa-apa   pun tak  beli
          Ali what-what PRT NEG buy

'Ali did not buy anything'

b. Ali apa-apa    pun   akan beli
Ali what-what PRT will   buy

'Ali will buy anything'

## 7.1 NPIs: Word Order, Morphological Form, Distribution

### 7.1.1 Word Order

With clausemate negation, NPIs are allowed to appear before or after the negation, which is the data discussed in the thesis. However, Malay also allows the passivization of object NPIs into subject position.

(65) siapa-siapa pun   tak    dinampak oleh Ali
who-who    PRT NEG PASS.see   by    Ali

'for all $x$, $x$ was not seen by Ali'
(No one was seen by Ali)

Malay NPIs can appear in an embedded clause with the licensing negation in the matrix clause. However, in this case, only SVO order is of the embedded clause is permitted while SOV order is found to be ungrammatical.

(66)   a. Siti tak    kata Ali beli apa-apa    pun
Siti NEG say   Ali buy what-what PRT

'Siti didn't say that Ali bought anything'

b. *Siti tak    kata Ali apa-apa    pun beli
Siti   NEG say   Ali what-what PRT buy

### 7.1.2 Morphological Form

The morphological form of the NPIs, reduplicated *wh*-word + particle, vary according to the word order. The reduplication of the NPIs (and FCIs) is completely optional and the meaning of the NPIs does not alter when the *wh-* word is not repeated. When the NPIs are objects under SVO order, the particle *pun* is optional as well. The possibilities of the morphological form of the NPIs when it is below negation is shown below.

(67)   NPI objects under negation

a. Ali tak    beli apa-apa    (pun)
Ali NEG buy what-what PRT

b. Ali tak    beli apa   (pun)
Ali NEG buy what PRT

'there isn't an $x$ such that Ali bought $x$'
(Ali did not buy anything)[8]

---

[8]Without the particle *pun* in this case, the sentence could be a declarative or a question. If it is a question, it will be said with a rising intonation

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When the NPI object appears above negation, the particle *pun* is not longer optional and must attach to the *wh*-word.

(68)  NPI objects above negation

    a.  Ali apa-apa     pun tak   beli
        Ali what-what PRT NEG buy

    b.  *Ali apa-apa     tak   beli
         Ali   what-what NEG buy

        'for all $x$, Ali did not buy $x$'
        (Ali did not buy anything)

When the NPI is in subject position, the particle *pun* is also not optional and must appear with the *wh*-word. This also applies to passivized subjects as well.

(69)  NPI subjects

    a.  siapa-siapa pun tak    datang
        who-who     PRT NEG come

        'for all $x$, $x$ did not come'
        (Nobody came)

    b.  *siapa-siapa tak    datang
        who-who      NEG come

    c.  *siapa-siapa tak    dinampak Ali
        who-who      NEG PASS.see   Ali

### 7.1.3   Distribution

Malay allows NPIs to occur in the antecedent of conditionals but not in the consequent. In (70c), the indeterminate pronoun has a free choice reading but not an NPI reading.

(70)  a.  kalau Ali ternampak siapa-siapa (pun), dia akan beritahu saya
        if     Ali see        who-who    also,   he   will   inform    me

        'if Ali sees anyone, he will inform me'

    b.  kalau Ali membaca apa-apa    buku (pun), dia    akan sakit kepala
        if     Ali read     what-what book PRT,   3.SG will   sick   head

        'if Ali read any book, he will get a headache'

    c.  kalau Ali datang, dia akan buat apa-apa     (pun)
        if     Ali comes,   he   will   do     what-what only/also

        'if Ali comes, he will do anything'

NPIs in Malay are allowed in the restriction of the universal quantifier but not in the nuclear scope.

(71) a. setiap murid yang baca apa-apa buku (pun) lulus dalam peperiksaan
   every student REL read what-what book PRT pass in exam
   'every student who read any book passed the exam'

  b. *setiap murid yang lulus dalam peperiksaan pergi ke mana-mana
   every student REL pass in exam go to where-where
   tempat (pun)
   place PRT
   'every student who passed the exam went anywhere'

The Malay NPIs are allowed in the restriction of existential quantifiers but not in nuclear scope. However, in this case, the particle *pun* is not used but a different particle *saja*, which correspond to English *only*, is used instead[9].

(72) a. seseorang murid yang baca apa-apa buku saja/*pun semalam lulus
   some student REL read what-what book PRT yesterday pass
   'some student who read any book yesterday passed'

  b. *seseorang murid yang lulus pergi ke mana-mana tempat pun
   some student REL pass go to where-where place PRT
   semalam
   yesterday
   'some student who passed the exam went anywhere yesterday'

Malay NPIs are possible in the complements of adversative predicates like 'prohibit'.

(73) a. saya melarang siapa-siapa (pun) dari bercakap dengan Ali
   I prohibit who-who also from talk with Ali
   'I prohibited anyone from talking with Ali'

  b. saya melarang Ali dari bercakap dengan siapa-siapa (pun)
   I prohibit Ali from talk with who-who also
   'I prohibited Ali from talking with anyone'

When the adversative verb is passivized, the NPI subject has a universal interpretation and the particle *pun* is compulsory.

(74) siapa-siapa *(pun) dilarang dari bercakap dengan Ali
  who-who PRT PASS.prohibit from talk with Ali
  'for all $x$, $x$ is prohibited from talking with Ali
  (Everyone is prohibited from talking with Ali)

---

[9]At this point, it is unclear whether *wh*-word+*saja* is an NPI since NPIs are generally not allowed in the restriction of existential quantifiers. It could be the case that it has some other quantificational force but this is beyond the scope of this thesis and will be left for future work.

## 7.2 FCIs: Word Order, Morphological Form, Distribution

### 7.2.1 Word Order

When Malay FCIs are objects, the objects can appear above or below the modal verbs.

(75) FCIs in object position

    a. Ali boleh makan apa-apa    pun
       Ali can    eat     what-what PRT

    b. Ali apa-apa    pun boleh makan
       Ali what-what PRT can    eat

       'for all $x$, Ali can eat $x$'
       (Ali can eat anything)

However, without the presence of a modal verb, only SOV order is permitted.

(76)  a. Ali apa-apa    pun beli
       Ali what-what PRT buy

       'for all $x$, Ali bought $x$'

    b. Ali apa-apa    dia   nampak pun dia   beli
       Ali what-what 3.SG see      PRT 3.SG buy

       'Ali bought everything that he saw'

    c. *Ali beli apa-apa    pun
       Ali   buy what-what PRT

Malay FCIs are allowed to appear in subject position regardless of the presence of a modal verb.

(77) FCIs in subject position

    a. siapa-siapa pun  boleh datang ke majlis perkahwinan Siti
       who-who    PRT can    come   to event wedding     Siti

       'for all $x$, $x$ can come to Siti's wedding'
       (Anyone can come to Siti's wedding)

    b. siapa-siapa pun  datang ke majlis perkahwinan Siti
       who-who    PRT come   to event wedding     Siti

       'for all $x$, $x$ came to Siti's wedding' (Everyone came to Siti's wedding)

Malay FCIs can also be passivised.

(78)  a. apa-apa    pun dibeli    oleh Ali
       what-what PRT PASS.buy by   Ali

       'for all $x$, $x$ was bought by Ali'

b. apa-apa    pantun pun  boleh dibaca     oleh Ali
what-what poem   PRT can    PASS.recite by   Ali
'for all $x$ such that $x$ is a poem, $x$ can be recited by Ali'

In an embedded clause with modal verbs, the FCI can appear above or below the modal verb.

(79)    a.  Ali kata Siti boleh makan apa-apa    pun
Ali say  Siti can   eat     what-what PRT

    b.  Ali kata Siti apa-apa    pun  boleh makan
Ali say  Siti what-what PRT can    eat
'for all $x$, Ali said that Siti can eat $x$'
(Ali said Siti can eat anything)

However, in an embedded clause without modal verbs, only SOV order is permitted.

(80)    a.  Ali kata Siti apa-apa    pun  beli
Ali say  Siti what-what PRT buy
'for all $x$, Ali said that Siti bought $x$'
(Ali said that Siti bought everything)

    b.  *Ali kata Siti beli apa-apa    pun
Ali   say  Siti buy what-what PRT

## 7.2.2   Morphological Form

The morphological form of Malay FCIs is similar to that of the NPIs. The reduplication of the *wh*-word is optional but the optionality of the particle *pun* is dependent on the presence of a modal verb and word order. Similar to negation for Malay NPIs, *pun* is optional when the modal verb is present and the FCI is below a modal verb. However, when an FCI is above a modal verb, the particle is compulsory.

(81)    a.  Ali boleh makan apa-apa    (pun)
Ali can   eat    what-what PRT

    b.  Ali apa-apa    *(pun) boleh makan
Ali what-what PRT    can   eat
'for all $x$, Ali can eat $x$'
(Ali can eat anything)

Without the presence of a modal verb, the word order is always SOV and the particle is always compulsory.

(82)    a.  Ali apa-apa    pun  beli
Ali what-what PRT buy
'for all $x$, Ali bought $x$'

b. *Ali apa-apa    beli
   Ali   what-what buy

In subject position, *pun* is always compulsory for Malay FCIs.

(83)  a. siapa-siapa *(pun) datang ke majlis ini
         who-who    PRT   come   to event  this

      'for all $x$, $x$ came to this event'
      (Everyone came to this event)

      b. siapa-siapa *(pun) dijemput ke        majlis ini
         who-        who  PRT    PASS.invite to    event this

      'for all $x$, $x$ was invited to this event'

FCIs can appear in generic contexts and the particle is compulsory.

(84)  a. mana-mana  kucing *(pun) memburu tikus
         where-where cat    PRT   hunt     mice

      'for all $x$ that are cats, $x$ hunts mice'
      (Any cat hunts mice)

      b. kamu apa-apa    *(pun) cakap
         you  what-what PRT    say

      'you say anything'

### 7.2.3   Distribution

Malay FCIs can appear freely in generic contexts. With generic DPs, *mana*[10] (which) is used instead of *apa* (what).

(85)  a. mana-mana  kucing *(pun) memburu tikus
         which-which cat    PRT   hunt     mice

      'any cat hunts mice'

      b. kamu apa-apa    *(pun) cakap
         you  what-what PRT    say

      'you say anything'

Malay FCIs are allowed with modals of possibility but not necessity as shown in the following examples.

(86)  a. siapa-siapa *(pun) boleh angkat meja itu
         who-who    also   can   lift    table this

      'anyone can lift this table'

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[10]This could be a case of free relatives such as 'whichever' or 'whatever' instead of a FCI. I am still unclear what to characterize these indeterminate pronouns at this point.

b. *siapa-siapa pun   mesti balik   sekarang
who-who      PRT must  return now
'anyone must go back now'

Finally, future tense also allow FCIs to appear when it is interpreted generically but not when it is interpreted episodically.

(87)  a. siapa-siapa *(pun) akan angkat meja itu
who-who    PRT   will  lift     table this
'anyone will lift this table'

b. kamu akan cakap apa-apa      (pun)
you    will  say    what-what also
'you will say anything'

c. *siapa-siapa pun   akan angkat meja itu   pada jam  dua petang
who-who      PRT will  lift     table this at    time two afternoon
esok
tomorrow
'anyone will lift this table at 2 o'clock tomorrow'

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