

Wh-Phrases as Indefinites: A Vietnamese Perspective*

Thuan Tran (Vietnam National University HCM City International University) and
Benjamin Bruening (University of Delaware)

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1 Introduction

Vietnamese allows *wh*-words to be used as indefinites in certain contexts. For instance, in a simple positive sentence, a *wh*-word must be interpreted as a question (1), but in a yes-no question the same *wh*-word can be interpreted as an indefinite (2):¹

- (1) *Cô ấy gặp ai?*
she meet who
'Who did she meet?'
*'She met anyone.'
- (2) *Cô ấy có gặp ai không?*
she Q meet who Q
'Did she meet anyone?'

We refer to *wh*-words used as indefinites as *wh*-indefinites. The contexts where a *wh*-word can be interpreted as an indefinite in Vietnamese include yes-no questions, negative sentences, the protasis of a conditional, and some others. A complete list is given in section 2.

A *wh*-word can also be used as an indefinite when it appears with the element *đó*, which in other contexts is a demonstrative (3). When this element follows a *wh*-word, it can be used as an indefinite in any context. For instance, unlike a bare *wh*-indefinite, a *wh*-word with *đó* can be used in a simple positive declarative, as in (4):

- (3) *Lan có mua quyển sách đó đâu.*
Lan Neg buy CL book Dem Neg
'Lan did not buy that book.'
- (4) *Tân vừa gặp ai đó.*
Tan just meet who Dem
'Tan just met someone.'

In this paper, we show that the bare *wh*-indefinites and the non-bare ones (those with *đó*) differ in two ways. First, bare *wh*-indefinites require licensing, but non-bare ones do not; and second, bare *wh*-indefinites may only take low scope, but non-bare ones may take widest scope. We propose an analysis that captures these differences. In our analysis, *wh*-words universally denote sets of individual alternatives (Hamblin 1973, Kratzer and Shimoyama 2002). To be used as an indefinite, a *wh*-word must be turned into a set. A null element performs this conversion, and

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¹Abbreviations: CL = classifier; Comp = complementizer; Dem = demonstrative; Fut = future; Neg = negation; Part = particle; PL = plural; Q = question particle; R = relative clause marker.

this null element must be licensed by being in the scope of a licenser. Since it must occur within the scope of a licenser, a *wh*-indefinite can only take low scope. In contrast, the demonstrative *đó* introduces a choice function, which is then bound by an existential quantifier inserted at any CP layer (Reinhart 1997). Since the existential quantifier occurs high, a *wh*-word with *đó* may take very wide scope. Section 2 describes the facts of Vietnamese *wh*-indefinites that we are concerned with. Section 4 outlines our analysis.

Our analysis is also concerned with some cross-linguistic generalizations regarding *wh*-words used as indefinites, which we point out and discuss along the way. We also compare Vietnamese to Mandarin Chinese, which has been very well described and for which several analyses have been proposed. The licensing condition that we propose for the null Vietnamese existential quantifier is adapted from one proposed for Mandarin Chinese by Lin (1998b). Further cross-linguistic tendencies are discussed in the conclusion.

2 The Distribution and Scope of Wh-Indefinites in Vietnamese

Bare *wh*-indefinites only appear in certain contexts, and seem to require some kind of licensing. In contrast, a *wh*-indefinite plus *đó* can appear in any context, with wide scope possible. We first describe bare *wh*-indefinites, and then turn to the non-bare ones.

2.1 Bare Wh-Indefinites

The distribution of bare *wh*-indefinites in Vietnamese is very similar to Mandarin Chinese, as described by Lin 1998b. Like Mandarin, there are contexts where *wh*-indefinites prefer to appear without a nominal classifier, and contexts where they prefer to appear with a classifier. We will have no account of this preference, and the presence or absence of the classifier seems to have no effect on the semantics (with or without the classifier, the *wh*-word is interpreted as an indefinite). For the purposes of this paper we will ignore the classifier, although the examples will include them where they are preferred. (We continue to refer to *wh*-indefinites without the particle *đó* as “bare *wh*-indefinites,” even though they are not technically bare when they occur with a classifier.)

The following contexts allow a *wh*-word to be interpreted as an indefinite, and they typically appear without a classifier in this use: negation, yes-no questions, the protasis of a conditional, epistemic adverbs, existential ‘have’, the complement of a nonfactive verb, and the complement of a negated factive verb. We illustrate them in turn, with the licensing operator underlined.

The first context is negation. Positive sentences do not license *wh*-indefinites (1 above), but negative ones do:

- (5) *Tân không gặp ai.*
 Tan Neg meet who
 ‘Tan does/did not meet anyone.’

The second context is yes-no questions:

- (6) *Cô ấy có gặp ai không?*
 she Q meet who Q
 ‘Did/Does she meet anyone?’

The third context is the protasis of a conditional:

- (7) *Nếu ai đến thì Anh Tho sẽ rất vui.*
 if who arrive then Anh Tho Fut very happy
 ‘If anyone arrives, Anh Tho will be very happy.’

The fourth context involves what we will classify as epistemic adverbs, which have meanings like ‘seemingly’ and ‘probably’. These license *wh*-indefinites:

- (8) a. *Hình như ai vừa gặp Tân.*
 seemingly who just meet Tan
 ‘It seems someone just met Tan.’
- b. *Chắc ai mới bắt nạt anh ta.*
 probably who just bully him
 ‘Probably someone just bullied him.’

Fifth is what we will call *existential ‘have’*, which asserts existence:

- (9) *Có ai gặp Tân.*
 have who meet Tan
 ‘Someone met/meets Tan.’

The sixth context where wh-indefinites are licensed, and prefer to lack a classifier, is in the complement to a nonfactive verb:

- (10) *Tân nghĩ/tin/*biết là tôi mới mua gì cho Lan.*
 Tan think/believe/*know Comp I just buy what for Lan
 ‘Tan thought/believed/*knew I just bought something for Lan.’

Factive verbs like ‘know’ do not license wh-indefinites in their complements. However, negated factive verbs do:

- (11) *Tôi không nhớ cô ấy đã gặp ai rồi.*
 I Neg remember she ASP meet who already
 ‘I don’t remember that she already met someone.’

We will return to this context below, and its counterpart in Mandarin Chinese.

In the next set of contexts, wh-indefinites are licensed, but the wh-word prefers to appear with a classifier (see Lin 1998b, 225–227 on Mandarin²). The first such context is in the scope of a modal:

- (12) a. *Tôi phải đi mua ?(cái) gì cho anh ta.*
 I must go buy CL what for him
 ‘I must go buy something for him.’
- b. *Anh nên ăn ?(cái) gì trước, nhưng đừng ăn nhiều quá.*
 you should eat CL what beforehand but do.not eat much too
 ‘You can eat something beforehand, but don’t eat too much.’

The second is imperative sentences:

- (13) *Lại đây ăn ?(cái) gì đã!*
 come here eat CL what Part
 ‘Come here to eat something!’

And the third is in the complement to verbs like ‘want’ and ‘plan’, which have non-realized complements:

²An example from Mandarin is the following:

- (i) *Ni keyi xian chi *(dian) shenme (dongxi), keshi bie chi tai duo.*
 you may beforehand eat *(CL) what thing but don’t eat too much
 ‘You are allowed to eat something beforehand but don’t eat too much.’ (Lin 1998a, 225, (20b))

- (14) *Tôi muốn làm ?(cái) gì để giúp cô ấy.*
 I want do CL what to help her
 ‘I want to do something to help her.’

As said above, we have nothing to say about why some contexts prefer classifiers. We take all wh-indefinites, whether they occur with a classifier or not, to be equivalent semantically, and treat them identically in our analysis.

Although the distribution of wh-indefinites is very similar in Vietnamese and Mandarin Chinese, there is one difference. This is that existential ‘have’ licenses a wh-indefinite by itself in Vietnamese (9), but it does not in Chinese. Our analysis of Vietnamese ‘have’ is given below; we also suggest what is different about Chinese.

As shown above, bare wh-indefinites are only licensed in certain contexts. We now turn to structural relations that have to hold between a bare wh-indefinite and its licenser.

In Vietnamese, a wh-indefinite does not have to be in the same clause as its licenser, and in fact they can be separated by island boundaries:

- (15) *Hình như Nim mới ăn [cái bánh mà [Gi vừa mua cho ai]].*
 seemingly Nim just eat [CL cake Rel [Gi just buy for who]]
 ‘It seems Nim just ate the cake that Gi just bought for someone.’

However, it is necessary for the licenser to take scope over the wh-indefinite. In the sentence above, the licensing epistemic adverb is in the matrix clause, and takes scope over the embedded clause which contains the wh-indefinite. In the following, in contrast, negation is in an embedded clause (a sentential subject), while the wh-word is in the matrix clause, and the sentence is ungrammatical on the indefinite reading:

- (16) **[Anh ta không đến] làm ai rất buồn.*
 [he Neg arrive] make who very sad
 ‘That he did not arrive makes anyone very sad.’

Importantly, whether a classifier is present or not, bare wh-indefinites always take scope below their licenser. In (5), repeated below, the only interpretation has negation taking scope over the existential quantifier (Neg > ∃); it is impossible for the existential quantifier to take scope over negation:

- (17) *Tân không gặp ai.*
 Tan Neg meet who
 ‘Tan does/did not meet anyone.’
 *‘There is someone such that Tan does/did not meet that person.’

Wh-indefinites are not limited to narrowest possible scope, however. If there are two licensers, intermediate scope is possible (see Lin 2002 on Mandarin):

- (18) *Nếu anh không muốn mời ai thì báo cho tôi biết.*
 if you Neg want invite who then report for I know
 ‘If you do not want to invite anyone, let me know.’ *or*
 ‘If there is someone you do not want to invite, let me know.’
- (19) *Hình như cô ấy không thích ai.*
 seemingly she Neg like who
 ‘It seems she does/did not like anyone.’ *or*
 ‘It seems there is someone she does/did not like.’

Hence, the generalization is that bare wh-indefinites must be within the scope of a licenser. If there is more than one potential licenser, they just need to take scope beneath one of them.

We hypothesize that intermediate scope arises through covert movement of the wh-indefinite (plus a null existential quantifier that combines with it in the analysis that we outline below). We saw above that the licenser and the wh-indefinite can be separated by an island boundary (15); however, it turns out that intermediate scope cannot be obtained when crossing the lower licenser would have to cross an island boundary:

- (20) *Hình như Nim không ăn [cái bánh mà Gi mua cho ai].*
 seemingly Nim Neg eat [CL cake Rel Gi buy for who]
 ‘It seems Nim did not eat the cake that Gi bought for anyone.’
 *‘It seems that there is someone such that Nim did not eat the cake that Gi bought for that person.’
- (21) *Nếu Nim không ăn [cái bánh mà Gi mua cho ai] thì Gi rất vui.*
 if Nim Neg eat [CL cake Rel Gi buy for who] then Gi very happy
 ‘If Nim does not eat the cake that Gi bought for anyone, then Gi will be very happy.’
 *‘If there is someone such that Nim does not eat the cake that Gi bought for that person, then Gi will be very happy.’

In these examples, there are again two potential licensors, but now the wh-indefinite is inside an island to movement (a complex noun phrase), while the lower licensor is outside the island. The wh-indefinite would have to cross the island boundary in order to take scope over the lower licensor. In such configurations, intermediate scope is barred, which indicates that syntactic movement is crucially involved. Islands only block movement, they do not block other sorts of dependencies such as operator-variable binding (Chomsky 1977).

There is also a different form for sentential negation, which does not permit a wh-indefinite to take scope over it:

- (22) *Hình như Tân chẳng gặp ai.*
 seemingly Tan Neg meet who
 ‘It seems Tan did not meet anyone.’
 *‘It seems that there is someone that Tan did not meet.’
- (23) *Nếu anh chẳng muốn mời ai thì cho tôi biết.*
 if you Neg want invite who then let I know
 ‘If you do not want to invite anyone, let me know.’
 *‘If there is someone that you do not want to invite, let me know.’

This form of negation also blocks covert wh-movement (which we have hypothesized takes place in the absence of a question particle; see Bruening and Tran 2006):

- (24) *Tân chẳng mời ai.*
 Tan Neg invite who
 ‘Tan didn’t invite anyone.’
 *‘Who didn’t Tan invite?’
- (25) *Tân không mời ai.!?/?*
 Tan Neg invite who
 ‘Tan didn’t invite anyone.’ or
 ‘Who didn’t Tan invite?’

We take this to indicate, again, that wh-indefinites must move in order to take higher scope. They do so covertly, without any visible effect.

In summary, bare wh-indefinites have to take scope lower than their licensor; when there are two potential licensors, intermediate scope is obtained by covert movement of the wh-indefinite. This movement is blocked by syntactic islands, and by certain elements like negative *chẳng*.

2.2 Non-Bare Wh-Indefinites

In contrast to bare wh-indefinites, non-bare wh-indefinites (those with the particle *đó*) can appear in any type of clause. For instance, they can appear in simple positive declaratives, unlike bare wh-indefinites (as in example 4, above, and all the examples here). They are also unlike bare wh-indefinites in that they can take scope over negation and conditional and yes-no question operators:

- (26) *Tân không gặp ai đó.*
 Tan Neg meet who Dem
 ‘There is someone that Tan does/did not meet.’
- (27) *Nếu Tân không mời ai đó thì Thơ sẽ rất buồn.*
 if Tan Neg invite who Dem then Tho Fut very sad
 ‘Someone is such that if Tan does not invite them, then Tho will be very sad.’
- (28) *Cô ấy có gặp ai đó không?*
 she Q meet who Dem Q
 ‘Did she meet someone (a particular person)?’

Scope-taking ignores movement islands, again unlike bare wh-indefinites:

- (29) *Tân không ăn [cái bánh mà Thơ mua cho ai đó].*
 Tan Neg eat [CL cake Rel Tho buy for who Dem]
 ‘Someone is such that Tan did not eat the cake that Tho bought for them.’ (widest scope)

We will account for non-bare wh-indefinites as involving choice functions (Reinhart 1997, Kratzer 1998), which take scope by binding, not by movement.

Before we turn to our analysis of these facts, we first discuss some cross-linguistic considerations that favor one approach to wh-indefinites over other possible approaches.

3 Cross-Linguistic Considerations: Haspelmath’s Generalization

We have seen above that Vietnamese uses wh-words both as interrogatives in wh-questions and as indefinites. This is a very common situation cross-linguistically (e.g., Haspelmath 1997). We see three possible ways to analyze this alternation: one can analyze wh-words and indefinites as being identical; one can derive wh-words as questions from a basic indefinite use; or, one can analyze wh-indefinites as being derived from the question use.

In many analyses of wh-questions, wh-words are treated as identical to indefinites. For instance, a wh-question like *Who left?* is analyzed as identical to the declarative *Someone left*, except that the whole clause denotes a set of propositions rather than a single proposition (e.g., Karttunen 1977). In both cases, however, the subject is simply an existential quantifier, restricted to range over humans. In many analyses, then, wh-words *are* indefinites; for instance, Cheng (1991, 1994) analyses Mandarin Chinese wh-words as restricted free variables, exactly like indefinites. Other analyses, like that of Cole and Hermon (1998), take the second route and treat wh-questions as derived from indefinites, by the addition of some kind of question operator.

However, we think both of these approaches are on the wrong track, for two reasons. First, wh-words used as indefinites are special, and do not have the distribution of lexical indefinites in any language. For instance, only wh-indefinites can appear in pairs in conditionals (“bare conditionals” in Cheng and Huang 1996). They also often need extra morphology to be used as indefinites, or require special licensing conditions. We take this to indicate that wh-indefinites are special, and require a special treatment.

Second, a generalization noticed by Haspelmath (1997) points to the conclusion that the indefinite use of a wh-word is derived from the question use. That is, the question use is basic, from which the indefinite use is derived. In a survey of several hundred languages, Haspelmath found that many languages have a wh-word that occurs bare in its question use (e.g., *where*), while its indefinite use involves additional morphology (e.g., *somewhere*, *anywhere*). There are also many languages where the two are identical (like Vietnamese bare wh-indefinites). In contrast, there is no language where the indefinite use is basic, but the question use involves additional morphology: no language has an indefinite like *place* that becomes a wh-question word by adding a morpheme, like **wh-place*. This generalization points to the wh-question use of wh-words being basic, and the indefinite use being derived, rather than the other way around.

Therefore, the analysis that we build will start with the wh-question use as basic, with the indefinite use arising from the addition of something. This will either be an existential quantifier, which can be null (Vietnamese) or

overt (English *somewhere, anywhere*); or it will be a morpheme that turns the wh-word into a choice function (Vietnamese *đó*).

4 A Neo-Hamblin Account

Following Kratzer and Shimoyama (2002), based on an original idea of Hamblin (1973), we take wh-words to denote sets of individuals. They are *not* properties, though (type $\langle e,t \rangle$); rather, they are individual alternatives (type e). In type, they are individuals rather than functions. The alternatives that they denote expand via pointwise function application: a function that takes an individual argument combines in turn with each member of the alternative set.

Spelling this out formally, we propose the following denotations for Vietnamese ‘who’ and ‘what’ (ignoring world variables):

- (30) a. $\llbracket ai \rrbracket = \{x: \text{person}(x)\}$
 b. $\llbracket gi \rrbracket = \{x: \text{thing}(x)\}$

So, *ai* is the set of people. Suppose that there are three people in the context, a, b, and c; then *ai* denotes the set $\{a,b,c\}$. We now show how this will work in the various contexts where wh-words occur.

4.1 Wh-Questions

Wh-questions are the basic context for wh-words. Consider the following example:

- (31) *Tân gặp ai thế?*
 Tan meet who Q
 ‘Who did Tan meet?’

In this example, the wh-word is the object. It will combine with the verb, which we assume is a two-place function ($\lambda x \lambda y. y$ meets x), via pointwise function application. If $\{a, b, c\}$ is the set of people, combining ‘who’ with ‘meet’ gives the set of properties $\{\lambda y. y$ meets $a, \lambda y. y$ meets $b, \lambda y. y$ meets $c\}$, as in (32b):

- (32) a. $\llbracket g\ddot{a}p \rrbracket = \lambda x \lambda y. y$ meets x
 b. $\llbracket g\ddot{a}p ai \rrbracket = \{\lambda y. y$ meets $x: \text{person}(x)\}$
 c. $\llbracket (31) \rrbracket = \{p: p = \text{Tan meets } x, x \text{ a person}\}$

The verb will then combine with the external argument, *Tân*, to give a set of propositions (32c). A set of propositions is exactly the denotation of a question in a Hamblin semantics (there is probably a speech act operator that operates on this set of propositions, but we ignore this for present purposes). So the question meaning arises from the pointwise function application that occurs because of the wh-word. The question particle does not contribute to the question semantics at all; we assume that it serves to mark where pointwise function application stops (and it may have other functions, for instance marking the question as realis; see Bruening and Tran 2006).

In a Hamblin semantics, wh-movement may take place or not; it makes no difference to the semantics. If wh-movement does take place, it is not driven by the semantics, but rather by the syntax. Note further that pointwise function application can occur at every node of the tree, continuing up the tree and across clause boundaries; so wh-questions can be long-distance, and they can also violate islands (if no movement takes place for syntactic reasons; again, see Bruening and Tran 2006).

So, treating wh-words as individual alternatives accounts neatly for wh-questions. It also accounts for Haspelmath’s generalization: individual alternatives lead automatically to a question semantics (a set of propositions); something has to be done to get some other interpretation. We will turn to what that might be shortly, but as background we first have to consider embedded questions.

4.2 Embedded Questions

Before spelling out how wh-words might be turned into indefinites in a Hamblin semantics, we have to first consider how the pointwise function application that is triggered by a wh-word might be stopped. In an embedded question like ‘I wonder who Tan met’, for instance, it would not do to continue pointwise function application beyond the embedding verb, otherwise the entire sentence would incorrectly be interpreted as a question. What we want is for the verb ‘wonder’ to take a set of propositions as its complement, and stop the pointwise function application. One way to do this is to recognize elements that are sets of alternatives as distinct types. So, for instance, an ordinary individual x is type e , but a set of individual alternatives $\{x\}$ is a different type, which we will notate as e_H . Same for all other types: $\lambda x.P(x)$ is type $\langle e,t \rangle$, while $\{\lambda x.P(x)\}$ is type $\langle e,t \rangle_H$, a proposition p is type t , but $\{p\}$ is type t_H , and so on. Now, we restrict pointwise function application to cases where one of the elements involved is a Hamblin type (σ_H):

(33) (Ordinary) Function Application:

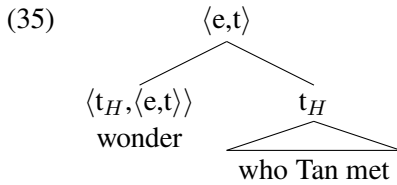
If α is a branching node with daughters β and γ , and $\llbracket \beta \rrbracket^{w,g} \subseteq D_\sigma$ and $\llbracket \gamma \rrbracket^{w,g} \subseteq D_{\langle \sigma, \tau \rangle}$, then $\llbracket \alpha \rrbracket^{w,g} = \llbracket \gamma \rrbracket(\llbracket \beta \rrbracket)$.

(34) Hamblin Function Application (HFA; adapted from Kratzer and Shimoyama 2002):

- a. If α is a branching node with daughters β and γ , and $\llbracket \beta \rrbracket^{w,g} \subseteq D_{\sigma_H}$ and $\llbracket \gamma \rrbracket^{w,g} \subseteq D_{\langle \sigma, \tau \rangle}$, then $\llbracket \alpha \rrbracket^{w,g} = \{a \in D_\tau : \exists b \exists c [b \in \llbracket \beta \rrbracket^{w,g} \ \& \ c \in \llbracket \gamma \rrbracket^{w,g} \ \& \ a = c(b)]\}$
- b. If α is a branching node with daughters β and γ , and $\llbracket \beta \rrbracket^{w,g} \subseteq D_\sigma$ and $\llbracket \gamma \rrbracket^{w,g} \subseteq D_{\langle \sigma, \tau \rangle_H}$, then $\llbracket \alpha \rrbracket^{w,g} = \{a \in D_\tau : \exists b \exists c [b \in \llbracket \beta \rrbracket^{w,g} \ \& \ c \in \llbracket \gamma \rrbracket^{w,g} \ \& \ a = c(b)]\}$

So, pointwise function application (HFA) is only triggered when one of two elements that must combine is a Hamblin type; otherwise, ordinary Function Application takes place.

In our example above, the Vietnamese wh-in-situ ‘Tan met who?’, HFA is triggered when ‘meet’ combines with ‘who.’ The result of the combination is also a Hamblin type (because the output of the rule is a set of alternatives). The derivation takes place exactly as described above. However, in the embedded question case (‘I wonder who Tan met’), we want HFA to stop with ‘wonder’. This will happen because, as a distinct type, a Hamblin type can be the argument of a function. So, a question-embedding verb will take a Hamblin set of propositions as its first argument, and output a non-Hamblin type. Simplifying greatly, it will be type $\langle t_H, \langle e,t \rangle \rangle$. Note that this is distinct from $\langle t, \langle e,t \rangle \rangle_H$, which is what is called for by the rule of HFA. What we have is the following tree:



We assume that ordinary Function Application always takes place if it can. In this case, it can, because one of the sisters is exactly the type called for as the first argument of the other. HFA is only called upon when ordinary Function Application will not work. So HFA will not take place in this instance, even though one of the elements involved is a Hamblin type. The output will therefore be an ordinary type, $\langle e,t \rangle$, which can then combine with the external argument of ‘wonder’ to yield a proposition.³

With this in place, we can now turn to wh-indefinites.

4.3 Bare Wh-Indefinites

We hypothesize that indefinites are created from wh-words by merging an existential quantifier with the wh-word. However, it is not a straightforward matter to merge an existential quantifier with a Hamblin question word. Existential quantifiers are commonly conceived of as taking two sets as arguments, but a question word in a Hamblin

³Note that this account predicts intervention effects across the board. For instance, a wh-phrase inside an embedded wh-question should be unable to take higher scope. This is not true; see Tran 2009. It is probably necessary to augment this approach with indexing, as in Beck 2006.

semantics is an individual, not a set. We therefore propose that something special has to be done, and the fact that something special has to be done explains why wh-indefinites are special in many languages. For instance, the element that performs the special operation requires special licensing in Vietnamese.

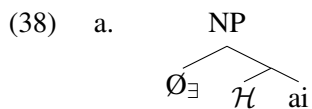
We posit the existence of a null element that mediates between the question word and the existential quantifier, which we notate as \mathcal{H} . This element is like a question-embedding verb as described above in taking a Hamblin type as its argument and returning a non-Hamblin type. In this case, it takes a wh-phrase that denotes individual alternatives and returns an ordinary type $\langle e, t \rangle$:

$$(36) \quad \llbracket \mathcal{H} \rrbracket = \lambda z \subseteq D_{e_H}. \lambda x. x \in z.$$

$$(37) \quad \text{a.} \quad \llbracket \mathcal{H}(\text{ai}) \rrbracket = \lambda x. x \in \{z: \text{person}(z)\}$$

$$\text{b.} \quad \llbracket \mathcal{H}(\text{gì}) \rrbracket = \lambda x. x \in \{z: \text{thing}(z)\}$$

The output of this combination is then the appropriate type for combination with the existential quantifier, which we propose is null in Vietnamese. This null existential quantifier (“ \emptyset_{\exists} ”) merges with the [\mathcal{H} wh-word] constituent to form a quantificational noun phrase:



$$\text{b.} \quad \llbracket \emptyset_{\exists} \rrbracket = \lambda Q \lambda P. \exists x. Q(x)=1 \ \& \ P(x)=1$$

$$\text{c.} \quad \llbracket \text{NP} \rrbracket = \lambda P. \exists x. x \in \{z: \text{person}(z)\} \ \& \ P(x)=1$$

In the following example, repeated from (5) above, the quantificational noun phrase will move and abstract over the proposition. Movement will take it to a position above the (base position of the) subject but below negation, so that negation will take scope over the entire proposition (we assume that movement of the subject to a pre-negation position is related to topicality and does not affect the denotational semantics):

- (39) *Tân không gặp ai.*
 Tân Neg meet who
 ‘Tan does/did not meet anyone.’

$$(40) \quad \llbracket (39) \rrbracket = \neg \exists x. x \in \{z: \text{person}(z)\} \ \& \ \text{Tan meets } x$$

As stated above, we hypothesize that \mathcal{H} , as a special syntactic/semantic element, requires licensing in Vietnamese. The question of what the licensing environments listed above have in common was addressed by Lin (1998b) for Mandarin Chinese, who proposed the following condition:

- (41) *The Non-Entailment of Existence Condition* (Lin 1998b, 230, (34))
 The use of [a wh-indefinite] is felicitous iff the proposition in which the [wh-indefinite] appears does not entail the existence of a referent satisfying the description of the [wh-indefinite].

Other possible semantic notions do not match the licensing environments listed above. For instance, yes-no questions and epistemic operators are not downward-entailing, while epistemic operators and nonfactive verbs are veridical (see Giannakidou 2001). It does seem that non-entailment of existence is generally the right notion, as we see from the following list of licensing contexts in Vietnamese:

1. Negation: A sentence like ‘Tan didn’t meet anyone’ does not entail the existence of someone Tan met;
2. Yes-no questions: A question like ‘Did Tan meet anyone?’ does not entail the existence of someone Tan met;
3. ‘If’ (protasis of conditional): A clause like ‘If Tan meets anyone, . . .’ does not entail the existence of someone Tan will meet or has met;

4. Epistemic operators ('seemingly', 'probably'): A sentence like 'It seems that Tan met someone' does not entail the existence of someone Tan met (it is only likely or probable);
5. Nonfactive verbs: A sentence like 'Lan thinks Tan met someone' does not entail the existence of someone Tan met;
6. Modals: A sentence like 'You should eat something' does not entail the existence of something the addressee will eat in the real world;
7. Imperatives: A sentence like 'Eat something!' does not entail the existence of something the addressee will eat in the real world;
8. Verbs like 'want' and 'plan': A sentence like 'I want to eat something' does not entail the existence of something I will eat in the real world.

The contexts that do not license wh-indefinites all entail existence:

1. Positive declaratives: A sentence like 'Tan met someone' does entail the existence of someone Tan met;
2. Complements of factive verbs: A sentence like 'I remember that someone came to look for you' does entail the existence of someone that came to look for you (factive verbs presuppose the truth of their complements);
3. Wh-questions.

The last item on the list is wh-questions, which we have not yet discussed. In a wh-question, all but the wh-phrase is presupposed. The fact that everything else is presupposed entails the existential closure of the variable contributed by the wh-indefinite. Therefore, wh-questions should not license wh-indefinites in Vietnamese. It appears that this is correct:

- (42) *Cô ấy muốn biết [ai vừa mua gì].*
 she want know who just buy what
- a. 'She wants to know who just bought what.'
 - b. * 'She wants to know who just bought anything.'
 - c. * 'She wants to know what anyone just bought.'

However, there are a couple of problems for the Non-Entailment of Existence Condition, which will lead us to revise it. First, complements of negated factive verbs *do* entail existence: A sentence like 'I don't remember that she met someone already' entails the existence of someone that she met, since negated factive verbs still presuppose the truth of their complements. Mandarin and Vietnamese speakers judge that in the following examples (Vietnamese repeated from above), it is presupposed that someone did come to look for you and that she did in fact already meet someone:

- (43) *Wo bu jide (you) shei lai zhao-guo ni.*
 I not remember (have) who come look-for you
 'I do not remember that anybody came to look for you.' (Mandarin; Lin 1998a, 236, (55))
- (44) *Tôi không nhớ cô ấy đã gặp ai rồi.*
 I Neg remember she ASP meet who already
 'I don't remember that she already met someone.'

A second problem for Lin's licensing condition is the consequent clause of a conditional sentence. This environment does not entail existence, yet wh-indefinites are disallowed (they are disallowed in consequents of conditionals in Mandarin Chinese, too):

- (45) **Nếu Anh Thọ đến [thì ai sẽ rất vui].*
 if Anh Thọ arrive [then who Fut very happy]
 ‘If Anh Thọ arrives, anyone will be very happy.’

If Lin’s Non-Entailment of Existence Condition were correct, wh-indefinites should be licensed anywhere in a conditional.

The third problem is existential ‘have’, which entails existence because it asserts it. Nevertheless, it licenses a wh-indefinite in Vietnamese (9, repeated from above):

- (46) *Có ai gặp Tân.*
 have who meet Tân
 ‘Someone met/meets Tân.’

Because of these problems, we modify Lin’s licensing condition to be syntactic, but with a semantic basis. We state the following, syntactic, licensing condition on our null element \mathcal{H} :

- (47) **Licensing Condition on \mathcal{H} :**
 \mathcal{H} is licensed if and only if it is in the scope of an operator with an [NE] feature.

In this statement of the licensing condition, particular operators license \mathcal{H} , ones with an [NE] feature. The following, semantic, condition endows certain operators with this feature:

- (48) [NE] Operators:
 Let p be a proposition of the form $\exists x.P(x) \ \& \ Q(x)$. Then a propositional operator OP has an [NE] feature if and only if OP(p) does not entail $\exists x.P(x) \ \& \ Q(x)$.

So, operators have an [NE] feature if, when they operate on a proposition with an existential quantifier, they are non-veridical. Let us take as such a proposition our example ‘Tân met someone/anyone.’ Negation will have an [NE] feature, because negation operating on $\exists x.person(x) \ \& \ Tân \ met \ x$ does not entail $\exists x.person(x) \ \& \ Tân \ met \ x$. The same holds for the yes-no question operator, epistemic operators (‘seemingly’, ‘probably’), nonfactive verbs, modals, imperatives, and verbs like ‘want’ and ‘plan’. In contrast, the assertion operator of a positive declarative is not [NE]; neither is a factive verb or a wh-question operator.

As for the three problematic contexts, negated factive verbs are the simplest to explain. Factive verbs do not have an [NE] feature, and so do not license wh-indefinites (in our terms, \mathcal{H}); but negation does. \mathcal{H} is therefore in the scope of an operator with an [NE] feature when it occurs in the complement of a negated factive verb, and is licensed. Since our licensing condition is purely syntactic, [NE] operators will always license wh-indefinites in their scope, regardless of the semantics of the actual sentence. This is an important difference between our licensing condition and Lin’s, and it straightforwardly explains why negated factive verbs license a wh-indefinite while at the same time they presuppose the existence of a referent for that wh-indefinite.

Turning now to existential ‘have’, we hypothesize that *có* is the existential quantifier in an existential sentence, and there is no null quantifier. Notice that this makes it a non-propositional operator, since it does not take a proposition as an argument (it takes two properties). So the semantic condition in (48) does not apply. In the case of non-propositional operators that are not covered by (48), we hypothesize that some can be lexically specified as licensing \mathcal{H} , that is, as having the feature [NE]. As we will see below, this is necessary for the demonstrative *đó*, too. So, we lexically endow *có*, ‘have’, and *đó*, the demonstrative that is analyzed below, with the [NE] feature. Existential *có* is therefore lexically specified as licensing \mathcal{H} , by virtue of having the feature [NE] inherently, independently of the licensing condition above. It therefore licenses \mathcal{H} by itself, and can always occur with a wh-indefinite.

Since this is a lexical specification, a similar element in another language might not have the [NE] feature. This will give us the difference between Vietnamese and Mandarin Chinese, where existential ‘have’ does not license a wh-indefinite by itself. Mandarin ‘have’ (*you*) does not have the [NE] feature, and so a wh-indefinite that occurs

with it will have to be within the scope of another [NE] operator. This nicely accounts for the difference between Vietnamese and Mandarin as a difference in lexical items.⁴

The third problematic context was conditionals. A *wh*-indefinite is licensed in the protasis of a conditional, as expected, but not in the consequent, which is unexpected. We think this difference will once again fall out from the licensing condition being syntactic rather than semantic. We contend that the right analysis of conditionals must involve an operator that takes scope only over the protasis and not over the consequent clause. Suppose that this operator is ‘if’ or its counterpart in other languages, which may be null. ‘If’ takes scope only over the clause it occurs in, the protasis, and not over the consequent clause. Since this operator does not entail existence when it operates on a proposition of the form $\exists x.P(x) \ \& \ Q(x)$, it has the [NE] feature. As such, it licenses \mathcal{H} in its scope. Since only the protasis is in its scope, \mathcal{H} is only licensed in the protasis of a conditional.

While we do not have an analysis of conditionals to offer that would meet this characterization, we think that it is justified by cross-linguistic facts pointed out to us by Satoshi Tomioka. Cross-linguistically, consequent clauses of conditionals seem to act like simple declaratives. As matrix clauses, they have the form and morphology appropriate to a matrix clause in the language. Only the ‘if’ clause has a special form and acts like an embedded clause. In Passamaquoddy, for instance, ‘if’ clauses take a special morphological form, the Unchanged Conjoint (“3Conj” is the Conjoint form of 3rd person agreement), while the consequent clause has the form appropriate to a simple matrix clause:⁵

- (49) a. *Nit olu sameht-aq, kat=te=hc woli-y-uku-w-on.*
 that.Inan Top touch.Inan-3Conj Neg=Emph=Fut 3.good-make-Inv-Neg-InanSubj
 ‘If he touches it, it will not have a good effect on him.’ (Mitchell 1921/1976, line 68)

In English, the protasis of a conditional may have subject-auxiliary inversion, but the consequent clause may not, acting in this respect like a declarative matrix clause:

- (50) a. Had he done that, we would not be in this mess.
 b. * Had he done that, would we not be in this mess.

Given this robust cross-linguistic generalization, consequent clauses are essentially matrix declarative clauses and are not in the scope of an [NE] operator. The [NE] operator in the protasis takes scope only over that clause. Hence, *wh*-indefinites are only licensed in the protasis of a conditional, and not in the consequent clause (unless the consequent clause has another [NE] operator, like negation or a modal).

Turning to the scope of the quantificational NP built out of a *wh*-phrase, when a bare *wh*-indefinite takes scope above one licenser but below another (intermediate scope), we posit movement of the quantificational noun phrase, as described above:

- (51) Hình như \diamond cô ấy không thích ai.
 seemingly she Neg like who
 ‘It seems there is someone she does/did not like.’ (one interpretation of (19))

This is allowed only when the movement keeps the *wh*-indefinite within the scope of a licensing operator; otherwise the licensing condition is violated, since \mathcal{H} must occur in the scope of an [NE] operator to be licensed.

There are some data that suggest that the licensing condition as stated above is not good enough, and that there is a surface *c*-command condition in addition. A *wh*-indefinite is licensed as a subject only when it occurs after negation, and not before it:

⁴In another language, the null existential quantifier that we have posited in (38) might be lexically specified as licensing \mathcal{H} by itself, and such a language would then have no limitation on where a *wh*-indefinite can occur. Such a language is Passamaquoddy, as described in Bruening 2007.

⁵Conj = Conjoint inflection; Emph = Emphatic particle; Fut = Future; Inan = Inanimate; Inv = Inverse (object higher in animacy than subject); Subj = Subject.

- (52) a. **Ai không gặp Tân.*
 who Neg meet Tan
 ‘Someone doesn’t/didn’t meet Tan.’
 b. *Không ai gặp Tân.*
 Neg who meet Tan
 ‘No one met/meets Tan.’

Below we state a version of the licensing condition that incorporates c-command:

- (53) **Licensing Condition on \mathcal{H} (c-command version):**
 \mathcal{H} is licensed if and only if it is c-commanded by an operator with an [NE] feature.

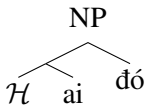
It is not yet clear to us that this reformulation is necessary, however. It is also possible that (52a) is ungrammatical because the pre-negation position is a topic position, and wh-indefinites (indefinites generally) do not make good topics. At this point we do not attempt to decide between the two formulations.

4.4 Non-Bare Indefinites

The following example, repeated from (4) above, illustrates a wh-word with *đó*, which can occur in any context, including a simple positive declarative:

- (54) *Tân vừa gặp ai đó.*
 Tan just meet who Dem
 ‘Tan just met someone.’

We hypothesize that the demonstrative *đó* is like *có*, above, in licensing \mathcal{H} by itself. It can do this because it is lexically endowed with an [NE] feature. So, *đó* merges with the constituent [\mathcal{H} wh-phrase], and licenses \mathcal{H} . To explain the scopal properties of *đó* detailed above, we take *đó* to introduce a choice function, as follows:

- (55) a. 
 b. $\llbracket \text{đó} \rrbracket = \lambda P.f(P)$
 c. $\llbracket \mathcal{H} \text{ ai } \text{đó} \rrbracket = f(\lambda x.x \in \{z: \text{person}(z)\})$

The choice function f is bound by a null existential quantifier inserted high in the clause, in the CP layer:

- (56) *Tân không ăn [cái bánh mà Thọ mua cho ai đó].*
 Tan Neg eat [CL cake Rel Tho buy for who Dem]
 ‘Someone is such that Tan did not eat the cake that Tho bought for them.’ (widest scope)
 (57) $\llbracket (56) \rrbracket = \exists f.CH(f) \ \& \ \neg \text{Tan eat } \iota y.\text{cake}(y) \ \& \ \text{Tho bought } y \ \text{for } f(\lambda x.x \in \{z:\text{person}(z)\})$

In general, non-bare wh-indefinites take very wide scope. We capture this by inserting the existential quantifier high, generally above other scopal operators.

Interestingly, however, a non-bare wh-indefinite like *ai đó* obligatorily takes scope above a local negation, but it may take scope below a higher negation:

- (58) *Tân không gặp ai đó.*
 Tan Neg meet who Dem
 ‘There is someone that Tan does/did not meet.’
 *‘Tan did not meet anyone.’

- (59) *Thơ không biết [Tan gặp ai đó].*
 Tho Neg know [Tan meet who Dem]
 ‘There is someone that Tho does not know that Tan met.’ *or*
 ‘Tho does not know that there is someone that Tan met.’

We follow Reinhart 1997 in allowing the existential quantifier to be inserted at any CP level. This means that the scope of a wh-indefinite will always be above local negation, because CP is higher than the position where negation occurs. However, a wh-indefinite can take scope lower than negation when there is a lower CP. The existential quantifier can be inserted in the embedded CP, giving it scope below negation in a higher clause. (It can also be inserted higher, giving it widest scope; the two options lead to ambiguity, as shown in 59.)

In the following example, *ai đó* can apparently take narrow, intermediate, or wide scope:

- (60) *Tất cả sinh-viên phải đọc [tất cả các quyển sách [mà ai đó đã giới-thiệu]].*
 all student must read all PL CL book Rel who Dem Asp recommend
 ‘Every student must read every book that someone recommended.’

The wide scope and intermediate scope readings are expected, but the narrowest scope reading is not. But note that this example involves other quantificational noun phrases, in particular universal quantifiers. We follow Kratzer 1998 in allowing the choice function to be parameterized to include a variable that can be bound by a universal quantifier elsewhere in the sentence. This permits the following representations for the wide, intermediate, and narrow scope readings, respectively:

- (61) a. \exists such that every student₁ must read every book₂ that $f(\lambda x.x \in \{z:\text{person}(z)\})$ recommended
 b. \exists such that every student₁ must read every book₂ that $f_1(\lambda x.x \in \{z:\text{person}(z)\})$ recommended
 c. \exists such that every student₁ must read every book₂ that $f_2(\lambda x.x \in \{z:\text{person}(z)\})$ recommended

The existential quantifier actually takes widest scope, but the choice function variable f includes a variable that can be bound by another quantifier, allowing it to vary according to that quantifier. Hence, our analysis accounts for the various possible readings of non-bare wh-indefinites, and how they differ from bare wh-indefinites.

One thing that our analysis does not account for is the fact that a non-bare wh-indefinite prefers to appear with existential ‘have’ when it is in subject position, just like indefinites generally:

- (62) *Có ai đó gặp Tân.*
 have who Dem meet Tan
 ‘Someone met/meets Tan.’

Above we hypothesized that ‘have’ is the existential quantifier when it occurs with a bare wh-indefinite. In the interests of a uniform analysis, we hypothesize that it is also an existential quantifier with non-bare wh-indefinites. In this case, it is the spellout of the existential quantifier over choice functions that is inserted in the CP layer. We suggest that it occurs in the C position, adjacent to the subject. It is only overt when the wh-indefinite is adjacent to it, as a subject.

If this hypothesis is correct, it predicts that, unlike non-bare wh-indefinites generally, a non-bare wh-indefinite that occurs in an embedded clause adjacent to ‘have’ will only take narrow scope. We derived wide scope above by allowing the null existential quantifier to be merged high, at the highest CP. But if ‘have’ is the existential quantifier, we can see that it is low in (63), in the lowest CP:

- (63) *Nếu có ai đó đến thì Anh Thơ sẽ rất vui.*
 if have who Dem arrive then Anh Tho Fut very happy
 ‘If anyone arrives, Anh Tho will be very happy.’
 *‘There is someone such that if that person arrives, Anh Tho will be very happy.’

Since the existential quantifier is below ‘if’, it should only take scope below ‘if’. This is correct. Example (63) only permits scope within the conditional clause, unlike (64), which lacks ‘have’:

- (64) *Nếu ai đó đến thì Anh Thơ sẽ rất vui.*
 if who Dem arrive then Anh Tho Fut very happy
 ‘If anyone arrives, Anh Tho will be very happy.’ *or*
 ‘There is someone such that if that person arrives, Anh Tho will be very happy.’

We take this to be strong evidence in support of our analysis.

5 Conclusion

To summarize our analysis, we have suggested that wh-words are universally sets of individual alternatives. Indefinites are created from wh-words by the addition of two things: a null element \mathcal{H} that turns a set of individual alternatives into a property; and either an existential quantifier or a choice function. The null element \mathcal{H} in Vietnamese is only licensed by operators with an [NE] feature. These are operators that do not entail existence.

Our analysis is consistent with cross-linguistic patterns indicating that indefinite uses of wh-words are derived from the more basic question use (Haspelmath’s generalization). In addition, however, there are some other cross-linguistic tendencies (possibly universals) that we have no account of yet. Vietnamese conforms to these tendencies, and is a good illustration of them. First, null existential quantifiers tend to require licensing. That is, if a language has two series of indefinites based on wh-words, one bare, one with additional morphology, the bare one is the one that requires licensing. We saw this above with Vietnamese: bare wh-indefinites require licensing, but non-bare ones do not. Cross-linguistically, there are non-bare wh-indefinites that require licensing (like English *anywhere*), but they are not typically opposed to a bare series of wh-indefinites in the same language (English does not use *where* as an indefinite).

The second cross-linguistic tendency is that overt morphology yielding regular contrasts between bare wh-expressions and morphologically complex wh-expressions tends to introduce choice functions. That is, wh-words with additional morphology can be wide-scope indefinites (Bruening 2007). Conversely, null morphology tends to be an existential quantifier, not a choice function. In other words, bare wh-indefinites do not take wide scope; they are limited to lowest (or sometimes intermediate) scope (Bruening 2007).

Our analysis does not account for these tendencies, if indeed they hold up as valid cross-linguistic generalizations. We leave verification and explanation of them to future research.

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Thuan Tran: tthuan2009@gmail.com
 Benjamin Bruening: bruening@udel.edu