James N. Collins* and Maayan Abenina-Adar[†1]
The University of Hawai'i at Mānoa* and The University of California, Los Angeles[†]

How modal and non-modal implications of Tagalog free relatives emerge

1 Introduction

Background

- What does a speaker suggest by using a *wh-ever* free relative (FR) over a plain (in)definite description?

(1) {Whichever | The | A} student who arrived first opened the window.

- An influential perspective on *wh-ever* FRs: they give rise to an implication that the speaker is unable or unwilling to uniquely identify the referent.

(2) Whatever Kim is cooking smells delicious.
$\rightsquigarrow$ *Sp. unable/unwilling to specify what Kim is cooking.*

- Since Dayal 1997, these modal meanings are often analyzed as part of the FR's conventional meaning.
- But such accounts are challenged by data demonstrating that FRs have non-modal readings.
- We argue this suggests the implication in (2) arises pragmatically.

Our case study

- Tagalog allows FRs comprised of a *wh*-word plus *man* (henceforth *man*-FRs).[2]
- Parallel to English FRs, the *man*-FR in (3) triggers a modal inference: speaker ignorance.

(3) binili ni-Maria [ang-anoman-g libro-ng nasa-lamesa]
TT.buy NS-Maria S-WH.man-LK book-LK on-table
'Maria bought whatever book was on the table' $\rightsquigarrow$ *Sp. cannot identify the book*

- However, we find that in downward entailing ('negative') contexts (4-a), and in quantificational contexts (4-b) (see Lauer 2009 on English), such modal inferences fail to arise.

(4) a. **hindi** ko sinisi [ang-sinuma-ng tumulong sa-akin]
Not NS.1sg TT.blame S-WH.man-LK AV.help OBL-1sg
'I didn't blame anyone that helped me' $\not\rightsquigarrow$ *Sp doesn't know who helped her.*

b. binili ng-**bawat isa** [ang-anoman-g libro-ng nasa-harap niya]
TT.buy NS-everyone S-WH.man-LK book-LK in-front GEN.3sg
'Everyone bought whatever book was in front of them'
$\not\rightsquigarrow$ *Sp. doesn't know what book each person bought.*

- Such cases suggest that the modal implication in (3) is not conventionalized, but arises pragmatically.

[1]jamesnc@hawaii.edu | mabeninaadar@ucla.edu
[2]The scalar particle *man* means 'even' or 'despite' in isolation (cf. Collins 2016 on Ilokano)

- *man*-FRs give rise to alternatives fully specifying the referent (see Abenina-Adar (2018) on English).
- The ignorance inference emerges pragmatically via general principles of interactional reasoning.
- Thus, non-modal readings (4) provide evidence against competing accounts of FRs which encode modal meanings directly (e.g., Hirsch (2016)).

2 A non-modal semantics of *man* free relatives

2.1 Modal accounts of FRs

- We take *man*-FRs to be semantically ambiguous between:
  - A definite reading: (5-a)
  - An indefinite reading: (5-b)

(5) *hindi ko sinisi* [*ang-sinuma-ng tumulong sa-akin*]
Not NS.1sg TT.blame S-WH.man-LK AV.help OBL-1sg

a. 'I didn't blame *the person helped me*.'
b. 'I didn't blame *a(ny) person who helped me*.'

- The analysis we will pursue is that the grammatical meaning of *man*-FRs does not involve modality
- Compare, for instance, Hirsch's 2016 analysis of English *wh-ever*. Hirsch is informed by the following generalization (following Dayal (1997); von Fintel (2000), and others):

"Wh-ever FRs obligatorily license modal inferences of ignorance or indifference"
2016:p341

- Applying Hirsch's analysis to (5-a) would produce a meaning like:

(6) **Hirsch (2016) on '*wh-ever*'**:

$$\bigwedge \left\{ \begin{array}{c} \text{I } \underline{\text{believe}} \text{ that if only } \textbf{Anna} \text{ helped me, then I didn't blame who helped me.} \\ \text{I } \underline{\text{believe}} \text{ that if only } \textbf{Barbara} \text{ helped me, then I didn't blame who helped me.} \\ \text{I } \underline{\text{believe}} \text{ that if only } \textbf{Choi} \text{ helped me, then I didn't blame who helped me.} \end{array} \right\}$$

- In order to derive the apparent modal inference, Hirsch argues that:
  - *whatever* introduces an implicit belief predicate (underlined in (6)).
  - Following Rawlins 2013, the belief predicate has a *non-triviality presupposition*.
  - Thus, each conditional antecedent in (6) must be compatible with the speaker's beliefs.
- The end result: a *wh-ever* expression hard codes a modal inference.
  - In (6), for each relevant individual x, the speaker entertains the possibility that x helped her.

2.2 Are free relatives always modal?

- Under Hirsch's analysis, *wh-ever* introduces a silent operator, quantifying over speaker beliefs. But is this justified?
- von Fintel and Condoravdi point out that ignorance inferences need not be tied to speaker beliefs.

(7) Context: *you are trying to guess (and I know) what's behind the door*
Whatever is behind that door has two legs. Condoravdi 2015:p222

(8) A: Jim came in first.
B: No! Josh came in first!
A: Well, whoever came in first saw what happened. Condoravdi 2015

- Moreover, Lauer 2009 points out that under quantification, modal implications vanish.

(9) a. Context: *Every test eater was randomly assigned one of the dishes.*
Each of them gave the highest mark to whatever he was eating.
b. (In those days,) whatever Parker wrote was violent. Lauer 2009:p8

2.3 The Tagalog perspective on FR modality

- We put forward Tagalog *man*-FRs as an argument that FRs need not directly encode modality.

(10) **Observation N:**
man-FRs in downward entailing contexts (e.g., negation) are non-modal if interpreted as indefinites.

- Reading (5-b) is an example demonstrating *Observation N*

(11) *hindi ko sinisi* [*ang-sinuma-ng tumulong sa-akin*]
Not NS.1sg TT.blame S-WH.man-LK AV.help OBL-1sg
'I didn't blame *any person who helped me*.' ($\not\rightarrow$ I don't know who helped me.)

(12) a. *Hindi ka pumupunta saan man.*
not NOM.2SG AV.PROG.go where even.
You don't go anywhere. Schachter and Otanes 1982
b. *Hindi siya ginigising ng anuman.*
Not NOM.3SG PV.PROG.awake GEN what.even
Nothing wakes him up. Schachter and Otanes 1982

- The second observation follows from Lauer's observation about English *wh-ever*.[3]

(13) **Observation Q:**
man-FRs are non-modal if distributed under a universal quantifier.

(14) binili ng-**bawat isa** [ang-anoman-g libro-ng nasa-harap niya]
TT.buy NS-everyone S-WH.man-LK book-LK in-front NS.3sg
'Everyone bought whatever book was in front of them'
($\not\rightarrow$ I don't know what book each person bought.)

[3]Hirsch does address Lauer's 'food critic' type sentences in (9), but claims that only a doxastic modal reading is ruled out, but a counterfactual reading is indeed permitted. It is unclear how this analysis derives the observed non-modal readings.

- Observations N/Q are evidence against modal implications (e.g., ignorance) being part of the hard-coded, conventionalized meaning of FRs, leading us to conclude:

modal implications of FRs are not part of the semantics of FRs.

- Given this conclusion, the goal is to provide a non-modal semantics for FRs *which derives observed modal implications pragmatically*.
- Our starting point is the definite reading (5-a).

3 Deriving ignorance

3.1 The semantics of *man*-FRs

- We propose the semantics for definite *man-FRs*, following Abenina-Adar's 2018 analysis of *wh-ever*.
- *man-FRs* are anaphoric to a set of relevant individuals A[4]

(15) $[\![wh\text{-}man(X)]\!]^A$ is defined just in case[5]
   a. *there is a unique X*
   b. *the unique X is one of the individuals in A*[6]
   where defined, $[\![wh\text{-}man(X)]\!]^A$ = *the unique X*

- For example:

(16) $[\![wh\text{-}man(book\ on\ the\ table)]\!]^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}}$ is defined just in case
   a. *there is a unique* ***book on the table***
   b. *the unique* ***book on the table*** *is either* ***A****nna Karenina,* ***B****leak House, or* ***C****rime and Punishment*
   where defined, $[\![wh\text{-}man(X)]\!]^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}}$ = *the unique* ***book on the table***

- Thus we analyze definite readings of *wh-man* FRs as a referring expression.
- So, why would a speaker use a *wh-man* FRs instead of just a plain definite?
- We argue that *wh-man* FRs pragmatically compete with alternative expressions which *fully specify* the referent of the FR: the speaker identifies the FR with *Anna Karenina* or some other book in A.

(17) $[\![wh\text{-}man(X)]\!]^A_{alt}$ is a set of pragmatic alternatives.
   if $M \in [\![wh\text{-}man(X)]\!]^A_{alt}$, then M is defined just in case, for some $a \in A$, [7]
   a. *there is a unique X*
   b. *the unique X* = a
   where defined, $M = a$

- For example

[4] cf. Condoravdi's notion of atomic members of contextually supplied individuation schemes.

[5] $[\![wh\text{-}man]\!]^A = \lambda P : A(\iota[P])\ .\ \iota[P]$

[6] cf. Abenina-Adar 2018 which instead assumes the referent is a sole instantiator of some sub-property of X. We don't employ the intermediary notion of sub-property, but it could be easily incorporated into the analysis.

[7] $[\![wh\text{-}man]\!]^A_{alt} = \{\lambda P : \iota[P] = a\ .\ a \mid a \in A\}$

(18) $[\![\textit{wh-man}(\textit{book on the table})]\!]_{alt}^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}}$ is a set of pragmatic alternatives.
if $M \in [\![\textit{wh-man}(\textit{book on the table})]\!]_{alt}^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}}$, then M is only defined if, for some $a \in A$ (say **A**nna Karenina),
   a. *there is a unique* ***book on the table***
   b. *the unique* ***book on the table*** *= **A**nna Karenina*
   where defined, $M =$ ***A****nna Karenina*

- **The upshot:** *man*-FRs are referring expressions which don't fully specify the referent, and moreover, pragmatically compete with alternative expressions which *do* fully specify the referent.

3.2 *Maximize Presupposition*

- Following Heim 1991, several theories of (in)definites make reference to a pragmatic principle *Maximize Presupposition* (see Chemla 2008; Schlenker 2012; Collins 2017; Lauer 2016, and others).

(19) ***Maximize Presupposition*** **(informal)**:
All else being equal, interlocutors prefer pragmatic alternatives with stronger presuppositions.

- *MP* is used to explain why (20-a) implies there is more than one bathroom.

(20) a. I'm renovating a bathroom in my apartment. *presupposes nothing*
   b. I'm renovating the bathroom in my apartment. *presupposes a unique bathroom*

- A speaker of (20-a) is at risk of violating *MP*, as the alternative (20-b) has a stronger presupposition.

- In order to explain the speaker of (20-a)'s choice, interlocutors reason that the uniqueness presupposition of (20-b) must be false. $\rightsquigarrow$ i.e., the speaker has more than one bathroom.

- How does this apply to *man*-FRs? Crucially, *man*-FRs under-determine reference.

- Speakers reason about alternatives to *man*-FRs, i.e., why didn't the speaker fully specify the referent?

(21) **Presupposition of *man*-FR**:
   a. *there is a unique X*
   b. *the unique X is one of the individuals in A* under specified

(22) **Presupposition of alternatives to *man*-FR**:
   a. *there is a unique X*
   b. *the unique X is a* (for some $a \in A$) fully specified

- Given (21), a speaker should be at risk of violating *MP* on uttering a *man*-FR.
  - The *under specified* presupposition (21) is *weaker* than the *fully specified* presupposition (22)

- Therefore, interlocutors reason about why the speaker chose the potentially *MP*-violating utterance.

3.3 Deriving ignorance

- Our hypothesis is that the observed ignorance implication is an implicature arising through the interaction of Gricean maxims and *MP*.

(23) **Ignorance Hypothesis**:
An utterance U containing a definite *man-FR* implicates that the speaker is unwilling to fully specify the referent, i.e., she does not endorse any presupposition of the form (22-b).

- To spell this out, we extend Schwarz's 2016 procedure for scalar implicatures to generate *MP*-based implicatures.[8]

(24) **Results of *MP*-based reasoning:**
a. **Step 1**: the speaker endorses the presupposition p of the utterance U.
b. **Step 2**: the speaker does not endorse q, such that
(i) q is presupposed by some alternative to U, and
(ii) q is strictly stronger than p.[9]

- We apply these general principles of interactional reasoning to *man*-FRs, given the semantics in §3.1.

(25) binili ni-Maria [ang-anoman-g libro-ng nasa-lamesa]
TT.buy NS-Maria S-WH.man-LK book-LK on-table
'Maria bought whatever book was on the table'
⇝ *Sp endorses that there is a unique book on the table and it is in A* via Step 1
⇝ *Sp doesn't endorse that Maria bought* ***Anna Karenina*** via Step 2
⇝ *Sp doesn't endorse that Maria bought* ***Bleak House*** "
⇝ *Sp doesn't endorse that Maria bought* ***Crime and Punishment*** "

- The implication we predict for *man*-FRs is a lack of endorsement for each stronger alternative.
- The lack of endorsement may be due to, e.g.,
  - The speaker's uncertainty as to the identity of the referent (ignorance)
  - The speaker's unwillingness to identify the referent (guessing games)
  - The interlocutors do not agree on the identity of the referent (disagreements)

4 Ambiguities under negation

- In the scope of negation, we observe two readings of *man*-FRs:

(26) *hindi ko sinisi* [*ang-sinuma-ng tumulong sa-akin*]
Not NS.1sg TT.blame S-WH.man-LK AV.help OBL-1sg
a. 'I didn't blame *the person who helped me'* (whoever it was…) definite, modal
b. 'I didn't blame *a(ny) person who helped me*.' indefinite, non-modal

[8] This places our theory of *MP* within a broader class of theories which align *MP* as a sub-category or analogue of the maxim of quantity (Chemla 2008; Schlenker 2012; Leahy 2016; Collins 2017, contra, e.g., Lauer 2016)

[9] Schwarz 2016(p35) incorporates a third step, in which the speaker denies the truth of q if it is 'innocently excludable'. This step is vacuous here, so it's excluded for simplicity. Though in quantificational examples, this extra step derives the right result.

- The definite modal reading (a) is explained via *MP*-based reasoning. The implication persists given that presuppositional content survives negation (Karttunen 1973).
- The second reading requires a different account:
  a. There is no uniqueness presupposition in (b)
  b. There is no implication in (b) that the speaker won't narrow down to individual reference.
- The indefinite reading is unavailable in upward entailing (i.e. positive) contexts

(27) sinisi ko [ang-sinuma-ng tumulong sa-akin]
TT.blame NS.1sg S-WH.man-LK AV.help OBL-1sg
  a. 'I blamed the person who helped me'
  b. Unattested: 'I blamed someone that helped me'

- We pursue an ambiguity-based analysis: *man*-FRs have an indefinite interpretation which is licensed only in downward entailing contexts.

4.1 The semantics of indefinite FRs

- Like definite *man*-FRs, indefinites are anaphoric to a set of individuals A.
- Indefinite *man*-FRs are simple existential quantifiers, whose domain P is restricted by A.[10]

(28) $[\![^{\exists}wh\text{-}man(P)(Q)]\!]^A$ asserts the existence of some individual a s.t., a is an P, Q, and an A.[11]

(29) $[\![hindi(^{\exists}wh\text{-}man(P)(Q))]\!]^A$ denies the existence of some individual a s.t., a is an P, Q, and an A.

- Just like the definite *man*-FR, each alternative is a full specification of some individual.

(30) $[\![^{\exists}wh\text{-}man(P)(Q)]\!]^A_{alt}$ is a set of pragmatic alternatives.[12]
if $M \in [\![^{\exists}wh\text{-}man(P)(Q)]\!]^A_{alt}$, then M is an assertion that for some $a \in A$, a is a P and Q.

- For example,

(31) $$[\![^{\exists}wh\text{-}man(help)(blame)]\!]^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}}_{alt} = \left\{ \begin{array}{c} \textbf{A}nna \textit{ is a person who helped me that I blamed} \\ \textbf{B}arbara \textit{ is a person who helped me that I blamed} \\ \textbf{C}arla \textit{ is a person who helped me that I blamed} \end{array} \right\}$$

- The ordinary meaning in (32) is just the disjunction of the alternative meanings in (31).

(32) $$[\![^{\exists}wh\text{-}man(help)(blame)]\!]^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}} = \bigvee \left\{ \begin{array}{c} \textbf{A}nna \textit{ is a person who helped me that I blamed} \\ \textbf{B}arbara \textit{ is a person who helped me that I blamed} \\ \textbf{C}arla \textit{ is a person who helped me that I blamed} \end{array} \right\}$$

- Each alternative for the definite *man*-FR is presuppositionally stronger than the ordinary meaning.
- Whereas for the indefinite *man*-FR, each alternative is a stronger assertion than the ordinary meaning.

[10] The indefinite meaning of *man*-FRs can be derived from the definite meaning by (a) applying Partee's 1986 operator *LIFT* to *wh-man*(P), then (b) suspending the uniqueness presupposition, and (c) accommodating the presupposition that A and P have a non-empty intersection.

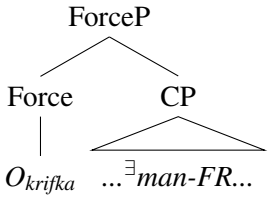
[11] $[\![^{\exists}wh\text{-}man]\!]^A = \lambda P.\lambda Q.\exists x[P(x) \wedge A(x) \wedge Q(x)]$

[12] $[\![^{\exists}wh\text{-}man]\!]^A_{alt} = \{\ \lambda P.\lambda Q.\exists x[x = a \wedge P(x) \wedge Q(x)] \mid a \in A\}$

4.2 Deriving polarity sensitivity

- To account for the observed polarity sensitivity, we appeal to theories of NPIs employing alternatives (e.g., Krifka 1995; Chierchia 2013).
- Krifka proposes that NPIs fall under the scope of a *Scalar Assertion* operator (labelled O_{krifka} below).

(33)



- Contra Krifka's original proposal, O_{krifka} is distinct from general mechanisms responsible for scalar implicatures (see, e.g., Spector 2016:§1). Under our analysis it is part of "what is said".
- O_{krifka} checks that its scope has the strongest assertive meaning among its alternatives.

(34) $[\![O_{krifka}(\text{CP})]\!]$[13]

a. asserts the ordinary meaning $[\![\text{CP}]\!]$
b. denies any alternative in $[\![\text{CP}]\!]_{alt}$ which is assertively stronger than $[\![\text{CP}]\!]$.

- In an upward entailing context, each alternative to a *man*-FR is strictly stronger than the *man*-FR.
- Each alternative is denied by O_{krifka}, creating a contradictory meaning.

(35) $[\![O_{krikfa}(^{\exists}wh\text{-}man(help)(blame))]\!]^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}}_{alt}$

a. asserts that there is some $a \in A$ that is a person who helped me that I blamed
b. for any $a \in A$, denies that a is a person who helped me that I blamed *Contradiction*

- This accounts for the impossibility of indefinite *man*-FR readings in upward entailing contexts.
- In a negative context, the indefinite *man*-FR has the strongest assertion among its alternatives; since O_{krifka} negates only stronger alternatives, its application is vacuous and no contradiction arises

(36) $[\![hindi(^{\exists}wh\text{-}man(help)(blame))]\!]^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}}_{alt} = \left\{ \begin{array}{c} \textbf{A}nna\ isn't\ a\ person\ who\ helped\ me\ that\ I\ blamed \\ \textbf{B}arbara\ isn't\ a\ person\ who\ helped\ me\ that\ I\ blamed \\ \textbf{C}arla\ isn't\ a\ person\ who\ helped\ me\ that\ I\ blamed \end{array} \right\}$

(37) $[\![hindi(^{\exists}wh\text{-}man(help)(blame))]\!]^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}} = \neg(\bigvee \left\{ \begin{array}{c} \textbf{A}nna\ is\ a\ person\ who\ helped\ me\ that\ I\ blamed \\ \textbf{B}arbara\ is\ a\ person\ who\ helped\ me\ that\ I\ blamed \\ \textbf{C}arla\ is\ a\ person\ who\ helped\ me\ that\ I\ blamed \end{array} \right\})$

(38) $[\![O_{krikfa}(hindi(^{\exists}wh\text{-}man(help)(blame)))]\!]^{\{\mathbf{a},\mathbf{b},\mathbf{c}\}}_{alt}$

a. asserts (37), that there is no $a \in A$ that is a person who helped me that I blamed
b. no alternative in (36) is denied.

- Thus, the indefinite reading of *man*-FRs becomes available in DE contexts.

[13] $[\![O_{krifka}(X)]\!] = [\![X]\!] \wedge \bigwedge\{\neg Y \mid Y \in [\![X]\!]_{alt} \wedge Y \sqsubseteq X\}$

(39) **hindi** ko sinisi [ang-sinuma-ng tumulong sa-akin]
Not NS.1sg TT.blame S-WH.man-LK AV.help OBL-1sg
a. 'I didn't blame the person who helped me'
b. 'I didn't blame anyone that helped me'

- Does the O_{krifka} operator interact with the alternatives of definite *man*-FRs?
- No. O_{krifka} interacts only with asserted content, ensuring its scope is assertively as strong as possible.
- The ordinary and alternative meanings of definite *man*-FRs differ in terms of presuppositional strength, not assertive strength, so the application of O_{krifka} is vacuous.

5 Conclusion

- Thus the Tagalog case study leads us to a non-modal semantics for FRs. Modal readings are derived by a generalized approach to pragmatic inference and how interlocutors reason about alternatives.
- A single grammatical ingredient (anaphoricity to a salient set *A* that triggers alternatives) can interact with (in)definite semantics to produce varying effects (ignorance, polarity sensitivity)
- Our analysis obviates the need for DPs with specialized modal meanings.

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