

Hamblin semantics for Japanese and German (Kratzer and Shimoyama)*

1. Recap: Unconditionals and Hamblin semantics

Unconditionals

Rawlins (2008) reports that unconditionals can be paraphrased as lists of conditionals and proposes that this paraphrase reflects the correct interpretation of unconditionals.

- (1) Whoever cooks, we have to smile.
- (2) If John cooks, we have to smile, and
if Mary cooks, we have to smile,
and ...

Interpreting conditionals

Adopting the standard view due to Kratzer, Rawlins takes if-clauses to restrict the domain of a main clause modal.

- (3) **[if John cooks] [have-to' [we smile]]**
- (4) **[[have-to' [we smile]]]** = $\lambda q. \text{that Acc} \cap q \subseteq \text{that we smile}$
- (5) **[[if John cooks]]** = $\text{that } j \text{ cooks}$
- (6) $\text{that Acc} \cap \underline{\text{that } j \text{ cooks}} \subseteq \text{that we smile}$

Hamblin semantics for unconditionals

To accommodate unconditionals, Rawlins adopts a Hamblin semantics to compose the unconditional adjunct with the main clause.

- (7) **[[have-to' [we smile]]]** = $\{\lambda q. \text{that Acc} \cap q \subseteq \text{that we smile}\}$
- (8) **[[if John cooks]]** = $\{\text{that } j \text{ cooks}\}$
- (9) $\{\text{that Acc} \cap \underline{\text{that } j \text{ cooks}} \subseteq \text{that we smile}\}$
- (10) **[[who(ever) cooks]]** = $\{\text{that } x \text{ cooks: } x \text{ is a person}\}$
- (11) **[whoever cooks] [have-to' [we smile]]**
- (12) $\{\text{that Acc} \cap \underline{\text{that } x \text{ cooks}} \subseteq \text{that we smile: } x \text{ is a person}\}$
- (13) **\forall [[whoever cooks] [have-to' [we smile]]]**

* Section 2 reports on [Shimoyama, Junko: 2006, 'Indeterminate phrase quantification in Japanese', *Natural Language Semantics* 14:139-173]; Section 3 reports on [Kratzer, Angelika and Junko Shimoyama: 2002, 'Indeterminate Pronouns: The View from Japanese', *Paper presented at the 3rd Tokyo Conference on Psycholinguistics*], which builds on Shimoyama 2006.

$$(14) \quad [[\forall \alpha]] = \{\cap[[\alpha]]\}$$

Non-Hamblin semantics for unconditionals

However, this is not the only possible account, so unconditionals *per se* do not present an argument for a Hamblin semantics.

$$(15) \quad [\forall [\text{whoever cooks}]] [\text{have-to}' [\text{we smile}]]$$

$$(16) \quad [[\forall \beta]] = \lambda f_{(pp)}. \cap \{f(p): p \in [[\beta]]\}$$

2. Shimoyama on indeterminate quantification

Shimoyama (2006) offers an analysis of Japanese indeterminate phrases which crucially relies on a Hamblin semantics, providing an argument for this approach.

2.1 Indeterminate quantification: the pattern

Indeterminate phrases: local *ka* and *mo*

Indeterminate phrases are *unselective*: they can associate with a number of different particles, including interrogative *ka* and universal *mo*.

$$(17) \quad [\text{Dare-ga odorimasu}] \text{ka?}$$

who-Nom dance Q
‘For what person x: x dances?’

$$(18) \quad \text{Dono gakusei-mo odotta.}$$

which student-MO danced
‘For every student x: x danced.’

Ka and *mo* without indeterminate phrases

Ka and *mo* can occur without indeterminate phrase in their scope, but then receive different interpretations.

$$(19) \quad \text{Yoko-wa [[Taro-ga kaita ronbun]-ga yuu-datta ka] siritagatteiru.}$$

Yoko-Top Taro-Nom wrote paper -Nom A-was Q want.to.know
‘Yoko wonders whether the paper got an A.’

$$(20) \quad \text{Sono syoonin-mo damatteita.}$$

that witness-MO was.silent
‘That witness was also silent.’

Indeterminate phrases: non-local *ka* and *mo*

Ka and *mo* can associate with indeterminate phrase across syntactic islands such as relative clauses.

- (21) Taro-wa [**dare**-ga katta mochi]-o tabemasita **ka**?
Taro-Top who-Nom bought rice cake-Acc ate Q
 ‘For what x: Taro ate rice cakes that x bought?’
- (22) [**Dono gakusei**-ga syootaisita sensei]-**mo** odotta.
which student-Nom invited teacher -MO danced
 ‘For every student x: the teacher that x had invited danced.’

Indeterminate phrases: intervention

However, association of an indeterminate phrase with a particle is blocked by an intervening particle. The examples below are cases of intervening *mo*. Shimoyama also presents analogous cases featuring intervening *ka*.

- (23) Yoko-wa [[Taro-ga **nan-nen**-ni **nani-nituite** kaita ronbun]-**mo** yuu-datta **ka**] siritagatteiru.
Yoko-Top Taro-Nom what-year-in what-about wrote paper -MO A-was Q want.to.know
 only available reading: ‘Yoko wonders whether [...].’
- (24) [[Taro-ga **nan-nen**-ni **nani-nituite** kaita ronbun]-**mo** yonda sensei]-**mo** totemo
 Taro-Nom what-year-in what-about wrote paper -MO read teacher-MO very
 tukareta.
 got.tired
 only available reading: ‘The teacher who [...] also got very tired.’
- (25) *[..... [..... **indeterminate**]-ka/mo]-**ka/mo**

2.2 Explanation: Hamblin semantics for indeterminates

Recall that in a Hamblin semantics, all denotations are sets. Semantic composition proceeds via point-wise function application or other generalized versions of familiar composition principles.

Local constituent questions

- (26) [**Dare**-ga odorimasu] **ka**?
who-Nom dance Q
 ‘For what person x: x dances?’
- (27) [[**dare**]] = {x: x is a person}
- (28) [[**odorimasu**]] = {λy. that y dances}
- Point-wise function application results in a set of propositions, the proper type of meaning for a question in the Hamblin/Karttunen analysis.
- (29) [[**dare-ga odorimasu**]] = {that x dances: x is a person}

The scope of **ka_{wh}** already has a question type denotation, so **ka_{wh}** could be considered semantically vacuous.¹

$$(30) \quad [[\mathbf{ka}_{wh} \alpha]] = [[\alpha]]$$

$$(31) \quad [[\mathbf{dare-ga odorimasu ka}_{wh}]] = \{\text{that } x \text{ dances: } x \text{ is a person}\}$$

Local universal quantification

$$(32) \quad \mathbf{Dono gakusei-mo} \text{ odotta.}$$

which student-MO danced
'For every student x: x danced.'

$$(33) \quad [[\mathbf{dono gakusei}]] = \{y_e: y \text{ is a student}\}$$

In local universal quantification, the Hamblin set denoted by the indeterminate phrase is immediately absorbed by the quantifier *mo*. The universal *mo*-phrase denotes (a singleton set containing) an ordinary generalized quantifier.

$$(34) \quad [[\mathbf{mo}_v \beta]] = \{\lambda f_{(ep)}. \cap \{f(x): x \in [[\beta]]\}\}$$

$$(35) \quad [[\mathbf{dono gakusei mo}]] = \{\lambda f_{(ep)}. \cap \{f(x): x \text{ is a student}\}\}$$

$$(36) \quad [[\mathbf{odotta}]] = \{\lambda y_e. \text{ that } y \text{ danced}\}$$

$$(37) \quad [[\mathbf{dono gakusei mo odotta}]] = \{\cap \{\text{that } x \text{ danced: } x \text{ is a student}\}\}$$

Non-singleton condition

In the Hamblin framework adopted by Shimoyama, the examples in (19) and (20) suggest that **ka_{wh}** and **mo_v** do not combine with phrases/clauses denoting singletons.

$$(38) \quad [[\mathbf{ka}_{wh} \alpha]] \text{ defined only if } [[\alpha]] \text{ is a non-singleton}$$

$$(39) \quad [[\mathbf{mo}_v \beta]] \text{ defined only if } [[\beta]] \text{ is a non-singleton}$$

Non-local *ka* and *mo*

Non-local association is straightforwardly expected, in fact unavoidable, because the Hamblin composition of sets is not subject to island constraints.

$$(40) \quad \text{Taro-wa } [\mathbf{dare-ga katta mochi}]\text{-o tabemasita } \mathbf{ka}?$$

Taro-Top who-Nom bought rice cake-Acc ate *Q*
'For what x: Taro ate rice cakes that x bought?'

$$(41) \quad [[\mathbf{Taro-wa dare-ga katta mochi-o tabemasita}]] =$$

{that Taro ate the rices cakes x bought: x is a person}

¹ But see fn. 2.

- (42) [**Dono gakusei**-ga syootaisita sensei]-**mo** odotta.
which student-Nom invited teacher -MO danced
 ‘For every student x: the teacher that x had invited danced.’
- (43) [[**dono gakusei-ga syootaisita sensei**]] =
 {the teacher x had invited: x is a student}

Intervention

Intervention effects are expected too. Take the case of intervening universal *mo*. Universal *mo* is, and must be, analyzed as composing with its scope into a singleton set.²

- (44) [[**mo_v β**]] is a singleton

As a higher **ka_{wh}** and **mo_v** cannot compose with a singleton, the intervention effect follows.

2.3 The argument for a Hamblin semantics

Benefits of Shimoyama’s Hamblin semantics for indeterminate phrase quantification:

- (45) non-selectivity/quantificational variability:
 indeterminates denote sets; they do not have quantificational force of their own (compare Kamp/Heim analysis of indefinites).
non-locality:
 expected, as there is no syntactic link between the particle and its indeterminate phrase.
intervention:
 also expected, given independently motivated semantic assumptions

Shimoyama argues that no competing account has the same coverage.

3. A Hamblin semantics for free choice indefinites with *irgend*

Kratzer and Shimoyama (2002) use a Hamblin semantics in their analysis of German free choice indefinites with *irgend*.

3.1 Irgend-indefinites

- (46) Er hat (irgend).ein.en Computer gekauft.
 Er hat (irgend).was gekauft.
 Er hat (irgend).etwas gekauft.

² Actually, more needs to be said about intervening *ka*; see Shimoyama’s footnotes 21, 28, and 29.

Er hat (irgend).welch.e gekauft.

- (47) Er hat (irgend).wen eingeladen.
Er hat (irgend).jemand.en eingeladen.
Er ist (irgend).wo hingegangen.
- (48) Er hat *(irgend).wann angerufen.
Er ist *(irgend).wie entkommen.
Er hat *(irgend).welche Computer gekauft.

3.2 Irgend-indefinites : Epistemic effects and modality

Irgend-indefinites seem to systematically result in stronger statements than ordinary indefinites. They can signal the speaker's ignorance or indifference.

- (49) a. Jemand hat angerufen.
b. **Irgend**.jemand hat angerufen.
- (50) Wen soll ich einladen?
a. #Jemand
b. **Irgend**.jemand

Irgend under modals: the distribution requirement

Under modals (necessity and possibility modals alike), *irgend*-indefinites contribute a distribution requirement, conveying (roughly) that any individual instantiating the indefinite is an option.

- (51) a. Maria muss einen Arzt heiraten.
Maria has-to a doctor marry
'Maria has to marry a doctor.'
- b. Maria muss **irgend**.einen Arzt heiraten.
Maria has-to irgend.a doctor marry
'Maria has to marry a doctor, any man was a permitted marriage option for her.'

- (52) **Scenario 1** (51a), (51b) are true
Maria had to marry a doctor, any doctor was a permitted marriage option for her.
w1: Dr. A w2: Dr. B w3: Dr. C w4: Dr. D

- (53) **Scenario 2** (51a) is true; (51b) is false
Maria had to marry one of two doctors, Dr. A or Dr. B, and those were the only permitted marriage options for her.
w1: Dr. A w2: Dr. B w3: Dr. A w4: Dr. B

- (54) a. Maria darf einen Arzt heiraten.
Maria is-allowed-to a doctor marry
 ‘Maria was allowed to marry a doctor.’
- b. Maria darf **irgend**.einen Arzt heiraten.
Maria is-allowed-to irgend.a doctor marry
 ‘Maria was allowed to marry any doctor.’

3.3 Preliminary Japanese analysis of *irgend*-indefinites

Kratzer and Shimoyama note that under a Hamblin semantics, the distribution requirement is a property of the set in the modal’s scope.

Modals in a Hamblin semantics

- (55) **muss/darf [Maria irgend.einen Arzt heiraten]**
- (56) $[[\text{irgend.ein Arzt}]]$ = {x: x is a doctor}
- (57) $[[\text{Maria irgend.einen Arzt heiraten}]]$ = {that Maria marries x: x is a doctor}
- (58) $[[\text{muss } \alpha]]$ = { that $\text{Acc} \subseteq \cup [[\alpha]]$ }
- (59) $[[\text{darf } \alpha]]$ = {that $\text{Acc} \cap \cup [[\alpha]] \neq \emptyset$ }
- (60) $[[\text{muss Maria irgend.einen Arzt heiraten}]]$ =
 that $\text{Acc} \subseteq \cup \{ \text{that Maria marries x: x is a doctor} \}$
- (61) $[[\text{darf Maria irgend.einen Arzt heiraten}]]$ =
 that $\text{Acc} \cap \cup \{ \text{that Maria marries x: x is a doctor} \} \neq \emptyset$

Adding the distribution requirement

The distribution requirement says that every proposition in the Hamblin set denoted by the modal’s scope is a possibility, i.e. is consistent with the set of accessible worlds.

- (62) Distribution requirement
 $\{ \text{that Maria marries x: x is a doctor} \} \subseteq \{ p: \text{Acc} \cap p \neq \emptyset \}$

One possibility would be to include this requirement by strengthening the lexical meaning of the modals.

- (63) $[[\text{muss } \alpha]]$ = {that $\text{Acc} \subseteq \cup [[\alpha]]$ & $[[\alpha]] \subseteq \{ p: \text{Acc} \cap p \neq \emptyset \}$ }
- (64) $[[\text{darf } \alpha]]$ = {that $\text{Acc} \cap \cup [[\alpha]] \neq \emptyset$ & $[[\alpha]] \subseteq \{ p: \text{Acc} \cap p \neq \emptyset \}$ }

Non-local and multiple association expected

This analysis predicts, correctly, that modals can associate with multiple *irgend*-indefinites and can do so across syntactic islands.

- (65) Mary muss **irgend**.einen Mann heiraten, der **irgend**.wo in Bayern wohnt.
Mary must irgend.a man marry who irgend.where in Bavaria lives.

3.4 The distribution requirement as a conversational implicature

The preliminary analysis breaks down when applied to cases where the modal and the *irgend*-indefinite are in a downward entailing context. There, the distribution requirement is absent.

- (66) Niemand musste **irgend**.jemanden heiraten.
no-one had-to irgend.one einladen
 ‘No one had to marry anybody.’
- (67) Ich bezweifle, dass Maria je **irgend**.jemandem helfen musste.
I doubt that Maria ever irgend.one help had-to
 ‘I doubt that Maria ever had to help anybody.’

This disappearance act in downward entailing contexts is the hallmark of (certain) conversational implicatures.

Other questions raised by the preliminary analysis: What about ordinary indefinites? Why do *irgend*-indefinites do not show unselective association/quantificational variability?

- (68) Ein Rabe kann singen.
a raven can sing
 ‘Any raven has the ability to sing.’
- (69) Irgend.ein Rabe kann singen.
irgend.a raven can sing
 cannot mean: ‘Any raven has the ability to sing.’

3.5 Deriving the implicature

Kratzer and Shimoyama propose that *irgend* widens the denotation of its indefinite.

- (70) [[**ein Arzt**]] = {x: x is a doctor & x ∈ C}
 (71) [[**irgend.ein Arzt**]] = {x: x is a doctor}

Deriving the implicature with necessity modals

- (72) Maria musste **irgend**.einen Arzt heiraten.
Maria had-to irgend.a doctor marry
 ‘Maria had to marry a doctor, any man was a permitted marriage option for her.’

They propose to derive the distribution requirement via Gricean reasoning along the following lines (see Alonso-Ovalle 2006, ch. 4 for more discussion)³:

- (73) **muss** {A,B}
- (74) a. Truth conditional content:
 $N(A \vee B)$
 b. Stronger alternatives: $N(A)$; $N(B)$
 c. Implicatures (avoidance of false alternative):
 $\sim N(A)$; $\sim N(B)$

Deriving the implicature with possibility modals

- (75) Maria durfte **irgend**.einen Arzt heiraten.
Maria was-allowed-to irgend.a doctor marry
 ‘Maria was allowed to marry any doctor.’
- (76) **darf** {A,B}
- (77) a. Truth conditional content:
 $P(A \vee B)$
 b. Stronger alternatives: $P(A)$; $P(B)$
 c. Implicatures (avoidance of false alternative+exhaustivity inference):
 $\sim[P(A) \ \& \ \sim P(B)]$; $\sim[P(A) \ \& \ \sim P(B)]$

Kratzer and Shimoyama note that no implicatures are expected to arise in downward entailing contexts, as potential implicatures are already entailed by the asserted content.

³ Alonso-Ovalle, Luis: 2006, *Disjunction in Alternative Semantics*, PhD dissertation, UMass, Amherst.

3.6 Enter syntax: selectivity of *irgendein*

Under the implicature analysis sketched above, modals do not operate on the Hamblin set created by an *irgend*-indefinite. Kratzer and Shimoyama propose that instead *irgend*-indefinites must be operated on by existential closure.

Selectivity: Existential meaning *only*

- (78) Ein Rabe kann singen.
a raven can sing
 ‘Any raven has the ability to sing.’
- (79) Irgend.ein Rabe kann singen.
irgend.a raven can sing
 cannot mean: ‘Any raven has the ability to sing.’

Existential closure

- (80) muss \exists [Maria \exists irgend.einen Arzt heiraten]
- (81) $[[\exists \alpha]] = \{\cup[[\alpha]]\}$
- (82) $[[\exists \text{ Maria irgend.einen Arzt heiraten }]] =$
 $\cup\{\text{that Maria marries } x: x \text{ is a doctor}\}$

Kratzer and Shimoyama propose that a feature movement mechanism forces the indefinite to be in the scope of existential closure. Conditions on feature movement are argued to account for certain intervention effects.

Removing the existential component from the modal meanings

Assuming existential closure in the scope of the modal, the existential component can be factored out from the modal meaning.

- (83) $[[\text{muss } \alpha]] = \{\text{that Acc} \subseteq [[\alpha]]\}$
- (84) $[[\text{darf } \alpha]] = \{\text{that Acc} \cap [[\alpha]] \neq \emptyset\}$