

## Tiwa indeterminates

**Introduction.** Indefinite pronouns and wh-words share a common base in many languages (Haspelmath 1997). The formal similarity of this common base – henceforth indeterminate phrases – has posed the semantic puzzle of how they can be unified. One highly successful approach, which straightforwardly accounts for their wh in-situ use, is to assume they denote sets of alternatives (Ramchand 1997; Kratzer & Shimoyama 2002; a.o.), usually couched in a Hamblin semantics (Hamblin 1973; K&S 2002). Tiwa, a Tibeto-Burman language of Assam, India, has two series of indefinites formed from indeterminate phrases which can likewise be analyzed as sets of alternatives. One patterns as a regular generalized quantifier (*-pha* indefinites), and the other always takes exceptional wide scope (*-khi* indefinites). These indefinites can function either as independent pronouns, or as determiners which take an NP restrictor.

In this paper I provide a compositional analysis of *-pha* and *-khi* indefinites which accounts for their scopal differences. Building on work in Japanese (Shimoyama 2006) and Russian (Yanovich 2005), I show that *-pha* denotes an existential quantifier and *-khi* denotes a choice function, both of which combine directly with a Hamblin-style set of individuals. I then address an apparent difference between Japanese and Tiwa, which is that any indeterminate in Tiwa can compose with an NP restrictor, while in Japanese only  *dono* “which” can. This freedom in Tiwa leads to a compositional puzzle in Kratzer & Shimoyama’s formulation of Hamblin semantics, in which predicates always denote singleton sets containing a property, which in Tiwa would result in a set of propositions as the denotation of DP. I propose Tiwa NPs instead also denote sets of individuals which compose with the indeterminate through (Hamblin) predicate modification, and the differing behavior of NPs and indeterminates in Tiwa follows directly from the syntactic structure of the DP.

**-Pha and -khi indefinites.** *-Pha* and *-khi* indefinites do not require licensing (1)-(2).

- |   |   |
|---|---|
| (1) Maria indâ-pha kashóng-go pre-ga.<br>Maria what-PHA dress-ACC buy-PFV<br>‘Maria bought some dress.’ | (2) Maria inda-khí kashóng-gô pre-ga.<br>Maria what-KHI dress-ACC buy-PFV<br>‘Maria bought some dress.’ |
|---|---|

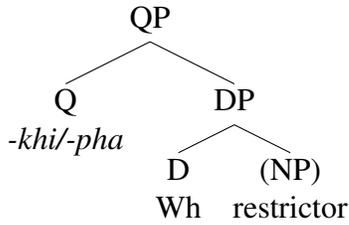
While *-pha* indefinites show variable scope with respect to other scope-taking operators, but obey scope islands (3), *-khi* indefinites always takes widest possible scope, regardless of islandhood (4).

- (3) [ Shar-**pha** phi-do honmandé ]<sub>CP</sub> thángane cha.  
who-PHA come-IPFV COMP correct NEG  
‘It’s not the case that someone came.’  
#: A particular person didn’t come.  
✓: No one came.
- (4) [ Shar-**khí** phi-do honmandé ]<sub>CP</sub> thángane cha.  
✓: A particular person didn’t come.  
#: No one came.

Both can appear as independent pronouns (3)-(4), or as determiners with an NP restrictor (1)-(2).

**Structure and scope.** I assume both *-khi* and *-pha* head a quantifier phrase above DP, and the indeterminate is a D head, which optionally selects for an NP restrictor (5). *-Khi* and *-pha* undergo morphological Lowering (Embick & Noyer 2007) to the head of their complement. Indeterminate pronouns denote Hamblin-style sets of individuals (6), and can compose directly with verbal predicates (which denote singleton sets containing a property (7)) through pointwise function application to yield a set of propositions, resulting in a wh-question.

(5)

(6) a.  $\llbracket \text{shar} \rrbracket = \{x: \text{human}(x)\}$ b.  $\llbracket \text{indâ} \rrbracket = \{x: \text{thing}(x)\}$ (7)  $\llbracket \text{prega} \rrbracket = \{\lambda x \lambda y. \text{bought}(x)(y)\}$ 

Indeterminates can also compose directly with *-pha* and *-khi*: *-pha* denotes a generalized existential quantifier (8) which takes in a set of individuals ( $\alpha$ ) and existentially quantifies over them, and *-khi* denotes a choice function (9), which likewise takes in a set of individuals.

(8) a.  $\llbracket \text{-pha} \rrbracket = \{\lambda \alpha \lambda P. \exists x[x \in \alpha \ \& \ P(x)]\}$ , where  $\alpha \subseteq D_e$ b.  $\llbracket \text{shar-pha} \rrbracket = \{\lambda P. \exists x[x \in \{x: \text{human}(x)\} \ \& \ P(x)]\}$ (9) a.  $\llbracket \text{-khi} \rrbracket = \{\lambda \alpha \lambda P. P(f(\alpha))\}$ , where  $\alpha \subseteq D_e$ ,  $f$  is a CFb.  $\llbracket \text{shar-khi} \rrbracket = \{\lambda P. P(f(\{x: \text{human}(x)\}))\}$ 

As a generalized quantifier, *-pha* indefinites are subject to scope islands (4), while *-khi*, as a choice function, always takes widest scope (3) (Kratzer 1998; Matthewson 1999).

**Composition with NP restrictor.** In K&S's semantics, all predicates denote singleton sets of properties. This assumption cannot be right for Tiwa, since Tiwa indeterminates can combine with NP complements (1) & (2). If the NP complement of an indeterminate denotes a singleton set of properties pointwise function application with the indeterminate would yield a set of propositions as the denotation of the DP. This problem does not arise if NPs in Tiwa also denote sets of individuals (11), and compose with indeterminates through Hamblin predicate modification (10).

(10) *Hamblin predicate modification:*If  $\alpha$  is a branching node with daughters $\beta$  and  $\gamma$ , and  $\llbracket \beta \rrbracket \subseteq D_e$  and  $\llbracket \gamma \rrbracket \subseteq D_e$ ,then  $\llbracket \alpha \rrbracket = \{x: x \in \llbracket \beta \rrbracket \ \& \ x \in \llbracket \gamma \rrbracket\}$ (11)  $\llbracket \text{kashóng} \rrbracket = \{x: \text{dress}(x)\}$ (12)  $\llbracket \text{indâ kashóng} \rrbracket = \{x: \text{thing}(x) \ \& \ \text{dress}(x)\}$ 

The DP then denotes a set of individuals (12), which can compose with either *-khi* or *-pha*, or directly with the verb to form a wh-question.

If NPs denote sets of individuals, just like indeterminates, this removes a key insight of Hamblin semantic approaches that accounts for their unique behavior: that indeterminate phrases are fundamentally different from all other lexical items. Instead, I claim that the unique behavior of indeterminates in Tiwa, in contrast to regular NPs, results from the structure of the DP. Specifically, NPs combine with a determiner which prevents the alternatives from percolating upwards through function application. Indeterminates, while having the same type of denotation, are themselves determiners. Unless caught by a quantifier, the alternatives are able to percolate up.

**Conclusion.** Tiwa's indefinites and their distinct scopal behavior lend support to both quantificational and choice functional analyses of indeterminate indefinites in previous work. Their unique ability to freely compose with NP restrictors, however, suggests that indeterminates are not the only lexical items to denote sets of alternatives, as is commonly assumed in Hamblin semantics.

**References:** Embick & Noyer. 2007. Distributed Morphology and the syntax/morphology interface. • Hamblin. 1973. Questions in Montague English. • Haspelmath. 1997. *Indefinite pronouns*. • Kratzer. 1998. Scope or Pseudoscope? Are there wide-scope indefinites? • Kratzer & Shimoyama. 2002. Indeterminate pronouns: The view from Japanese. • Matthewson. 1999. On the interpretation of wide-scope indefinites. • Ramchand. 1997. Questions, polarity and alternatives. • Shimoyama. 2006. Indeterminate phrase quantification in Japanese. • Yanovich. 2005. Choice functional series of indefinite pronouns and Hamblin semantics.