

Incorporated Nominals, Weak Definites and their Anaphoric Uptake, with special reference to Persian

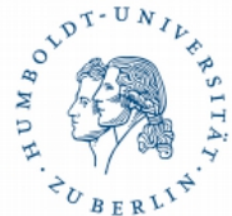
Manfred Krifka
&
Fereshteh Modarresi

Queen Mary University of London
Dept. of Linguistics
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Zentrum für Allgemeine
Sprachwissenschaft

HUMBOLDT-UNIVERSITÄT ZU BERLIN



1 Pseudo-Incorporation and Anaphora

1.1 Incorporation and Pseudo-Incorporation

What is incorporation?

- ◆ Morphological integration of a nominal head N into a transitive verb, thereby filling an argument slot (cf. Mithun 1984, Baker 1996, ...)

What is pseudo-incorporation?

- ◆ Syntactic integration of an NP with a transitive verb, thereby filling an argument slot, but syntactically closer than “regular” object
- ◆ Example (Niuean, Oceanic; Massam 2001, Seiter 1980)

(1) a. *Takafaga tūmau nī [e ia] [e tau ika].* non-incorporated
hunt always EMPH ERG he ABS PL fish
'He always hunts for fishes', 'He is always fishing.'

b. [*Takafaga ika*] *tūmau nī [a ia].* incorporated
hunt fish always EMPH ABS he.
'He is always fishing.'

(2) *Ne [inu [kofe kono]] [a Mele].* incorporated, complex
PST drink coffee bitter ABS Mary
'Mary drank bitter coffee.'

1.2 Pseudo-incorporation in Hungarian

Farkas & de Swart 2003:

(3) a. *Mari olvas egy hosszú verset.*

Mari read a long poem.ACC

'Mary is reading a long poem.'

indefinite, non-incorporated

b. *Mari hosszú verset olvas.*

Mari long poem.ACC read

'Mary is reading a long poem / long poems.'

pseudo-incorporated

- ◆ pseudo-incorporated nominals are number neutral
- ◆ they lack articles
- ◆ they occur in pre-verbal position

1.3 Pseudo-incorporation in Persian:

Modarresi 2014, 2015:

- (4) a. *Mæn roobah did-æm.* incorporated
I fox saw-1SG
'I saw a fox / foxes.'
- b. *Mæn yek roobah(-ra) did-æm.* indefinite
I a fox-(ACC) saw-1SG
'I saw a fox.'
- c. *Mæn roobah-rā did-æm.* non-incorporated
I fox-ACC saw-1SG
'I saw the fox.'
- (5) *Mæn mobil-e atiqhe mi-frousham* incorporated, complex
I sofa-EZ antique DUR-sell-1SG
'I sell antique sofa(s)'

- ◆ pseudo-incorporated nouns are bare nouns lacking accusative case marking (-*rā*)
- ◆ pseudo-incorporated nouns are number-neutral
- ◆ indefinite nouns may lack accusative marking
- ◆ bare nouns with accusative marking are interpreted as definite (no definite article)

1.4 Pseudo-Incorporation and Anaphora

- ◆ Common claim: Pseudo-incorporated NPs cannot be taken up by anaphora.
- ◆ But: uptake by anaphora is possible in certain cases, cf.
 - van Geenhoven 1998 for West Greenlandic Eskimo (assumed generally possible),
 - Massam 2001 for Niuean,
 - Asudeh & Mikkelsen 2000 for Danish,
 - Dayal 2011 for Hindi,
 - Mithun 2010 for Kapampangan:
- ◆ Farkas & de Swart 2003 call this **discourse translucency** (contrasted with discourse transparency, discourse opacity):

(1) *János_i beteg_j vizsgált a rendelőben.*

Janos_i patient.ACC_j examine.PAST the office.in

‘Janos_i patient_j-examined in the office.’

a. *??∅_i Túl súlyosnak találta őt_j és beutaltatta ∅_j a kórházba.*
pro_i too severe.DAT find he_j.ACC and intern.CAUSE.PAST pro_j the hospital.in

b. *✓∅_i Túl súlyosnak találta ∅_j és beutaltatta ∅_j a kórházba.*
pro_i too severe.DAT find.PAST pro_j and intern.CAUSE.PAST pro_j the hospital.in
‘He_i found him_j too sick and sent him to hospital.’

2 Discourse Referents and Thematic Arguments

Discussion of Farkas & de Swart 2013

2.1 Discourse Transparency

Theoretical reconstruction in Discourse Representation Theory (Kamp & Reyle 1994) here illustrated with Persian data, to ensure comparability.

Format of discourse representations (DRS), with discourse referents (DRs) and discourse conditions, to be interpreted in a model.

(6) $K_0 +$ *Pedro owns a donkey.*

$= [x_1 x_2 \mid x_1 = \text{PEDRO}, \text{DONKEY}(x_2), \text{OWN}(x_1, x_2)]$

(7) $K_0 +$ *Every farmer owns a donkey.*

$= [\quad \mid [x_1 \mid \text{FARMER}(x_1)] \Rightarrow [x_2 \mid \text{DONKEY}(x_2), \text{OWN}(x_1, x_2)]]$

Standard interpretation of DRS, here given only for (6):

(8) $[x_1 x_2 \mid x_1 = \text{PEDRO}, \text{DONKEY}(x_2), \text{OWN}(x_1, x_2)]$

is true w.r.t. a model $M = \langle A, \llbracket \rrbracket \rangle$

iff there is a DR assignment $f: \{x_1, x_2\} \rightarrow A$

such that all conditions are true in the model w.r.t. the assignment f ,

i.e. $f(x_1) = \llbracket \text{PEDRO} \rrbracket$,

$f(x_2) \in \llbracket \text{DONKEY} \rrbracket$,

$\langle f(x_1), f(x_2) \rangle \in \llbracket \text{OWN} \rrbracket$

2.2 Discourse translucency

Assumptions of Farkas & de Swart 2003:

- ◆ Pseudo-incorporated NPs are not accessible to **overt** pronouns
- ◆ But anaphoric uptake is possible for **covert** pronominals (pro).

Representation of pseudo-incorporated object contrasted with regular object:

(9) $K_0 + [Leili [yek sīb] khærid]$
= $[x_1 x_2 \mid x_1 = LEILI, APPLE(x_2), BUY(x_1, x_2)]$, two DR introduced: x_1, x_2

(10) $K_0 + [Leili [sib khærid]]$
= $[x_1 \mid x_1 = LEILI, APPLE(x_2), BUY(x_1, x_2)]$ just one DR introduced: x_1
= K_1 x_2 : “thematic argument”

Interpretation of thematic arguments:

(11) A function f verifies a condition of the form $P(x_1, \dots, x_n)$ relative to a model M iff there is a sequence $\langle a_1, \dots, a_n \rangle \in A_n$, such that $\langle a_1, \dots, a_n \rangle \in \llbracket P \rrbracket$,

and if x_i is a **discourse referent**, $a_i = f(x_i)$

and if x_i is a **thematic argument**, a_i is **some element in A**.

- ◆ As thematic arguments do not introduce DRs, no anaphoric uptake possible.
- ◆ We need a special rule for translucency cases.

2.3 Semantics of Translucency

- (12) If a suitable discourse referent cannot be found in K for an anaphoric expression, **introduce a new DR** x_j and **add a condition** of the form $x_j = x_i$, where x_i is a thematic argument that is part of a condition $P(x_1, \dots, x_i, \dots, x_n)$ in the conditions of K or a DRS that is superordinate to K
- (13) f verifies the condition $x_j = x_i$, with a preceding condition $P(x_1, \dots, x_i, \dots, x_n)$, iff f maps x_j onto an individual a_i that is the i -th element of an n -tuple $\langle a_1, \dots, a_i, \dots, a_n \rangle$ that verifies the condition $P(x_1, \dots, x_i, \dots, x_n)$.

Example:

- (14) $K_1 + [Majnoon\ khord = \emptyset]$
 $= [\begin{array}{l} x_1 \quad | \quad x_1 = \text{LEILI}, \text{APPLE}(x_2), \text{BUY}(x_1, x_2) \\ x_3 \ x_4 \quad | \quad x_3 = \text{MAJNOON}, x_4 = x_2, \text{EAT}(x_3, x_4) \end{array}]$

true w.r.t. f and a model $\langle A, \llbracket \rrbracket \rangle$

iff – $f(x_1) = \llbracket \text{LEILI} \rrbracket$,

– there is an a_2 such that $a_2 \in A$ with $a_2 \in \llbracket \text{APPLE} \rrbracket$,

– there is a sequence $\langle a_1, a_2 \rangle \in A \times A$ with $f(x_1) = a_1$ and $\langle a_1, a_2 \rangle \in \llbracket \text{BUY} \rrbracket$

– $f(x_3) = \llbracket \text{MAJNOON} \rrbracket$,

– f maps x_4 to a_2 ,

– $\langle f(x_3), f(x_4) \rangle \in \llbracket \text{EAT} \rrbracket$

2.4 Problems

- ◆ Non-compositional rule:

a_2 is bound by existential quantifier “there is a...”, hence not accessible from outside.

iff $f(x_1) = \llbracket \text{LEILI} \rrbracket$,

there is an $a_2 \in A$ with $a_2 \in \llbracket \text{APPLE} \rrbracket$,

there is a sequence $\langle a_1, a_2 \rangle \in A \times A$ with $f(x_1) = a_1$ and $\langle a_1, a_2 \rangle \in \llbracket \text{BUY} \rrbracket$

$f(x_3) = \llbracket \text{MAJNOON} \rrbracket$,

f maps x_4 to a_2 ,

$\langle f(x_3), f(x_4) \rangle \in \llbracket \text{APPLE} \rrbracket$

- ◆ Yanovich 2008:

the rule does not guarantee binding between the individual that is an apple and the individual that Majnoon ate, as a_2 is bound by two independent quantifiers “there is...”

- ◆ Yanovich 2008 also points out an empirical problem

with Farkas & de Swart’s claim about Hungarian:

Anaphoric uptake of pseudo-incorporated objects with overt pronoun is possible (data: Anna Szabolcsi):

(15) *A bátyám házat₁ vett a múlt héten. Egész vagyont adott érte₁.*
‘The brother house-bought last week. He spent a fortune for it.’

3 Number-unspecified DRs

Cf. Modarresi 2015

3.1 Number-neutral DRs

- ◆ Pseudo-incorporated NPs do introduce DRs
- ◆ But these DRs are number-neutral (a stipulation)
- ◆ Overt pronouns are marked for number, hence expect number-marked DRs
- ◆ Covert pronouns: not marked for number, hence do not expect number-marked DRs
- ◆ If world knowledge suggests atomic or sum interpretation of number-neutral DR, singular or plural overt pronouns are possible.

Number-neutral DRs in Kamp & Reyle 1994:

- (16) *All lawyers hired secretaries and payed them well.*
'All lawyers hired one or more secretaries and payed him/her/them well.'

Example for number neutral DRs (rendered by ξ):

- (17) *Leili sīb khærid. Majnoon khord-∅ /-??esh/ -??eshoon.*
Leili apple bought.3SG Majnoon ate-pro/-it/-them
'Leili bought apple(s). Majnoon ate it / them.'

$[x_1 \xi_2 \mid x = \text{LEILI, APPLE/S}(\xi_2), \text{BUY}(x_1, \xi_2)$
 $x_3 \mid x_3 = \text{MAJNOON, ATE}(x_3, \xi_2)]$

ξ_2 : number-neutral DR

3.2 Contextual factors for sing/plur overt pronouns

Example for contexts that favors atomic / sum interpretation:

(18) *Leili apartman khærid. Gheimat-esh bala bood.* atomic interpretation

Leili **apartment** bought.3SG. Price-**its** high was.3SG
'Leili bought apartment(s). Its price was high.'

(19) *Leili havij khærid. Majnoon khord-eshoon.* sum interpretation

Leili **carrot** bought.3SG. Majnoon ate-**them**.
'Leili bought carrot(s). Majnoon ate them.'

Role of context like in specificational anaphora (anaphora adds information):

(20) *There was **a donkey** at the gate. **The poor old animal** cried terribly.*

(21) *There was **a person** at the door. **She** was quite young.*

Problems:

- ◆ Why are pseudo-incorporated NPs interpreted as number neutral, in spite of being morphologically singular?
- ◆ Uptake not always easily possible, even with covert pronoun.

(22) *Man roobah didam. ?Shekar kardam-∅.*
I fox saw.1SG hunt did.1SG.
'I saw fox(es). I hunted it/them.'

(23) *Man yek roobah didam. Shekar kardam-∅ / -esh.*
I one fox saw.1SG hunt did.1SG-pro / -it.
'I saw a fox. I hunted it.'

4 Incorporated Nominals and E-type Pronouns

4.1 E-type pronouns

Pronouns that pick up DRs with quantifier antecedents, without being c-commanded by them (Evans 1980):

- (24) *Few congressmen admire Kennedy, and they are very junior.*
'There are (only) few congressmen that admire Kennedy, and the congressmen that admire Kennedy are very junior.'

Maximality effect with the pronoun interpretation, lacking with indefinites (Heim 1990):

- (25) a. *A wine glass broke last night. It was very expensive.*
(o.k. if several wine glasses broke last night, and only one was expensive.)
b. *At least three wine glasses broke last night. They were very expensive.*
(all the wine glasses that broke last night were very expensive).
c. *Few wine glasses broke last night, but they were very expensive.*
(all the wine glasses that broke last night were very expensive.)

- ◆ E-type pronouns have been seen as evidence for a descriptive theory of pronouns (Neale 1990, Heim 1990, Elbourne 2005),
- ◆ but descriptive approaches are not required (cf. Nouwen subm.)

4.2 E-type pronouns in DRT

DRT (Kamp & Reyle 1993, Hardt 2003): abstraction and summation over DRSs

(26) *John beats most donkeys he owns. They complain.*

$[x_1 \mid x_1 = \text{JOHN}, [x_2 \mid \text{DONKEY}(x_2), \text{OWN}(x_1, x_2)] \langle \text{MOST } x_2 \rangle [\mid \text{BEAT}(x_1, x_2)]]$

$\xi_3 \mid \xi_3 = \Sigma x_2 [x_2 \mid \text{DONKEY}(x_2), \text{OWN}(x_1, x_2), \text{BEAT}(x_1, x_2)]]$

Abstraction and Summation rule:

- ◆ Given a triggering configuration with a duplex condition $K_1 \langle Q \rangle K_2$ in a DRS K ,
 - form the union $K' = K_1 \cup K_2$,
 - choose a DR x from the universe of K' , add new DR ξ to universe of K' , add condition $\xi = \Sigma x K'$
- ◆ $\Sigma x K'$ is interpreted relative to an assignment f and a model $M = \langle A, [I] \rangle$ as the sum of all $a \in A$ such that there is an extension f' of f with $f'(x) = a$, and K' is true w.r.t. f' and M

Notice:

- ◆ DRs that are introduced in embedded DRSs become available as antecedents
- ◆ the choice of singular / plural pronoun depends on whether ξ is atomic or not
- ◆ Maximality effect arises by the interpretation of summation, Σ
- ◆ reference to DRSs K_1, K_2 is itself an anaphoric process (cf. Asher & Lascarides)

4.3 E-type anaphors to incorporated nominals

Taking up a suggestion of Yanovich 2008 for “thematic argument abstraction”, but assuming that incorporation is treated like quantification for anaphoric purposes.

- ◆ Pseudo-incorporated nominals are introduced in embedded DRS
- ◆ Anaphoric uptake is possible, but only via abstraction + summation

Predictions:

- ◆ Anaphoric uptake is more complex for incorporated antecedents than for non-incorporated antecedents
- ◆ Incorporated NPs are number neutral (number neutrality derived, not stipulated)
- ◆ Uptake can be achieved by covert number-neutral anaphora
- ◆ Uptake possible with singular or plural pronouns, depending on context.

Proposal, in more detail:

- ◆ Existential closure (EC) (Diesing 1991) with scope over vP
- ◆ EC quantifies over the event variable of the verbal predicate
- ◆ Nominals within EC can introduce DRs within the scope of EC

4.4 Illustration of E-type analysis

(27) $K_0 + [_{IP} \text{Leili}_1 \text{EC}_2 [_{vP} t_1 \text{s}i\bar{b}_3 \text{khar}i\bar{d}_2]]$
'Leili apple bought'

$[x_1 \mid x_1 = \text{LEILI}, \exists[e_2 x_3 \mid x_3 = \text{APPLE-OF}(e_2), \text{BUY}(x_1, x_3, e_2)]]], = K_1$

Syntactic structure:

- ◆ Pseudo-incorporated noun *sīb* remains within vP
- ◆ Existential closure over vP, indexed with event argument
- ◆ Subject *Leili* has moved out of vP, leaving trace

Discourse representation:

- ◆ Existential closure creates embedded DRS, with quantifier \exists
- ◆ Quantifies over an event argument of the predicate, e_2
- ◆ Bare singular noun *sīb* is interpreted as dependent definite, here on the event argument, $\text{APPLE-OF}(e_2)$: 'the apple of the event e_2 '
- ◆ Being dependent on e_2 , the discourse referent x_3 must be interpreted in scope of \exists

Semantic interpretation:

- ◆ Condition $\exists K$ is true w.r.t. assignment f , model M iff there is an extension f' of f such that K is true w.r.t. f' , M .
- ◆ Implicit in negation, disjunction, quantifier conditions: $\neg \exists K, \exists K \vee \exists K', K \Rightarrow \exists K'$

4.5 Anaphoric uptake of incorporated nominals

Abstraction and summation over existentially quantified DRS

(28) $K_1 + [_{IP} Majnoon_4 EC_5 [_{VP} t_4 t_6 khord-\emptyset]]$

$[x_1 \quad | \quad x_1 = LEILI, \exists [e_2 \ x_3 \ | \ x_3 = APPLE-OF(e_2), BUY(x_1, x_3, e_2)]]$

$x_4 \ \xi_6 \quad | \quad x_4 = MAJNOON,$

$\xi_6 = \sum_{x_3} [e_2 \ x_3 \ | \ x_3 = APPLE-OF(e_2), BUY(x_1, x_3, e_2)],$ Abstraction, Summation
 $\exists [e_5 \ | \ EAT(x_4, \xi_6, e_5)]]$

- ◆ The covert pronoun can be interpreted as an E-type pronoun, requiring abstraction and summation
- ◆ The covert pronoun does not require a specific number feature, ideally relating to the number-neutral DR ξ_6
- ◆ If world knowledge suggests an atomic or sum individual, overt singular or plural pronouns are licensed (cf. Modarresi 2015)
- ◆ Anaphoric uptake is more complex compared to cases in which a DR is already introduced; hence if speaker intends to take up a DR, non-incorporated NPs are better.

5 Predictions of the analysis

5.1 Number neutrality

The representation of singular incorporated count nouns refers to atomic individuals:

(29) $K_0 + [_{IP} \text{Leili}_1 \text{EC}_2 [_{VP} t_1 \text{sīb}_3 \text{kharīd}_2]]$

$[X_1 \mid x_1 = \text{LEILI}, \exists[e_2 x_3 \mid x_3 = \text{APPLE-OF}(e_2), \text{BUY}(x_1, x_3, e_2)]]]$,
where $\text{APPLE-OF}(e_2)$: the unique apple of e_2 .

Nevertheless, the representation results in number-neutrality:

- ◆ Existential closure does not imply uniqueness, there may be more than one buying events e_2 for which there is a unique apple that Leili buys.
- ◆ Existential closure does not come with alternatives, hence there is no pragmatic exhaustification to a single buying event either, in contrast to numerals like *one apple*, strengthened to ‘exactly one apple’
- ◆ Anaphoric uptake uses abstraction and sum formation, which involves **all** of the ways in which the vP-DRS can be interpreted:

(30) $\xi_6 = \Sigma x_3 [e_2 x_3 \mid x_3 = \text{APPLE-OF}(e_2), \text{BUY}(x_1, x_3, e_2)]]]$

- ◆ Hence, reference to all apples for which there is a buying event e by Leili.
- ◆ World knowledge will determine whether one or more than one events are involved, e.g. difference between carrot-buying and melon-buying.

5.2 Maximality effects

Current theory predicts:

- ◆ Maximality effect, as with other E-type pronouns, due to summation Σ
- ◆ Not predicted by Farkas & de Swart 2003, Modarresi 2015

Maximality can in fact be observed (cf. Yanovich 2008):

(31) *Ali khaneh darad. # Khane-ye-digari ham dard ke ejareh mideh.*
Ali house has. house-EZ-other also has that rent gives.
'Ali has house(s). He also has another house that he rents.'

(32) *Ali yek khaneh darad. Khane-ye-digari ham dard ke ejareh mideh.*
Ali a house has. house-EZ-other also has that rent gives
'Ali has a house. He also has another house that he rents.'

5.3 Collective predicates

Current theory predicts:

- ◆ No collective predicates for incorporated singular count nominals, as they refer to one entity, e.g. *sīb*: APPLE-OF(e), ‘the apple of e’
- ◆ Not predicted by theories that take incorporated nominals inherently number-neutral
- ◆ Dayal 2011, 2015 for collective predicates and incorporation: Sometimes possible

With non-habitual readings: plural nominals preferred, often definite reading with *rā*:

- (33) a. ??*diruz Sara barg-e-khoshk jam-kard* *‘collect the dry leave of e’
b. *diruz Sara barg-ha-ye-khosk jam-kard* o.k. ‘collect the dry leaves of e’
c. *diruz barg-ha-ye-khosk-rā jam-kard* o.k. ‘collect the (given) dry leaves’
d. **diruz barg-e-khoshk-rā jam-kard* *‘collect the (given) dry leave’
‘Yesterday Sara collected dry leaves’

But: Collectives with bare singulars sometimes possible:

- (34) *Ali tambr jam-mi-konad*
Ali stamp collect-DUR-do.3SG
‘Ali collects stamps.’, ‘Ali is a stamp collector.’

- ◆ Possible reading: Ali habitually adds the stamp of an event to its collection’

- (35) $[x_1 \mid x_1 = \text{ALI},$
 $[\text{SUITABLE } t] \Rightarrow \exists [e_2, x_3 \mid e_2 \text{ in } t, x_3 = \text{STAMP-OF}(e_2) \wedge \text{ADD TO-COLLECTION}(x_1, x_3, e_2)]]]$

5.4 Plural nominals

Current theory predicts:

- ◆ In non-collective predication, plurality with incorporated nominals has no effect, as incorporation results in a number-neutral interpretation
- ◆ Presumably, plural nominals are avoided or result in a special interpretation

Findings (cf. Modarresi 2014):

- ◆ Plural-marked incorporated nominals are avoided
- ◆ If they occur, they lead to specialized interpretations

(36) *Maryam ketāb-ha khand-ad.*

Maryam book-PL read-3SG

‘Maryam has read (many) different books at different occasions.’

Nominal plural possibly indicating a multitude of events:

(37) $[x_1 \mid x_1 = \text{MARYAM}, \exists[E_2, X_3 \mid X_3 = \text{BOOKS-OF}(E_2), \text{READ}(x_1, X_3, E_2)]]$

Cumulative interpretations (cf. Krifka 1994):

- ◆ When $x = \text{BOOK-OF}(e)$, $x' = \text{BOOK-OF}(e')$, then $x \oplus x' = \text{BOOKS-OF}(e \oplus e')$
- ◆ When $\text{READ}(y, x, e)$, $\text{READ}(y, x', e')$, then $\text{READ}(y, x \oplus x', e \oplus e')$
- ◆ Reference to collective events E suggest: Their parts are spatio-temporally distinct.

6 Additional Issues related to Persian

6.1 Accusative-marked bare nominals

Assumption (Modarresi 2015):

- ◆ *ra* marking is a morphological reflex of an object scrambling out of vP, with interpretative consequences
- ◆ (Movement of an object NP into a initial focus position does not require *ra*-marking)
- ◆ (Scrambling of subjects has similar effects, but this is marked only prosodically)

ra-marking of bare NP results in definite interpretation:

(38) [*Leili*₁ *stb-ra*₃ EC₂ [_{vP} t₁ t₃ *kharīd*]]
Leili apple-ACC bought-3SG
'I Leili bought the apple.'

- ◆ Recall: we have interpreted bare NPs as definites w.r.t. an event: APPLE-OF(e)
- ◆ Outside of vP, e cannot be dependent on the event e₂ introduced by EC
- ◆ Hence it must depend on a salient event given in the previous discourse or situation
- ◆ Generates **definite reading**: the apple given in previous discourse or in the situation
- ◆ Predicts: **No number neutrality**, singular interpretation
- ◆ Observe: We have a **uniform interpretation of bare NPs as definites** (for Persian)

Examples for *ra*-marked bare nominal:

(39) a. *tooye sabad miveh bood. Leili sib-rā bardasht.*
 in basket fruit was.3SG Leili apple-ACC took.3SG
 'There was fruit in the basket. Leili took the apple'

b. $[x_1 \ \xi_2 \quad | \text{BASKET}(x_1), \text{FRUIT}(\xi_2), \text{IN}(x_1, \xi_2),$
 $x_3 \ x_4 \ | \ x_3=\text{LEILI}, \ x_4=\text{APPLE-OF}(\xi_2), \exists[e_5 \ | \ \text{TAKE}(x_3, x_4, e_5)]]$
 'the apple of the fruit'

(40) a. *tooye sabad yek sib(-i) va yek golabi(-i) bood. Leili sib-rā bardasht.*
 in basket an apple and a pear was.3SG Leili apple-ACC took.3SG
 'There was apple and a pear in the basket. Leili took the apple.'

b. $[x_1 \ \xi_2 \ x_3 \ x_4 \ X_5 \quad | \text{BASKET}(x_1), \text{APPLE}(x_2), \text{PEAR}(x_3), \ X_4=x_2 \oplus x_3, \text{IN}(x_1, X_4),$
 $x_6 \ x_7 \ | \ x_6=\text{LEILI}, \ x_7=\text{APPLE-OF}(X_4), \exists[e_8 \ | \ \text{TAKE}(x_6, x_7, e_8)]]$
 'the apple of the sum individual of an apple and a pear'

(41) a. *Yek sib(-i) too sabad bood. Leili sib-rā bardasht.*
 an apple (apple-i) in basket was.3SG Leili apple-ra took.3SG
 'There was an apple in the basket. Leili took the apple.'

b. $[x_1 \ x_2 \quad | \text{BASKET}(x_1), \text{APPLE}(x_2), \text{IN}(x_1, \xi_2),$
 $x_3 \ x_4 \ | \ x_3=\text{LEILI}, \ x_4=\text{APPLE-OF}(x_2), \exists[e_5 \ | \ \text{TAKE}(x_3, x_4, e_5)]]$
 'the apple of the apple'

6.2 Comparison with yek-marked indefinites

(42) $K_0 + [{}_{IP} \text{Leili}_1 \text{ EC}_2[{}_{VP} t_1 [{}_{NP} \text{yek s\bar{t}b}] \text{ khar\bar{t}d}]]$
Leili an apple bought.3SG

Two possible readings, (43) and (44):

(43) $[x_1 \mid x_1 = \text{LEILI}, \exists[e_2 \ x_3 \mid \text{APPLE}(x_3), \#(x_3)=1, \text{BUY}(x_1, x_3, e_2)]]$

- ◆ No relation of x_3 to e_2
- ◆ Compatible with more than one apple being bought by Leili
- ◆ Anaphoric uptake by abstraction and sum formation would refer to all the apples that were bought by Leili, just as with bare nominals
- ◆ The number information of *yek* ‘a / one’ would be irrelevant in this case, hence this reading is blocked by the form with bare nominal.

(44) $[x_1 \ x_3 \mid x_1 = \text{LEILI}, \text{APPLE}(x_3), \#(x_3)=1, \exists[e_2 \mid \text{BUY}(x_1, x_2, e_3)]]$

- ◆ Indefinite NP is interpreted outside of the existential closure
- ◆ This is known to be possible with indefinites in general, cf. “specific” reading of:

(45) *If you see a black dog, then be careful, it will bite you!*

$[x_1 \mid \text{BLACK-DOG}(x_1), [e_2 \mid \text{SEE}(\text{YOU}, x_1, e_2)]] \Rightarrow [e_3 \mid e_1 < e_3, \text{BITE}(x_1, \text{YOU}, e_3)]$

- ◆ Notice: x_3 is singular discourse referent, can be targeted by singular pronouns.

6.3 Accusative marking of singular indefinite nominals

rā-marking of *yek*-marked nouns also indicates scrambling out of vP

(46) [*Leili*₁ [*yek sīb-rā*]₃ EC₂ [_{vP} t₁ t₃ *kharīd*]]
Leili an apple-ACC bought-3SG
'Leili bought an apple.'

- ◆ possible, but disfavored in the current case
- ◆ reason: wide-scope indefinite reading can be achieved without *rā*, cf. (44)
- ◆ but scrambling out of vP essential to guarantee wide scope w.r.t. other quantifiers

(47) *yek ketāb-rā har daneshjoo-i bayad be-khoon-ad*
a book-RA each student-i must SUBJ-read-3SG
'Each student must read a certain book.'

6.4 *i*-marked nouns

Another way of expressing indefiniteness in Persian: *i*-marking

(48) a. [_{IP} *Mæ*_n₁ EC [_{VP} *t*₁ *roobah-i* *did-æm*]]
 | fox-INDEF saw-1SG
 ‘I saw a fox (not: foxes)’

c. [_{IP} *Mæ*_n₁ *roobah-i-rā*₂ EC [_{VP} *did-æm*]]
 | fox-INDEF-ACC saw-1SG
 ‘I saw a certain fox.’

- ◆ *i*-marking: restrictive selection out of a kind or plurality (Windfuhr 1987)
- ◆ Modeling by choice functions
 (cf. Reinhart 1997, von Stechow 1997, Kratzer 1998, Yanovich 2005, others)

(49) [_{IP} *Leili*₁ EC₂ [_{VP} *t*₁ *sīb-i kharīd*]]
 [*x*₁ (F) *x*₃ | *x*₁=LEILI, ∃[*e*₂ | *x*₃ = F(APPLE), EAT(*x*₁,*x*₃,*e*₂)]]

- ◆ F is a choice function, selects F(APPLE), an object *a* where *a* ∈ [[APPLE]]
- ◆ as with other referring expressions, discourse referent *x*₃ introduced in higher box, hence easily accessible for anaphoric uptake
- ◆ no dependency on on event of existential closure *e*₂, hence no number neutrality

Situation is more complex, as combination *yek + i* is possible as well: *yek sīb-i*

6.5 Iterative readings and modal subordination

The durative marker *mi* can express progressivity or imperfective readings:

(50) *har-rooz sobh Maryam sib mi-kharad.*
 everyday morning Maryam apple DUR.buy.3SG
 ‘Every morning Maryam buys apples.’

$[x_1 \mid x_1 = \text{MARYAM},$
 $[t_2 \mid \text{MORNING}(t_2)] \Rightarrow \exists [e_3 \ x_4 \mid x_2 = \text{APPLE-OF}(e_3), \text{AT}(t_2, e_3) \text{BUY}(x_1, x_4, e_3)]]$
 $= K_1$

Uptake of discourse referents by modal subordination (Roberts 1989):

- ◆ Combination of antecedent boxes forms antecedent of next clause.
- ◆ Abstraction and summation of DR of incorporated nominal.

(51) $K_1 + \text{Ab-e-shoon ro mi-girad.}$
 water-of-them ra DUR.take.3SG.
 ‘She makes juice of them.’

[...,
 $[t_2 \ x_5 \mid \text{MORNING}(t_2), x_5 = \Sigma x_4 [e_3 \ x_4 \mid x_2 = \text{APPLE-OF}(e_3), \text{AT}(t_2, e_3) \text{BUY}(x_1, x_4, e_3)]]$
 $\Rightarrow \exists [e_6, x_7 \mid \text{JUICE}(x_7), \text{MAKE-OF}(x_7, x_5, e_6)]]$

7 Weak Definites

7.1 What are weak definites?

Carlson e.a. 2006, relating weak definites to incorporation and bare singulars;
cf. also Bosch 2010; Schwarz 2012 for a kind-referring analysis

Number neutrality:

(52) *The accident victims were taken to **the hospital**.*

Narrow scope effect of weak definites:

(53) *Every accident victim was taken to **the hospital**.*

(54) *Jedes Unfallopfer wurde **ins Hospital** gebracht. (ins: in + das)*
every accident.victim was to.the hospital brought

(55) *Hans ist **im Kino** und Maria auch.*

Hans is in-the cinema and Mary too.

'Hans is in the cinema, and Mary too (potentially different cinemas)'

7.2 Representation as event-dependent definites

Weak definites are interpreted like Persian pseudo-incorporated bare nominals

(56) *Mary took John to the hospital.*

$[x_1 x_2 \mid x_1 = \text{MARY}, x_2 = \text{JOHN}, \exists[e_3 x_4 \mid x_4 = \text{HOSPITAL-OF}(e_3), \text{TAKE-TO}(x_1, x_2, x_4, e_3)]]$

- ◆ Weak definites as functional definites, cf. Asic and Corblin 2012, but w.r.t. event
- ◆ Prediction: Anaphora to weak definites are possible only via abstraction / summation
- ◆ Prediction: Maximality effect

(57) *Every victim was taken to the hospital. They declared a state of emergency.*

$[\quad \mid [x_1 \mid \text{VICTIM}(x_1)]] \Rightarrow \exists[e_2 x_3 \mid x_3 = \text{HOSPITAL-OF}(e_2), \text{TAKEN-TO}(x_1, x_3, e_4)],$

$X_4 \mid X_4 = \Sigma x_3 [x_1 e_2 x_3 \mid \text{VICTIM}(x_1), \text{HOSPITAL-OF}(e_2), \text{TAKEN-TO}(x_1, x_3, e_4)],$
 $\exists[e_5 \mid \text{DECLARE-EMERGENCY}(X_4, e_5)]$

‘the hospitals to which the victims were taken declared a state of emergency’

7.3 Institutionalized Meanings

Difference between Persian pseudo-incorporated singulars and English / German weak definites:

- ◆ Weak definites imply an “institutionalized” meaning
(Mithun 1984, Asudeh & Mikkelsen 2001, Borthen 2003, Dayal 2011, Lazaridou-Chatzigoga & Alexandropoulou 2013, Klein e.a. 2013)

- (58) a. *The hurricane victims were taken to the hospital.* (weak or regular definite)
b. *The hurricane victims were taken to the arena.* (only regular definite)

Narrow-scope, event-dependent definites lead easily to institutionalized reading:

(59) [e_2 x_3 | HOSPITAL-OF(e_2), VICTIMS(X_1), TAKEN-TO(X_1, x_3, e_2)]

- ◆ **presupposes** that for e_2 there is a unique hospital
- ◆ hence events like e_2 are categorized as belonging to a well-known class of events,
- ◆ the notion *be taken to the hospital* refers to a conceptualized class of events,
- ◆ similar to words or idiomatic expressions,
but still with a syntactically transparent combination of lexical items

7.4 Difference Weak Definites vs. Pseudo-Incorporated Nominals

Weak definites in English and German

- ◆ restricted to institutionalized readings
- ◆ possible reason: otherwise, no clear syntactic distinction

(60) a. *The victims were taken to the hospital.*

b. *The visiting delegation of the Red Cross was taken to the hospital.*

(61) a. *Die Opfer wurden **ins** Krankenhaus gebracht.*

'The victims were taken to the hospital.'

b. *Die Nahrungsmittel wurden **ins** Krankenhaus gebracht.*

'The food items were taken to the hospital.' (the hospital of the situation)

c. *Die Nahrungsmittel wurden **in das** Krankenhaus gebracht.*

'The food items were taken to the hospital.' (hospital mentioned, or of situation)

Pseudo-incorporated nominals in Persian:

- ◆ not restricted to institutionalized readings
- ◆ possible reason: clear marking definite / givenness by accusative *rā* (for objects)

But this cannot be the whole story:

- ◆ Bare nominals in English (and other languages, cf. Grønn e.a. 2010)

(62) *The victims were taken to hospital.*

- ◆ Complex predicates in Persian with a conventionalized / idiomatic meaning, cf. Family 2014:

(63) *Sara ba frooshandeh chaneh mi-zan-ad.*

Sara withseller chin DUR-hit-3SG

'Sara is negotiating with the seller'

8 Predictions for Anaphoric Processing

We have examined three theories to account for discourse translucency:

- ◆ Farkas & de Swart 2003:
Thematic arguments, DRs can be created by special rule for covert pronominals
- ◆ Modarresi 2015:
Number-neutral DRs, can be picked up by covert pronouns, also, supported by world knowledge with overt singular / plural pronouns
- ◆ Proposed here (working out suggestions by Yanovich 2008):
Event-dependent functional definites, can be picked up by abstraction / summation, world knowledge relevant for using singular / plural pronouns

Other work:

- ◆ Asudeh & Mikkelsen 2000: Implicit entities, as in *John got married. She is nice.*
- ◆ Dayal 2011, 2015: influence of aspect
- ◆ Schwarz 2012, for weak definites: reference to event kinds

How to decide? – Different, testable predictions for anaphoric uptake, for example:

- ◆ Do covert pronouns always have an advantage over overt pronouns?
- ◆ Is uptake of incorporated NPs with covert pronouns always as easy as uptake of non-incorporated NPs with covert/overt pronouns?
- ◆ Is there a maximality effect with anaphoric uptake of pseudo-incorporated NPs?

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