Number-Neutrality and Anaphoric Uptake of Pseudo-Incorporated Nominals in Persian (and Weak Definites in English)

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1. PINs and their Anaphoric Uptake

1.1 Pseudo-Incorporated Nominals (PINs)

Morphological (true) and syntactic (pseudo) incorporation:

◆ Morphological integration of a nominal head N into a transitive verb (cf. Mithun 1984, Baker 1996, ...)

◆ Syntactic integration of an NP with a transitive verb, thereby filling an argument slot, but syntactically closer than "regular" object (cf. Massam 2001, ...)

◆ Example: Hungarian; Farkas & de Swart 2003

(1) a. Mari   olvas   egy hosszú verset.   indefinite, non-incorporated
       Mari   read   a   long poem.ACC
       'Mary is reading a long poem.'
    b. Mari   hosszú   verset   olvas.   pseudo-incorporated:
       Mari   long   poem.ACC read   number neutral, no det, preverbal
       'Mary is reading a long poem / long poems.'

◆ Example: Persian, Modarresi 2014, 2015

(2) a. Leili   yek sīb(-rā)   khærīd.   indefinite, non-incorporated
       Leili   an apple-(acc) bought.3SG
       'Leili bought an apple.'
    b. Leili   sīb   khærīd.   pseudo-incorporated
       Leili   apple bought-3SG   number neutral, no det, no case
       'Leili bought an apple / apples.'

1.2 PINs and Anaphora

◆ Common claim: (Pseudo)-incorporated nominals cannot be taken up by anaphora.

◆ But: uptake by anaphora is possible in certain cases, cf.
 – van Geenhoven 1998, West Greenlandic – Massam 2001, Niuean
 – Asudeh & Mikkelsen 2000, Danish – Dayal 2011, Hindi
 – Mithun 2010, Kapampangan – Farkas & de Swart 2003, Hungarian

◆ Farkas & de Swart 2003: **discourse translucency**, for null anaphora

(3) János, betegel,   vizsgált   a   rendelőben.
    János, patient.ACC examine.PAST the office.in
    'János, patient-examined in the office.
    a. ??∅i Túl sulyosnak találta öt, és beutaltatta   ∅j   a korházba.
        pro, too severe.DAT find   he,ACC and intern.CAUSE.PAST pro, the hospital.in
    b. ✓∅i   Túl sulyosnak találta ∅ j   és beutaltatta   a   korházba.
        pro, too severe.DAT find.PAST pro, and intern.CAUSE.PAST pro, the hospital.in
    'He, found him, too sick and sent him to hospital.'

But possible also with **overt** pronouns (cf. Yanovich 2008):

(4) A bátyám házat, vett a múlt héten. Egész vagyont adott érte,
    'The brother house-bought last week. He spent a fortune for it.'

2. Existing Approaches

2.1 Farkas & de Swart 2013: Thematic Arguments

Representation in terms of Discourse Representation Theory (Kamp & Reyle 1994) here illustrated with Persian data

(47) K_0 + [Leili [yek sīb] khærīd]
   = [x_1 x_2 | x_1 = LEILI, APPLE(x_2), BUY(x_1, x_2)],   two DRs introduced: x_1, x_2

(48) K_0 + [Leili [sīb khærīd]]
   = [x_1 | 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 by existential quantification.

Anaphoric uptake:

(49) K_1 + [Majnoon khord=∅]
   = [| x_1 = LEILI, APPLE(x_2), BUY(x_1, x_2)]
     x_3 x_4 | x_3 = MAJNOON, x_4 = x_2, EAT(x_3, x_4)]

Problems:

◆ Non-compositional rule:
   a_2 is bound by existential quantifier "there is a...", hence not accessible from outside.

◆ 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)

3. A New E-Type Analysis of PINs

3.1 E-type pronouns

Pronouns with quantifier antecedents, no c-command (Evans 1980; Nouwen subm.)

(13) Few congressmen admire Kennedy, and they are very junior.   Evans 1980
    '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):

(14) 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).

◆ Descriptive theory of pronouns (Neale 1990, Heim 1990, Elbourne 2005),

◆ but descriptive approaches are not required for E-type strategies (Nouwen subm.)

3.2 E-type pronouns in DRT

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

(15) John beats most donkeys he owns. They complain.

   [x_1 | x_1 = JOHN, [x_2 | DONKEY(x_2), OWN(x_1, x_2)] ⟨MOST x_2⟩ [| BEAT(x_1, x_2)]

   ξ_3 | ξ_3 = Σx_2 [x_2 | DONKEY(x_2), OWN(x_1, x_2), BEAT(x_1, x_2)]]

Abstraction and Summation rule:

◆ Given a triggering configuration with a duplex condition K_1⟨(Q)⟩K_2 in a DRS K,
   – form the union $K' = K_1 \cup K_2$,
   – choose a DR x from K', add new DR ξ to K', add condition $\xi = \Sigma x K'$

◆ $\Sigma x K'$ relative to assignment g, model M = ⟨A, [ ]⟩ is the sum of all a∈A
   such that there is an extension g' of g with g'(x) = a where K' true w.r.t. g' 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 (SDRT, Asher & Lascarides)

3.3 PINs as dependent definites under existential closure

Basic assumptions for incorporated nominals:

◆ Existential quantifiers with narrow scope in DRT
   -- Condition ∃K is true w.r.t. assignment g, model M
      iff there is an extension g' of g such that K is true w.r.t. g', M.
   -- Implicit in negation, disjunction, quantifier conditions ¬∃K, ∃K∨∃K', K→∃K'

◆ Existential Closure EC scoping over vP (Diesing 1991)

◆ EC ranges over event variable of the verb

◆ Nominals within vP are dependent definites relative to the event variable of the verb

Example:

(16) K_0 + [$_{IP}$ Leili $_1$ EC$_2$ [$_{vP}$ t_1 sīb$_3$ khærīd]]   'Leili apple bought'
   = [x_1 | x_1 = LEILI, ∃[e_2 x_3 | x_3 = APPLE-OF(e_2), BUY(x_1, x_3, e_2)]]
   = K_1

   where BUY(x_1, x_3, e_2): e_2 is an buying event, with x_1 the buyer, x_3 the object bought
   APPLE-OF(e_2) is the unique apple of e_2

3.4 Anaphoric uptake of PINs by E-type strategy

(17) K_1 + [$_{IP}$ Majnoon$_4$ EC$_5$ [$_{vP}$ t_4 t_6 khord-∅]]   'Majnoon ate it/them'

   [x_1 | x_1 = LEILI, ∃[e_2 x_3 | x_3 = APPLE-OF(e_2), BUY(x_1, x_3, e_2)]
    x_4 ξ_6 | x_4 = MAJNOON,
       ξ_6 = Σx_3[e_2 x_3 | x_3 = APPLE-OF(e_2), BUY(x_1, x_3, e_2)],   Abstraction, Summation
       ∃[e_5 | EAT(x_4, ξ_6, e_5)]]

◆ Pronominal interpreted as E-type pronoun, requiring abstraction/summation

◆ Covert pronoun has no number feature, ideally relating to the number-neutral DR ξ_6

◆ Anaphoric uptake more complex w.r.t. cases in which a DR is already introduced; hence if speaker intends to take up a DR, non-incorporated NPs are better.

4. Consequences & Further Observations

4.1 Number Neutrality

Number neutral interpretation of singular PINs predicted:

◆ (16) is compatible with there being multiple events of Leili buying an apple.

But then: Why are regular indefinites not interpreted as number neutral?

(18) K_0 + [$_{IP}$ Leili$_1$ EC$_2$[$_{vP}$ t_1 [$_{NP}$ yek sīb]$_3$ khærīd]]
          Leili   an apple bought.3SG

   [x_1 x_3 | x_1 = LEILI, APPLE(x_3), #(x_3) = 1, ∃[e_2 | BUY(x_1, x_3, e_2)]]

◆ yek 'a/one' introduces #(x_3) = 1, excludes alternatives #(x_3) > 1 by scalar implicature.

◆ With PINs, there is no scalar alternative to EC.

4.2 Maximality Effect with anaphoric uptake of PINs

Due to summation in (17) we expect maximality effect, cf. Yanovich 2008

(19) 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.' (EZ: ezafe linker)

(20) 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.'

4.3 Avoidance of collective predication

◆ If PINs were semantically number neutral, collective predicates should be possible.

◆ Present theory: PINs are singular → no collective predicates (cf. Dayal 2011, 2015)

(21) diruz   Sara *barg-e-khoshk / barg-ha-ye-khoshk jam.kard
     yesterday Sara leaf-EZ-dry   leaf-PL-EZ-dry   collected
     'Yesterday Sara collected dry leave / dry leaves.'

But: bare singulars possible in habitual sentences:

(22) Ali   tambr jam-mi-konad
     Ali   stamp collect-DUR-do.3SG
     'Ali collects stamps.', 'Ali is a stamp collector.'

Explanation as generic quantification:

(23) [x_1 | x_1 = ALI,
     [SUITABLE t] ⇒ ∃[e_2, x_3 | e_2 in t, x_3 = STAMP-OF(e_2) ∧ ADD TO-COLLECTION(x_1, x_3, e_2)]
     'Ali habitually adds a stamp to his collection.'

4.4 Plural nominals

Current theory predicts:

◆ In non-collective predication, plurality with incorporated nominals has no effect, as incorporation results in a number-neutral interpretation

Findings (cf. Modarresi 2014):

◆ Plural-marked incorporated nominals lead to specialized interpretations

(24) 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:

(25) [x_1 | x_1 = MARYAM, ∃[E_2, X_3 | X_3 = BOOKS-OF(e_2), READ(x_1, X_3, E_2)]

Cumulative interpretations (cf. Krifka 1996):

◆ When x = BOOK-OF(e), x' = BOOK-OF(e'), then x⊕x' = BOOKS-OF(e⊕e')
   When READ(y,x,e), READ(y,x',e'), then READ(y, x⊕x', e⊕e')

◆ Reference to collective events E suggest: Their parts are spatio-temporally distinct.

5. Further Issues relating to Persian

5.1 Accusative-marked bare nominals

Assumption (Modarresi 2015):

◆ ra as a morphological reflex of an object scrambling out of vP (Movement of an object NP into a initial focus position does not require ra-marking)

ra-marking of bare NP results in definite interpretation:

(26) [Leili$_1$ sīb-rā$_3$ EC$_2$ [$_{vP}$ t_1 t_3 khærīd]]
     Leili   apple-ACC   bought-3SG
     '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 e_2 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)

(27) a. tooye sabad miveh bood. Leili sīb-rā   bardasht.
        in   basket fruit was.3SG Leili apple-ACC took.3SG
        'There were fruits in the basket. Leili took the apple'
     b. [x_1 ξ_2 | BASKET(x_1), FRUITS(ξ_2), IN(x_1, ξ_2),
        x_3 x_4 | x_3 = LEILI, x_4 = APPLE-OF(ξ_2), ∃[e_5 | TAKE(x_3, x_4, e_5)]]
        'the apple of the fruits'

5.2 A closer look at yek-marked indefinites

(30) K_0 + [$_{IP}$ Leili$_1$ EC$_2$[$_{vP}$ t_1 [$_{NP}$ yek sīb] khærīd]]
          Leili   an   apple bought.3SG

Two possible readings, (31) and (32):

(31) [x_1 | x_1 = LEILI, ∃[e_2 x_3 | APPLE(x_3), #(x_3) = 1, 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 refers 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.

(32) [x_1 x_3 | x_1 = LEILI, APPLE(x_3), #(x_3) = 1, ∃[e_2 | BUY(x_1, x_2, e_2)]]

◆ Indefinite NP not dependent on e_3, allows for wide scope w.r.t. EC

5.3 Accusative marking of singular indefinite nominals

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

(34) [Leili$_1$ [yek sīb-rā]$_3$ EC$_2$ [$_{vP}$ t_1 t_3 khærīd]]
     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. (32).

◆ but scrambling out of vP essential to guarantee wide scope w.r.t. other quantifiers

(35) yek ketab-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.'

5.4 i-marked nouns

Another way of expressing indefiniteness in Persian: i-marking

(36) a. [$_{IP}$ Mæn$_1$ EC [$_{vP}$ t_1 roobah-i   did-æm]]
        I   fox-INDEF saw-1SG
        'I saw a fox.'
     c. [$_{IP}$ Mæn$_1$ roobah-i-rā$_3$ EC [$_{vP}$ t_1 did-æm]]
        I   fox-INDEF-ACC   saw-1SG
        'I saw a certain fox.'

◆ i-marking: restrictive selection out of a kind or plurality (Windfuhr 1987)

◆ Choice functions (Reinhart 1997, v. Heusinger 1997, Kratzer 1998, Yanovich 2005)

(37) [$_{IP}$ Leili$_1$ EC$_2$ [$_{vP}$ t_1 sīb-i khærīd]]
     [x_1 | x_1 = LEILI, ∃[e_2 | x_3 = F(APPLE), EAT(x_1, x_3, e_2)]]

◆ F(APPLE) ∈ ⟦APPLE⟧

◆ as with other referring expressions, discourse referent x_3 introduced in higher box, hence easily accessible for anaphoric uptake

◆ no dependency on event of existential closure e_2, hence no number neutrality

5.5 Iterative readings and modal subordination

The durative marker mī can express progressivity or imperfective readings:

(38) har-rooz sobh   Maryam sīb mi-kharad.
     everyday morning Maryam apple DUR -buy.3SG
     'Every morning Maryam buys apples.'

   [x_1 | x_1 = MARYAM,
    [t_2 | MORNING(t_2)] ⇒ ∃[e_3 x_4 | x_4 = APPLE-OF(e_3), AT(t_2, e_3) 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.

(39) K_1 + Ab-e-shoon ro mi-girad.
     water-of-them ra DUR.take.3SG.
     'She makes juice of them.'

   [....
    [t_2 x_5 | MORNING(t_2), x_5 = Σx_4 [e_3 x_4 | x_2 = APPLE-OF(e_3), AT(t_2, e_3) BUY(x_1, x_4, e_3)]]
    ⇒ ∃[e_6, x_7 | JUICE(x_7), MAKE-OF(x_7, x_5, e_6)]]

2.2 Modarresi 2015: Number-neutral DRs

◆ Pseudo-incorporated NPs introduce number-neutral DRs
   (such DRs already stipulated in Kamp & Reyle 1994).

◆ Overt pronouns are marked for number, hence expect number-marked DRs
   Covert pronouns: not marked for number, hence do not expect number-marked DRs

(50) Leili sīb   khærīd.   Majnoon khord-∅ ^,->esh/ -^>eshoon.
     Leili apple bought.3SG Majnoon ate-pro/-it/-them
     'Leili bought apple(s). Majnoon ate it / them.'

   [x_1 ξ_2 | x = LEILI, APPLE/S(ξ_2), BUY(x_1, ξ_2)
    x_3 | x_3 = MAJNOON, ATE(x_3, ξ_2)] ξ_2: number-neutral DR

◆ If world knowledge suggests atomic or sum interpretation of number-neutral DR, singular or plural overt pronouns are possible.

(51) a. Leili apartman khærīd.   Gheimat-esh bala bood.   atomic interpretation
        Leili appartment bought.3SG. Price-its high was.3SG
        'Leili bought appartment(s). Its price was high.'
     b. Leili havij khærīd.   Majnoon khord-eshoon.   sum interpretation
        Leili carrot bought.3SG. Majnoon ate-them.
        'Leili bought carrot(s). Majnoon ate them.'

Problems:

◆ Why are pseudo-incorporated NPs interpreted as number neutral?

◆ Anaphoric uptake always more complex than with non-incorporated antecedent.

6. Weak Definites in English

6.1 Weak definites analyzed as PINs

Weak definites (Poesio 1994, Carlson e.a. 2006, Schwarz 2013):

(40) Every accident victim was taken to the hospital. (possibly different hospitals)

Proposal: WDs are situation-dependent definites under existential closure, just as PINs

(41) Mary took John to the hospital.
   [x_1 x_2 | x_1 = MARY, x_2 = JOHN, ∃[e_3 x_4 | x_4 = HOSPITAL-OF(e_3), TAKE-TO(x_1, x_2, x_4, e_3)]]

6.2 Predictions

◆ Number-neutral interpretations: See (40)

◆ Maximality effect of anaphoric uptake.

(42) Every victim was taken to the hospital. They declared a state of emergency.
   'the hospitals to which the victims were taken declared a state of emergency'

◆ No collective predicates with weak definites:

(43) The accident victims gathered at the hospital. (the same hospital)

6.3 Institutionalized Meanings

WDs have institutionalized meaning (Asudeh & Mikkelsen 2001, ..., Klein e.a. 2013)

(44) a. The hurricane victims were taken to the hospital.   (weak or regular definite)
     b. The hurricane victims were taken to the church.   (only regular definite)

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

(45) [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 hospital-events

◆ similar to idiomatic expressions, but with transparent combination of lexical items

Why is institutionalization of readins less prominent for Persian PINs?

◆ Persian allows a clear differentiation for EC-internal/external interpretation due to rā

◆ English: internal reading (a) needs support by idiomatization, in contrast to (b).

(46) a. [John EC [went to the hospital]]   b. [John EC [went] [to the hospital]

Aguilar-Guevara, Ana & Joost Zwarts. 2010. Weak definites and reference to kinds. SALT. 20, 1-15.
Aguilar-Guevara e.a. (eds.) 2014. Weak referentiality. Amsterdam: John Benjamins.
Asudeh, Ash & Line Mikkelsen. 2000. Incorporation in Danish: Implications for interfaces. In: Cann, R., C. Grover & P. Miller, (eds), Grammatical interfaces in HPSG. Stanford: CSLI Publications.
Borik, Olga & Berit Gehrke. 2015. An introduction of the syntax and semantics of pseudo-incorporation. In: (eds), The syntax and semantics of pseudo-incorporation. Leiden: Brill, 1-46.
Borthen, Kaja. 2003. Norwegian bare singulars. Norwegian University of Science and Technology.
Carlson, Greg N. 2006. The meaningful bounds of incorporation. In: Vegeleer, Svetlana & Liliane Tasmowski, (eds). Non-definiteness and plurality. Amsterdam: John Benjamins, 35-60.
Carlson, Gregory & Rachel Sussman. 2005. Seemingly indefinite definites. In: Kepser, S & Marga R, (eds), Linguistic evidence. Berlin: Mouton de Gruyter, 26-30.

Dayal, Veneeta. 2015. Incorporation: Morpho-syntactic vs. semantic considerations. In: Borik, Olga & Berit Gehrke, (eds), The syntax and semantics of pseudo-incorporation. Leiden: Brill, 189-221.
Elbourne, Paul 2005. Definite descriptions. Oxford University Press.
Farkas, Donka F. & Henriëtte de Swart 2003. The semantics of incorporation. CSLI Publications.
Kamp, Hans, Uwe Reyle & Josef Van Genabith. 2011. Discourse Representation Theory. In: Guenthner, Franz & Dov M. Gabbay, (eds), Handbook of Philosophical Logic. Springer, 125-394.
Klein, Natalie, et al. 2013. Experimental investigations of weak definites and weak indefinite noun phrases. Cognition 128: 187-213.
Massam, Diane. 2001. Pseudo Noun Incorporation in Niuean. Natural Language & Linguistic Theory 19: 153-197.
Massam, Diane. 2009. Noun Incorporation: Essentials and Extensions. Language and Linguistics Compass 3: 1076-1096.
Mithun, Marianne. 2010. Constraints on compounding and incorporation. In: Vogel, Irene & Sergio Scalise, (eds), Compounding. Amsterdam: John Benjamins, 37-56.

Modarresi, Fereshteh. 2014. Bare nouns in Persian: Interpretation, Grammar, and Prosody. Doctoral dissertation. Humboldt Universität zu Berlin.
Modarresi, Fereshteh. 2015. Discourse properties of bare nouns in Persian. In: Borik, Olga & Berit Gehrke, (eds), The syntax and semantics of pseudo-incorporation. Leiden: Brill, 189-221.
Nouwen, Rick. in prep. E-type pronouns: congressmen, sheep and paychecks.
Poesio, Massimo. 1994. Weak definites. SALT 4. 282-299.
Schwarz, Florian. 2013. Two kinds of definites cross-linguistically. In: Aguilar-Guevara, Ana, Bert Le Bruyn & Joost Zwarts, (eds), Weak Referentiality. Amsterdam: John Benjamins.
Yanovich, Igor. 2008. Incorporated nominals as antecedents formanaphora, or How to save the thematic arguments theory. University of Pennsylvania Working Papers in Linguistics 14.