Indexical shift in Armenian: evidence from and for binding

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Outline

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I, you, here, now, actually
$sp^c, ad^c, loc^c, t^c, w^c$

- As emphasized by Kaplan (1989), indexicals are **rigid designators** (in the sense of Kripke (1972)) that **refer directly** to an object in the actual context.

Indexicals

- A consequence of rigid designation is the fact that indexicals cannot be 'intensionalized', i.e. they systematically leap out of any sentential operators:

(1) a. Last year in Pakistan, everyone who was there then was kidnapped.
$\rightsquigarrow$ The people in Pakistan last year were kidnapped

b. Last year in Pakistan, everyone who was here now was kidnapped.
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(2) a. During conferences, the current speaker is extremely boring. $\rightsquigarrow$ speaker covaries with conferences

b. During conferences, I am extremely boring. $\rightsquigarrow$ I, David, am an extremely boring person

Context shifters ?

- But, as first noted by Schlenker (1999) and popularized by Anand and Nevins (2004), it seems that one *can* find shifted indexicals in natural languages:

(3) ǰon ǰəgna nə-ññ yɨl-all
John hero be.1SG.O 3SG-MASC.say-AUX.3SG-MASC
✓ 'John says that I am a hero'
✓ 'John$_i$ says that he$_i$ is a hero' (Amharic: Schlenker 1999)

(4) Hɛseni$_i$ mɨ$_k$-ra va kɛ ɛz$_{i/k}$ dɛwletia
Hesen.OBL I.OBL-did say that I rich.be-PRES
'Hesen told me$_k$ that I$_k$ am rich'
'Hesen told me$_k$ that he$_i$ is rich' (Zazaki: Anand and Nevins 2004)

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Sundaresan 2018 for an overview

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- Restricted to attitude reports environments: shifting occurs mostly under *say* and *tell*, while less languages allow shifting under *think* and *know*, possibly forming an implicative hierarchy

Deal 2017, Sundaresan 2018, Wurmbrand 2018

First theory: monster operator

- In this view, the shift is not induced by the attitude verb itself, but by a so-called *monster operator* (MO) after Kaplan (1989).

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- The MO is a **context-shifting** operator: it is introduced via an attitude verb and turns the context coordinates of the embedded clause into the coordinates of its index:

The monster operator 👻

$[\![\text{👻} \ \phi]\!]^{c,i} = [\![\ \phi \ ]\!]^{i,i} = 1$

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- The context variables that refer to the original context of utterance are thus **rewritten** with those of the index, i.e. the variables whose value are computed against the reported context introduced by the embedded clause.

First theory: monster operator

- This analysis straightforwardly captures the following restriction, illustrated here with an example in Zazaki:

(5)

Vɨzeri	Rojda	Bill-ra	va	Kɛ	ɛz	to-ra	miradiša
Yesterday	Rojda	Bill-to	say-PST	that	I	you-to	angry.be-PRES

✓ 'Yesterday Rojda$_i$ told Bill$_j$ that he$_i$ was mad at him$_j$'
✓ 'Yesterday Rojda$_i$ told Bill$_j$ that I$_{speak}$ was mad at you$_{addr}$'
✗ 'Yesterday Rojda$_i$ told Bill$_j$ that I$_{speak}$ was mad at him$_j$'
✗ 'Yesterday Rojda$_i$ told Bill$_j$ that he$_i$ was mad at you$_{addr}$'

(Anand and Nevins, 2004)

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- The monster approach correctly predicts this: once the parameters of the context have been replaced by those of the index, it is not available to the computation anymore, and indexicals receive a shifted interpretation.

First theory: monster operator

- It has been demonstrated for various languages that shift together is too strong a constraint: it *might*, but *must not*, hold in many attested 'shifty' languages.

Tamil (Sundaresan, 2012), (Sundaresan, 2018), Mishar Tatar (Podobryaev, 2014), Telugu (Messick, 2017), (Messick, 2020), Catalan Sign Language (Quer, 2005), (Blunier and Zorzi, 2020), German Sign Language (Hübl, 2013), i.a.

- In some languages, the utterance context remains accessible even when one or more indexicals are shifted, arguing against a 'context rewriting' approach

Korean (Pak et al., 2008), Slovenian (Stegovec and Kaufmann, 2015)

Second theory: the binding approach

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- Crucially, this option requires context variables to be present in the syntax, just like individual variables *x,y...* and world variables w_1, w_2..., as proposed by Percus (2000) a.o.
- Attitude verbs have the ability to bind the context variable that comes along with the indexical pronoun, yielding the two possible readings for (6):

(6) ǰon ǰəgna nə-ññ yɨl-all
John hero be.PF-1SGo 3SG-MASC.say-AUX.3SG-MASC
John$_i$ said λ_c that I$_c{}^i$ am a hero (shifted, bound reading)
c John said that I$_{s(c)}$ am a hero (unshifted, free reading)
Amharic: Schlenker 1999

Outline

IS in Modern Eastern Armenian

- Modern Eastern Armenian (Indo-European: Armenia, Yerevan region) allows optional indexical shift (7):

(7)

Mariam-nə	asɛl-a	ʊɔr	(jɛs)	haχtɛl-ɛm
Mariam.NOM-DEF	say.PST-3SG	COMP	1SG	win.PST-1SG

✓ "Mariam said that I won" (indexical)
✓ "Mariam$_i$ said that she$_i$ won" (shifted)

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- A number of 'shifty configurations' in MEA, to which we now turn, challenge the operator-based approach in significant ways.

Problem 1: multiple embeddings

- In multiple embedded constructions, indexicals in MEA must receive their value from the closest "shifty" C-domain:

(8)

Samuel-ə	asɛl-a	Anna-in	ʊɔɾ	Narɛk-ə	Mariam-in
Samuel.NOM-DEF	say.PST-3SG	Anna.DAT	COMP	Narek.NOM-DEF	Mariam.DAT

asɛl-a	ʊɔɾ	(jɛs)	kɛz	sirum-ɛm
say.PST-3SG	COMP	1SG	2SG	love.PTCP.PRS-1SG

✓ 'Samuel$_i$ said to Anna$_j$ that Narek$_k$ said to Mariam$_m$ that he$_k$ loves her$_m$'

✗ 'Samuel$_i$ said to Anna$_j$ that Narek$_k$ said to Mariam$_m$ that he$_i$ loves her$_j$'

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- The operator-based approach would predict an intermediate shifted reading, where the 👻 is inserted by the highest attitude verb: however, this reading is unavailable.
- The binding approach similarly overgenerates in predicting the same reading, since nothing in principle prevents the two indexicals of being bound by the topmost λ-binder.

Problem 2: split-antecedence

- Another problem for the oprator-based approach is the availability of shifted readings of plural indexicals referring to two coordinated DPs in the matrix clause:

(9)

Anna-n	u	Mariam-ə	asəl-ən	te	gnalu
Anna.NOM-DEF	and	Mariam.NOM-DEF	say.PST-3PL	COMP	go.PTCP-FUT

enk	kefi	miasin
be.PRS.1PL	party.DAT	together

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- The preferred reading for this sentence is a *dependent* one (Beck and Sauerland, 2000), whereby Anna and Mariam each said something like 'I will go to the party with Anna/Mariam' (a group reading is not excluded, but dispreferred).

Problem 2: split-antecedence

- Preference for the dependent reading of plural *enk* is expected under the assumption that shifted indexicals (like their non shifted counterparts) are interpreted *de se* (Anand, 2006): each speaker x attributes to herself the property P such that x will go to the party with y (and $x \neq y$).

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- This is a problem for the operator-based approach, since the speaker parameter $sp(c)$ is not a plurality of individuals in the original context of utterance.
- In fact, the presence of a plural feature [+PL] seems to suggest that the shifting mechanism ranges over two different speech acts, but not one.

Problem 3: argument realization

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- (10) shows that, when a first person and second person indexicals pronouns are shifted in the same embedded clause, their corresponding referents are both realized as matrix DPs subject and object, respectively:

(10)

Annai	maman	asɛl-ə	**Anna-in**	ʊɔɾ	du	pɛtk-ə	indʒ
Anna.GEN	mom	say.PRS-3SG	Anna.DAT	COMP	you.NOM	need-COP	me.DAT

ognɛs	tun-ə	makrelu	hamar
help-PRS.2SG	house-DEF	clean-PTCP.FUT	for

✓ 'Anna's mother said **to Anna** that you should help me with the cleaning' (indexical)

✓ 'Anna$_j$'s mother$_i$ said **to Anna**$_j$ that she$_j$ should help her$_i$ with the cleaning' (shifted)

Problem 3: argument realization

- If this is not the case, indexicals must refer to the utterance context participants: in (15), the 2SG indexical agreement marking *ɛs* can only refer to the actual addressee, not to Anna (the addressee of the reported context).

(11)

Annai	maman	asɛl-ə	ʊɔr	du	pɛtk-ə	indʒ
Anna.GEN	mom	say.PRS-3SG	COMP	you.NOM	needneed-COP	me.DAT

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Putting it all together: local binding and a new constraint on arguments

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- I will assess the three problems in turn and argue for an interface solution, according to which grammar is context-sensitive in a fine-grained fashion.
- The solution crucially hinges on two constraints: one grammatical - a type of relativized minimality in the sense of Rizzi (1990) and another of a more pragmatic type, that forces indexical reference to be resolved locally rather than globally (at the level of the utterance).

Solving problem 1: local binding

- Recall that the binding approach falls short in accounting for cascaded embeddings like (12) below:

(12) Samuel-ə asɛl-a Anna-in ʊɔɾ Narɛk-ə Mariam-in
Samuel.NOM-DEF say.PST-3SG Anna.DAT COMP Narek.NOM-DEF Mariam.DAT

asɛl-a ʊɔɾ (jɛs) kɛz siɾum-ɛm
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- In order to prevent this, we need to provide the theory with a principled way of 'blocking' the intermediate reading, i.e. enforce closest binding.

Solving problem 1: local binding

- Adopting a version of Rizzi's (1990, **?**) relativized minimality to context, we can correctly derive the possible readings for (12): indexicals must be bound by the closest λ-binder

Context-relativized minimality (Sundaresan, 2018)

In a configuration in which Φ and Ψ are indexicals of the same category,

(13) $\lambda c ... \Phi ... \lambda c' ... \Psi ...$

Φ and Ψ must be bound by the closest context-λ-abstractor.

Solving problem 2: binding of multiple variables

- Recall that the second problem had to do with the referential value of indexicals, which we assume are inherently singular in our example:

(14)

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✓ Anna$_i$ and Mariam$_j$ said that we$_{i,j}$ will go to the party together.

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- A distributive operator ensures that the dependent reading of *say* obtains, and returns 'true' if any member of the variable set $\{Anna, Mariam\}$ each said 'I'll go to the party'

Rullmann (2003), Rullmann (2004), LaTerza et al. (2014), LaTerza et al. (2015)

Solving problem 3: argument realization

- What about the absence of a shifted reading for an indexical whose binder is not present as a full DP in the matrix clause ?

(15)

Annai	maman	asɛl-ə	ʊɔɾ	du	pɛtk-ə	indʒ
Anna.GEN	mom	say.PRS-3SG	COMP	you.NOM	needneed-COP	me.DAT

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Solve reference globally !

In a shifty language, indexical reference is resolved at the grammatical level when it can, i.e. when to each indexical bindee corresponds a binder that

1. is in the right configuration (obeys context-relativized minimality); and

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- The constraint operates on both grammatical and pragmatic levels: during the processing/parsing of the sentence, indexical will be resolved against the local (grammatical) context if it can; if not, speakers and hearers will resolve indexical reference against the utterance context.

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- Furthermore, ellipsis sites are sensitive to the grammatical structure of their antecedent (16):

(16) The garbage needed to be taken out.

a. John did it.

b. *John did.

(17) Someone took out the garbage.

a. John did it.

b. John did. (Hankamer and Sag, 1976)

Solving problem 3: argument realization

- This is consistent with other findings about ellipsis processing: the parser will likely consult immediately preceding linguistics antecedent before consulting discourse-available information

Frazier & Clifton 2000, 2005, Arregui et al. (2006) i.a.

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- Analogous results have been observed in studies about pronominal reference, according to which parallelism and thematic roles are more important factors in determining pronominal reference than mere discourse saliency or recency

Terken and Hirschberg (1994), Smyth (1994)

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- The operator-based approach does not predict the behavior of indexicals in multiple embeddings and thus undergenerates.
- Because indexicals are still considered to be directly referential under the OP theory, it cannot account for split-antecedence configurations and for mixed readings involving indexicals referring to different contexts (and thus violating the shift-together effect).
- An approach in terms of binding can account for the data, if it is provided with i) a locality constraint on binders and ii) a constraint on the availability of arguments that can serve as potential antecedents for shifted indexicals.

Thank You!

Feedback much welcome: david.blunier@unige.ch

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