Syntactic alternatives in Turkish polar questions

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question

Are alternatives computed based on semantic type or are there constraints from syntax?

- The sentences in (1) express the same assertions, but *focus* occurs on different elements.

(1) a. Heidi likes DONER$_F$.
b. HEIDI$_F$ likes doner.

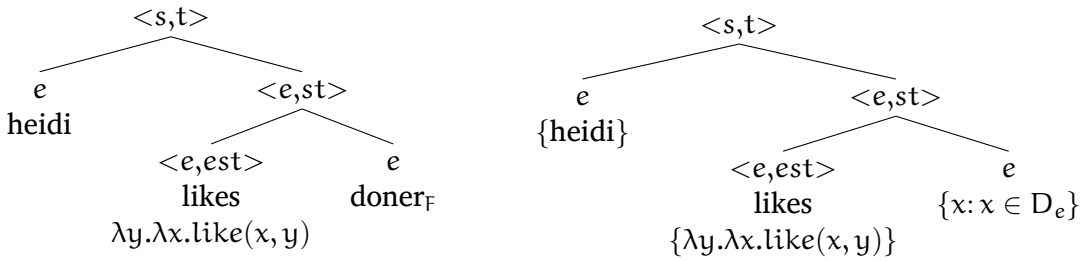
- Focus indicates that *alternatives* are activated (following Rooth, 1985, 1992).

(1a′) { like(heidi, doner), like(heidi, schnitzel), like(santa, cheesesteak), ... }
(1b′) { like(heidi, doner), like(felix, doner), like(elia, doner), ... }

- What constraints restrict *which* alternatives are introduced?

- Rooth (1985): F-marked elements are replaced by any element of the same semantic type.

(1a′)



- Question: is what matters only semantic type, or are there constraints based on syntax?

- This talk: a novel argument that syntax *does* play some role (cf. Fox & Katzir, 2011).
  - Testing ground: *polar questions* in Turkish, composed via *focus* (Atlamaz, 2023).
  - Rooth's algorithm *over-generates* alternatives in the data.

- Our response: a constraint on alternatives based on *syntactic category* (e.g. Katzir 2007).

1 Polar Questions

spoiler

At least in Turkish, polar questions are naturally analyzed based on focus computation.

1.1 *Starting Point*

- One view: a polar question denotation is introduced by a particle, which may occur in the C head (cf. Ciardelli et al., 2018; Hamblin, 1973; Karttunen, 1977).[1]

(2) $[\![\text{C}]\!] = \lambda p\,.\,\lambda q\,.\,q = p \vee q = \neg p$

- Given an LF as in (4), (2) returns a Hamblin set containing p and $\neg p$ (as desired).

(3) Does Heidi like doner?

(4) a. $[_{\text{CP}}\ \text{C}\ [_{\text{TP}}$ Heidi like doner]]
b. $\lambda q\,.\,q = \text{like}(\text{heidi}, \text{doner}) \vee q = \neg\text{like}(\text{heidi}, \text{doner})$

- But, there are reasons to think that focus plays an important role in polar questions.

1.2 *Turkish Polar Questions*

- Turkish polar questions are obligatorily produced with a clitic *=mI*, whose placement is sensitive to focus (Kamali, 2015; Kamali & Krifka, 2020).

- By default, *=mI* appears rightmost, as in (6).

(5) Heidi döner sev-er.
Heidi döner like-AOR
'Heidi likes doner.'

(6) Heidi döner sev-er =mı?
Heidi döner like-AOR =Q
'Does Heidi like doner?'

- When a constituent is focused, *=mI* must attach to it and yields a cleft-like meaning.

[1] Our argument will be based on a Hamblin set containing both positive and negative answers. However, this is controversial. See e.g. Biezma and Rawlins (2012) and Roberts (2012) for a 'monopolar' analysis.

(7) a. Heidi =mi döner sev-er.
Heidi =Q döner like-AOR
'Was it Heidi that likes doner?'
b. Heidi doner =mi sev-er?
Heidi döner =Q like-AOR
'Was it doner that Heidi likes?'

- Atlamaz (2023) took this morphological evidence to be a crucial point and proposed that focus is the main compositional tool for polar questions in Turkish.

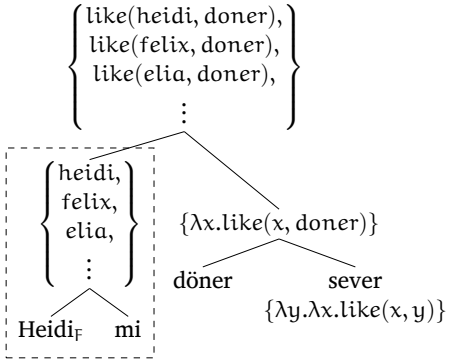
1.3 *Atlamaz's (2023) Focus Computation*

- Focus introduces alternatives, and those alternatives would propagate up to C, which would convert the focus value to an ordinary value, as in (8) (Beck, 2006; Kotek, 2014, 2016).[2]

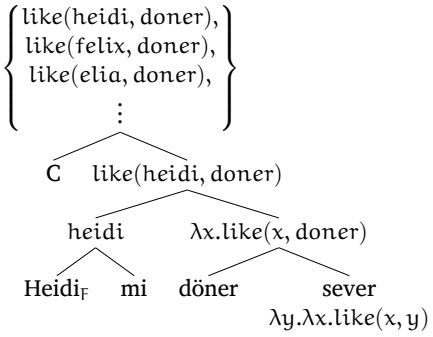
(8) $[\![\text{C TP}]\!]^{o} = [\![\text{TP}]\!]^{f}$

- In (7a), *=mI* attaches to the subject, introducing salient alternatives, as in (9).

(9) Alternative Computation

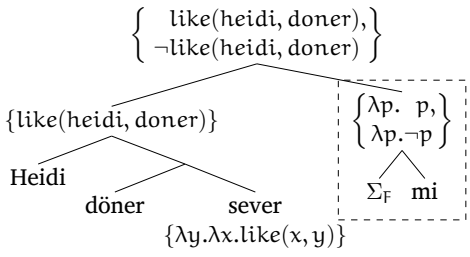


(10) Ordinary Computation

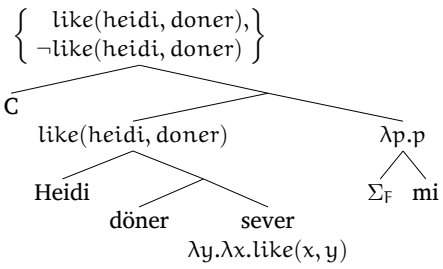


- In its default position, *=mI* attaches to a covert polarity head (Σ) (11) (Laka, 1990).

(11) Alternative Computation



(12) Ordinary Computation



[2] In adopting the C in (8), we depart from Atlamaz (2023), who places focus alternatives at the matrix level. Embedding is straightforward if alternatives are first shifted to ordinary values.

1.4 *Further Support for the Focus Analysis*

- Further evidence that focus drives question computation comes when the clause is embedded.

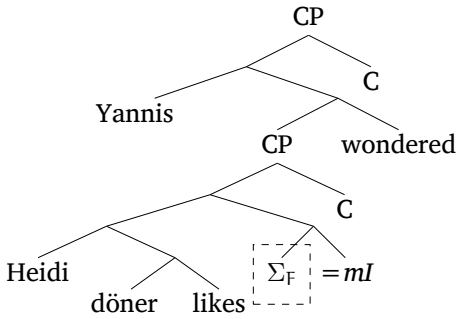
- The placement of *=mi* affects whether a matrix question reading is observed with verbs like *wonder*, which only embed questions.

C > = mI: Matrix Declarative

(13) Yannis [Heidi döner sev-er =mı diye] meraket-ti.
Yannis [Heidi doner like-AOR Q C] wonder-PST
'Yannis wondered whether Heidi likes doner.'

- Recall that the C head shifts alternatives from the focus value to the ordinary value.

- In (13), focus is on the embedded polarity head, so alternatives propagate to the local C, = matrix declarative.



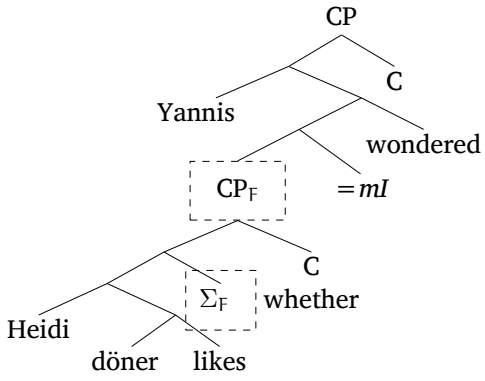
= mI > C: Matrix Question

(14) Yannis [Heidi döner sev-er diye] =mi meraket-ti?
Yannis [Heidi doner like-AOR C] Q wonder-PST
'Was it that Heidi likes doner that Yannis wondered?'

- *=mI* tracks the highest F-marking.

- In (14), both the embedded polarity head and the CP are F-marked.

- Alternatives to the embedded CP propagate up to matrix C, = matrix question.



- Turkish data (morphology and readings under embedding) suggest that polar questions are formed following a composition based on focus mechanisms.[3]

[3]Gonzalez (2023) posits a different focus-sensitive analysis, where C is focus-sensitive in its presupposition, but along the lines of (2) in its assertive component. We focus on Atlamaz's (2023) analysis in this talk.

2 Type-theoretic Predictions

spoiler

A type-theoretic algorithm over-generates answers to the basic polar question.

- Let's take a step back and recall our main question: how is the alternative set introduced in polar questions derived?

- In this talk, we will focus on the basic polar question in (15). Recall: Σ is focused.

(15) Heidi döner sev-er =mı?
Heidi doner like-AOR =Q
'Does Heidi like doner?'

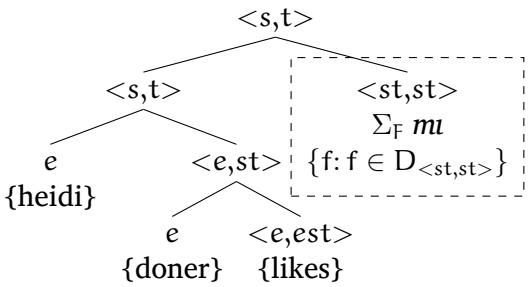
- Atlamaz (2023) assumes that only affirmative and negative morphemes are possible replacements of Σ in forming alternatives. However, this is a *lexical stipulation*.

- Consider: what Hamblin set would follow for free from Rooth's (1985) theory of focus?

2.1 *Prediction for (15)*

- The semantic type of nodes are given in (16), along with their focus semantic values.

(16)



- Based on type, alternatives triggered by the highlighted node include any element of type <st,st>. In addition to negation, replacements could include possibility or necessity modals of any flavor (e.g. epistemic, deontic) and coordinators, among other operators.

(17) **Sample replacements**

a. λp_{st} . p
b. λp_{st} . ¬p
c. λp_{st} . $\Box_{deontic}$ [p]
d. λp_{st} . ¬$\Box_{deontic}$ [p]
e. λp_{st} . p ∧ $\Box_{deontic}$ [p]

- Thus, based on type, a Hamblin set like (18) should be possible for the polar question.

(18) **Possible Hamblin set**

$$\left\{\begin{array}{r} \mathit{like}(\mathit{heidi}, \mathit{doner}), \\ \neg\mathit{like}(\mathit{heidi}, \mathit{doner}), \\ \Box[\mathit{like}(\mathit{heidi}, \mathit{doner})], \\ \neg\Box[\mathit{like}(\mathit{heidi}, \mathit{doner})], \\ \mathit{like}(\mathit{heidi}, \mathit{doner}) \wedge \Box[\mathit{like}(\mathit{heidi}, \mathit{doner})], \\ \vdots \end{array}\right\}$$

3 Restricting Alternatives

spoiler

The only warranted alternatives are ever $\{p, \neg p\}$ — even if context is manipulated.

- Consider: the question in (19), assuming the hypothetical world w' with facts in (20).

(19) Ali uyudu=mu?
Ali sleep-PST.3SG=Q
'Did Ali sleep?'

(20)

Facts at w'

a. Ali had to sleep.

b. Ali slept.

- Let's take Dayal's (1996) Ans operator. As defined in (21), Ans applies to a Hamblin set, and picks out the ***maximally informative*** (i.e. strongest) true answer, (22).[4]

(21) $[\![\mathit{Ans}]\!](Q) = \lambda w.\iota p \in Q[p(w) \wedge \forall p' \in Q[p'(w) \rightarrow p \subseteq p']]$

(22) [Ans [$_{CP}$ C [Ali sleep Σ_F]]]

- Let's pick a Hamblin set for (19) allowed based on semantic type. Parallel to above:

(23) **Possible Hamblin set**

$$\left\{\begin{array}{r} \mathit{sleep}(a), \\ \neg\mathit{sleep}(a), \\ \Box[\mathit{sleep}(a)], \\ \neg\Box[\mathit{sleep}(a)], \\ \mathit{sleep}(a) \wedge \Box[\mathit{sleep}(a)], \\ \vdots \end{array}\right\}$$

[4] The Ans operator would presupposes the existence of a maximally informative true answer in Q. We set aside the presupposition in the lexical entry in (21) in order to streamline exposition.

- At the world w′, the Hamblin set contains (at least) three true answers.

(24) **True answers**
a. $\mathrm{sleep}(a)$ b. $\Box[\mathrm{sleep}(a)]$ c. $\boxed{\mathrm{sleep}(a) \wedge \Box[\mathrm{sleep}(a)]}$

- But, the predicted complete answer is over informative, and thus infelicitous with (19).

(25) # Evet, Ali uyu-mak zorunda-y-dı ve uyu-du.
yes Ali sleep-INF obliged-COP-PST.3SG and sleep-PST.3SG
'Yes, Ali had to sleep and slept.'

- Moreover, the answer in (26), which is predicted to be a partial answer, is felicitous.

(26) Evet, Ali uyu-du.
yes, Ali sleep-PST.3SG
'Yes, Ali slept.'

3.1 *Context is Not Enough*

- The Hamblin set may be constrained by *context* to contain only those alternatives that are contextually relevant (e.g. Beaver & Clark, 2009; Rooth, 1985, 1992).

– Possibility: perhaps the default context for (19) only supports (27).

(27) **Hamblin set (target)**
$\{ \mathrm{sleep}(a), \neg\mathrm{sleep}(a) \}$

- But, with contextual support, other alternatives could be in the Hamblin set, such as (28).

(28) **Hamblin set (test)**
$\{ \Box[\mathrm{sleep}(a)], \neg\Box[\mathrm{sleep}(a)] \}$

– Problem: this Hamblin set does not seem to ever be attested.

- Let's assume that we take a scenario where the Hamblin set in (28) would be natural.

(29)

Scenario (at w'')

a. Ali's mom said to Ali: 'Ali, you have to sleep.'

b. Ali slept.

c. We hear Ali snoring.

d. $P(sleep(a) \mid snore(a)) > 0.99$

e. We are unaware of any exchange between Ali and his mom.

f. We ask (19).

• There is a deontic requirement of Ali to go to sleep and we are unaware of this. We are sure that Ali is sleeping. It is illogical that we question Ali's state of sleeping.

• With the Hamblin set in (28), the question would ask whether Ali was *required* to sleep, which is natural in this context. The strongest true answer would be: $\Box[sleep(a)]$.

• Yet, this answer is an incomplete answer and not an available answer to the question in (19) even with the facts of w'' in (29).

(30) # Evet, Ali uyu-mak zorunda-y-dı.
yes Ali sleep-INF obliged-COP-PST.3SG
'Yes, Ali had to sleep.'

• We conclude that the alternative set should be constrained by *grammar* to {p, ¬p}.

4 Syntactic Constraint

proposal

Alternatives are computed based on a constraint sensitive to *syntactic category*.

• Our take: focus alternatives are *syntactic* objects (Fox & Katzir 2011, cf. Katzir 2007), and the focus is replaced with other elements of the same *syntactic category*.

(31) **Match Constraint**
If the focus is of syntactic category α, replacements must be of category α.
(e.g. Jeretič et al., 2024; Katzir, 2007)[5]

[5]Katzir (2007) posited a syntactic category constraint alongside a complexity restriction (see Section 4.1). While his focus was on complexity, we argue for the category constraint (see also e.g. Jeretič et al., 2024).

• Given an LF as the following (32), the set of alternatives are based on replacements of the category Σ. Assuming only affirmative and negative morphemes are of category Σ, the only possible alternatives in (32) would be $sleep(a)$ and $\neg sleep(a)$, (33).

(32) $[_{CP}$ C $[_{TP}$ Ali sleep Σ_F]]

(33) **Hamblin set (predicted)**
{ $sleep(a)$, $\neg sleep(a)$ }

• With the Match Constraint, alternatives based on e.g. modals or conjunction are not derived.

4.1 *Moderation*

• In their analyses, Katzir (2007) and Fox and Katzir (2011) propose that alternatives are restricted to be at most as *structurally complex* as the prejacent.

(34) Mary only ate $[\text{some}]_F$ of the cookies.

(35) **Symmetry problem**

a. Mary ate [all] of the cookies. (attested alternative)
b. Mary ate [not all] of the cookies. (unattested alternative)

• Yet, that constraint has been questioned, since complex alternatives do seem to arise (e.g. Hirsch & Schwarz, *in press*; Schwarz & Wagner, 2024; Trinh & Haida, 2015).

– E.g. Hirsch and Schwarz (*in press*): (36a) entails (36b). (36a) is false in (37).

(36) a. Al only has to $[_{VP}$ cook$]_F$.
b. $\Rightarrow \neg\Box[\ clean(\text{Al}) \vee shop(\text{Al})\ ]$

(37) **Facts at w'''**
a. Al has to cook.
b. Al has to clean or shop (his choice).

– Hence, (38) is an alternative, and is more complex than the original focus.

(38) $[_{TP}$ Al has to $[_{VP}$ clean or shop]]

• Our account is not in tension with those results, since it does not rely on a complexity restriction, only on a constraint based on syntactic category match.

takeaway

- Are alternatives computed based on semantic type or are there constraints based on syntax?
- At least in Turkish, polar questions are formed based on focus computation.
- A type-theoretic algorithm over-generates answers to the basic polar question.
- The only warranted alternatives are ever $\{p, \neg p\}$ — even if context is manipulated.
- Response: alternatives are computed following a syntactic identity constraint.

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