

Against Optional *Wh*-Movement

Karine Megerdooian and Shadi Ganjavi

University of Southern California

1 Introduction

Cheng (1991) distinguishes languages based on the strategy they use in forming *wh*-interrogatives. She argues that a given language can use only one of the following strategies: (i) overtly moving the *wh*-element to the scopal position or (ii) leaving the *wh*-element in situ. This analysis predicts that no language can show evidence of optional *wh*-movement. Eastern Armenian¹ and Persian, however, seem to employ both strategies, where *wh*-elements can be in-situ as in (1) or they can be moved overtly to the beginning of the sentence as in (2).²

- (1) a. Ara-n **vor** **girk**-en e k'artatsel ? *Armenian*
Ara-Nom which book-Acc is read
'Which book did Ara read?'
- b. nâder **ki**-ro did? *Persian*
Nader who-Acc saw
'Who did Nader see?'
- (2) a. **vor** **girk**-en e Ara-n k'artatsel? *Armenian*
which book-Acc is Ara-Nom read
'Which book did Ara read?'
- b. **ki**-ro nâder did? *Persian*
who-Acc Nader saw?
'Who did Nader see?'

The following paper argues that these languages do not have optional *wh*-movement. Evidence from the distributional properties of the two constructions shows that *wh*-in situ and overt *wh*-extraction are two distinct processes. We argue that overt movement of *wh*-phrases is not *wh*-movement in the sense of English, but rather an instance of scrambling. *Wh*-in situ, on the other hand, is

indeed the strategy for forming *wh*-questions in these languages and should be analyzed as an operator-variable relation.

2 Island Effects

In this section, we will examine the effects of overt *wh*-extraction and *wh*-in situ on Complex NPs, Sentential Subjects, Adjuncts and *wh*-islands.

Overt extraction of the *wh*-element from an island results in ungrammaticality, as shown in the following examples:

Complex NPs

- (3) a. * **vor yere_i-in_i** [ayn mart-un vor x_i sp'anel er] bandark'etsin
 which child-Acc that man-Acc that killed was imprisoned
 'Which child they imprisoned the man that had killed?'
 b. * **kojâ_i** ali [in shâye' ke nâder kilinton-o x_i dide]-ro shenide
 where Ali this rumor that Nader Clinton-Acc has seen-Acc has heard
 'Where Ali has heard the rumor that Nader has seen Clinton?'

Sentential Subjects

- (4) a. * **umin_i** [vor vrej-e x_i mat'nel e] amboj ent'anik-in husahat'ets
 whom that Vrej-Nom denounced is whole family-Dat disappointed
 'Whom the fact that Vrej denounced disappointed the whole family?'
 b. * **Ki** [inke x_i in ketâb-ro xundeh] taajobâvar-e
 who this-that this book-Acc has read surprising-is
 'Who that has read this book is surprising?'

Adjuncts

- (5) a. * **vor t'q-in_i** usutsich-e bark'atsav [vorovhet'ev GaRnik'-e x_i tzetzel er]
 which boy-Acc teacher-Nom got angry because Garnik-Nom beat was
 'Which boy did the teacher get angry because Garnik had beaten?'
 b. * **ki(-o)_i** ali [ba'd az in-ke x_i busid] raft madrese
 who(-Acc) Ali after from this-that kissed left school
 'Who Ali left for school after he kissed?'

Wh-Islands

- (6) a. * **ov_i** e Ara-n uzum imana vor x_i *inch girk* e k'artatsel
 who is Ara-Nom wanting know-Subj that what book is read
 'Who did Ara want to know which book had read?'

- b. * **chi**_i nâder mi-xâhad be-dânad ke *ki* x_i xunde?
 what Nader Prog-want Subj-know that who has read
 ‘Which book does Nader want to know who has read?’

As the examples (7) through (10) indicate, *wh*-elements in situ also show sensitivity to island constraints.

Complex NPs

- (7) a. * [ayn girk-en] es aRnelu [vor **ov** dasaran-um k’artats]
 that book-Acc are buy-Fut that who class-Loc read
 ‘Who are you going to buy the book that read in class?’
 b. * ali [in shâye’ ke nâder kilinton-o **kojâ** dide]-ro shenide
 Ali this rumor that Nader Clinton-ACC where has seen-Acc has heard
 ‘Where has Ali heard the rumor that Nader has seen Clinton?’

Sentential Subjects

- (8) a. * [vor vrej-e **umin** e mat’nel] amboqj ent’anik-in husahat’ets
 that Vrej-Nom whom is denounced whole family-Dat disappointed
 ‘Whom the fact that Vrej denounced disappointed the whole family?’
 b. * [inke **ki**(yâ) bâ in ma’sale âshenâ hast(and)] xeyli jâleb-e
 this-that who(pl) with this issue familiar is(are) very interesting-is
 ‘Who the fact that is familiar with this issue is very interesting?’

Adjuncts

- (9) a. *usutsich-e bark’atsav [vorovhet’ev GaRnik’-e **vor t’q-in**_i er tzetzel]
 teacher-Nom got angry because Garnik-Nom which boy-Acc was beat
 ‘Which boy did the teacher get angry because Garnik had beaten?’
 b. *ali [ba’d az in-ke **ki-o** busid] raft madrese
 Ali after from this-that who-Acc kissed went school
 ‘Ali went to school after kissing who?’

Wh-Islands

- (10) a. * Ara-n uzum e imana vor **ov** e *inch girk* k’artatsel
 Ara-Nom wantingis know-Subj that who is what book read
 ‘Who did Ara want to know which book had read?’
 b. *nâder mi-xâhad be-dânad ke *ki* **kodâm ketâb**-o xunde?
 nader Prog-want Subj-know that who which book-Acc read?
 ‘Which book does Nader want to know who read?’

- (14) a. * mâdar-esh_i **ki**_i-ro dust dâre *Persian*
 mother-3sg who-Acc like have
 ‘Who_i does his_i mother like?’
 b. **ki**_i-ro mâdar-esh_i dust dâre
 who-Acc mother-3sg like have
 ‘Who_i does his_i mother like?’

It is traditionally assumed that the LF representation for the examples with *wh*-in situ is as in (15), in which the *wh*-element has moved to the [Spec, CP] position for interpretive reasons, leaving a trace which is coindexed with the pronoun to its left, resulting in a Weak Crossover configuration. As is indicated by the * in the (a) sentences above, these constructions are indeed ungrammatical.

- (15) * [CP wh_i [IP [... pro_i ...] x_i]

If the overtly moved *wh*-phrases were also in [Spec, CP] position as shown in the configuration in (16), we would expect WCO effects as in the in-situ cases. These sentences, however, are grammatical, suggesting that the *wh*-phrase is not moving to the specifier of CP.

- (16) [CP wh_i [IP [... pro_i ...] x_i]

Hence, the distinct landing sites provide evidence for the difference between the two question-forming strategies. The following section shows that a study of the tense condition supports this generalization.

4 Tense Condition

As exemplified with the following Persian examples, overt extraction of *wh*-phrases from a Subjunctive embedded clause (17a) is more felicitous than from an Indicative embedded clause (17b)³.

- (17) a. **bâ ki**_i ali fekr mi-kone [ke nâder x_i be-raqse]
 with who Ali thought Prog-do that Nader Subj-dance
 ‘With whom does Ali think that Nader will dance?’
 b. ?? **bâ ki**_i ali fekr mi-kone [ke nâder x_i xâhad raqsid]
 with who Ali thought Prog-do that Nader future danced
 ‘With whom does Ali think that Nader will dance?’

However, there is no difference between a *wh*-in situ appearing in either Indicative or Subjunctive embedded clauses. In both constructions, *wh*-in situ renders grammatical sentences, as is indicated by the following Persian examples.

- (18) a. ali fekr mi-kone [ke nâder **bâ ki** be-raqse]
 Ali thought Prog-do that Nader with who Subj-dance
 ‘With whom does Ali think that Nader will dance?’
 b. ali fekr mi-kone [ke nâder **bâ ki** xâhad raqsid]
 Ali thought Prog-do that Nader with who future danced
 ‘With whom does Ali think that Nader will dance?’

Further evidence for the distinction between the two constructions comes from the interception effects considered in the following section.

5 Interception Effects

If a focused element intervenes between the *wh*-in situ and the matrix CP, where the *wh*-element takes scope, the sentence is ungrammatical. Consider the Armenian examples in (19) and (20).

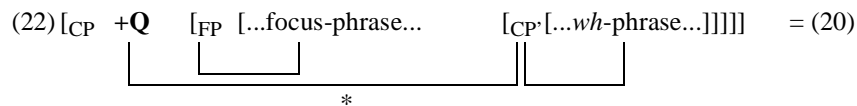
- (19) Ara-n k’artzum e vor **ov** e k’at’v-in k’erak’rel
 Ara-Nom thinking is that who is cat-Acc fed
 ‘Who does Ara think that fed the cat?’
 (20) *ARA-n e k’artzum vor **ov** e k’at’v-in k’erak’rel
 Ara-Nom is thinking that who is cat-Acc fed
 ‘Who is it Ara that thinks fed the cat?’

In (19), the *wh*-phrase appears in-situ in the embedded clause but it takes scope in the matrix CP. However, as soon as the subject of the matrix clause, viz. *Ara*, is focused, the sentence becomes ungrammatical as shown in (20). This suggests that focus prevents the *wh*-element *ov* ‘who’ to take scope in the matrix clause for its interpretation.

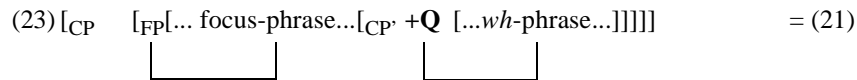
If this line of reasoning is correct, then we expect that changing the matrix verb to a *wonder*-type verb, which selects an interrogative clausal complement, would eliminate any kind of interception by matrix focus since the *wh*-element is interpreted within the embedded clause. As the example in (21) shows, this is indeed the case. In this example, which is minimally different from (20), we see that the focused element in the matrix clause does not interfere with the licensing of the embedded *wh*-element.

- (21) ARA-n e uzum imana vor **ov** e k'at'v-in k'erak'rel
 Ara-Nom is wanting know that who is cat-Acc fed
 'It is Ara who wants to know who fed the cat.'

The schematic representations of (20) and (21) are provided in (22) and (23), respectively, where +Q represents a question-operator. In order for the *wh*-element in situ to be interpreted in (22), it needs to form a dependency or licensing relation with the question operator in the [Spec, CP] position of the matrix clause and the focused element in the matrix clause intercepts that relation.



But in the configuration in (23), where the *wh*-element takes scope in the embedded [Spec, CP] position, focus in the matrix clause has no effect on the interpretation of the *wh*-element.



As is evident from the following Armenian sentences, however, focused elements do not intervene in the overt movement of *wh*-phrases.

- (24) a. **ov** e ARA-n k'artzum vor x_i k'at'v-in k'erak'ri
 who-Nom is Ara-Nom thinking that cat-Acc feed-Subj
 'Who does ARA think that will feed the cat?'
 b. **vor mekena-n** DU es k'artzum vor Ara-n arni
 which car-Acc you are thinking that Ara-Nom buy-Subj/3sg
 'Which car do YOU think Ara will buy?'

What we have seen in this section is that focus-phrases can intercept the interpretation of *wh*-elements appearing in-situ in an embedded clause but they do not interfere with the overt movement of embedded *wh*-elements.

Similarly, *wh*-elements in situ are intercepted by negation, negative polarity items and other *wh*-phrases in both languages. In contrast, these elements do not block the overt movement of *wh*-phrases. Due to lack of space, we will not present these examples in this paper.

6 DP Islands

In Persian and more so in Eastern Armenian, islands can be nominalized. In these constructions, the verbs are in the infinitival or participial forms. (25a) shows an ungrammatical clause in Armenian, in which the *wh*-element appears in-situ within a complex NP island. The nominalized form of the island is given in (25b), where in contrast with the CP form of the island, the *wh*-element can appear in-situ.

- (25) a.* [ayn girk-en] es aRnelu [vor **ov** dasaran-um k'artats]
that book-Acc are buy-Fut that who class-Loc read
'You are going to buy the book that who read in class?'
- b. [um k'artatsatz girk]-en es aRnelu
whose read book-Acc are buy-Fut
'Lit: You are going to buy whose read book?'

Overt *wh*-extraction from within a DP island, however, is ungrammatical as illustrated below:

- (26) * **vor yerec-in_i** aysor [x_i sp'anoq mart]- un en bandark'el
which child-Acc today killer man -Acc are imprisoned
'Which child today killing man did they imprison?'

Similarly, while *wh*-phrases may appear in situ in nominalized sentential subject or adjunct islands, as illustrated in (27) and (29), overt movement of a *wh*-element out of these islands is not felicitous, as exemplified in (28) and (30).

Sentential Subjects

- (27) [Vrej-i **umin** mat'nel]-e amboqj ent'anik-in husahat'ets
Vrej-Gen whom denouncing-Nom whole family-Dat disappointed
'Lit: Vrej's denouncing whom disappointed the whole family?'
- (28) * **umin_i** [Vrej-i x_i mat'nel]-e amboqj ent'anik-in husahat'ets
whom Vrej-Gen denouncing-Nom whole family-Dat disappointed
'Who did Vrej's denouncing (of) disappoint the whole family?'

Adjuncts

- (29) [vor **mekena-n** t'esnel-uts het'o] toqar gnatsir
which car-Acc see-Abl after left-2sg went-2sg
'Lit: You left after seeing which car?'

- (30) * vor t'q-in_i [Gagik'-i x_i tzetzel-u p'atch'ar]-ov usutsich-e bark'atsav
 which boy-Acc Gagik-Gen beat-Gen reason -Inst teacher-Nom got angry
 'Which boy did the teacher get angry because of Gagik's beating?'

7 Summary and Analysis

Table 1 summarizes the distributional properties of *wh*-extraction and *wh*-in situ in Persian and Armenian. The results show that *wh*-in situ and overt movement of *wh*-elements are two distinct phenomena.

Table 1: Distributional Properties of *wh*-extraction and *wh*-in situ

		<i>Wh</i> -in situ	<i>Wh</i> -extraction
<i>Islands and Boundedness</i>	Sensitive to CP Islands (SSC, CNP, Adjunct, Wh)	Yes	Yes
	Sensitive to DP Islands	No	Yes
	Tense Condition (Subjunctive effect)	No	Yes
<i>Interception Effects</i>	Focus Intercepts	Yes	No
	Negation Intercepts	Yes	No
	NPI Intercepts	Yes	No
	Wh Intercepts	Yes	No

7.1 Subjacency and Overt *Wh*-Movement

We argue that overt extraction of *wh*-elements is sensitive to locality effects and can be captured by referring to the Subjacency Condition. Both CP and DP islands create a barrier for movement as shown in (31a) and (31b), respectively. While tensed clauses constitute an island, overt extraction out of the embedded subjunctive in (31c) is felicitous. This can be accounted for if we assume that the tense of the subjunctive clause is dependent on the matrix tense, thus extending the domain of extraction.

- (31) a. CP islands: * [CP **wh_i** [TP ... [(NP) [CP [TP ... x_i ...]]]]]
 b. DP islands: * [CP **wh_i** [TP ... [NP/DP [TP ... x_i ...]]]
 c. TSC/Subj.effect: [CP **wh_i** [TP ... [... x_i ...]]]

7.2 No LF Movement

Wh-in situ elements display a different behavior with respect to islands. While *wh*-elements in situ do not sit comfortably in CP islands, they violate DP-islands. If *wh*-in situ involved movement at LF of a *wh*-element or Operator, then both DP and CP constructions should behave as islands. The distinct behavior of *wh*-in situ in DP vs. CP islands indicates that there exists no *wh*-movement at LF (as suggested in Huang (1992) among others) or Operator movement in syntax (Watanabe 1992, Aoun and Li 1993). We propose that the operator is base-generated in the specifier of CP.

7.3 *Wh*-in situ and Minimality

We account for the behavior of *wh*-in situ elements in terms of an operator-variable dependency relation. The interception facts observed can then be explained by Minimality as defined in (32).

- (32) The linking of A with B [... A... B...] obeys Minimality iff there is no intervening C [...A...C...B] such that C is linked to another element D, D distinct from B and A. (Li 1992)

As the configurations in (33) illustrate, when A-bar or operator elements, such as focus or negation (represented as XP), appear in between a *wh*-element in situ and its scopal position, an interception effect arises, resulting in ungrammaticality. Following Aoun and Li (1993), we argue that *wh*-in situ is licensed by an operator in the matrix [Spec, CP] and the presence of an intervening operator causes a Minimality effect.

- (33) Interception Effects:
 * [CP Op_i [XP **Op** ... wh_i ...]]
 * [CP Op_i [XP **Op** [CP ... wh_i ...]]]
 XP = FocusP, NegP, etc.

The contrastive data on *wh*-phrases in situ in CP vs. DP islands can also be captured by Minimality. We assume that DP-islands lack an operator, hence no Minimality effect is observed. CP islands, however, include an operator which intercepts the interpretation of the *wh*-in situ element.

8 Conclusion

In this paper, we studied the properties of *wh*-in situ and overt movement of *wh*-elements in Persian and Eastern Armenian, and we have shown that they are two distinct phenomena. Although not developed in this paper, the behavior of overt *wh*-extraction parallels the properties of scrambled elements in these languages. We therefore propose that overt movement of *wh*-elements is an instance of scrambling. The data clearly show that there is no optional *wh*-movement in these two languages, confirming Cheng's prediction.

In addition, the analysis proposed argues against a movement approach to *wh*-in situ and provides support for an operator-variable relation.

9 Notes

1. Throughout this paper, we use Eastern Armenian and Armenian interchangeably.
2. The following abbreviations are used in the examples: **Nom**-Nominative; **Acc**-Accusative; **Dat**-Dative; **Gen**-Genitive; **Abl**-Ablative; **Loc**-Locative; **Inst**-Instrumental; **Subj**-Subjunctive; **Prog**-Progressive; **Fut**-Future; **sg**-Singular; **pl**-Plural; person agreement is marked with numbers **1,2,3**. The following characters *k'*, *t'*, *p'* represent ejectives and small R is a trill.
3. Eastern Armenian and Persian do not have infinitival clauses similar to English; the Subjunctive is used instead.

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Karine Megerdooian
 University of Southern California
 Department of Linguistics, GFS 301
 Los Angeles, CA 90089-1693
 megerdoo@usc.edu

Shadi Ganjavi
 University of Southern California
 Department of Linguistics, GFS 301
 Los Angeles, CA 90089-1693
 ganjavi@usc.edu