Seth Cable, *The Grammar of Q: Q-Particles, Wh-Movement, and Pied-Piping*

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1. Introduction

Based on an in-depth study of Tlingit, an endangered and under-documented language of North America, Seth Cable's *The Grammar of Q: Q-Particles, Wh-Movement, and Pied-Piping* puts forth a novel syntactic and semantic analysis of *wh*-questions of human language. Its central claim is that it is Q-particles not *wh*-words that bear the features triggering *wh*-fronting. The Q-based analysis brings with it the following valuable results; (i) the elimination of 'pied-piping' (chapters 2, 4, and 5), (ii) a semantics for *wh*-questions which correctly interprets pied-piping structures without any special mechanisms (chapters 2 and 4), (iii) a unified account of the constraints on adposition stranding and left-extraction (chapters 2 and 4), (iv) a typology of *wh*-question formation (chapter 3), (v) a syntax and semantics for multiple wh-questions which relate the presence of Superiority Effects to the absence of Intervention Effects (chapter 4), and (vi) a theory of the constraints on pied-piping structures (chapter 5). The book under review is certainly an indispensable reading not only for scholars interested in Tlingit and other Na-Dene languages but also for those seriously concerned with the syntax and semantics of *wh*-questions of human language. This review first takes an overview of the Q-based analysis of *wh*-questions, and then suggests a way of extending the Q-based analysis to adjunct *wh*-questions.

2. An Overview

2.1 The Q-based Analysis of Tlingit *Wh*-questions

Contrary to the widely-assumed view that *wh*-fronting involves some syntactic relation between interrogative C and a *wh*-word, Cable argues that *wh*-fronting rather involves a probe-goal relation between C (more precisely, Force) and a Q-particle c-commanding the *wh*-word. Fronting of the *wh*-word is a by-product of fronting the QP projected by this Q-particle, as shown by *wh*-questions in Tlingit (Cable 2010: 7):

(1) Daa sá i éesh al'óon?
what Q your father he.hunts.it
'What is your father hunting?'

(2) [CP **[QP daa [Q sá]]** [IP [DP i éesh] [VP ***t*** al'óon]]]

QP-fronting

Since the Q-particle *sá* c-commands the *wh*-word *daa* 'what' and projects its own projection QP, this QP projection necessarily contains the *wh*-word; fronting of the QP has as a secondary consequence the appearance of the *wh*-word in the left periphery.

2.2 Consequences of the Q-based Analysis

Cable shows that the Q-based analysis of *wh*-questions brings about a number of valuable results. As space is limited, however, I will only look at three major consequences of the Q-based analysis, i.e. a typology of *wh*-questions, the elimination of 'pied-piping,' and Intervention and Superiority Effects in *Wh*-Fronting languages.

2.2.1 A Typology of *Wh*-questions

Cable argues that the Q-based analysis is not peculiar to Tlingit *wh*-questions but rather underlies the structure of *wh*-questions of all human languages. Languages differ depending on (i) whether the Q-particle has any phonological content or not, (ii) whether the Q-particle takes its sister as complement (Q-projection languages) or is adjoined to its sister (Q-adjunction languages), and (iii) whether movement of a Q-projection is overt or covert.

In Tlingit *wh*-questions like (1), the Q-particle, which has a Q-feature, is pronounced as *sá*. Tlingit is a Q-projection language in that the Q-particle *sá* takes its sister as complement, forming QP. On the assumption that this QP also bears the Q-feature, it is the first node bearing the Q-feature to be probed by the interrogative C. C agrees with this QP, which moves into the CP domain, as represented in (2). The Niger-Congo language Edo also belongs to this type of language. He argues that the Q-based analysis of Tlingit *wh*-questions can be extended to the *wh*-questions of the more familiar *wh*-fronting languages like English, German, Greek, Icelandic, Irish, Mohawk, and Russian. These *wh*-fronting languages differ from Tlingit only in that their Q-particles are phonetically null, as shown by the English example below:

(3) [CP [QP **What Q**] [did [IP you read *t*]]]

QP-fronting

The Q-based analysis can also accommodate *wh*-in-situ languages. He argues that the *wh*-in-situ languages consist of two distinct syntactic types, i.e. Sinhara-type languages and Japanese/Korean-type languages. Sinhara, a Q-projection language, differs from Tlingit only in that QP-movement is covert. The Sinhara *wh*-question (4), for instance, is derived as represented in (5) (where the *-e* suffix which is glossed as '-E' encodes the scope of a *wh*-word):

(4) Chitra monəwa də gatte?
Chitra what Q bought-E
'What did Chitra buy?' (Kishimoto 2005: 3)

(5) [CP [QP **monəwa** [Q **də**]] [IP Chitra [VP *t* gatte]]]

Covert QP-fronting

Languages like Japanese and Korean differ from Sinhara only in that the former are

Q-adjunction languages. In Japanese, for example, since the Q-particle *ka* is adjoined to its sister, the node immediately dominating Q and its sister is not a QP but is of the same type as the sister of Q. Hence, attraction of the Q-feature into the CP domain entails that only the Q-particle *ka* moves, leaving its sister in its original position. The derivation of the Japanese wh-question (6), for example, proceeds as represented in (7)[1]:

(6) John-wa nani-o kaimasita ka
John-TOP what-ACC bought Q
'What did John buy?'

(7) [CP [IP John-wa [VP [DP [DP nani-o] *t*] kaimasita] [Q **ka**]]]

Overt Q-movement

2.2.2 Elimination of 'Pied-Piping'

The Q-based analysis enables us to eliminate the concept of 'pied-piping'. In Tlingit, the Q-particle *sá* always marks the right edge of what is 'pied-pied' as shown in (8) (Cable 2010: 8):

(8) **Aadóo** yaagú **sá** ysiteen?
who boat Q you.saw.it
'Whose boat did you see?'

Under the Q-based analysis of 'pied-piping', the derivation of (8) proceeds as represented below:

(9) [CP **[QP [DP Aadóo yaagú] [Q sá]]**] [IP [CP pro] [VP *t* ysiteen]]

QP-fronting

The 'pied-piping' structure is simply a case where the Q-particle *sá* has as its sister a phrase larger than the maximal projection of the *wh*-word, i.e. the DP *aadóo yaagú* 'which boat' in (9). By adopting such an analysis, we can assume the null hypothesis that if an operation targets the features of a given lexical item, i.e. Q in *wh*-fronting, it applies only to the maximal projection of that lexical item, *i.e.* QP in this case.

He further argues that the Q-based analysis also explains limited pied-piping in languages like English. In English-type languages, neither 'pied-piping' past islands nor 'pied-piping' past lexical categories is permitted (Cable 2010: 144):

(10) a.* [DP A book [CP that **who** wrote]] did you buy?
b.* I wonder [CP [NP pictures of **whom**] John bought]?

This is in contrast with languages like Tlingit, where pied-piping is not limited:

[1] As pointed out by an anonymous reviewer, Cable's typology of *wh*-questions would predict that there are eight types of language. In the book under review, however, only the four types presented here are discussed. It is not entirely clear whether the other four types are attested.

(11) [NP [CP **Wáa** kwligeyi] x̄áat] **sá** i tuwáa sigóo
how it.is.big.REL fish Q your spirit.at it.is.happy

Based on the insight of Kratzer and Shimoyama (2002), he claims that in limited pied-piping languages, a Q-particle must agree with a *wh*-word. Q/*Wh*-Agreement, however, is blocked by the Complex NP constraint in (10a), and the Phase Impenetrability Condition in (10b) given Embick and Marantz's (2008) view that every lexical projection (VP, NP, AP) is complement to a phase head (*v*, *n*, *a*).

2.2.3 Intervention Effects and Superiority Effects in *Wh*-Fronting Languages

The Q-based analysis is able to tie the presence of Superiority Effects in multiple wh-questions with the absence of Intervention Effects, and vice versa. For instance, English exhibits Superiority Effects as shown in (12) while it does not exhibit any Intervention Effects as shown in (13), where the *wh*-words appear within the scope of such typical offending operators as *not* and *nobody* (Cable 2010: 123):

(12) a. Who bought what?
b.* What did who buy?
(13) a. Who didn't read **what**?
b. Which children wanted to show nobody **which pictures**?

German, on the other hand, does not exhibit any Superiority Effects as shown in (14) while it exhibits Intervention Effects as shown in (15) (Cable 2010: 122–123):

(14) a. Wer hat was gekauft?
who has what bought
'Who bought what?'
b. Was hat wer gekauft?
what has who bought
'Who bought what?'
(15)?? Wer hat niemanden **wo** angetroffen?
who has nobody where met
'Who met nobody where?'

Cable claims that the English lexicon contains not only Force_{Q}, which existentially quantifies over one choice-function variable introduced by a Q-particle, but also a special interrogative Force head ForceQ_{2}, which contributes two existential quantifiers to the meaning of the question. It then follows that in an English binary wh-question with ForceQ_{2}, there are multiple Q-particles, one for each wh-word. Since all the *wh*-words are associated with QPs, the Attract Closest or the Minimal Link Condition requires that the structurally highest QP undergo overt movement, thereby explaining the presence of Superiority Effects in English:

(16) a. $[\text{Force}_{Q2}$ [QP who Q]$_1$ [t_1 bought [QP what Q]]]
b.* $[\text{Force}_{Q2}$ [QP what Q]$_1$ [did [QP who Q] buy t_1]]

Given that Intervention Effects arise when the first focus-sensitive operator c-commanding a *wh*-word is not a Q-particle, the Force_{Q2} analysis also explains the absence of Intervention Effects in English. This is because an in-situ wh-word is always paired with its own Q-particle so that the first focus-sensitive operator c-commanding it does not need to be an offending operator irrespectively of whether the in-situ QP covertly moves or not.

Cable claims that unlike English, German does not allow multiple *wh*-questions to have multiple Q-particles. The German lexicon contains Force_{Q*}, which shares with Force_{Q2} the property of contributing multiple existential quantifiers to the meaning of the *wh*-question but already contains the choice function variable bound by one of those existential quantifiers. This Force_{Q*} can bind only one Q-particle so that only one of the *wh*-words can be dominated by QP. The Force_{Q*} analysis explains the absence of Superiority Effects in German because it derives the superiority-violating order in cases where the highest *wh*-word is not dominated by QP as shown in (17b):

(17) a. $[\text{Force}_{Q+1}$ [QP wer $Q_1]_2$ hat [t_2 was gekauft]]
who has what bought
b. $[\text{Force}_{Q+1}$ [QP was $Q_1]_2$ hat [wer t_2 gekauft]
what has who bought

The Force_{Q*} analysis also explains the presence of Intervention Effects in German. In (15), for example, since the in-situ *wh*-word *wo* 'where' is not dominated by QP, the first focus-sensitive operator c-commanding it is not the Q-particle but *niemanden* 'nobody' as represented in (18); the intervention effect follows:

(18) $[\text{Force}_{Q+1}$ [QP wer $\mathbf{Q}_1]_2$ hat [niemanden t_2 **wo** angetroffen]]
who has nobody where met

3. Adjunct *Wh*-Questions

Although Cable discusses the *wh*-questions of various languages in great detail, he only deals with *wh*-questions with argument *wh*-words like *who* and *what* but not with those with adjunct *wh*-words. This section investigates adjunct *wh*-questions, focusing on *why*-questions.[2] It is pointed out that there are differences between argument *wh*-questions and adjunct *wh*-questions. I will show that the differences can be accommodated under the Q-based analysis if we assume that a *wh*-adjunct and its associated Q-particle form a 'phrasal lexical unit' in the sense of Booij (2002a, 2002b) and Blom (2005). If the analysis to follow is on the right track, it constitutes further support for the Q-based analysis of *wh*-questions.

[2] Among Japanese adjunct *wh*-questions, *how*-questions with *dooyatte* 'how' behave like *why*-questions with *naze* 'why' whereas *when*- and *where*-questions with *itu* 'when' and *doko* 'where' do not. I leave this important issue for future research. See Tsai (1994) for relevant discussion. I would like to thank an anonymous reviewer for bringing my attention to this issue.

3.1 Adjunct *Wh*-Questions in Q-Adjunction *Wh*-in-situ Languages

As mentioned in section 2.2.1, the Q-based analysis claims that the Q-particles of Q-adjunction *wh*-in-situ languages like Japanese are initially merged at a clause-internal position and subsequently undergo overt movement to the clause peripheral position.[3] Since Japanese does not have Q/*Wh*-Agreement, we should expect that a *wh*-word can be dominated by an island within the sister of Q (see section 2.2.2). Cable (2010: 225) points out that this prediction is borne out by the well-known fact that a *wh*-word can be buried within an island, presenting the following example where the *wh*-word *dare* 'who' is buried within the Complex NP (see also Huang 1982, Nishigauchi 1990, Lasnik and Saito 1992, Watanabe 1992, Ishii 1997):

(19) Kimi-wa [[[**dare**-ga kaita] hon]-o ***t***] yomimasita **ka**
you-TOP who-NOM wrote book-ACC read Q
Lit. 'You read [the book that who wrote].'

Under the Q-based analysis, (19) can be derived via movement of the Q-particle *ka* from the base position outside the Complex NP to the clause-peripheral position. Apart from the Complex NP Constraint, a *wh*-argument is also immune from the Adjunct Condition, as shown in (20):

(20) John-wa [[**nani**-o yonde kara] ***t***] dekakemasita **ka**
John-TOP what-ACC read after went-out Q
Lit. 'John went out [after he read what].'

Although the lack of the Adjunct Condition effect in Q-adjunction *wh*-in-situ languages is not discussed in the book under review, nor is the case where the Q-particle appears outside the adjunct in *wh*-fronting languages with overt Q-particles like Tlingit, it is reasonable to claim that (20) is derived via movement of the Q-particle *ka* from outside the adjunct to the clause-peripheral position.

It is not the case, however, that *wh*-elements in-situ in Q-adjunction *wh*-in-situ languages never exhibit any island effects. As pointed out by, among others, Huang (1982), Fukui (1988), Lasnik and Saito (1992), and Ishii (1997), unlike *wh*-arguments, the *wh*-adjunct *naze* 'why' in Japanese is subject to the island constraints:

(21) *John-wa [Bill-ga **naze** Mary-ni watasita tegami]-o sagasiteimasu **ka**
John-TOP Bill-NOM why Mary-DAT gave letter-ACC looking-for Q
Lit. 'John is looking for [the letter which Bill gave to Mary why].'

(22) *John-wa [Bill-ga **naze** totuzen okoridasita kara] totemo odoroiteimasu **ka**
John-TOP Bill-NOM why suddenly got-angry because very be-surprised Q
Lit. 'John is very surprised [because Bill suddenly got angry why].'

The sensitivity of the *wh*-adjunct *naze* 'why' to the island constraints prima facie constitutes evidence against the Q-based analysis, since nothing would prevent the Q-particle *ka* from originating outside the island and then moving to the clause-peripheral position in (21, 22). I argue that like particle verbs in Dutch, pseudo-verbal compounds in Hungarian, and complex predicates in Eastern/Central Arrernte, an adjunct *wh*-word and its associated Q-particle form a 'phrasal lexical unit' in the sense of Booij (2002a, 2002b) and Blom (2005). It then follows from the Q-based analysis that the *wh*-adjunct *naze* 'why' is subject to the island constraints.

[3] Alternatively, the Q-particle can be initially merged in the clause-peripheral position. It should be noted that the discussion to follow holds irrespectively of whichever analysis is adopted.

Let us explicate what 'phrasal lexical units' are, taking particle verbs in Dutch as examples. Particle verbs in Dutch are combinations of a particle and a verb that function as complex verbs like *opbelde* 'up-phoned' in (23):

(23) ... dat Hans zijn moeder opbelde
that Hans his mother up-phoned
'that Hans phoned his mother.' (Booij 2002b: 319)

As shown in (23), the particle *op* 'up' is combined with the verb *belde* 'phoned' in the embedded SOV order. In the matrix V2 order, however, the verb *belde* 'phoned' undergoes movement to the V2 position, with the particle *op* 'up' being stranded as shown in (24):

(24) Hans belde zijn moider op
Hans phoned his mother up
'Hans phoned his mother.' (Booij 2002b: 319)

The fact that particle verbs are separable represents their phrasal nature; a particle and a verb count as independent words. Hence, they can be split without violating the principle of Lexical Integrity, which states that syntax neither manipulates nor has access to the internal structure of a word (Anderson 1992: 84). Booij and Blom argue, however, that particle verbs also have word-like properties and thus count as lexical units. First, the fact that particle verbs are perceived as word-like units is reflected by Dutch orthography, which requires particle verbs to be written as one word, without internal spacing. Second, particle verbs can feed word-formation, including both derivation and compounding as shown in (25, 26) (Booij 2002b: 321):

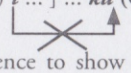
(25) Deverbal Suffixation
a. aanbied 'to offer' aanbied-er 'offerer'
aanbied-ing 'offer'
b. aankom 'to arrive' aankom-st 'arrival'
c. aantoon 'to prove' aantoon-baar 'provable'

(26) Compounding with Verbal Left Constituent
a. doorkies 'to dial through'
doorkies-nummer 'direct number'
b. doorkijk 'to see through'
doorkijk-bloes
'(lit.) see through blouse, transparent blouse'
c. opberg 'to store'
opberg-doos 'store box'

Hence, particle verbs in Dutch have both phrasal and word-like properties, forming what Booij and Blom call 'phrasal lexical units.' In other words, although the combination of a particle and a verb is phrasal in that the particle and the verb count as independent words, they also form a lexical unit, thereby being required to originate next to each other.

If we assume that a *wh*-adjunct *naze* 'why' and its associated Q-particle form a 'phrasal lexical unit,' having both phrasal and word-like properties, we can accommodate the island effects under the Q-based analysis. Since the Q-particle *ka* is required to originate next to the *wh*-adjunct *naze* 'why,' it undergoes overt Q-movement from within the complex NP or the adjunct to the clause-peripheral position. Hence, (21, 22) violate the island constraints, as schematically represented in (27):

(27) ... [Island ... naze (why) ***t*** ...] ... ***ka*** **(Q)**



There is independent evidence to show that '*wh*-adjunct + Q' forms a 'phrasal lexical unit.' It is well known that Japanese *wh*-arguments can have a non-interrogative reading as well as an interrogative reading as shown in (28)[4]:

(28) Japanese
a. DAre-ka (who-KA) 'someone'
b. DAre-mo (who-MO) 'everyone'
c. daRE-MO (who-MO) 'anyone'

Based on this fact, it has been claimed that *wh*-arguments in Japanese lack their own quantificational force and particles like *ka* and *mo* provide their quantificational force to the *wh*-arguments. The *wh*-adjunct *naze* 'why,' on the other hand, can only be used as an interrogative expression. The Japanese *wh*-adjunct *naze* 'why' cannot co-occur with the existentially-quantified particle *ka* (29a), the universally-quantified particle *mo* (29b), or the negative polarity particle *mo* (29c) (Ishii 1997: 294–297):

(29) a.?*NAze-ka (why-KA) 'for some reason'
b.* NAze-mo (why-MO) 'for whatever reason'
c.* naZE-MO (why-MO) 'for any reason'

One might claim that *NAze-ka* 'why-KA' is acceptable as exemplified by (30). As observed by Ishii (1997), however, *NAze-ka* 'why-KA' in (30) cannot be interpreted as an existential quantifier. Rather, it functions as a kind of speaker-oriented adverbial elements, meaning 'I don't know why':

(30) John-ga **NAze-ka** kinoo gakkoo-ni kita rasii
John-NOM why-KA yesterday school-to came seem
?*'It seems that John came to school yesterday for some reason.'
'It seems that John came to school yesterday, but I don't know why.'

[4] The universally-quantified particle *-mo* is isomorphic with the negative polarity particle *-mo*, though they have different pitch patterns. As extensively discussed by McCawley (1968), Japanese is a pitch-accent language and an accent falls on the last syllable of a stretch of high-pitch tones. High-pitch tones are indicated by the upper case and low-pitch tones, by the lower case here and in relevant examples to follow.

This view is supported by the fact that *NAze-ka* 'why-KA' cannot appear within a 'true embedded context', as shown by the degraded status of (31) (Ishii 1997: 294):

(31)?*John-wa [Bill-ga **NAze-ka** Mary-to-no konyaku-o
John-TOP Bill-NOM why-KA Mary-with-GEN engagement-ACC
kaisyoo sita to] uwasa siteiru
has broken that spread the rumor
'John is spreading the rumor that Bill has broken his engagement with Mary for some reason.'

This is parallel to the fact that speaker-oriented adverbs like *frankly* cannot appear within 'true embedded contexts':

(32)* John ordered that **frankly** you call him today.

If *NAze-ka* 'why-KA' were interpreted as 'for some reason,' (31) would be acceptable, since such an existential quantifier may freely appear within a 'true embedded context.'

The discussion above strongly suggests that unlike *wh*-arguments, the *wh*-adjunct *naze* 'why' in Japanese should be inherently interrogative, and that '*wh*-adjunct + Q' should be a lexical unit, although it is also phrasal in that the *wh*-adjunct and its associated Q-particle are independent words and thus separable. This paves a way of explaining the sensitivity of the *wh*-adjunct *naze* why' to the island constraints under the Q-based analysis.

3.2 Adjunct *Wh*-Questions in Q-Projection *Wh*-in-situ Languages

In Sinhara, a Q-projection *wh*-in-situ language, the *wh*-adjunct *mokə də* 'why Q' is inseparable as shown in (33) (where the *-a* suffix which is glossed as '-A' represents the neutral ending) (Slade 2011: 123):

(33) a. Ranjit [Chitra **mokə də** aawe kiyəla] dannəwa
Ranjit Chitra why Q came-E that] know-A
'Ranjit knows why Chitra came.'
b.* Ranjit [Chitra **mokə** aawa **də** kiyəa] dannəwa.
Ranjit Chitra why came-A Q that know-A
'Ranjit knows why Chitra came.'

This is in contrast with the other '*wh*-word + də' constructions, where the Q-particle *də* may be separated from its associated *wh*-word as shown in (34b) (Kishimoto 2005: 5–6):

(34) a. Ranjit [**kau də** aawe kiyəla] dannəwa
Ranjit who Q came-E that know-A
'Ranjit knows who came.'
b. Ranjit [**kauru** aawa **də** kiyəla] dannəwa
Ranjit who came-A Q that know-A
'Ranjit knows who came.'

Given our claim that '*wh*-adjunct + Q' forms a 'phrasal lexical unit,' the contrast between (33b) and (34b) can be accommodated under the Q-based analysis. It should be noted that since Sinhara is a Q-projection language, (33b, 34b) cannot be derived by base-generating

the Q-particle dɔ next to the *wh*-phrase and then moving the Q-particle to the clause peripheral position.

3.3 Adjunct *Wh*-Questions in Wh-Fronting Languages without Q/*Wh*-Agreement

Let us finally consider adjunct *wh*-questions in wh-fronting languages without Q/*Wh*-Agreement like Tlingit and Basque. As pointed out by Ortiz de Urbina (1986), although Basque is an overt clausal pied-piping language, the *wh*-adjunct *zergatik* 'why' cannot pied-pipe the clause containing it as shown in (35):

(35)*[[**zergatik** egin-da-ko] **Q**] lana gustantzen zaizu
why do-Adv-of work like AUX
Lit. '[The work done why] do you like?' (Ortiz de Urbina 1986: 315)

This is in contrast with the other wh-words as shown in (36):

(36) [[**Nor** joango dela] **Q**] esan du Jonek
who go AUX said AUX John
Lit. 'Who did John say will go?' (Cable 2010: 154)

As mentioned in section 2.2.2, the Q-particle is base-generated as the sister of the fronted constituent in the pied-piping structures like (35, 36). The contrast between (35) and (36) straightforwardly follows from the Q-based analysis if we assume that the *wh*-adjunct and its associated Q-particle form a 'phrasal lexical unit,' thereby being required to originate next to each other.

4. Conclusion

This review has first overviewed Cable's Q-based analysis of *wh*-questions, and then explicated its three major consequences, *i.e.* a typology of *wh*-questions, the elimination of 'pied-piping,' and Intervention and Superiority Effects in *Wh*-Fronting languages. I have then shown that adjunct *wh*-questions can be accommodated under the Q-based analysis if we assume that an adjunct *wh*-question and its associated Q-particle form a 'phrasal lexical unit.'

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