The syntax of pied-piping

Reading for Monday: Kotek (2014), chapter 2, pp. 57–70.

1 The phenomenon

The term ‘pied-piping’ is used by linguists to refer to structures where a movement operation applies to a constituent that is in some sense ‘larger than expected.’

(1) Wh movement
   a. [To whom], did you speak ti?
   b. [Which world-famous linguist], did the committee not consider ti for the job?
   c. [Whose brother’s friend’s father], did you see ti?
   d. [How big a car], did you buy ti?

(2) Relative clauses
   a. [DP The person [CP who], everybody ignored ti]
   b. [DP The person [CP whose singing], everybody hates ti]
   c. [DP The person [CP [pictures of whom], are hanging on my wall ti]

(3) Focus movement
   a. I’ve read John’s book, but [DAVE’s book], I haven’t read ti.
   b. It’s [JOHN’s book], that I read ti (not Dave’s).

(4) The pied-piping convention (Ross, 1967, p. 206)
   Any transformation which is stated in such a way as to affect the reordering of some specified node NP, where this node is preceded and followed by variables in the structural index of the rule, may apply to this NP or to any non-coordinate NP which dominates it, as long as there are no occurrences of any coordinate node, nor the node S, on the branch connecting the higher node and the specified node.

   “Just as the children of Hamlin followed the Pied Piper out of town, so the constituents of larger noun phrases follow the specified noun phrase when it is reordered...

   There are certain Feinschmeckers who have taken issue with the formulation of this sentence, pointing out that following the original Pied Piper was obligatory for all the children of the town but one, who was lame, so that the phrase “obligatory pied-piping” is a case of terminological coals to Newcastle. These critics suggest that since convention [(4)] describes optional accompaniment, such accompaniment should best be dubbed “fellow traveling,” or the like, with the term “pied piping” being reserved for cases of mandatory accompaniment such as those described below. While the point they make is valid, I have chosen to disregard it, eschewing an exact parallel to the fairy tale in question in the interest of a less elaborate set of terms.”

   (Ross, 1967, p. 263, fn. 23-24)
2 Feature percolation

Ross’s (1967) approach to pied-piping can essentially be thought of as feature percolation. If we believe that movement is driven by syntactic Agree/Attract operations, we would like to assume that the constituent targeted for movement carries the relevant feature.

(5) **The Feature Percolation Hypothesis** (Chomsky, 1973, much subsequent work)
There is a mechanism of feature percolation that enables features to spread across phrase boundaries.

(6) \[ \text{DP}_2 \rightarrow \text{DP}_1 + \text{wh} \]

(7) \[ \text{DP}_2 + \text{wh} \]

This feature percolation must be constrained in some way, to avoid overgenerating pied-piping structures. (Note that only (8d) is ruled out by Ross’s (4).)

(8) **Some impossible pied-piping**
   a. * A man [DP a deckchair of whom], you spilled coffee on ti
   b. * A man [AP fond of whom], she found herself ti
   c. * A man [VP to address whom], she hesitated ti
   d. * A man [CP that we trust whom], you should not believe ti

Constraining (5) in a principled way is not easy. Recently, Heck (2008) and Cable (2007) have argued that it is, in fact, impossible.

Feature percolation appears to be limited to cases of pied-piping and is not otherwise useful. We might therefore want to derive it from the other primitives of the system—agree, merge, and move. However:

- **Merge** does not seem to help here.
- We might imagine that feature percolation is an agree relation, but what would the agreeing feature be and why would it be there? (9) shows that a possessive phrase needn’t agree in number with its possessor.

1It is worth noting, though we will not give an analysis for this in class, that possible pied-piping in questions is different than possible pied-piping in relative clauses, so it’s not clear that we can just give one formulation of where feature percolation should “stop.”
We might imagine that feature percolation is the result of feature movement (Chomsky, 1995; Pesetsky, 2000), but if so this movement would not be sensitive to known islands for extraction, such as the specifier of DP (10).

(9) [My father] is / *am at the party.

(10) a. [Whose father’s book], did you buy t_1?
    b. *Whose, did you buy [ t_1 father’s book]?

3 Pied-piping using Q-particles (Cable, 2010)

3.1 Q-particles and their distribution

In Tlingit (Na-Dene; Alaska, British Columbia, Yukon), questions may involve the fronting of a bare wh-word, (11a), or pied-piping of additional material of different sizes, (11b–d).

Each fronted phrase contains a sá particle at its right edge. Cable (2007, 2010) argues that this is a Question-particle, which projects a further phrasal layer, a QP.

In a multiple question, each wh-phrase occurs with its own Q-particle, (11e).

(11) Wh-movement and pied-piping in Tlingit (Cable, 2010):
   a. [Daa sá] i éesh al’ón?
      what Q your father he.hunts.it
      ‘What is your father hunting?’
   b. [Daakw keitl sá] asháa?
      which dog Q it.barks
      ‘Which dog is barking?’
   c. [Goodéi sá] kkwagóot?
      where.to Q I.will.go
      ‘Where will I go to?’
   d. [Goodéi wugootx sá] has oowajéé i shagóonich?
      where.to he.went Q they.think your parents.ERG
      ‘Where do your parents think that he went?’
   e. [Aadóo sá], [daa sá] [TP t_1 yéi oowajéé [t_2 du jee yéi teeyí]]?
      who Q what Q they.think their hand.at it.is.there
      ‘Who thinks they have what?’

In all languages, interrogative movement is triggered by Q-particles.
In a given language, Q-particles may project a QP layer, or they may adjoin to a structure containing a *wh*-element but not project.

(12) **Possible QP structures in** [Cable (2010)](#):

(a) Q-adjunction:

```
XP
 Q   XP
  `wh`
```

(b) Q-projection:

```
QP
 Q   XP
  `wh`
```

The largest constituent baring a Q-feature is attracted to the CP layer by the interrogative probe, which probes for Q-features.\footnote{QP that are not moved to Spec,CP end up becoming *wh*-existentials. We will not see more of those today.}

This gives rise to two types of languages: *wh*-in-situ languages and *wh*-movement languages.

(13) **Q-movement in *wh*-in-situ languages: Q-adjunction** (Sinhala, Japanese...)

```
CP
 Q
 C       TP
   ↓       ↓
   Agree/Attract
   ↓       ↓
  Q  XP
    ↓       ↓
   ... *wh*-word ...
```

(14) **Q-movement in *wh*-fronting languages: Q-projection** (English, German...)

```
CP
 QP
 Q   XP
   ↓   ↓
   ... *wh*-word ...
```

```
QP
 C       TP
   ↓       ↓
   Agree/Attract
   ↓       ↓
  QP
```
3.2 Where does Q go?

In Tlingit, Q cannot occur inside syntactic islands, inside PPs, and inside DPs.

(15) Q can’t occur inside islands, but wh can
   a. [[Wáa yateeyí ʃháx’w sáani] ʃháx’w sáani] sá ash koodlénxaa?
      How they are REL  girls Q they are tempting him
      What kind of girls are tempting him? (= Girls that are how are tempting him?)
   b. * [[Wáa sá yateeyí ʃháx’w sáani] ʃháx’w sáani] ash koodlénxaa?
      How Q they are REL  girls they are tempting him
   c. * [[Wáa yateeyí ʃháx’w sáani] ʃháx’w sáani] ash koodlénxaa?
      How they are REL  Q girls they are tempting him

(16) Q can’t occur inside PP, but wh can
   a. [Tléil [QP [PP aadóo teen] sá] xwagoot?
      not who with Q I went
      ‘I didn’t go with anyone.’
   b. * [Tléil [PP [QP aadóo sá] teen] xwagoot?
      not who Q with I went

(17) Q can’t occur inside DP, but wh can
      not which dog Q barks
      ‘None of the dogs are barking.’
      not which Q dog barks

(18) Q can’t occur inside DP, but wh can
   a. [QP [DP Aadóo yaagú] sá] ysiteen?
      who boat Q you saw it
      ‘Whose boat did you see?’
   b. * [DP [QP Aadóo sá] yaagú] ysiteen?
      who Q boat you saw it

Cable’s idea: lexical heads (e.g. verbs, nouns), can “select through” a QP. Functional heads (like D and P) cannot see through a QP and therefore cannot have a QP complement. Picking a somewhat less than optimal name, Cable proposes:

(19) The QP-intervention condition
   A QP cannot intervene between a functional head and a phrase selected by that functional head.

This may give us good results for Tlingit, where Q can basically go anywhere except the cases above (including for example on top of CPs and islands), this will overgenerate pied-piping for English.
3.3 English is a limited pied-piping language

English allows quite deeply embedded wh's in possessive pied-piping:

(20) \[QP [[[Whose] brother’s] friend’s] father] Q, did you see \(ti\)?

However, English does not allow movement of CPs or islands, and movement of large DPs where wh is not near the edge of the pied-piping is at least degraded.

(21) ? [DP A picture of which president], \(ti\) hangs on Jim’s wall?
(22) ?? [DP The father of whose brother’s friend], did you see \(ti\)?
(23) * [CP that Mary likes which man], does John believe \(ti\)?
(24) * [DP A fish [CP that is how big]], do you want \(ti\)?

The idea here: some languages require Agreement between wh and Q. This has morphological reflexes, as observed e.g. in English, German and Hebrew, as opposed to Japanese and Tlingit (see also Kratzer and Shimoyama (2002) on this).

Japanese | German | Tlingit | Hebrew | English
--- | --- | --- | --- | ---
dare | wer | aa(dóó) | mi | who
nani | was | daat | ma | what
itu | wann | gwatk/gwatgeen | matay | when
naze | warum | wáá | lama | why
do|ko | wo | goo | eifo | where
dore | welche | daakw | eize | which

(26) Limited pied-piping languages (Cable, 2010, p. 147):
If the Q-particle must Agree with the wh-word it c-commands, then a wh-word cannot be dominated in the sister of Q by islands or lexical categories. Thus limited pied-piping languages are those where Q/wh-Agreement must occur.

This may be independently derived from work in Distributed Morphology, which argues that every lexical category is a phase. Let’s assume that Agree can’t happen across a phase.

(27) The Fine Structure of Lexical Categories (Embick and Marantz, 2008)
Every lexical projection (VP, NP, AP) is complement to a phase head (little-v, little-n, little-a).

Prediction: no pied-piping of modifiers to lexical categories:

(28) a. * [QP [DP The [NP party where]] Q] will John enjoy?
    b. * [QP [VP Go where] Q] will you?
    c. * [QP [DP A [NP [DegP how big] party]] Q] will you throw?
3.4 The left edge of pied-piping constituent

The way to get around this problem is to bring the *wh* to the edge of the pied-piping, where it is not shipped off as part of the lower phase and instead is visible to Agree operations from above.

(29) Pied-piping possible when *wh* is in left edge of pied-piping
   a.  [CP [[[Whose] brother’s] friend’s] father] Q, did you see *t*?
   b.  ?? [DP The father of whose brother’s friend] Q, did you see *t*?

(30) a.  ![Example](example-a.png)
   b.  * ![Example](example-b.png)

We see this in other languages as well, for example in Basque and Quechua, which allow for CP-pied-piping, but only if the *wh* is fronted inside CP (Heck, 2008).

(31) Pied-Piping of Subordinate CPs in Basque and Ancash Quechua
   a.  Basque:
      i.  ![Example](example-a.png)
      ii. ![Example](example-b.png)
   b.  Ancash Quechua:
      i.  ![Example](example-a.png)
      ii. ![Example](example-b.png)

Note: you might also think there is CP-pied-piping in English, at least in colloquial speech:

(32) Possible CP Pied-Piping in English (Kayne, 2000; Horvath, 2007)
   a.  ![Example](example-a.png)
   b.  ![Example](example-b.png)
   c.  ![Example](example-c.png)
   d.  ![Example](example-d.png)

And indeed, this construction requires fronting of the *wh*.

(33) English CP Pied-Piping Requires Wh-Fronting
   a.  ![Example](example-a.png)
   b.  * ![Example](example-b.png)
3.5 Parameters of variation

From (Cable, 2007, p. 358–360), this is a summary of the variation in the Q-based system, and some major consequences.

3.5.1 The projection parameter: Q-projection vs. Q-adjunction
In some languages (the Q-adjunction languages), Q adjoins to its sister and their mother is of the same category as the sister. In other languages (the Q-projection languages), Q takes its sister as complement, and so the node minimally dominating the Q and its sister is a QP.

3.5.2 The Q-movement parameter: Overt vs. Covert
In some languages (the Overt Q-movement languages), the highest syntactic copy of a Q-particle is pronounced. In other languages (the Covert Q-movement languages), the lowest syntactic copy of a Q-particle is pronounced.

3.5.3 The Q-pronunciation parameter: Pronounced vs. Null
In some languages, the Q-particle has phonological content. In other languages, the Q-particle is phonologically null.

3.5.4 The Agreement parameter: Q/Wh-Agreement vs. Non-Agreement
In some languages (the Q/Wh-Agreement languages), a Q-particle must Agree with a wh-word. In other languages (the Non-Agreement languages), Q-particles needn’t undergo Agreement with any wh-word.

3.5.5 The Multiple Wh-Question parameter: Multiple Qs vs. Single Q
In some languages (the Multiple QP languages), a multiple wh-question can contain multiple Q-particles. In other languages (the Single QP languages), multiple wh-questions must contain only a single instance of Q.

3.5.6 Some consequences
a. The cases where Q is attached, not directly to the wh-word, but higher up, are the ones that people call “pied-piping” constructions.

b. Because Q has to move to C, no movement-preventing obstacles (like islands or phase boundaries) can be in the way between Q and C.

c. In languages where Q agrees with wh, no agreement-preventing obstacles (like islands or phase boundaries) can be in the way between Q and wh. The game will be to make sure that Q attaches at the right height, which we will see is not always the same in different languages.

d. There are basically three kinds of wh-in-situ language: (a) Q-projection languages that move QP covertly, (b) Q-adjunction languages that move Q covertly, and (c) Q-adjunction languages that move Q overtly. There is only one kind of wh-movement language: Q-projection languages that move QP overtly.

---

3 Another consequence we’ll return to soon has to do with predictions regarding focus intervention effects (Beck, 2006).

4 Abstracting away from how multiple questions behave. If we wanted to worry about that, we’d end up with several additional types: languages that disallow multiple questions; languages that allow multiple
References


Cable, Seth. 2007. The grammar of Q. Doctoral Dissertation, Massachusetts Institute of Technology.


QPs; and languages that allow just one QP but multiple *wh*-words. Once we’ve done our movements, we need to worry about where to pronounce each QP/*wh*. 