

## Towards the Elimination of Pied-Piping: Evidence from Tlingit

This paper presents evidence that pied-piping, as traditionally understood, might not exist. That is, I propose that movement only ever targets the maximal projection of the lexical item whose features trigger it. Classic, well-known counter-examples from English are reanalyzed in light of new data from Tlingit, an understudied and endangered language of Alaska. It is argued that the *prima facie* appearance of ‘pied-piping’ structures in Tlingit is misleading, and actually reflects structures where no true pied-piping has taken place. I then turn my attention to putative cases of pied-piping in English, and argue that a similar ‘eliminativist’ analysis is possible here. The overall picture that results is one where both the phenomenon of ‘pied-piping’ and the grammatical mechanisms introduced to derive it are eliminated from the theory of grammar.

### 1. Introduction

The central claim of this paper is that, in a certain sense, pied-piping might not exist. That is, although we may retain the term ‘pied-piping’ or ‘pied-piping structure’ as a purely descriptive label, the class of structures it circumscribes have perhaps been misanalyzed, and differ in no interesting theoretical sense from simple non-pied-piping structures.

As we will see, this ‘eliminativist’ perspective on pied-piping phenomena follows from a particular theory of the structure of wh-questions. Under this theory, fronting of a wh-operator is, contrary to common perception, *not* triggered by any features of the wh-word itself. Rather, it is triggered by a distinct formal element – an element I dub a ‘Q-particle’ – whose projection *contains* the projection of the wh-word. Thus, under this account, so-called ‘pied-piping structures’ are simply instances of normal phrasal movement.

The special syntactic theory advocated here is initially motivated by the properties of wh-questions in Tlingit, a Na-Dene language of Alaska, British Columbia and the Yukon. As we will see, the wh-questions of Tlingit do not on the surface appear very different from those of more familiar wh-fronting languages. Nevertheless, we will see that, when examined carefully, Tlingit wh-questions challenge certain common perceptions regarding wh-fronting and pied-piping. To get a sense of why this is so – and to further clarify my central theoretical claim – let us briefly review some background regarding the theory of wh-fronting.

#### 1.1 Pied-Piping as ‘Epicyle’ in the Theory of Movement

Since at least the mid-1960’s, a fundamental question in the theory of wh-questions has been “Why do wh-words have to front in the wh-questions of some languages?” Although there are currently a great variety of answers to this question, they all seem to share the following form.

##### (1) Structure Common to Theories of Wh-Fronting

###### Hypothesis 1:

Wh-words have a special property, X

###### Hypothesis 2:

The position that wh-words move to has a special property, Y.

###### Hypothesis 3:

General principals entail that property X must be located at positions bearing property Y.

That is, across many different frameworks and ideologies, linguists generally agree that wh-words front in some languages because *the wh-word* has a ‘special property’ that requires it to be located at the position that it fronts to.

Interestingly, although virtually every theory of wh-fronting possesses the ‘classic structure’ under (1), theories having such a structure are immediately faced with a rather fundamental challenge: how to analyze sentences like those in (2), where *more* than the maximal projection of the wh-word undergoes fronting.

## (2) Some Pied-Piping Structures

- a. [ Whose book ] did you read?
- b. [ To whom ] did you speak?
- c. [ How long a book ] did he write?

Although it’s often not explicitly recognized, sentences like those in (2) directly challenge the analytic structure in (1). After all, if it’s a property of the *wh-word* that motivates the fronting, how did this property come to appear on the larger, fronted phrase, *a phrase that doesn’t otherwise inherit the properties of the wh-word*? For example, we can see from contrasts like those in (3) that a possessive DP doesn’t inherit the *number* properties of a wh-possessor. How, then, does such a DP inherit the special ‘wh-properties’ that trigger the fronting seen in (2a)?

## (3) Possessive DP Doesn’t Exhibit Singular Number of Possessive DP

- a. Who is / \*are coming to your party?
- b. [ Whose sisters ] are / \*is coming to your party?

There is, of course, a commonly accepted answer to these questions, a theoretical construct that renders sentences like those in (2) consistent with the assumptions under (1): *the structures in (2) all illustrate something called ‘pied-piping’*. Although details of implementation vary across frameworks, generally speaking, the term ‘pied-piping’ describes cases where an operation that targets the features of a particular lexical item applies to a phrase properly containing the maximal projection of that item. This definition is highlighted below.

## (4) Definition of ‘Pied-Piping’

Pied-piping occurs when an operation that targets the features of a lexical item L applies to a phrase properly containing  $L^{\text{MAX}}$ .

We might, then, contrast the theoretical term ‘pied-piping’ with the more descriptive and theory-neutral label ‘pied-piping structure’, defined below.<sup>1</sup>

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<sup>1</sup> Note that, following the definition in (4), I do not include under the rubric of ‘pied-piping’ all instances of phrasal movement. That is, I accept as uncontroversial the existence of a mechanism of ‘feature projection’, which places the features of a head onto the *projections* of that head. What is at issue is any mechanism that places the features of a head onto nodes *outside* the projections of that head. This is a significant distinction, because ‘feature projection’ is arguably indispensable, while the latter sort of devices are of little utility outside of deriving pied-piping structures.

## (5) Definition of ‘Pied-Piping Structure’

A pied-piping structure is one where a phrase *properly containing* the maximal projection of a wh-word (or related operator) has undergone fronting.

Thus, to claim that pied-piping exists is to claim that it is sometimes possible for an operation to apply to a phrase *properly containing* the projections of the word whose features it targets.

Of course, what *makes* such cases possible – what mechanisms are responsible for pied-piping – is a separate, subsequent question, one that has received much attention (Ross 1967; Sells 1985; Webelhuth 1992; Kayne 1994; Ginzburg & Sag 2000; Grimshaw 2000; Heck 2004, 2007; Watanabe 2006; Horvath 2007). Curiously, however, the basic question of whether pied-piping actually exists has not yet received serious attention. This is largely due to the ubiquity of the explanatory structure in (1). After all, if the only analytic option is that the fronting in wh-questions ‘targets’ a property of wh-words, then the sentences in (2) clearly show that pied-piping *does* exist. Indeed, in some introductory discussions of pied-piping, pied-piping is presented as an *observable phenomenon*, a datum that must be explained, rather than as a technical solution to an empirical challenge faced by a particular kind of analysis.

We find, then, that when we survey the vast literature on wh-questions, despite all the variety over more specific issues, a shared, ‘classic’ picture clearly emerges, one where (a) the fronting of wh-words in wh-questions is triggered by a property born by the wh-word, and (b) the fronting of a phrase properly containing the projections of the wh-word reveals the existence of pied-piping.

The present paper seeks to challenge this classic, consensus view. Specifically, we will find that it is possible to develop a theory that rejects assumptions (a) and (b) above, but nevertheless is able to capture observed properties of ‘pied-piping structures’, as well as some limited aspects of their cross-linguistic variation. My argument begins in the next section, with an introduction to the special syntactic theory of wh-fronting promoted here. After introducing the technology, we turn to the wh-questions of Tlingit. and argue that they transparently motivate the defining assumptions of the system.

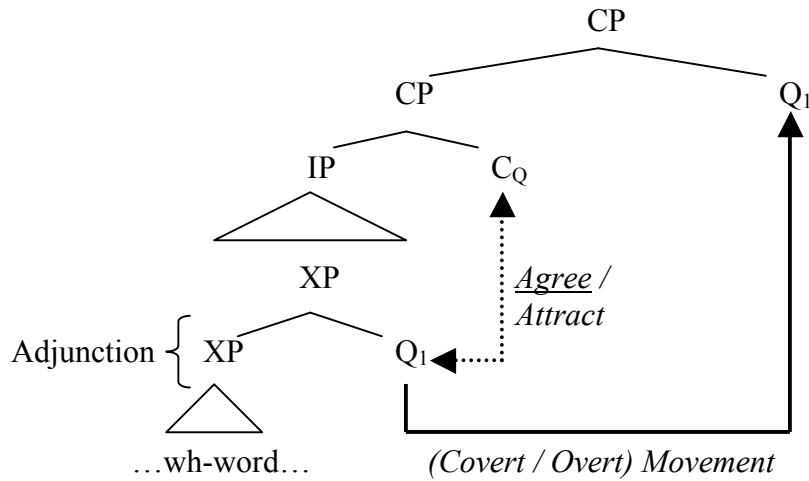
As a final introductory comment, I should note a potentially problematic feature of our discussion throughout this paper. Although pied-piping structures can be found in a variety of A-bar constructions – wh-fronting, focus-fronting, relative clauses – attention in this paper will be restricted to pied-piping in wh-questions. The reader should be aware that this is not necessarily an innocent simplification. As will be more apparent in Section 4.2, it is not trivial to extend the theory proposed here to structures beyond wh-questions. Neither, of course, is such extension impossible, and XXX (2007, Chapter 6) explains how this account might be generalized across A-bar constructions.

## 2. The Q-Based Analysis of Wh-Fronting

This section introduces the theory of wh-fronting that will provide the foundation for our theory of pied-piping structures. In order to introduce this analysis, it will help to begin with some recent proposals concerning wh-*in-situ* languages.

In recent work, an operation of ‘Q-movement’ has been argued to be central to the formation of wh-questions in several wh-*in-situ* languages (Hagstrom 1998, Kishimoto 2005). Under this analysis, the formation of wh-questions in these languages proceeds as follows.

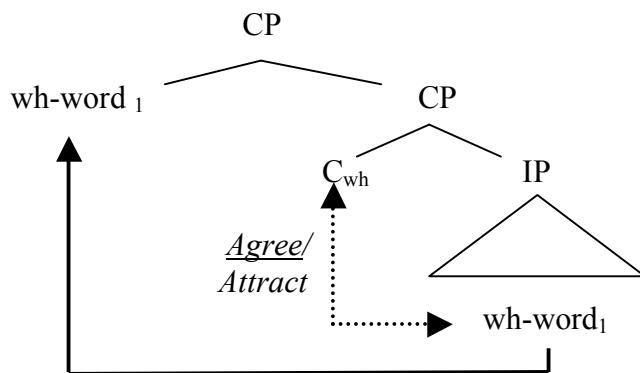
(6) **Q-Movement in Wh-In-Situ Languages**



The structure in (6) represents the following claims. A *wh*-word is obligatorily c-commanded by a Q(uestion)-particle, which adjoins to some phrase containing the *wh*-word. Under this analysis, it is the Q-particle, *and not the wh-word itself*, which is probed by and Agrees with the interrogative C head of the *wh*-question. More concretely, the interrogative C head bears an uninterpretable instance of the interpretable Q-feature born by the Q-particle. The interrogative C must therefore probe for an interpretable instance of the Q-feature. Upon reaching the adjoined Q-particle, the interrogative C Agrees with the particle, eliminating its own uninterpretable instance of Q. This Agreement then triggers movement of the Goal, the Q-particle, into the projection of C. In some languages (e.g., Sinhala), this movement is usually covert; in others (e.g., Japanese), this movement is always overt.

Under the ‘classic’ theory of *wh*-fronting in (1), the analysis in (6) would seem to entail that *wh*-questions in these languages are quite different from those in *wh*-fronting languages. After all, according to (1), the *wh*-questions in *wh*-fronting languages are structured as follows:

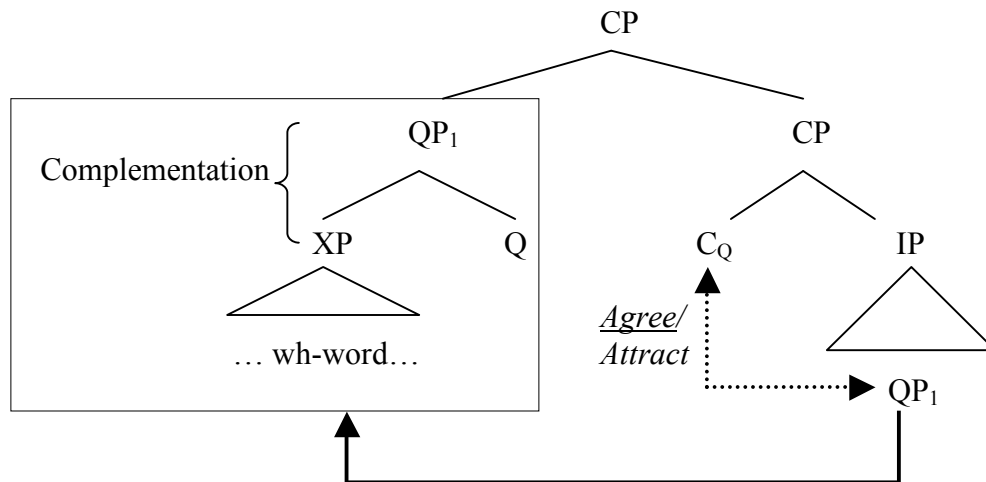
(7) **Wh-Movement in Wh-Fronting Languages**



Thus, under one particular view, the interrogative C head probes and Agrees with a *wh*-feature of the *wh*-word itself. Since the *wh-word* is the Goal, the *wh-word* is then subsequently moved into the projection of the interrogative C.

As I've stated, however, one of the principal goals of this paper is to develop an analysis that rejects some of the key assumptions underlying (7). In its place, I will take up the view that wh-questions in wh-fronting languages are formed in a manner nearly identical to that represented in (6); their only difference from wh-questions in those wh-*in-situ* languages is in the relationship between the Q-particle and its sister. Specifically, I will propose that in all so-called 'wh-fronting' languages, the left-peripheral position of wh-words in wh-questions has the structural character represented below under (8).

(8) **Wh-Fronting as a Secondary Effect of Q-Movement**



The structure in (8) represents the following claims. As with wh-*in-situ* languages, a wh-word in a wh-fronting language is associated with an obligatory Q-particle, which c-commands the wh-word. In a wh-fronting language, however, this Q-particle takes *as complement* a phrase containing the wh-word, and thus projects the category of the phrase minimally dominating Q and Q's sister. As with wh-*in-situ* languages, the interrogative C head probes for an interpretable instance of the Q-feature born by the Q-particle, *and not any feature of the wh-word itself*. In a wh-fronting language, however, the first node which the C encounters bearing this feature is the QP projected by the Q-particle, and so the C head must Agree with this QP. As with wh-*in-situ* languages, this Agreement then triggers movement of the Goal into the projection of C. In a wh-fronting language, however, since the Goal is QP, the entire QP is moved into the periphery of the clause. Finally, because the wh-word is necessarily contained within the QP, the wh-word is fronted into the periphery along with everything else inside the QP.<sup>2,3</sup>

<sup>2</sup> Again, it should be noted that the Q-particle in (8) is not part of the functional projection of the wh-word, as its sister could contain a lexical head selecting for the wh-word. Thus, (8) must be distinguished from the competing claim that the wh-feature of a wh-word heads its own projection in the functional projection of the wh-word.

Similarly, the proposal in (8) must be distinguished from the competing proposals in Watanabe (1992), which though similar in outline, differ substantially from the account offered here in their treatment of wh-fronting languages. See XXX (2007) for an extensive discussion of the differences between Watanabe (1992) and the proposal in (8), as well as the ways in which (8) avoids certain incorrect predictions of Watanabe (1992).

<sup>3</sup> Note that nothing in the logic of this analysis *requires* that the movement of the QP be overt. Thus, my claim here is that wh-fronting languages are a subset of the languages where the Q-particle takes its sister as complement (rather than adjoins to its sister). Consequently, this analysis would hold that there exist wh-*in-situ* languages

I claim, then, that even in wh-fronting languages there is no direct syntactic relationship between the interrogative C and the wh-word itself. The obligatory left-peripheral position of the wh-word is a mere epiphenomenon, a by-product of the real syntactic relationship between the interrogative C and the c-commanding Q-particle.

We will later see that this analysis of wh-fronting holds potentially important consequences for our understanding of pied-piping structures like (2). Before we turn to this discussion, however, I will present evidence that the structure in (8) *does* represent a grammatical possibility licensed by UG. That is, I will argue that some rather direct, initial support for (8) can be found in the wh-questions of Tlingit (Na-Dene; Alaska, British Columbia, Yukon), which transparently motivate the analysis in (8), and cannot be accommodated within the traditional framework of (1) and (7).

### 3. Tlingit Wh-Questions Require The Q-Based Analysis

This section, based upon material in XXX (2007, 2008), provides the core empirical motivation for assigning Tlingit wh-questions the Q-based analysis in (8). The Tlingit sentence under (9a) illustrates the general structure of the language’s wh-questions, which is schematized in (9b).<sup>4</sup>

#### (9) The Wh-Questions in Tlingit

- a. Waa sá sh tudinookw i éesh?  
how Q feels your father  
*How is your father feeling?* (Dauenhauer & Dauenhauer 2000; p. 138)
- b. General Form of a Tlingit Wh-Question  
[CP ... [ [ ... wh-word ... ] Q ] ... Main-Predicate .... ]

The schema in (9b) encapsulates the following two, central properties of wh-questions in Tlingit. First, the wh-word must precede the main predicate of the wh-question, and is typically initial in the clause. Secondly, the wh-word is followed by the Q-particle *sá*, which either directly follows the wh-word or directly follows a phrase containing the wh-word.

In order to motivate the analysis in (8), we must first establish that (i) Tlingit is a wh-fronting language, and (ii) the particle *sá* which obligatorily co-occurs with the wh-word is a ‘Q-particle’ in the sense of Hagstrom (1998) and Kishimoto (2005). I begin with the arguments that Tlingit is a wh-fronting language.

#### 3.1 Tlingit is a Wh-Fronting Language

A fundamental feature of the Tlingit language, which must be born consistently in mind, is its status as a ‘free word order’ language. Any linear permutation of subject, object and verb in the

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possessing the structure in (8), but where the movement of the QP is covert. Indeed, XXX (2007; Chapter 3) argues that Sinhala actually represents such a case (contrary to the analyses of Hagstrom 1998 and Kishimoto 2005).

<sup>4</sup> Throughout this paper, I will provide only the roughest of glosses for individual Tlingit words, which can be morphologically quite complex. This simplification is the most radical with respect to the verbal glosses, where I indicate only the “lexical” content of the verb, and none of its complex inflectional information.

language is, in principle, a well-formed sentence, though there are of course discourse-structural effects associated with particular orders (Leer 1991; Chapter 2).

Because of this freedom of word order, it isn't obvious upon casual examination whether the language requires wh-words to occupy a left-peripheral position in wh-questions. Indeed, aside from XXX (2007, 2008), this issue is not addressed in the published grammatical descriptions of Tlingit. Nevertheless, certain facts indicate that wh-words are left-peripheral in Tlingit wh-questions. For reasons of space, these facts will only be outlined here, and are illustrated with only a modicum of data. For a more thorough discussion of the question of wh-fronting in Tlingit, I refer the reader to XXX (2007, 2008).

First, note that unlike other sentential material, the wh-word of a wh-question *must* precede the matrix predicate, and cannot appear in a post-predicative position.

(10) **Obligatory Pre-Predicate Position of Wh-Operators**

- a.     **Aadóoch** sá   **kgwatóow**    yá   x'úx'?
- who.erg Q   will.read    this book
- Who will read this book?*
  
- b.     \* Yá x'úx'   **akgwatóow**   **aadóoch** sá ?
- this book   will.read    who.erg Q

This condition is especially apparent with long-distance questions. In Tlingit, it is preferred for clausal complements to follow the matrix predicate. When the wh-operator of the wh-question is an argument of the subordinate verb, it must appear displaced from the subordinate clause, in a position preceding the matrix verb.

(11) **Obligatory Long-Distance Movement in Tlingit Wh-Questions**

- a.     [ **Daa** sá ]<sub>1</sub> haa   koo at latóowu   yawsikaa [ *t*<sub>1</sub> wutootoowú ] ?
- what Q   our    teacher    said            we.read
- What did our teacher tell us to read?*
  
- b.     \* Haa koo at latóowu   yawsikaa [ **daa** sá wutootoowú ] ?
- our    teacher            said        what Q    we.read

It should be noted that this condition on the placement of wh-operators doesn't obviously follow from the pragmatics of word-order in the language. As we see below, wh-words can appear post-predicatively when they function as indefinites in declarative clauses.

(12) **Post-Predicative Wh-Indefinites**

- Yá x'úx'   **akgwatóow**   **aadóoch** sá.
- this book   will.read    who.erg Q
- People will read this book.*

The word-order facts above provide clear, initial evidence that wh-operators in Tlingit wh-questions undergo fronting. In addition, XXX (2007, 2008) notes that while it is acceptable for material to precede the wh-word in a wh-question (13), such material must be referential (14), and often is translated by speakers into English as dislocated phrases (15).

(13) **A Tlingit Wh-Question Where the Wh-Word is Not Clause Initial**

Wé i sée daakw aa sáwé?  
 that your daughter which of.them Q.foc-part  
*Which one is your daughter?* (Dauenhauer & Dauenhauer 1990; p. 298; line 10)

(14) **Non-Referential DPs Cannot Precede Wh-Operators**

- a. Aa sáyá l daa sá uxá?  
 who Q.foc-part nothing he.eats.it  
*Who ate nothing?*
- b. \* L daa sá aa sáyá uxá?  
 nothing who Q.foc-part he.eats.it

(15) **The Order [ XP ... Wh-Operator ... V ] Translated as Left Dislocation**

Ax éesh daa sá aawa<sub>x</sub>áa?  
 my father what Q he.ate.it  
*Translated as 'My father, though, what did he eat?'*

These data suggest that any material preceding a wh-word in a wh-question must occupy a left-peripheral topic position (or even perhaps be dislocated), a fact that would itself indicate that the wh-word necessarily occupies a left-peripheral position in such sentences.

Finally, XXX (2007, 2008) observes that multiple wh-questions in Tlingit appear to exhibit Superiority Effects, a feature that is otherwise characteristic of movement structures.

(16) **Superiority Effects in Tlingit Multiple Wh-Questions**

- a. Aa sá waa sá kuyawsikaa?  
 who Q how Q they.said.to.someone  
*Who said what?*
- b. \* Waa sá aa sá kuyawsikaa?  
 how Q who Q they.said.to.someone

**3.2 Tlingit Sá is a 'Q-Particle'**

Recall that our Q-based analysis in (8) is understood to be a parametric variant of the structure in (6), proposed by Hagstrom (1998) and Kishimoto (2005) for the wh-*in-situ* languages Sinhala and Japanese. Thus, in order to defend the analysis in (8) for Tlingit, we should confirm that its

particle *sá* is the same formal element as those that Hagstrom and Kishimoto identify as ‘Q’ in their analyses. That is, we must show that Tlingit *sá* is the same formal entity as the Sinhala Q-particle *da* and the Japanese Q-particle *ka*. XXX (2007, 2008) documents a variety of grammatical similarities between the particles *sá*, *da* and *ka*. Some of the most important of these will be summarized here. Again, for reasons of space, the following generalizations are illustrated with only a modicum of data. For a more thorough discussion of these issues, I refer the reader to XXX (2007, 2008).

One of the most fundamental feature of Tlingit *sá* is that a wh-question *must* contain it. If this particle is removed from any of the sentences above, the result is ill-formed.

(17) **The Obligatory Presence of *Sá* in Tlingit Wh-Questions**

Daa \*(*sá*) aawaxáa i éesh?  
 what Q he.ate.it your father  
*What did your father eat?*

This is similar to the requirement in Sinhala that its wh-questions contain the particle *da* (18a), as well as the requirement in Japanese that wh-questions contain *ka* (18b).<sup>5,6</sup>

(18) **The Obligatory Presence of Q in Sinhala and Japanese Wh-Questions**

- a. Sinhala  
 Chitra monawa \*(*da*) gatte?  
 Chitra what Q bought  
*What did Chitra buy?* (Kishimoto 2005; p. 3, 4)
  
- b. Japanese  
 John-ga nani-o kaimasita \*(*ka*)?  
 John-nom what-acc bought.polite Q  
*What did John buy?* (Hagstrom 1998; p. 15)

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<sup>5</sup> In highly colloquial Japanese, it is reportedly possible to drop *ka* in matrix wh-questions like (31a) (Lasnik & Saito 1992, Yoshida & Yoshida 1996, Ko 2005). However, there are certain stringent conditions governing this ‘particle drop’, and under at least one current account, such sentences contain an unpronounced *ka* (Ko 2005).

<sup>6</sup> One salient difference, however, between Tlingit *sá* and the other two particles is that *sá* can *only* appear in sentences containing wh-words. The particle *sá* simply has no use outside of its obligatory co-occurrence with wh-words. This is unlike Japanese *ka* and Sinhala *da*, which can function both as markers of polar questions and as disjunctive operators (Hagstrom 1998).

In this context, however, let us note that polar (yes/no) questions in Tlingit are formed via insertion of the particle *gé*, as illustrated by the following sentence.

- (i) Lingít gé x’eeya.áxch?  
 Tlingit y/n you.understand.it  
*Do you speak Tlingit?*

Thus, in Tlingit, wh-questions and yes/no questions are formed via two distinct particles. I suspend judgment here as to whether the particle *gé* should also be regarded as an instance of Q. Nevertheless, given the distinction between *gé* and *sá* in Tlingit, I assume that the use of *da/ka* in Sinhala/Japanese polar questions reflects the existence of a separate, homophonous ‘yes/no’ particle. Thus, the apparent difference noted above might be only apparent, as the actual, underlying correlates of *sá* in Japanese and Sinhala likewise appear only in wh-questions.

Beyond appearing in wh-questions, the Tlingit particle *sá* also appears attached to wh-words functioning as indefinites in declarative clauses (12). This is similar to the appearance of Japanese *ka* and Sinhala *da* in analogous environments.

(19) **The Appearance of Q in Sinhala and Japanese Wh-Indefinites**

- a. Sinhala  
 Mokak \*(da) waetuna.  
 what Q fall  
*Something fell.* (Hagstrom 1998; p. 23)
- b. Japanese  
 John-ga nani-\*(ka)-o katta.  
 John-nom what-Q-acc bought  
*John bought something.* (Hagstrom 1998; p. 17)

Both Hagstrom (1998) and Kishimoto (2005) conclude from facts such as these that the Q-particles found in sentences like (18) and (19) are not properly analyzed as ‘interrogative C-heads’. On the basis of (12), a similar conclusion can be drawn for Tlingit *sá*. Rather, in all three languages, the particle in question is an obligatory ‘satellite’ of the wh-word.

Moreover, we can see that these particles are neither ‘sub-morphemes’ of the wh-words themselves, as they can be separated from the wh-word by phrasal material.

(20) **Q Separated From the Wh-Word by Phrasal Material**

- a. Sinhala  
 Chitra [ **kaa**-ge amma ] **da** daekke?  
 Chitra who-gen mother Q saw  
*Whose mother did Chitra see?* (Kishimoto 2005; p. 13)
- b. Tlingit  
 [ **Aadóo** yaagu ] **sá** ysiteen?  
 who boat Q you.saw.it  
*Whose boat did you see?*

Nevertheless, the placement of Tlingit *sá*, Sinhala *da* and Japanese *ka* is subject to a condition that the particle c-command the wh-word (cf. Kishimoto 2005; Yatsushiro 2001).

(21) **Tlingit *Sá* Must C-Command the Wh-Word**

- a. [ **Aadóo** jeet ] **sá** wé sakwnéin aawatee?  
 who hand.to Q that bread he.brought.it  
*Who did he give the bread to?*
- b. \* [ **Aadóo** jeet ] wé sakwnéin **sá** aawatee?  
 who hand.to that bread Q he.brought.it

One final striking parallel between Tlingit *sá* and Sinhala *da* concerns their behavior with respect to syntactic islands. As described by Hagstrom (1998) and Kishimoto (2005), the wh-operator of a Sinhala wh-question may be contained inside an island if and only if the Q-particle *da* is merged outside the island. In the case of relative clause islands, the Q-particle must be merged to the right of the head of the relative clause. The following data illustrate.<sup>7</sup>

(22) **Interaction Between Q-Particle and Relative Clause Islands in Sinhala**

a. Oyaa [ [ Chitra **kaa**-ta dunna<sub>CP</sub>] pota<sub>NP</sub>] **da** kieuwe?  
 you Chitra who-dat give book Q read  
*Who did you read the book that Chitra gave?*

b. \* Oyaa [ [ Chitra **kaa**-ta **da** dunna<sub>CP</sub>] pota<sub>NP</sub>] kieuwe?  
 you Chitra who-dat Q give book read

(Kishimoto 2005; p. 29)

The same condition can be observed in Tlingit. The wh-operator of a Tlingit wh-question may be contained inside an island if and only if the particle *sá* is merged outside the island. When this occurs, the entire island seems to be ‘pied-piped’ into the left periphery of the interrogative clause. In the case of relative clause islands, the particle *sá* must be merged to the right of the head of the relative clause.

(23) **Interaction Between Q-Particle and Relative Clause Islands in Tlingit**<sup>8</sup>

a. [ [ **Wáa** kligéiyi<sub>CP</sub>] xáat<sub>NP</sub>] **sá** i tuwáa sigóo?  
 how it.is.big.REL fish Q your spirit it.is.happy  
*How big a fish do you want?*  
 (Lit. ‘A fish that is how big do you want?’)

b. \* [ [ **Waa** **sá** kligéiyi<sub>CP</sub>] xáat<sub>NP</sub>] i tuwáa sigóo?  
 how Q it.is.big.REL fish your spirit it.is.happy

c. \* [ [ **Wáa** kligéiyi<sub>CP</sub>] **sá** xáat<sub>NP</sub>] i tuwáa sigóo?  
 how it.is.big.REL Q fish your spirit it.is.happy

Aside from the three shared properties outlined above, XXX (2007, 2008) also discusses two other features that appear to unite Tlingit *sá* with Sinhala *da*. It is important to also note in

<sup>7</sup> Because Japanese *ka* obligatorily appears at the end of the interrogative clause, it cannot be easily determined whether this property also holds of the Japanese Q-particle. However, Hagstrom (1998; p. 40) argues that the behavior of the emphasis marker *ittai* in Japanese provides indirect evidence that it does.

<sup>8</sup> Like many languages, Tlingit possesses only a small, closed class of adjectives, and so most nominal modification is accomplished with relative clauses. Thus, questions regarding the degree to which some NP possesses a given property (e.g. “How ADJ a NP”) must in Tlingit be asked using a structure in which the wh-word is buried within a relative clause. This fact greatly aids the elicitation in Tlingit of wh-questions where wh-words are buried within relative clause islands.

For other examples in which the wh-operator of a wh-question is contained within a relative clause island, I refer the reader to Section 5 and to XXX (2007, 2008).

this context that the syntactic and semantic theory of Q-particles put forth by Hagstrom (1998) and extended in XXX (2007) captures this observed constellation of properties, though only under the assumption that Tlingit *sá*, Sinhala *da* and Japanese *ka* are all the same formal entity, namely, a ‘Q-particle’. Given the similarities observed above, as well as their following from a general theory of ‘Q-particles’, one may reasonably hold that the Tlingit particle *sá* is a ‘Q-particle’ in the sense of Hagstrom (1998) and Kishimoto (2005).

### 3.3 Tlingit Wh-Fronting is a By-Product of Q-Movement

Thus far, we have seen evidence that (i) wh-words in Tlingit wh-questions must occupy left-peripheral positions, and (ii) they are obligatorily c-commanded by Q-particles. In this final subsection, we will review the evidence that the fronted position of wh-words in Tlingit wh-questions results from a movement operation targeting the features of the Q-particle alone. In order to establish this, I must defend the twin claims that (a) the movement operation in question targets features of the Q-particle, but (b) doesn’t target any features of the wh-word.

First, let us consider the claim that (a) the movement operation seen in Tlingit wh-questions targets (at least) the features of the Q-particles. To start things off, it should be noted that Tlingit wh-questions are ill-formed if only the wh-word or only the Q-particle is fronted. For example, sentence (24a) becomes ill-formed if *sá* is left downstairs in its base position, as in (24b). One might wonder, however, whether the ill-formedness of (24b) is not due simply to a condition requiring that *sá* not be stranded. Such a condition, however, would be too weak, and would not serve to rule out the ill-formed (24c). In sentence (24c), the Q-particle *sá* is not ‘stranded’ since its complement is the unmoved subordinate CP, a possibility that is independently witnessed in (CP-pied-piping) sentences like (24d).

#### (24) No Fronting of Wh-Word Alone

- a. [ [ **Goodéi** **sá** ]<sub>1</sub> [ has uwajée [ t<sub>1</sub> woogoot<sub>x</sub> ] i shagóonich ] ]?  
 where.to Q they.think he.went your parents.erg  
*Where do your parents think he went?*
- b. \* [ **Goodéi**<sub>1</sub> [ has uwajée [ t<sub>1</sub> **sá** woogoot<sub>x</sub> ] i shagóonich ] ]?  
 where.to they.think Q he.went your parents.erg
- c. \* [ **Goodéi**<sub>1</sub> [ has uwajée [ t<sub>1</sub> woogoot<sub>x</sub> **sá** ] i shagóonich ] ]?  
 where.to they.think he.went Q your parents.erg
- d. [ [ **Goodéi** woogoot<sub>x</sub> **sá** ]<sub>1</sub> [ has uwajée t<sub>1</sub> i shagóonich ] ]?  
 where.to he.went Q they.think your parents.erg  
*Where do your parents think he went?*

Moreover, we can see below that the well-formed sentence (25a) becomes ill-formed if the particle *sá* is fronted into the left-periphery without the wh-word, as in (25b). The ill-formedness of (25b) is not simply due to a condition that *sá* follow some phrasal material in the sentence, as sentence (25c) illustrates.

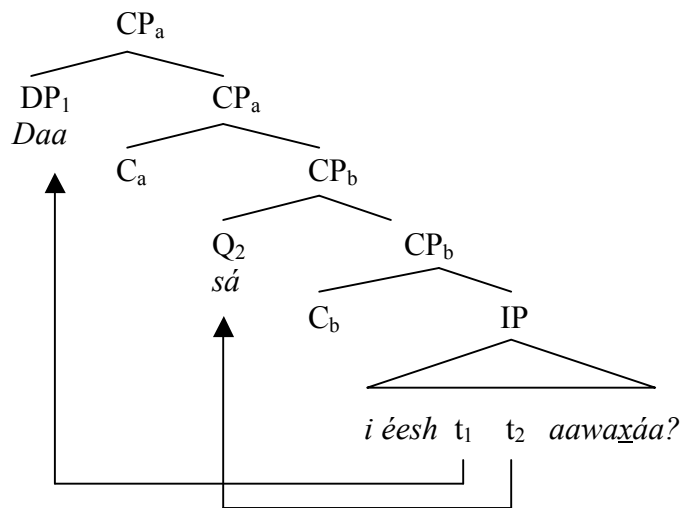
(25) **No Fronting of Q-Particle Alone**

- a. **Daa** **sá** i éesh aawaxáa?  
 what Q your father he.ate.it  
*What did your father eat?*
- b. \***Sá** i éesh **daa** aawaxáa?      c. \*I éesh **sá** **daa** aawaxáa?  
 Q your father what he.ate.it              your father Q what he.ate.it

On the other hand, the data above would follow naturally from the analysis in (8). Under this analysis, a well-formed wh-question in Tlingit *must* have the Q-particle *sá* within its left periphery, thus ruling out sentences (24b, c). Furthermore, under the analysis in (8), the fronting of the QP necessarily brings with it the wh-word associated with *sá*, as that wh-word is contained within the QP. Thus, sentences (25b, c) are ruled out under the analysis.

Of course, one might conclude from the facts in (24) and (25) that *both* the wh-operator and the Q-particle are directly attracted into the left periphery of a Tlingit wh-question, perhaps by separate heads, as diagrammed in (26).

(26) **Wh-Operator and Q-Particle Both Attracted, but by Separate Heads**



An immediate problem for the structure in (87), however, arises in the context of multiple wh-questions. Sentences such as those in (27) demonstrate that all the wh-words of a Tlingit multiple wh-question may front together into the left periphery of the clause.

(27) **Multiple Wh-Fronting in Tlingit Multiple Wh-Questions**

- [<sub>CP</sub> [ Aadóo **sá** ]<sub>1</sub> [ daa **sá** ]<sub>2</sub> [<sub>IP</sub> *t*<sub>1</sub> *yéi uwajée* [ *t*<sub>2</sub> *du jee yéi teeyí* ] ] ]?  
 who Q what Q they.think their hand.at it.is.there  
*Who thinks they have what?*

We can also see from such sentences (as well as (16)) that in a Tlingit multiple wh-question, each Q-particle immediately follows the wh-word it is associated with. Therefore, if there were separate C heads attracting wh-words and Q-particles in Tlingit, then the left-periphery of a Tlingit multiple wh-question must appear as in (28), where the  $C_{wh}$  heads are those attracting wh-words and the  $C_Q$  heads those attracting Q-particles.

(28) **Structure Required For Multiple Wh-Fronting, Under the Analysis in (26)**

[ $CP$   $C_{wh1}$  [ $CP$   $C_{Q1}$  [ $CP$   $C_{wh2}$  [ $CP$   $C_{Q2}$  ... ] ] ] ] ]

Now, we have already seen that the order of wh-words in a Tlingit multiple wh-question is constrained by Superiority; as shown in (29), wh-subjects *must* precede wh-objects.

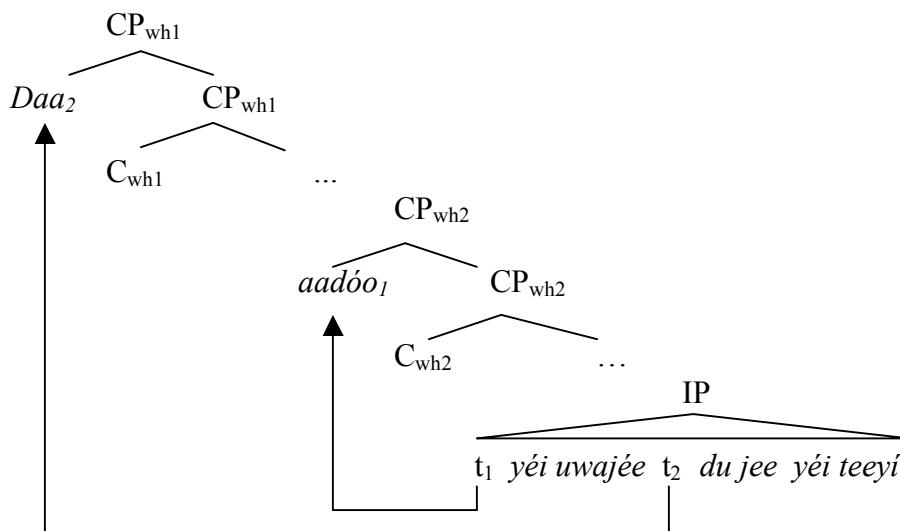
(29) **Multiple Wh-Fronting Constrained by Superiority**

\* [ $CP$  [ *Daa* *sá* ]<sub>2</sub> [ *aadóo* *sá* ]<sub>1</sub> [ $IP$  *t*<sub>1</sub> *yéi uwajée* [ *t*<sub>2</sub> *du jee yéi teeyí* ] ] ]?

what Q      who Q                      they.think      their hand.at it.is.there

However, if the left periphery of a multiple wh-question had the structure in (28), then the simplest algorithm for probing would incorrectly derive the ill-formed, Superiority-violating order in (29). The lowest  $C_{wh}$  head would probe first, attracting the highest wh-word in the IP. Only later will the higher  $C_{wh}$  head probe for a wh-word, and by this time, the only ‘visible’ wh-word left in the clause will be the lower wh-word not probed by the first  $C_{wh}$  head.

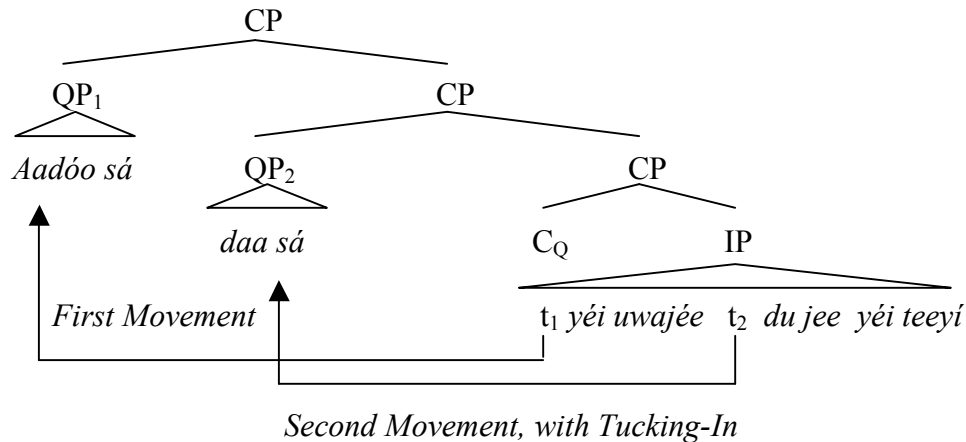
(30) **Derivation of the Incorrect Orders in (29), via the Analysis in (28)**



On the other hand, the analysis proposed in (8) can derive the targeted word-order, assuming a theory of ‘Tucking-In’, as in Richards (2001). This analysis is sketched under (31) below. There we find that a single  $C_Q$  head probes for *both* QPs in the multiple wh-question. Following the standard algorithm for probing, this  $C_Q$  first probes and attracts the highest QP in

the clause. Following this attraction, the  $C_Q$  then continues to probe for additional QPs. It subsequently probes and attracts the lower QP, requiring that the QP front into the  $C_Q$  projection. However, because of a constraint of ‘Shortest Move’, that QP has to be merged to as close a position to the  $C_Q$  as possible. Consequently, the QP ‘Tucks-In’, and moves to a Spec position *lower* than that occupied by the higher wh-word.

(31) **Derivation of the Correct Orders in (88), via the Analysis in (18) [with ‘Tucking in’]**



Thus, the view that there is a *single* head attracting the entire wh-word+Q complex as a whole is partly necessitated by the word-order facts in (27) and (29).

I have thus far defended the claim that (a) the fronting seen in Tlingit wh-questions is an operation that targets the features of the Q-particle *sá*. I have also defended the claim, central in the Q-based analysis in (8), that the fronting of the Q-particle in a Tlingit wh-question is the ultimate ‘agent’ of the fronting of the wh-word. Finally, let us consider the other core claim of the analysis in (8), that (b) the movement operation seen in Tlingit wh-questions *does not* target any features of the *wh-word*.

Consider the contrast between sentences (23a) and (23b), repeated below.

(32) **Interaction Between Q-Particle and Relative Clause Islands in Tlingit**

- a.    [ [ **Wáa** kligéiyi<sub>CP</sub> ] xáat <sub>NP</sub> ] **sá** i tuwáa sigóo?  
       how it.is.big.REL fish Q you.want  
       *How big a fish do you want?*  
       (Lit. ‘A fish that is how big do you want?’)
- b.    \* [ [ **Waa** **sá** kligéiyi<sub>CP</sub> ] xáat <sub>NP</sub> ] i tuwáa sigóo?  
       how Q it.is.big.REL fish you want

Note that the Q-based analysis in (8) predicts the contrast between (32a) and (32b), under the assumption that probing relations cannot cross into islands. The impossibility of (32b) is a straightforward result of the fact that the Q-particle is inside a relative-clause island, and so is inaccessible to probing by the matrix C. When the Q-particle is located outside the island, as in (32a), it is accessible to the matrix C, and the sentence is well-formed. The fact that the wh-

word in (32a) remains inside the island has no bearing on the well-formedness of the sentence, given that the matrix C doesn't probe for any of its features.

Now consider whether the facts in (32) could be made compatible with a 'classic' theory like (1) and (7), where the interrogative C *does* probe for features of the wh-word. Given the well-formedness of (32a), one would have to conclude that somehow the relative clause island does not upset probing of the wh-word by C. But, then, what accounts for the ill-formedness of (32b)? Since the Q-particle *sá* is directly adjacent to the wh-word, it should be as visible for probing by C as the wh-word. Therefore, the impossibility of (32b) must follow from something other than the fact that the Q-particle in this sentence is located inside a syntactic island. What this could be, however, remains quite unclear.

Therefore, from the contrast in (32), we must conclude that the interrogative C of the wh-question doesn't probe for any features of the wh-word itself. Thus, the fronting seen in Tlingit wh-questions is not triggered by any features of the wh-word itself, only by features of the Q-particle, a conclusion that is tantamount to accepting the Q-based analysis in (8).

#### 4. The Q-Based Theory of Pied-Piping Structures: the Elimination of 'Pied-Piping'

The preceding sections have introduced our special, Q-based theory of wh-fronting, and have presented arguments that Tlingit wh-questions establish its typological possibility. In this section, I begin to lay out the theory of pied-piping structures that follows from this account.

I begin, in the following sub-section, with the pied-piping structures of Tlingit.

##### 4.1 The Pied-Piping Structures of Tlingit: Not Really Pied-Piping

First, let us observe that the Tlingit language very clearly possesses 'pied-piping structures', as defined in (5). We have already seen several examples of Tlingit pied-piping structures; a number are collected below for our consideration.

##### (33) Pied-Piping Structures in Tlingit

- a. [PP **Aadóo** teen ] **sá** yigoot?  
       who with Q you.went  
       *Who did you go with?*
- b. [DP **Aadóo** yaagú ] **sá** ysiteen?  
       who boat Q you.saw  
       *Whose boat did you see?*
- c. [DP **X'oon** keitl ] **sá** ysiteen?  
       how.many dog Q you.saw.them  
       *How many dogs did you see?*
- d. [DP [CP **Wáa** kligéiyi ] xáat ] **sá** i tuwáa sigóo?  
       how it.is.big.REL fish Q you.want  
       *How big a fish do you want? (Lit. 'A fish that is how big do you want?')*

As in the English sentences under (2), sentences like those above are such that the phrase fronted in the wh-question properly contains the maximal projection of the wh-word. Thus, these structures qualify as ‘pied-piping structures’ under the definition in (5), and their *prima facie* similarity to the English structures in (2) is rather apparent.

Importantly, however, one must also note that in a Tlingit wh-question, the particle *sá* always occurs *to the right* of the fronted phrase, as shown below.

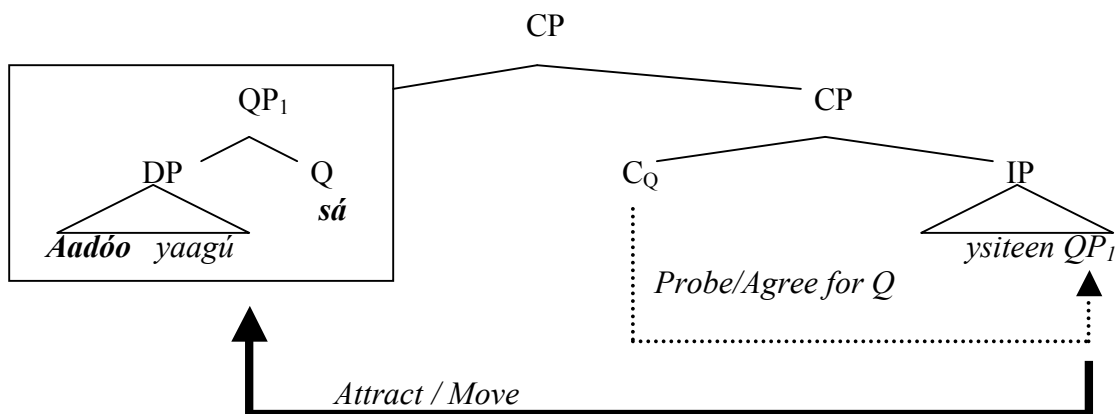
(34) **The Projection of Q is Never Properly Contained Inside the Fronted Phrase**

- a. \* [<sub>PP</sub> **Aadóo** **sá** teen ] yigoot?  
       who    Q with    you.went
- b. \* [<sub>DP</sub> **Aadóo** **sá** yaagú ] ysiteen?  
       who    Q boat    you.saw
- c. \* [<sub>DP</sub> **X’oon**    **sá** keitl ] ysiteen?  
       how.many Q dog    you.saw.them
- d. \* [<sub>DP</sub> [<sub>CP</sub> **Wáa** **sá** kligéiyi    ] xáat ] i tuwáa sigóo?  
       how Q it.is.big.REL    fish            you.want

Thus, the fronted phrase of a Tlingit wh-question *never* properly contains the projection of the Q.

Now, according to our Q-based analysis in (8), it is the features of the Q – and not the wh-word – that trigger the fronting seen in Tlingit wh-questions. Consequently, under our theory of Tlingit wh-questions, the ‘pied-piping structures’ in (33) are all straightforward cases of simple phrasal movement. As illustrated below for (33b), in each structure, movement simply targets the maximal projection of the head whose features motivate the movement (namely, Q).

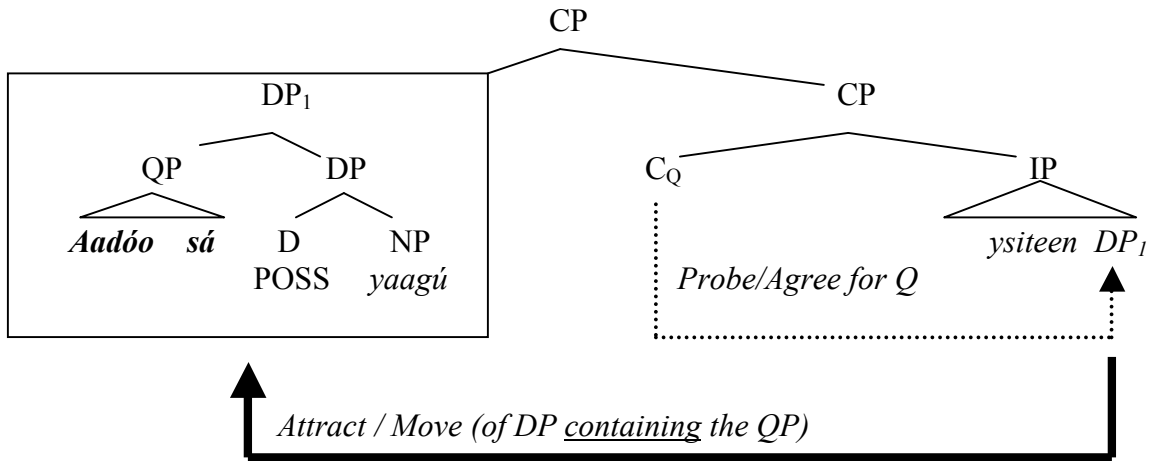
(35) **Derivation of the Tlingit Pied-Piping Structure in (33b)**



Interestingly, then, *none* of the structures in (33) are cases where movement applies to a phrase *properly* containing the projections of the head whose features trigger the movement. That is, none of the Tlingit structures in (33) are instances of true ‘pied-piping’, as defined in (4).

Furthermore, given the generalization illustrated in (34), we find that there just *aren't* any true cases of pied-piping in Tlingit. Following our definition in (4), an instance of true 'pied-piping' in Tlingit wh-questions would have the appearance of the structures in (34), where the projections of the particle *sá* (which are the 'targets' of movement) are properly contained within the fronted phrase. To clarify the point, such hypothetical structures are illustrated below.

(36) A Hypothetical 'True Pied-Piping' Structure in Tlingit



We find, however, that such structures are systematically ill-formed.

Thus, under our Q-based account, any well-formed 'pied-piping structures' in Tlingit are not true instances of 'pied-piping', and all attempts to construct true instances of pied-piping in the language result in ill-formedness. For this reason, the special concept of 'pied-piping' as defined in (4) can be eliminated without cost from our theory of Tlingit grammar. By adopting the analysis in (8), we needn't deviate from the null hypothesis that if an operation (in Tlingit) targets the features of a lexical item, then it applies only to the maximal projection of that item.

4.2 Pied-Piping Structures Beyond Tlingit: A Preliminary Discussion

We have just seen that the Q-based analysis in (8) entails that the pied-piping structures of Tlingit are not true instances of 'pied-piping' as defined in (4). Interestingly, this is despite the fact that the language clearly possesses 'pied-piping structures' as defined in (5), structures that are in their surface form intuitively similar to English pied-piping structures like those in (2).

This state of affairs immediately raises the question of whether the Q-based account couldn't also be extended to English and other wh-fronting languages. After all, given the striking surface similarity in their wh-questions and pied-piping structures, it would at first glance seem 'unparsimonious' to suppose that English and Tlingit were truly as different from one another as the analyses in (7) and (8) would suggest.

Furthermore, if the Q-based analysis were extended to *all* wh-fronting languages, then we might in principle be able to eliminate the special concept of 'pied-piping' in (4) from our general theory of grammar. For example, pied-piping structures in English might be amenable to a Q-based analysis like the following.

(37) **The Pied-Piping Structures of English, Under the Q-Based Theory**

a. Whose father's cousin's uncle did you meet at the party?

b. [<sub>QP</sub> [ [ [ **whose** ] father's ] cousin's ] uncle ] **Q** ] did you meet at the party?

Under this analysis, a pied-piping structure in English is derived exactly like the pied-piping structures of Tlingit. In such sentences, the (null) Q-particle takes as sister a phrase properly containing the *wh*-word, which entails that the fronted phrase of the *wh*-question properly contains the *wh*-word. Thus, one might derive sentences like those in (2) without viewing them as cases where one fronts 'more' than the phrase whose features trigger the fronting. Consequently, under such a Q-based theory, one needn't ever accept that pied-piping truly exists in English.<sup>9</sup> If this same basic result can be maintained for *all* *wh*-fronting languages, then one needn't ever admit the existence of phenomena like (4) at all; we will have eliminated the very concept of 'pied-piping' from our theory of grammar.

The ability to eliminate pied-piping from our theory of grammar would be advantageous in several respects. First, such elimination would simply reduce the number of phenomena that our theory must explain. More importantly, it should be observed here that 'pied-piping' as defined in (4) represents a marked departure from the simplest possible picture one could have regarding the mechanics of phrasal movement. In the simplest and best-understood cases, phrasal movement triggered by a feature *F* applies *only* to the phrases projected by a lexical item bearing *F*. For example, to recall our discussion from Section 1, the 'classic picture' of *wh*-fronting in (1) is unable to account for pied-piping structures like (2) without the addition of a special theory of 'pied piping' (with attendant special mechanisms like 'feature percolation'). Thus, if pied-piping as defined in (4) were just discounted as unreal, then one needn't ever deviate from the simplest (null) hypothesis, according to which movement of a phrase *XP* can only be triggered by features of the head *X*.

Let us also further consider the fact that, under the classic analysis in (1), the pied-piping structures in (2) represent a *deviation* from the expected grammatical pattern. That is, on its own, the analysis in (1) would seem to predict that structures like (2) *shouldn't* exist, as it can only account for such structures via the addition of a special theory of 'pied-piping'. This is in

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<sup>9</sup> On the other hand, there is the indisputable fact that pied-piping structures occur in constructions other than *wh*-fronting in English. For example, sentences like the following seem to exhibit 'pied-piping' in 'Focus Movement'.

(i) I've read John's book, but [ DAVE's book ] I haven't read.

One might rightly worry, then, whether our Q-based account isn't too parochial, failing to derive the possibility of pied-piping structures in *A*-bar constructions beyond *wh*-fronting.

This issue is taken up briefly by XXX (2007, Chapter 6). XXX argues the Q-based theory advocated here can only account for facts such as (i) above if we assume that the extractions in question are *all* some sub-variant of the Q-movement seen in *wh*-questions. That is, besides the Q found in *wh*-questions, there also exist separate, featurally distinct instances of the category 'Q' in focus-movement constructions, relative clauses, etc.

As XXX shows, this idea is not without merit. First, it should be noted that under our use of the term, a 'Q-particle' has no essential connection to interrogativity *per se* (cf. (12), (19)). Indeed, under the semantics developed by Hagstrom (1998) and XXX (2007), Q-particles are simply interpreted as choice-function variables. Thus, their appearance in structures other than *wh*-questions is *prima facie* quite plausible. Furthermore, this generalization of our Q-based analysis in (8) receives some independent support from recent work on focus-movement by Horvath (2000, 2005). Horvath argues at length that so-called 'focus-movement' doesn't truly target the 'focus' feature of the focused phrase, but rather the features of a (null) formal element that sits just above the fronted phrase. I refer the reader to XXX (2007, Chapter 6) for a fuller discussion of these important issues.

stark contrast to the predictions of the Q-based analysis. Under that analysis, pied-piping structures merely represent cases where the sister of Q is not the wh-word itself, but rather a phrase containing the wh-word. Importantly, the possibility of such configurations requires no special assumptions or additions to the basic theory. Indeed, it would require special assumptions to *rule out* pied-piping structures from our Q-based theory.

In summary, the extension of the Q-based analysis to all wh-fronting languages would seem to result in a simpler general picture of phrasal movement and ‘pied-piping structures’, one where ‘pied-piping’ as traditionally understood in (4) would cease to exist. On the other hand, one cannot be certain that such generalization of the account in (8) would truly result in a more attractive theory without seeing concretely, for at least the case of English, how such an analysis could be structured in detail. Therefore, in the following section, I will show how the Q-based analysis of wh-fronting and pied-piping developed for Tlingit might be extended to English and related languages.

## 5. Q/Wh-Agreement and the Constraints on Pied-Piping

In the previous section, I put forth our Q-based theory of pied-piping structures, and noted some initial, conceptual arguments in its favor. In this section, I will show in more detail how the Q-based theory in might be applied to English and related languages.

To begin, let us first introduce a potentially serious problem for extending our Q-based account to English, as in (37). Recall that under that account, pied-piping structures are nothing more than structures where the Q-particle takes as its sister a phrase strictly containing the projections of the wh-word. Moreover, recall that this general theory of pied-piping structures is based upon the surface form of Tlingit pied-piping structures, where the Q-particle *sá* is never directly adjacent to the wh-word, but appears at the right edge of the larger, fronted phrase.

### (38) The Pied-Piping Structures of Tlingit

[pp **Aadóo** teen ] **sá** yigoot?  
 who with Q you.went  
*Who did you go with?*

Thus, our theory of pied-piping structures would view *all* such structures as homologous to the Tlingit phenomenon in (38). However, when we compare the pied-piping structures of languages like English to their putative correlates in Tlingit, we find that there are a significant number of differences between them. Generally speaking, the differences lie in the ‘size’ of the phrase dominating the wh-word in the fronted constituent. Tlingit permits the wh-word to be dominated by structures that English and other well-studied languages never allow.

We have already encountered one rather prominent example of this disparity. A centerpiece of the argument that Tlingit wh-questions possess the structure in (8) is the ability for the wh-word of a Tlingit wh-question to be contained *inside an island* within the fronted phrase (*cf.* Section 3.3). I will refer to such structures, exemplified by (39) below, by the purely descriptive label ‘*pied-piping past islands*’.

(39) **Pied-Piping Past Islands in Tlingit**

- a. [ [ **Wáa** kligéiyi<sub>CP</sub>] xáat<sub>NP</sub>] **sá** i tuwáa sigóo?  
how it.is.big.REL fish Q your spirit it.is.happy  
*Lit. 'A fish that is how big do you want?'*
- b. [ [ **Daat** yís ] át ] **sákwshéiwégé?**  
what for thing Q.dubitative  
*Lit. 'A thing for what is this?'* (Nyman & Leer 1993; p. 120)
- c. [ [ **Goodáx** ] k'anáaxán tlein ] **sáyá** du kát satéen?  
where.from fence big Q.foc-part its surface.to it.rests  
*Lit. 'A big fence from where rests on it?'* (Nyman & Leer 1993; p. 150)
- d. [ [ **Goodáx** ] káa ] **sáyá** yéi yatee?  
where.from man Q.foc-part he.is  
*Lit. 'A man from where was he?'* (Dauenhauer & Dauenhauer 1987; p. 168)

Crucially, while Tlingit allows pied-piping past islands, the best-studied wh-fronting languages do not. As we see in (40) below, the putative correlates of (39) in English are ill-formed.

(40) **No Pied-Piping Past Islands in English**

- a. \* [DP A fish [CP that is **how** big ] ] do you want?  
b. \* [DP A book [CP that **who** wrote ] ] did you buy?

Furthermore, as documented by Heck (2004), such structures are similarly ill-formed in all the most familiar wh-fronting languages.

But, it is not merely pied-piping past islands that separates Tlingit from the most commonly studied wh-fronting languages. To facilitate our discussion here, let us adopt the following, more general terminology.

(41) **Pied-Piping Past X**

A wh-question exhibits 'pied-piping past X' if the wh-word is dominated by an instance of X within the fronted phrase of the wh-question.

With this terminology in place, let us note that several authors have offered the generalization that English and other well-known languages do not permit pied-piping past lexical categories (Cowper 1987, Webelhuth 1992, Grimshaw 2000).<sup>10</sup> That is, in the most commonly studied wh-fronting languages, no wh-operator can be dominated by a lexical category within the fronted

<sup>10</sup> Properly speaking, it is only Grimshaw (2000) that explicitly states this generalization. Webelhuth (1992) states, rather, that there is no pied-piping past *theta-assigners*, while Cowper (1987) states the there is no pied-piping past categories whose members can be lexically specified as being '[+Wh]'. Note, however, that in the context of their respective theories, these latter two generalizations are equivalent to the generalization that there is no pied-piping past the categories N, V, A, i.e., no pied-piping past any lexical category.

phrase of the wh-question. The ill-formed English structures in (42) demonstrate.

(42) **No Pied-Piping Past Lexical Categories in English**

- a. I wonder [ [DP **whose** [<sub>NP</sub> pictures ] ] John bought ] ?
- b. \* I wonder [ [NP Pictures of **whom** ] John bought ] ? <sup>11</sup>
- c. \* I wonder [ [AP proud of **whom** ] John was ] ?
- d. \* I wonder [ [VP eaten **what** ] John has ] ?

Although pied-piping past lexical categories is ill-formed in many languages, it does not appear to be problematic in Tlingit. Indeed, under the plausible assumption that Tlingit relative clauses are adjuncts to NP, such pied-piping is widely exemplified by sentences like (39), where the wh-operator is buried within a relative clause.<sup>12</sup>

We find, then, that our Q-based theory of pied-piping is presented with the following *prima facie* challenge. While we propose that all pied-piping structures be reduced to the Tlingit phenomenon in (38), we also find that those Tlingit structures exhibit properties that the most well-studied cases of pied-piping do not exhibit. It follows, of course, that the Tlingit structures in (38) are not *perfectly* homologous to the more widely studied cases of pied-piping. From this fact, one could conclude that the two structures are not homologous at all, and that our Q-based theory of pied-piping is just wrong for languages like English. However, I will argue that such a reaction would be too extreme. Rather, we will see that a slight addition to our Q-based theory will allow it to capture the observed differences between English and Tlingit pied-piping.

To again facilitate our discussion here, I will use the term ‘limited pied-piping’, defined as follows, to describe the pied-piping structures of languages like English.

(43) **Limited Pied-Piping**

A ‘limited pied-piping’ structure is a pied-piping structure where pied-piping past islands and pied-piping past lexical categories is not permitted.

Similarly, I will use the term ‘limited pied-piping language’ to refer to languages where all pied-piping structures are instances of limited pied-piping. Thus, all the most widely studied wh-fronting languages appear to be limited pied-piping languages.

Now, in order for our Q-based theory to be applied to the limited pied-piping languages,

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<sup>11</sup> Interestingly, the ill-formedness of subordinate questions like that (42b) becomes weakened if they are used instead as matrix questions (i) or appositive relative clauses (ii).

(i) Pictures of whom has John bought?

(ii) My father, pictures of whom John has bought, is very famous.

This phenomenon is carefully explored by Heck (2004) and XXX (2007). Throughout our discussion, however, I adopt the common position that the pied-piping in seen in (42b) is indeed ill-formed in English, and that there is something special about matrix environments that (marginally) improves their acceptability (cf. Heck 2004, XXX 2007).

<sup>12</sup> It is difficult to find more direct evidence that Tlingit permits pied-piping past lexical categories. For example, it is impossible to construct putative correlates to the English structures in (42b) – (42d). First, the syntactic class ‘Adjective’ is rather underrepresented in Tlingit, and the few elements of this class do not seem to take arguments. Furthermore, complements of N in Tlingit do not appear to ever remain as sisters of N, but rather always move into a higher specifier position (XXX 2007). Finally, unlike English, Tlingit has no process of ‘VP fronting’.

some account must be offered for *why* those languages do not permit pied-piping past islands or lexical categories. In the remainder of this section, I put forth such an account. This account will build upon the theory of Q/Wh-Agreement developed by Kratzer & Shimoyama (2002), and so Section 5.1 begins our discussion by introducing that theory.

### 5.1 Background: Q/Wh-Agreement in Kratzer & Shimoyama (2002)

The leading idea underlying our account of limited pied-piping assumes that wh-words in some languages must undergo Agreement with the c-commanding Q-particle. Although I could posit such Agreement as a pure axiom of our theory, one should note that it has independent precedent in the literature. This concept plays a critical role in the work of Kratzer & Shimoyama (2002; Section 9), where it is used to capture differences in the behavior of German and Japanese indefinites.

In brief, Kratzer & Shimoyama propose that in some (but not all) languages, wh-operators necessarily come packed with a special, uninterpretable instance of the feature [Q]. In these languages, the Q-particle must undergo Agreement with the wh-operator it c-commands, or else a syntactic crash will result from the uninterpretable instance of Q on the wh-operator. Of course, in those languages where wh-operators do *not* bear uninterpretable instances of [Q], no Agreement between the Q-particle and any wh-operators need take place.

Kratzer & Shimoyama’s ultimate interest in these morpho-syntactic hypotheses is that they are able to derive from them a possible explanation for differences between German (a language hypothesized to have such ‘Q/Wh-Agreement’) and Japanese (a language hypothesized to not have such Agreement). As we will soon see, however, these same general hypotheses can also be combined with our Q-based theory in (8) to provide an analysis of the limited pied-piping languages. Before I can fully present this analysis, however, I first must further flesh out the morpho-syntactic hypotheses sketched above. Because Kratzer & Shimoyama’s specific implementation of these hypotheses employs a syntactic theory different from that assumed here, we must develop our own formal implementation of these assumptions.

Such formal implementation will require us to be more explicit regarding the exact nature of feature valuation under Agree. Throughout the remainder of this paper, I will adopt the theory of feature valuation developed by Pesetsky & Torrego (2007). The characteristic property of this system is that valuation and interpretability are independent of one another. Consequently, there are four ‘states’ that a given feature may be in: (i) valued and interpretable, (ii) valued and uninterpretable, (iii) unvalued and interpretable, and (iv) unvalued and uninterpretable. The following diagram illustrates this idea, as well as the notation we will use.

#### (44) The Independence of Valuation and Interpretability

Feature = <i>F</i>	<u>Interpretable (<i>iF</i>)</u>	<u>Uninterpretable (<i>uF</i>)</u>
<u>Valued (<i>F[<i>val</i>]</i>)</u>	<i>iF[<i>val</i>]</i>	<i>uF[<i>val</i>]</i>
<u>Unvalued (<i>F[ ]</i>)</u>	<i>iF[ ]</i>	<i>uF[ ]</i>

Within this system, there are two principles that drive syntactic valuation. The first is the requirement that every feature must possess a value by LF. Due to this principle, any unvalued feature *F[ ]* must probe for a valued instance of itself *F[*val*]*, at which point the usual mechanics

of long-distance Agree apply (Chomsky 2000). The second principle relevant here is one stating that all uninterpretable features  $uF$  must by LF be matched to some interpretable instance  $iF$ . That is, if any uninterpretable instance of F ( $uF$ ) has not undergone Agreement with an interpretable instance of F ( $iF$ ) by LF, then the derivation crashes. For further details regarding this theory of feature valuation, I refer the reader to Pesetsky & Torrego (2007).

With these ideas in place, let us now incorporate the morpho-syntactic hypotheses of Kratzer & Shimoyama (2002) into our broader system. First, we assume that the wh-words of some languages (e.g. German) all bear an instance of uninterpretable, valued Q, while the wh-words of other languages (e.g. Japanese) do not bear any instance of the Q-feature.

**(45) The Wh-Words of German vs. The Wh-Words of Japanese**

- |    |                   |               |
|----|-------------------|---------------|
| a. | German Wh-Word:   | $was_{uQ[+]}$ |
| b. | Japanese Wh-Word: | $dare$        |

In languages where wh-words bear  $uQ[+]$ , our theory of valuation entails that the wh-word must undergo Agreement with a head bearing  $iQ$ . Given that the only head assumed to carry  $iQ$  is the Q-particle itself, it follows that the Q-particle in languages like German must undergo Agreement with the wh-word. In order for this Agreement to take place, however, we must assume that the Q-particles of such languages initially bear *unvalued* instances of Q.<sup>13</sup> Therefore, in those languages where the wh-words bear  $uQ[+]$ , the Q-particle must in turn bear  $iQ[ ]$ . On the other hand, in those languages where the wh-words don't bear any instance of Q, we can safely assume that the Q-particle simply bears an interpretable, *valued* instance of Q. This idea is illustrated below.

**(46) The Q-Particles of German vs. The Q-Particles of Japanese**

- |    |             |                     |
|----|-------------|---------------------|
| a. | German Q:   | $\emptyset_{iQ[ ]}$ |
| b. | Japanese Q: | $ka_{iQ[+]}$        |

Assuming the initial valuations in (45) and (46), we predict the necessity of Q/Wh-Agreement in languages like German, and the absence of such Agreement from languages like Japanese. First, in those languages where the Q-particle is lexically assigned  $iQ[ ]$ , the lack of a value for  $iQ$  entails that the Q-particle must probe for a valued instance of the feature. Following Chomsky's (2000) algorithm for probing, the first element bearing  $Q[val]$  that the Q-particle probes will be the wh-word that it c-commands. Therefore, the Q-particle will undergo Agreement with that wh-word, as shown below.

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<sup>13</sup> It may at first blush seem suspicious for a Q-particle to initially bear an unvalued Q-feature. However, our proposals regarding Q are rather parallel to the proposals regarding Tense in Pesetsky & Torrego (2007), where the Tense node of the clause initially bears unvalued Tense, and receives its Tense-value only under Agreement with the uninterpretable Tense feature of the verb.



(49) **The Nature of Limited Pied-Piping**

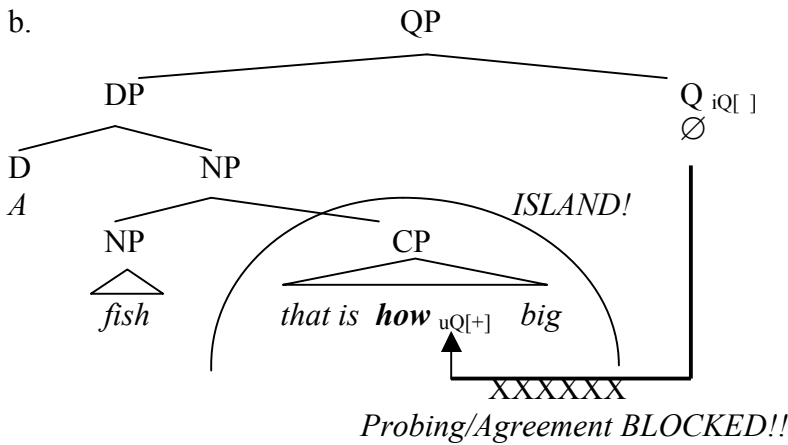
If the Q-particle must Agree with the wh-word it c-commands, then a wh-word cannot be dominated in the sister of Q by islands or lexical categories. Thus, limited pied-piping languages are those where Q/Wh-Agreement must occur. Non-limited pied-piping languages are those where Q/Wh-Agreement does not occur.

In the remainder of this section, I will fully flesh out the hypothesis in (49), by outlining *why* obligatory Q/Wh-Agreement would preclude wh-words from being dominated by islands or lexical categories inside the sister of Q.

Let us begin with the condition against pied-piping past islands. Recall our assumption from Section 3.3 that probing and Agreement cannot apply across syntactic islands. Under this general assumption, of course, Q/Wh-Agreement would not be able to apply across syntactic islands. Therefore, if we assume that limited pied-piping languages are Q/Wh-Agreement languages, we correctly predict that such languages will not permit pied-piping past islands. As we see below, the domination of the wh-word by a syntactic island within the sister of Q would prevent Agreement from taking place between the Q-particle and the wh-word.

(50) **Inability to Pied-Pipe Past Islands in English**

a. \* [DP A fish [CP that is **how** big ] ] do you want?

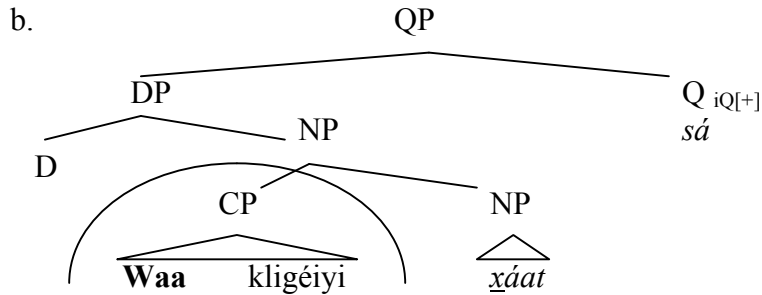


Consequently, the impossibility of Q/Wh-Agreement in structures like (50b) would result in the Q-particle never receiving a value for its Q-feature. Therefore, the structure in (50b) would violate the principle that all features must be valued by LF, and so is predicted to be ill-formed.

Our theory thus predicts that Q/Wh-Agreement languages will never permit pied-piping past islands. On the other hand, such configurations are predicted to be perfectly well-formed in non-Agreement languages like Tlingit, as illustrated below.

(51) **Ability to Pied-Pipe Past Islands in Tlingit**

- a. [DP [CP **Waa** kligéiyi ] xáat ] **sá** i tuwáa sigóo?  
           how it.is.big.REL fish Q your spirit it.is.glad  
*How big a fish do you want?*



Given that Tlingit Q-particles are, like Japanese Q-particles, assumed to carry a *valued* interpretable instance of Q, no Q/Wh-Agreement is required in the pied-piping structures of Tlingit. Consequently, no syntactic principles are violated by structures like (51b), where the wh-word is dominated by an island within the sister of Q. Therefore, we predict that non-Agreement languages like Tlingit should permit pied-piping past islands.

We have thus seen that pied-piping past islands should be impossible in all and only the Q/Wh-Agreement languages, which supports our hypothesis in (49). But, what of the second core property of limited pied-piping languages, their inability to pied-pipe past lexical categories? Interestingly, this condition can be seen to follow from certain independently motivated assumptions regarding the structure of lexical projections.

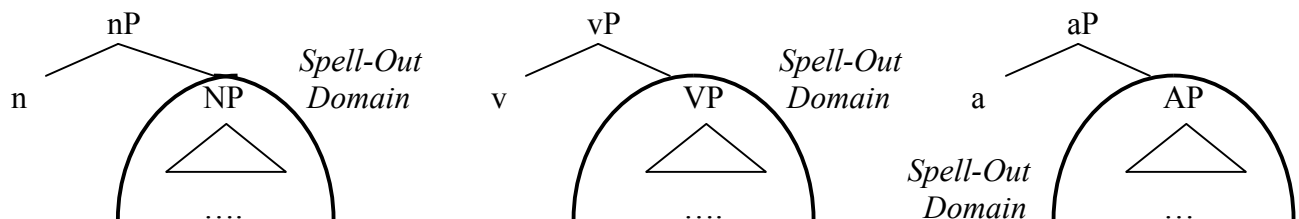
To begin, let us adopt the following, key hypothesis concerning lexical categories.

(52) **The Fine Structure of Lexical Categories (Embick & Marantz 2007)**

Every lexical projection (VP, NP, AP) is complement to a functional projection (v, n, a). Furthermore, each of these ‘categorical heads’ (v, n, a) is a phase head.

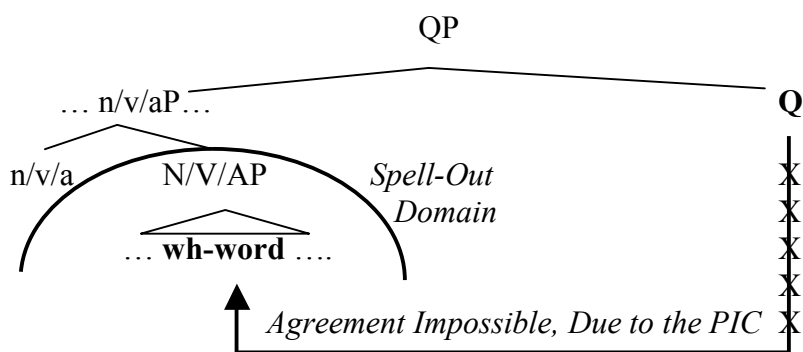
That is, let us assume that every lexical projection is dominated by its own equivalent of the ‘little-v’ projection commonly held to dominate VPs. According to this hypothesis, independently supported by work within Distributed Morphology (Embick & Marantz 2007), every NP, AP and VP is embedded in a structure like that represented under (53), below.

(53) **Diagram of the Lexical Projections**



Given the natural assumption that each of these little categorial heads (v, n, a) shares with little-v the property of being a phase head (cf. Chomsky 2000), it immediately follows that Q/Wh-Agreement cannot cross lexical projections. First, it would follow that all material inside a lexical projection occupies a separate Spell-Out domain from any material outside the lexical projection (cf. Chomsky 2000). Now, under the standard formulation of the ‘Phase Impenetrability Condition’ (PIC), syntactic operations like Agree cannot apply to heads inside separate Spell-Out domains (cf. Chomsky 2000). Thus, under these assumptions, no material inside a lexical projection can undergo Agreement with any head outside that lexical projection.<sup>14</sup> Consequently, we predict that Agreement between a Q-particle and a wh-word buried inside a lexical projection should be impossible. The following illustrates.

(54) **Inability for Q/Wh-Agreement to Cross a Lexical Projection**



Thus, the theory of lexical projections in (52) predicts that a Q-particle should be unable to Agree with a wh-word buried inside a lexical projection. Consequently, for reasons that should now be familiar, it follows that Q/Wh-Agreement languages will not permit structures like (54), while such structures will be possible in non-Agreement languages. We find, then, that when combined with the independently motivated theory in (52), our hypothesis in (49) captures the inability of limited pied-piping languages to ‘pied-pipe’ past lexical categories.

In summary, we have seen that our broader syntactic assumptions predict that pied-piping past islands and pied-piping past lexical categories should be impossible in all and only the Q/Wh-Agreement languages. Thus, our theory indeed predicts the generalization in (49), that the limited pied-piping languages are precisely the Q/Wh-Agreement languages. Consequently, we find that the various differences between the pied-piping structures of English and those of Tlingit are not necessarily due to some deep difference in their syntax, but instead to a rather superficial difference in whether Q/Wh-Agreement is obligatory.

We have seen, then, that our Q-based theory of pied-piping structures can offer a sensible perspective on the cross-linguistic variation observed in (39) – (42). Of course, one might object that such a theory isn’t obviously simpler or more attractive than a ‘classic account’ that appeals to a special theory of ‘pied-piping’ as defined in (4). After all, in order to capture the observed constraints on pied-piping structures in English, we’ve had to supplement our Q-based theory with (a) the notion that there are languages where Q and the wh-word Agree, (b) the notion that

<sup>14</sup> An anonymous reviewer for *NLLT* observes, however, that a potential problem for this account may therefore be cases where Agreement seems to cross into the complements of lexical heads, such as when T agrees with ‘Nominal Objects’ in Icelandic.

Agreement cannot cross into islands, (c) the special theory of lexical projections in (53), and (d) the notion that Agreement cannot cross separate Spell-Out Domains (the PIC).

In response to this criticism, it should be noted first that each of the additions listed in (a) – (d) above have been independently proposed and defended by separate authors. Thus, they are not stipulations introduced *de novo* here, but do enjoy some external currency and validity. Furthermore, it should also be noted that there is a definite unity underlying the additions in (b) and (c). That is, it is worth noting that our account derives both the defining properties of limited pied-piping languages from independently motivated constraints on Agreement. In fact, it's likely that both these properties ultimately follow from the *same* fundamental property of Agreement: its inability to apply across separate Spell-Out domains. After all, a plausible view regarding the inability for movement/probing/Agreement to cross syntactic islands is that such operations would violate the PIC. Ultimately, then, it's likely that our Q-based theory can provide a fully unified account of the inability for limited pied-piping languages to 'pied-pipe' past islands or lexical categories.

Finally, I would submit that a 'classic theory' admitting the existence of pied-piping as defined in (4) will almost certainly be more complex than the Q-based account proposed here, in as much as it would still require a special theory of 'pied-piping', of *how* features can be transported from a head H onto phrases beyond the projections of H. For example, if such 'feature transfer' is accomplished via mechanisms of 'feature percolation', then observed constraints on pied-piping must be captured via constraints imposed on those mechanisms. Even if such a theory were to have wonderfully elegant constraints that match the data perfectly, it would nevertheless still have this additional, unexplained mechanism of feature percolation.<sup>15</sup> By contrast, under the Q-based account, there is no appeal to any grammatical mechanisms beyond the operation of Agreement, and no special constraints are imposed on Agreement beyond those that have independent merit.

It is reasonable, then, to conclude on general grounds that the Q-based account – even paired with the additional assumptions laid out here – offers serious competition to any 'classic accounts' of pied-piping with similar empirical coverage.

## 6. Pied-Piping, Lexical Categories and the Left Edge

In this final section of the paper, I will turn to a crucial empirical assumption of our preceding discussion: the claim that English and all the most commonly studied wh-fronting languages do not permit pied-piping past lexical categories. Although I illustrated this claim with a modicum English data, it actually has a much broader empirical coverage. Indeed, it is a generalization that has been independently made several times in the literature on pied-piping (Cowper 1987, Webelhuth 1992, Grimshaw 2000), as it accounts for a wide array of seemingly disparate facts, including a number of generalizations that had previously been treated as independent properties.

Therefore, in order to provide a fuller picture of the work accomplished by our theory of Q/Wh-Agreement, I will review in the following subsection some of the phenomena that fall under the broader generalization that 'there is no pied-piping past lexical categories.' After this, I will offer a few remarks on the way in which this generalization (and the subsequent Q-based theory) impacts the oft-encountered notion that there is some 'special connection' between 'pied-piping' and the left-edge of a phrase.

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<sup>15</sup> Heck (2004) argues extensively that a mechanism of 'feature percolation', as it is usually intended, cannot be reduced to any more fundamental operation of the grammar.

## 6.1 Further Evidence Regarding Pied-Piping Past Lexical Projections

As noted in Section 5, one of the most striking properties of pied-piping structures is how limited they are. None of the most commonly-studied languages permit a *wh*-word to ‘pied-pipe’ any and all phrases that contain it.<sup>16</sup> Therefore, an important part of a general theory of *wh*-fronting is some account of the observed constraints on pied-piping structures. For this reason, linguists have for some time struggled with the logically prior task of properly characterizing *what* the constraints on pied-piping *are*, what patterns the general theory should predict. Unfortunately, given the numerous independent structural differences across the best-studied *wh*-fronting languages, it is far from transparent what the underlying generalizations should be.

Although there has yet to be discovered a completely unified account for all the various constraints governing pied-piping structures, a number of them can be seen to follow from the impossibility of pied-piping past lexical categories (Cowper 1987, Webelhuth 1992, Grimshaw 2000). As we will presently see, this generalization is superior to competing proposals that attempt to characterize those constraints purely in terms of the phrase-structural or linear position of the *wh*-word.

One immediate consequence of our generalization is, of course, that the complement of a lexical head *L* will be unable to pied-pipe past the projections of *L*. Thus, we correctly predict that limited pied-piping languages will not allow the complements of lexical heads to be ‘pied-pipers’.<sup>17</sup> The data in (42), repeated below, illustrate this fact for English.

### (55) Complements of Lexical Heads Can’t Pied-Pipe (in Limited Pied-Piping Languages)

- a. I wonder [ [<sub>DP</sub> **whose** [<sub>NP</sub> pictures ] ] John bought ] ?
- b. \* I wonder [ [<sub>NP</sub> Pictures of **whom** ] John bought ] ?
- c. \* I wonder [ [<sub>AP</sub> proud of **whom** ] John was ] ?
- d. \* I wonder [ [<sub>VP</sub> eaten **what** ] John has ] ?

However, the reader may rightly wonder at this point whether our generalization is the correct one to draw from the data above. Indeed, facts like those in (55) have led many researchers to instead propose the stronger generalization that *no* complements of *any* head can serve as ‘pied-pipers’ (Kayne 1994, Koopman 1997, Koopman & Szabolcsi 2000). Under such accounts, pied-piping structures are only well-formed if the *wh*-word occupies a *specifier* position within the fronted phrase.

This stronger generalization will receive more focused discussion in the following subsection, where I will also discuss the related generalization that pied-pipers tend to be left-peripheral specifiers (Heck 2004, 2007). I will however, briefly foreshadow the points I will return to in greater detail. The overarching problem is that the stronger generalization is too strong, and faces an immediate challenge from the ubiquity of pied-piping by complements of *P*. That is, contrary to the stronger generalization, it is possible in most limited pied-piping languages for *wh*-words to ‘pied-pipe’ a *PP* from the complement of *P*. This is illustrated below.

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<sup>16</sup> Throughout this discussion, I will use the verb ‘pied-pipe’ in a purely descriptive sense. The phrase ‘*X* pied-pipes *Y*’ means only that *X* is the *wh*-operator in a pied-piping structure, and is dominated by *Y* within the fronted phrase of the structure.

<sup>17</sup> Throughout this discussion, I will use the term ‘pied-pipers’ in a purely descriptive sense. The noun ‘pied-piper’ refers to *wh*-operators whose projections are properly contained within the fronted phrase of a *wh*-question.

(56) **Complements of P Can Pied-Pipe (in Limited Pied-Piping Languages)**

- a. English:  
[<sub>PP</sub> In [ **what** sense ] ] was he a doctor?
- b. Icelandic:  
Ég velti því fyrir mér [ [<sub>PP</sub> við **hvern** ] thú taladir ].  
I roll it before me with who you talked  
*I wonder who you talked with.*
- c. Russian:  
[ v **čey** mashyne ] priyekhal ?  
in whose car you.arrived  
*Whose car did you arrive in?*

Thus, in order to allow for these rather common structures, proponents of the stronger generalization must introduce special assumptions regarding the structure of PPs, so that what appear in so many languages to be pied-pipers in CompPP are in fact covertly specifiers of PP.

By contrast, our weaker generalization that complements of lexical categories cannot pied-pipe receives no *prima facie* challenge from the facts above. Because P may be regarded a functional category, our weaker generalization correctly predicts that wh-words may generally occupy the complement of PP within the fronted phrase of a wh-question. As for the fact that pied-pipers do *tend* to be specifiers (Heck 2004, 2007), we will later see that this is an epiphenomenal consequence of the fact that most functional categories cannot take interrogative words as complements.

Our constraint against pied-piping past lexical categories also predicts another oft-noted feature of the limited pied-piping languages. Besides ruling out pied-piping by *complements* of lexical heads, our generalization also correctly predicts that *modifiers* of lexical heads will be unable to pied-pipe past the lexical projection containing them. This inability for modifiers to pied-pipe, illustrated below, was observed by Webelhuth (1992).

(57) **Modifiers of Lexical Heads Cannot Pied-Pipe (in Limited Pied-Piping Languages)**

- a. \* [<sub>QP</sub> [<sub>DP</sub> The [<sub>NP</sub> party **where** ] ] **Q** ] will John enjoy?
- b. \* [<sub>QP</sub> [<sub>VP</sub> Go **where** ] **Q** ] will you?
- c. \* [<sub>QP</sub> [<sub>DP</sub> A [<sub>NP</sub> [<sub>DegP</sub> **how** big ] party ] ] **Q** ] will you throw?

Again, since the wh-words in each of these structures is contained within a lexical projection inside the fronted phrase, our generalization predicts their ill-formedness.

A third prediction of our restriction against pied-piping past lexical categories concerns the placement of possessors within pied-piping structures. A pervasive phenomenon across the limited pied-piping languages is the inability for post-nominal possessors to pied-pipe past the larger possessive DP (Heck 2004; p. 133 – 142). Sentences like (55b) demonstrate the impossibility of such structures in English, and the data below illustrate this for German.

(58) **Post-Nominal Possessors Cannot Pied-Pipe in German (Heck 2004; pp. 134 – 135)**

- a. [DP **Marias** Tochter ]  
    Maria's daughter
- b. [DP die [NP Tochter von **Maria** ] ]  
    the daughter of Maria
- c. [DP **Wessen** Tochter ] willst du malen?  
    whose daughter want you to paint  
    *Whose daughter do you want to paint?*
- d. \* [DP Die [NP Tochter von **wem** ] ] willst du malen?  
    the daughter of who want you to paint

As we see from (58a) and (58b), German generally permits possessor DPs to either precede or follow the N that they possess. However, if that possessor DP is a pied-piper, then the post-nominal order becomes impossible (58d), and only the pre-nominal position is allowed (58c). As discussed by Heck (2004, 2007), similar patterns of data can also be observed in many Romance languages, as well as the Mayan languages Chol and Tzotzil (cf. XXX 2007, Chapter 5).

Much like the facts in (55), the inability for post-nominal possessors to pied-pipe has been seen by some as evidence that pied-pipers must generally be left-peripheral specifiers of the fronted phrase. Note, however, that post-nominal possessors are commonly held to occupy positions internal to the possessed NP, as indicated by our English structure in (55b) and our German structures in (58b,d). Under this plausible assumption, post-nominal possessors are necessarily dominated by a lexical projection within the larger possessive DP. Therefore, our generalization correctly predicts their inability to pied-pipe past the possessive DPs containing them.<sup>18</sup>

In this context, let us also take note of a related phenomenon in Hungarian. Szabolcsi (1994) argues that possessors in Hungarian can occupy either of two distinct positions inside the possessive DP – one internal to the NP projection and one external to it. Importantly, however, both these two positions for possessors in Hungarian are *pre-nominal*; Hungarian does not permit post-nominal possessors. Rather, the two positions are empirically distinguished via their case morphology. Possessors internal to the NP bear nominative case, while possessors external to the NP bear dative case. Interestingly, it is only the *dative*-marked possessors, those argued to be external to the NP, which can pied-pipe the entire possessive DP.

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<sup>18</sup> However, an anonymous reviewer for *NLLT* points out that structures like (58d) *do* seem to be possible in languages like Greek, Icelandic and Russian. The following illustrates the pattern for Greek.

- (i) Anarotieme [ to vivlio **tinós** ] mu ipes pos dhiavases.  
    I.wonder the book **whose** you said that you.read  
    *I wonder whose book you said that you read.*

It is perhaps significant that in such cases of ‘post-nominal possessor pied-piping’, the pied-piping possessor is not marked with an adposition, as in the German examples in (58). This may suggest that such possessors are – unlike post-nominal possessors in English and German – *not* internal to NP, but rather right-specifiers of DP.

(59) **Nominative-Marked Possessors Cannot Pied-Pipe in Hungarian (Szabolcsi 1994)**

- a. [DP **Ki**-nek a [NP vendégét ] ] ismertétek?  
who-DAT the guest you.know  
*Whose guest did you know?*
- b. \* [DP [NP **Ki** vendégét ] ] ismertétek?  
who-NOM guest you.know

Given Szabolcsi's arguments that the nominative-marked possessor in (59b) is NP-internal, the ill-formedness of (59b) would follow from the more general impossibility of pied-piping past lexical categories. Furthermore, our generalization provides a unified account for both (59) and (58), despite the fact that the data in (58) superficially appear to concern the *linear position* of the wh-word, while those in (59) appear to concern its *case*. To put the issue more acutely, both the Hungarian possessors in (59) occupy left-peripheral specifier positions within the fronted phrase. It therefore follows that any attempt to capture the contrast between (58c,d) via the simple generalization that 'pied-pipers must be left-peripheral specifiers' would fail to capture the parallel contrast between (59a) and (59b). Thus, the behavior of possessors in Hungarian further supports our more general claim that properties like 'left peripherality' and 'specifier-hood' are not directly relevant to the constraints on pied-piping seen in the limited pied-piping languages (cf. Horvath 2007, Section 2.2).

Moreover, the Hungarian data in (59) appear to be thematically similar to a certain pattern surrounding English gerunds. As reported by Horvath (2007), Culicover (1999) observes the following contrast regarding pied-piping past gerunds in English.<sup>19</sup>

(60) **Pied-Piping Past Gerunds in English (Culicover 1999)**

- a. \* [ **Who** solving the problem ] were you thinking about?  
b. [ **Whose** solving the problem ] were you thinking about?  
c. [ **Whose** solving of the problem ] were you thinking about?

Like the Hungarian data in (59), the contrast between the ill-formed (60a) and the well-formed (60b,c) seems connected with the case of the gerund's subject. In the ill-formed (60a), the subject of the gerund bears accusative case, while in the well-formed (60b, c), the gerundive

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<sup>19</sup> Note that a more well-known observation regarding pied-piping in English gerunds comes from Webelhuth (1992), who reports a contrast between sentences like (60b) and (60c).

(60b) \* [ Whose solving the problem ] were you thinking about?

(60c) [ Whose solving of the problem ] were you thinking about? (judgment of Webelhuth 1992)

Thus, Webelhuth (1992) would seem to group (60b) with (60a) as ill-formed, in distinction to the well-formed (60c). Furthermore, this particular grouping of judgments crucially supports Webelhuth's proposed theory of pied-piping.

As Horvath notes, however, Culicover (1999) reports the judgments in (60) in a context entirely unrelated to the nature of pied-piping, and without any plausible interest in challenging the theory of Webelhuth (1992). Moreover, consultation with other English speakers reveals a consensus that, although there may be a (slight) contrast between (60b) and (60c), it is not nearly as strong as the contrast between (60a) and the other two.

In summary, it appears that with respect to pied-piping past gerunds, there is a much stronger effect from the case-marking of the pied-piping subject than from the case-marking of the object. As I note below, this stronger effect is captured by our Q-based theory, while the weaker one remains a mystery under our account.

subject bears genitive case.

As noted by Horvath (2007), our account of the Hungarian contrasts in (59) can also capture the English data here. Let us assume that accusative-marked gerundive subjects in English occupy the NP-internal position of Hungarian nominative-marked possessors. Furthermore, let us assume that genitive-marked gerundive subjects occupy the NP-external position of Hungarian dative-marked possessors. Under these assumptions, the data in (60) again follow from our condition against pied-piping past lexical categories. Finally, we should again note that *all* the *wh*-words in (60) are left-peripheral specifiers, and so these data would not obviously be captured by a condition directly tying pied-piping to left-peripherality or specifier-hood *per se*.

We have seen, then, that our generalization against pied-piping past lexical categories would predict a variety of facts that otherwise must be captured via distinct generalizations. We may reasonably conclude, then, that a theory of limited pied-piping languages should derive that generalization as a theorem.

## 6.2 The Relationship Between Pied-Piping and the Left Edge

In the previous section, I noted that a potential advantage of our Q-based theory of pied-piping is that it does *not* predict that pied-piping is only possible from left-peripheral specifiers. Consequently, the ability for *wh*-words in CompPP to pied-pipe the larger PP presents no *prima facie* challenge to our theory. In this section, I will elaborate upon this point in detail.

Let us begin by noting that our Q-based account employs exactly the same mechanisms to derive pied-piping by specifiers and pied-piping by complements of P. That is, the analysis of pied-piping structures where the *wh*-word occupies a specifier position appeals to no notions beyond those appealed to in the analysis of pied-piping structures where the *wh*-word occupies CompPP, and *vice versa*.

This ‘analytic uniformity’ does not, however, hold for most other theories of pied-piping (e.g. Sells 1985, Cowper 1987, Kayne 1994, Koopman 1997, Grimshaw 2000, Koopman & Szabolcsi 2000). Under most other accounts, pied-piping by *wh*-words in CompPP employs mechanisms not required for pied-piping by specifiers. For example, under analyses like Kayne (1994) and Koopman (1997), it is only specifiers that can truly pied-pipe. Consequently, special assumptions must be introduced regarding the covert syntax of adpositional phrases, so that what appear overtly to be pied-pipers in CompPP are covertly in SpecPP. Similarly, Grimshaw (2000) proposes that complements of P can pied-pipe PP because adpositions are ‘extended projections’ of D, and so can inherit the *wh*-feature of their complements via normal feature projection. However, since Grimshaw’s system assumes that a given phrase can never be an extended projection of its specifier, it follows that some other mechanism (i.e., Spec-Head Agreement) must be responsible for pied-piping of a phrase by its specifier. However, despite this tendency for theories of pied-piping to treat pied-piping by CompPP via mechanisms different from those used in pied-piping by specifiers, there is no evidence that these two cases of pied-piping do involve distinct mechanisms.

On the other hand, the tendency to treat pied-pipers in CompPP as exceptional does have some potential merit. Indeed, it is largely *by design* that earlier accounts categorize pied-piping by CompPP as a distinct phenomenon from pied-piping by specifiers. Such accounts generally seek to predict that, aside from CompPP, all pied-pipers must occupy left peripheral specifier positions. Importantly, this prediction is *in fact true*, at least for the limited pied-piping

languages. As is clear from the cross-linguistic studies of Heck (2004, 2007) and Horvath (2007), in these languages, it *is* the case that P is the only category that permits pied-piping from its complement. In all cases but pied-piping of PP, a pied-piping wh-word must occupy a left-peripheral specifier position. Given this tendency, which Heck (2004, 2007) dubs the ‘Edge Generalization’, we must therefore question whether our uniform treatment of pied-piping is in fact accurate. Does our Q-based theory of pied-piping actually fail to capture an important property of pied-piping by failing to explicitly limit pied-piping to left-peripheral specifiers?

In fact, it does not. Rather, there is under our Q-based account a quite straightforward explanation for this pattern: *P happens to be the only functional category that directly takes interrogative words as complements.*

To see this more clearly, let us first consider the class of functional categories, which we might reasonably assume to be the following: C, I, D, Deg, P.<sup>20</sup> Now, consider the class of wh-words, which we might reasonably assume to be represented by the following English items: *who, what, which, where, why, how*. Placing these two sets side-by-side, we easily observe that the only member from the first set that can take as complement a member of the second set is the category P. It follows, then, that if a wh-word ever occupies a complement position, and is *not* complement to P, then it must be complement to some lexical head. Recall, though, that in the limited pied-piping languages, pied-piping past lexical projections is impossible. Consequently, in those languages, any wh-word that is complement to a category other than P will not be able to pied-pipe. We see, then, that our theory correctly predicts that, for the limited pied-piping languages, it is only PPs that may be pied-piped from their complement position.

In short, the reason why so many pied-pipers are specifiers (in the limited pied-piping languages) is not that there is some special importance of the specifier position *per se*. Rather, this tendency simply follows from the twin facts that (i) these languages only permit pied-piping past *functional* categories, and (ii) there is only one functional category, P, where a wh-word can occupy the complement position. Consequently, for the limited pied-piping languages, if the wh-word of a pied-piping structure is ever contained within a phrase other than PP, it must be within the specifier of that phrase. For this reason, in the grand majority of pied-piping structures, the wh-word will be a left-peripheral specifier.

In summary, while our Q-based theory *does* correctly predict that pied-pipers in the limited pied-piping languages will almost always occupy specifier positions (Heck 2004, 2007), it does *not* derive this tendency by banning pied-piping from complement position. Rather, this generalization emerges as an epiphenomenal consequence of the independent fact that P is just the only functional head to take wh-words as complements. Thus, our Q-based theory correctly predicts the tendency for pied-pipers in limited pied-piping languages to be specifiers without receiving any *prima facie* challenge from the widespread possibility of PP-pied-piping.

## 7. Conclusion

In the preceding sections, we have seen that our Q-based, ‘eliminativist’ theory of pied-piping is able to capture certain observed variation and uniformity in pied-piping structures across languages. It might be concluded, then, that while our Q-based account denies the existence of (true) ‘pied-piping’, it nevertheless provides a versatile – though properly constrained – tool for

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<sup>20</sup> To my knowledge, all other purported functional heads (e.g., Foc, Agr, Num, Loc) are a result of ‘exploding’ the five basic functional categories listed above.

the analysis of those structures that have traditionally been thought to exemplify the phenomenon.

In conclusion, then, we have seen that an empirically adequate theory of pied-piping structures needn't assume the actual existence of pied-piping. At the very least, this result calls into question a long-standing and wide-spread analytic tradition surrounding structures like those in (2). More interestingly, it casts doubt upon the existence of a phenomenon that has hitherto been accepted as a very real and deeply problematic property of human language. Most importantly, we find that the overall theory of grammar can potentially be simplified. If we simply abandon the problematic assumptions in (1), we needn't deviate from the null hypothesis that operations targeting the features of a lexical item apply only to the projections of that item.

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