

Chapter 4

“Odd Prepositions”

4.1 Introduction

Baker’s Paradox has been discussed primarily with respect to verbal diathesis alternations (in the literature, and so far in this dissertation), but there are instantiations of it in other domains of grammar as well. Although they are not discussed quite in these terms, Culicover’s (1999) book *Syntactic Nuts* contains instances of Baker’s Paradox outside the domain of verbal diathesis alternations, concerning the behavior of prepositions.

Not all of Culicover’s “syntactic nuts” are instances of Baker’s Paradox, i.e., potential arbitrary exceptions. Recall that an arbitrary exception is a word that fails to undergo a productive “rule” (broadly speaking) despite meeting the criteria for undergoing it. A “syntactic nut,” on the other hand, is a slightly different concept, implicitly defined by Culicover as any lexical item that has a set of syntactic properties that is not identical to that of any other lexical item. Some of Culicover’s “syntactic nuts” involve the display of an apparently unique positive ability (for example, the adverb *rather* licenses sentential complements in the context of *would*); this is idiosyncratic, but not a negative exception.

Culicover’s analysis of certain putatively “odd” prepositions, however, contains arbitrariness claims in the sense related to Baker’s Paradox. Although he does not explicitly cast his argument in these terms, there are several prepositions that he argues constitute arbitrary exceptions to productive generalizations, which are as follows.

(i) Prepositions precede, and do not follow, their argument:

- (1) a. John performed in the coffeeshop.
 b. *John performed the coffeeshop in.

(ii) Prepositions undergo *pied-piping* in long-distance dependency constructions (Ross 1968), preceding their argument, of course:

- (2) a. In which coffeeshop did John perform?
 b. *Which coffeeshop in did John perform?

(iii) Prepositions can be *stranded* in long-distance dependency constructions:

- (3) Which coffeeshop did John perform in?

A “normal” preposition like *in* adheres to these principles, but the “odd” prepositions *notwithstanding*, *ago*, *since*, *during*, *out*, and *off* each differ from this picture in their own apparently nutty way. Culicover summarizes their properties as in Table 4.1 which shows the whole range of patterns: Some prepositions must strand, some must pied-pipe, and some do neither. In his summary of this table, Culicover (1999:82) writes, “A number of possible patterns are realized, with no apparent generalization emerging among the exceptions” (p. 82). The claim that such chaos exists can be translated into a set of arbitrariness claims: The inability of *notwithstanding* to strand is an arbitrary exception to the generalization that prepositions can strand, the inability of *off* to pied-pipe is an arbitrary exception to the generalization that

Preposition	Precede	Piedpipe (prec.)	Follow	Piedpipe (follow)	Strand
<i>to</i> (normal)	yes	yes	no	n/a	yes
<i>notwithstanding</i>	yes	yes	yes	no	no
<i>ago</i>	no	n/a	yes	yes	no
<i>since</i>	yes	with <i>when</i>	no	n/a	no
<i>during</i>	yes	yes	no	n/a	??
<i>out</i>	yes	no	no	n/a	no
<i>off</i>	yes	no	no	no	no

Table 4.1: Behavior of odd prepositions according to Culicover (1999:82)

prepositions can pied-pipe, etc. Combined with the productivity of preposition ordering, pied-piping, and stranding (the “productivity” premise), along with the notion that the child does not make use of negative evidence to acquire such restrictions (the “no negative evidence” premise), these arbitrariness claims constitute instances of Baker’s Paradox.

Although Culicover does not cast his arguments in terms of Baker’s Paradox, his goals concern the same learnability problem. On the basis of the apparent chaos shown in Table 4.1, Culicover argues for “the conservative [learning] strategy of ‘setting’ the ‘features’ [STRAND] and [PIEDPIPE] independently [for each word], on the basis of positive experience.” The learner he describes is *attentive*, paying attention to what prepositions have (for example) pied-piped, and *conservative*, not allowing a preposition to pied-pipe unless the preposition has been witnessed in a pied-piping construction. (By this logic, [PRECEDE NP] and [FOLLOW NP] must also be features that are set individually for each word on the basis of positive experience.)

Throughout the book, Culicover (1999) uses the existence of lexical idiosyncrasies to argue for a “Conservative Attentive Learner.” As discussed in Chapter 1, conservatism does not follow from the existence of lexical idiosyncrasies; negative evidence is another possible means by which they could arise.¹ However, it does follow from

¹The inference from idiosyncrasy to conservatism echoes Baker’s (1979) argument for strict lexical conservatism on the basis of the existence of apparently arbitrary exceptions.

arbitrariness that the learner must be attentive to the use of particular words in particular constructions. The notion that the learner is attentive in this way constitutes a significant claim about learning, so it is worthwhile to establish its empirical foundations carefully.

The goal of this chapter is to critically evaluate Culicover’s claim that the behavior of prepositions is unpredictable and chaotic, and rife with arbitrary exceptions. I argue that a corrected version of the picture that he presents follows from deeper principles, and that prepositions do not differ arbitrarily in their ability to precede or follow their argument, strand, or pied-pipe.

4.2 Straightening out the data

Prior to developing an explanation for the behavior of the prepositions in question, I will aim to establish firmly how they behave. I argue in this section that the grammaticality status of pied-piping, stranding, and ordering with the prepositions in question is not in fact as represented in Table 4.1. I offer a revised picture of the data to be accounted for, which serves as the foundation for my argument that prepositions do not differ arbitrarily in their ability to undergo pied-piping or stranding.

4.2.1 Typographical error regarding *off*

In Table 4.1, the value “n/a” (“not applicable”) is often present in the “Piedpipe (follow)” column because prepositions would not be expected to pied-pipe following the argument if it does not do so in canonical sentences. If a preposition never follows its argument, then there is no reason to expect that it should follow its argument when pied-piped, so the value in the “Piedpipe (follow)” column should be “n/a” whenever the “Follow” column is “no,” as it is for *since*, *during*, and *out*. The “no” in the “Piedpipe (follow)” column for *off* should therefore read “n/a”. I believe this is a

typographical error. (This change renders the last two rows identical, so neither *out* nor *off* is a “syntactic nut” in Culicover’s sense, because neither has a unique set of properties.)

4.2.2 Pied-piping with *since*

Culicover argues that *since* cannot be pied-piped, except when its argument is *when*, citing the contrast between these two examples:

- (4) *Since which party hasn’t John called?
- (5) Since when have you been able to speak French?(!)

The awkwardness of (4) can be attributed to factors other than pied-piping with *since*, however, as evidenced by the fact that there are contexts that can ameliorate pied-piping with *since*.

One factor in the unacceptability of (4) is the use of the contracted form, *hasn’t*. The following example, assumed to be grammatical and analyzed by Grimshaw (2005:41), uses the uncontracted form *has not*, and sounds much better:

- (6) Since which party has he not seen her?

Contraction is an informal, casual construction, while pied-piping is a formal construction. As Silva and Zwicky (1975) show, contraction (or lack thereof) has stylistic properties that can conflict with the stylistic properties of other aspects of an utterance. For example, non-contraction of an auxiliary, which is formal, conflicts with the very casual use of subject deletion in (7):

- (7) *Have not seen George around for a long time.

Silva and Zwicky assign a numerical value between -10 (most casual) and $+10$ (most formal) to a set of linguistic elements, and measure “discord” as the difference between

these values. For example, non-contraction of the auxiliary is assigned +4, and subject deletion is assigned -9, yielding a very large discord value of 13 for example (7).

Under Silva and Zwicky's analysis, contraction is actually neutral (with a value of 0), and non-contraction has a value of +4 (somewhat formal). Pied-piping has a value +7 (quite formal). The discord between contraction and pied-piping we see in (4) is not quite as great as the discord in (7); it is only $7 - 0 = 7$. But non-contraction as in (6) reduces the stylistic discord value of (4) from $7 - 0 = 7$ to $7 - 4 = 3$, clearly an improvement. Under these assumptions, stylistic discord is one of the factors underlying the unacceptability of example (4).

There is independent support for the claim that pied-piping is formal in register. Corpus evidence provides one source: The frequency of pied-piping, relative to stranding, is higher in formal registers in corpora (Hoffmann 2005). In light of a cross-linguistic tendency for pied-piping to be obligatory where stranding is impossible, Heck (2004) even suggests that preposition pied-piping involves a separate grammar from stranding in English; people who have learned to pied-pipe switch back and forth between two grammars, one which disallows it and one which requires it. Indeed, pied-piping has a very different status from stranding in the course of acquisition; the children who participated in the acquisition study of McDaniel et al. (1998) tended not to produce or accept pied-piping, even though they were capable of forming and accepting relative clauses with stranded prepositions. McDaniel et al. (1998:332) conclude that "pied-piping is a prescriptive rule which is learned during schooling," and is not part of the basic grammatical system of English. Whether or not pied-piping reflects a separate grammar from stranding, their evidence suggests that it is of a different status, and more formal in particular.

Examples of pied-piped *since* are admittedly somewhat awkward in many contexts, but this can be understood on the basis of pragmatic factors. Often, a *since*

question is an overly complicated and roundabout way of asking for a piece of information: it asks for the starting point as a way of deriving the duration – why not just ask for the duration, using *how long*? In contexts where the duration is not really the question, pied-piped *since* becomes more acceptable. For example, consider the following example from a Weber State University application for Resident Classification, from the Utah System of Higher Education:

(8) Since what date have you lived *continuously* in Utah? (Month/Day/Year)

In (8), a *how long* question (*How long have you lived (continuously) in Utah?*) would not suffice, because the answer is to be in the form of a date. Another type of context in which it is sensible to ask for a starting point is in television game shows. Game shows ask participants to supply answers in a prescribed format. In such contexts, pied-piped *since* is acceptable:

(9) Since what year have all popes been cardinals?

(10) Since what war has Sweden remained a neutral country?

Since is appropriate here because the answer to these questions must be in a certain form, specifying a particular point of time or event that marks the beginning of a period.

In short, I conclude that *since*'s entry for “Piedpipe (prec.)” should be “yes” rather than just “with *when*.” This removes one of the potential arbitrary exceptions to be accounted for.

4.2.3 Stranding with *out*

Culicover claims that stranded *out* is ungrammatical without *of*, thus (Culicover's judgments):

(11) This is the door that you go out of.

(12) *This is the door that you go out.

Members of the audience at the 2007 Berkeley Linguistics Society meeting, where this material was presented, not only found (12) acceptable, but even preferred (12) to (11). I assume that stranding with *out* is acceptable.

4.2.4 Stranding with *off*

Culicover's example of stranding with *off* is:

(13) This is the chair that Robin fell off *(of).

In a more felicitous pragmatic context, stranded *off* becomes acceptable; consider the following example:²

(14) One tiny detail of his passing that seems particularly tragic to me: they found his bicycle and helmet on the bridge he jumped off.

Identifying the particular chair that someone has fallen off (of) is a less likely scenario than identifying the bridge that someone has jumped off (of), unfortunately.³

4.2.5 The new picture

These corrections leave us with the picture in Table 4.2. Deviations from the normal pattern are shown in bold; corrections are shown with strike-throughs.

With the deviations from the normal pattern highlighted, it can be seen that the cases of deviation from the normal pattern are less numerous than cases in which the normal pattern is followed. Already, this picture is less chaotic than the one in Table 4.1.

²adam.rosi-kessel.org/weblog/2004/03

³This may be a source of dialectal variation; Eve Clark (p.c.) informs me that (13) is acceptable without *of* in her British dialect.

Preposition	Precede	Piedpipe (prec.)	Follow	Piedpipe (follow)	Strand
<i>to</i> (normal)	yes	yes	no	n/a	yes
<i>notwithstanding</i>	yes	yes	yes	no	no
<i>ago</i>	no	n/a	yes	yes	no
<i>since</i>	yes	with <i>when</i> yes	no	n/a	no
<i>during</i>	yes	yes	no	n/a	??
<i>out</i>	yes	no	no	n/a	no yes
<i>off</i>	yes	no	no	no n/a	no yes

Table 4.2: Behavior of odd prepositions (revised)

4.3 Explaining the new picture

In this section, I will argue that, indeed, with a small number of independently-motivated principles, we can derive the picture in Table 4.2.

4.3.1 *since* and *during*

What makes *since* and *during* odd prepositions is their difficulty with stranding, as shown in (15) and (16).⁴

(15) *What war has Sweden been a neutral country since?

(16) *What class did you fall asleep during?

An indication that this may reflect a general constraint comes from the fact that temporal prepositions have difficulty stranding in general:

(17) *What war did Sweden become a neutral country after?

(18) *What party did you talk to him before?

(19) *What time did you talk to him until?

⁴Example (16) is admittedly not as unacceptable as (15); a possible explanation for this contrast will be given later in this section.

One might imagine that the relative unacceptability of stranding with these temporal prepositions is due to the fact that they are adjuncts. It has been claimed that extraction from within an adjunct is ungrammatical (Huang 1982; Chomsky 1986). However, extraction from within an adjunct cannot be ruled out across the board, because there are clearly acceptable cases of this. For example, Hornstein and Weinberg (1981) cite example (20), which contains extraction out of an adjunct prepositional phrase headed by *about*:

(20) Who did you speak to Harry about?

Hornstein and Weinberg (1981) offer the alternative generalization that “only [prepositional phrases] which are immediately dominated by VP [as opposed to S] can strand.” This includes some prepositional phrases that are adjuncts, but not those dominated by S. For example, (21) is ambiguous between one interpretation in which *on the boat* is dominated by VP and one where it is dominated by S (Hornstein and Weinberg 1981, ex. 13):

(21) John decided on the boat.

According to one interpretation, John decides to buy the boat. According to another one, he made a decision while on the boat (i.e., the boat is the location of the decision). The former interpretation corresponds to a syntactic analysis on which *on the boat* is dominated by VP; the latter interpretation corresponds to the one on which it is dominated by S.

Hornstein and Weinberg (1981) propose to account for preposition stranding in English through a transformational rule of “reanalysis,” which converts a complex sequence including the verb and the preposition into a single transitive verb. Under Hornstein and Weinberg’s (1981) reanalysis rule, a verb *V* and a set of contiguous elements to its right in the domain of VP is “reanalyzed” as a complex *V*. The resulting complex *V* is similar to a transitive verb, with the ability to license the trace.

Hornstein and Weinberg’s (1981) analysis falls into a class of theories positing a process of reanalysis, all of which also posit some kind of “possible word” constraint on the sequence undergoing reanalysis. According to Hornstein and Weinberg, the resulting sequence must be a “semantic unit.” Hornstein and Weinberg’s (1981) solution builds on van Riemsdijk’s (1978) analysis in which a V-PP sequence can be reanalyzed as a V'-NP sequence, where V' contains the V and the head of the PP; van Riemsdijk (1978:221) suggests that reanalysis is limited to sequences that are “possible words.” Stowell (1982:255) posits a restriction on his reanalysis rule that the resulting sequence be “defined as a *word* by the rules of the word-formation component,” that is, “the complex words that [reanalysis rules] ‘create’ must be weakly equivalent in structure to words that might be produced independently by the word-formation rules of the language in question.”

Theories based on the idea of the “possible word” all posit a limit on the semantic complexity of the material intervening between the filler and the gap. Another way of limiting the semantic complexity, without appealing to syntactic reanalysis, is offered by Truswell (2008:25):

(22) **Single Event Condition**

An instance of *wh*-movement is acceptable only if the minimal constituent containing the head and the foot of the chain describes a single event.

The terms *wh*-movement and *chain* connote the type of theory in which questions and relative clauses and other *long-distance dependencies* are formed by movement of the *wh*- item, which leaves a trace in its place (Chomsky 1981, 1986). This is not a necessary assumption (e.g. Gazdar 1981, Pollard and Sag 1994, Sag and Fodor 1994, Levine and Hukari 2006); a more theory-neutral way of casting this principle would be in terms of the *filler* and the *gap* in a *long-distance dependency*. Moreover, it is not clear whether the effect predicted by the Single Event Condition is due to

grammatical constraints or processing factors (or a combination of these). What is important for present purposes is that the generalization in (23) holds:^{5,6}

(23) **Single Event Condition (theory-neutral version)**

In a long-distance dependency construction, the path between the filler and the gap must span only a single event.

What constitutes a single event? This is a deep question with a venerable history. As discussed in Chapter 2, in order for a set of events to be grouped as subevents of a larger event, the subevents must be related by causation (Davidson 1969, Croft 1991, i.a.). Truswell (2007) proposes that event individuation is related to agentivity, intentionality, and planning, which can affect whether or not the subevents stand in *contingent* relations (of which causation is an example). Drawing on insights also expressed by Wolff (2003), Truswell (2007:27) puts it thus: “The link between agentivity and the individuation of events stems from the observation that larger single events tend to consist of subevents related by goal-driven and planning-related notions. Such notions require the presence of a rational agent capable of forming goals and acting in such a way as to attempt to reach them.” This formulation allows Truswell to account for patterns of extraction from bare present participial adjuncts (e.g. *What did John arrive/*work whistling?*) and extraction from *in order to* phrases (e.g. *What did you come round in order to work on?*) The idea that agentivity affects event individuation receives experimental support from Wolff (2003): Native English

⁵It is not clear whether the condition is sensitive to linear order or hierarchical relations or some combination of the two. A potential problem for a characterization based on hierarchical relations is that it would seem to incorrectly rule out right-adjoined modifiers that introduce events, as in *What was John [talking about _] when he called you after he got back from his travels?* But in support of the hierarchically-based characterization, intervening relative clauses do not seem to degrade extraction: *[What did [the guy that [Mike met yesterday]] bring to eat]?* (Robert Truswell, p.c.).

⁶To be more precise, the Single Event Condition should be stated in terms of “eventualities” rather than events (Bach 1986), to take into account cases in which the matrix clause is stative rather than eventive.

speaking participants were found to be more likely to describe an event using a lexical rather than periphrastic causative when the causer of the event was depicted as sentient.

Although the Single Event Condition was designed to account for the conditions under which extraction from bare present participial adjuncts is possible, it also applies to preposition stranding. Although Truswell’s focus is not on preposition stranding, he points out that *notwithstanding* and *despite* stand out from the set of prepositions by virtue of the fact that, far from introducing a causally related event, they describe a *hindrance* to the matrix event (Truswell 2007:164). The unacceptability of extraction from the complement of these prepositions is predicted by the Single Event Condition, since the semantic relation between the two events is precisely the opposite of what is required to make them into a single event.

The Single Event Condition extends to the inability of other temporal prepositions to strand, like *after*, *before*, *since*, and *until*. Because these temporal prepositions introduce a new event, the filler-gap dependency spans more than a single event. For example, the preposition *since* introduces an additional event into the sentence (World War II, in the following example):

(24) Sweden has been a neutral country since World War II.

When an event-introducing preposition like *since* is stranded in a long-distance dependency construction, as in (15), repeated here as (25), the *wh*- phrase is extracted across the event introduced by the preposition:

(25) *What war has Sweden been a neutral country since?

The unacceptability of (25) is thus captured by the Single Event Condition.

As Truswell (2007) discusses, the preposition *during* can describe an event that is more tightly integrated with the matrix clause. He argues that *during* allows

extraction when the event it introduces is construed as causally related to the matrix event; hence a contrast between (26) and (27):⁷

(26) *Which meal did you read a book during?

(27)[%]Which play did John fall asleep during?

In (26), the matrix event (reading) and the event described by the prepositional phrase (eating) are not causally related. On the other hand, it is possible to construe the play and the sleeping as causally related in (27). In this way, the Single Event Condition accounts for the slight contrast between *since* and *during* in their ability to strand.

The Single Event Condition also accounts for the fact that not all temporal prepositions are incapable of stranding – some temporal prepositions do strand, such as *on*:

(28) What day did he leave on?

In this case, the *on* phrase specifies the time of the matrix event, rather than introducing a separate event. Hence, the extraction path crosses only one event. The acceptability of (28) is therefore consistent with the Single Event Condition.

The Single Event Condition does not affect pied-piping in the same way that it affects stranding. This can be made evident using the distinction between the relation between the filler and the gap on one hand, and the relation between the *wh*- element and the filler on the other. (See Pollard and Sag 1994 regarding this distinction.) In pied-piping constructions, the filler is distinct from the *wh*- element; for example, in *To whom did you speak?*, the filler is *to whom*, and the *wh*- element is just *whom*. Assuming that a preposition such as *since* introduces a new event, (23) will rule out stranding the preposition, but not pied-piping it, because the extraction

⁷The percent sign in (27) indicates that there is variation between speakers on this judgment.

path will cross two events in the case of stranding, but only one event in the case of pied-piping.

In summary, the Single Event Condition predicts the behavior of *since*, *during*, and other temporal prepositions with respect to stranding, without being overly restrictive. It does not rule out stranding with the temporal preposition *on*, and does not rule out pied-piping.

4.3.2 *ago*

Ago is like other temporal prepositions in that it does not strand, but *ago* is quite unlike other prepositions in general. All of *ago*'s properties are abnormal for a preposition. It follows the noun phrase, and does not precede it:

- (29) a. John received a very generous offer a few minutes ago.
 b. *John received a very generous offer ago a few minutes.

It pied-pipes, but only following the noun phrase (as one would expect based on its behavior in canonical sentences):

- (30) a. How long ago did John receive the offer?
 b. *Ago how long did John receive the offer?

It also does not strand:

- (31) *How long did John receive the offer ago?

One possible analysis of these facts is that *ago* is a postposition. In that case, its inability to strand would remain to be explained, and its ordering properties would be individually stipulated.

I propose to analyze *ago* as an intransitive preposition rather than a postposition. I propose to analyze the preceding noun phrase (e.g. *how long*) as a specifier, performing

the same function as measure phrases such as *three years* and *two blocks* in phrases like *three years in the past* or *two blocks past the light*. This analysis is proposed by Jackendoff (1973:355, ex. 44a) for phrases such as in (32).

$$(32) \left\{ \begin{array}{l} \text{Right} \\ \text{Far} \\ \text{Six miles} \\ \text{A long way} \\ \text{Halfway} \end{array} \right\} \text{ down the road, Frodo saw an approaching band of grzches.}$$

The category of “intransitive preposition” has a great deal of independent support. Klima (1965) argues for the analysis of words such as *home*, *downstairs*, and *afterward* as intransitive prepositions. Emonds (1972) argues that the particles in verb-particle constructions such as *look out* are also intransitive prepositions. Jackendoff (1983:350) treats *home*, *here*, and *there* as intransitive prepositions. These arguments are based partially on similarities with prepositions that do take complements: intransitive prepositions can modify verb phrases, appear as the complement of *put*, occur in locative inversion constructions, and can be modified by *right*, etc. Furthermore, they can be distinguished from adverbs on the basis that they can post-modify nouns, they cannot modify adjectives or other adverbs, they can function as the complements of prepositions, and they can take prepositional phrases as complements (see Lee 1999:134). The category of intransitive preposition is not small; the *Cambridge Grammar of the English Language* lists 40 prepositions that alternate between taking a complement and taking no complement, and approximately 40 others that function solely as intransitive prepositions, including *abroad*, *north*, and *downstairs*.

The intransitive-preposition-with-specifier analysis is in line with that of Fillmore (2002), which relates the syntax of time expressions to a simple but explicit semantic ontology. Expressions like *a few minutes ago* are “Vector Constructions” which locate

a Target (e.g. the time of the event) at a Distance (e.g. ‘a few months’) in a Direction (e.g. ‘before’) with respect to some Landmark (e.g. ‘now’). The Distance element in a Vector Construction is expressed as a specifier. Unlike *before* and *after*, the preposition *ago* requires its Distance element to be expressed.

The analysis according to which the noun phrase is a specifier, rather than a complement, accounts for the facts as follows. *Ago* follows its argument because its argument is realized as its specifier, and specifiers precede their heads in English. The same principle accounts for ordering in pied-piping constructions. *Ago* cannot be stranded for the same reason that stranding of *book* is impossible in (33):

(33) *Whose did you read book? [cf. *Whose book did you read?*]

This example illustrates the generalization that specifiers do not strand their heads in long distance dependencies in English, assuming that a possessor is a specifier. The constraint may be formulated in a variety of ways – as the *Left Branch Condition* (Ross 1968), the *Trace Principle* (Pollard and Sag 1994:173), or otherwise, but the generalization remains the same. It would not be necessary to see and remember having seen *ago* in the pied-piping construction in order to conclude that pied-piping is grammatical; learners need only learn the principle that is at work in (33).

4.3.3 *notwithstanding*

Unlike a normal preposition, *notwithstanding* can precede its complement, as in (34a), or follow it, as in (34b):

- (34) a. Notwithstanding your generous offer, we are going to demolish the building.
- b. Your generous offer notwithstanding, we are going to demolish the building.

Yet (unlike the other cases discussed so far) its behavior in pied-piping constructions does not mirror its behavior in declarative sentences; when it pied-pipes, it can only precede the argument:

(35) That was a very generous offer, notwithstanding which we are going to demolish the building.

(36) *That was a very generous offer, which notwithstanding we are going to demolish the building.

It also does not strand:

(37) *That was a very generous offer, which we are going to demolish the building notwithstanding.

If *notwithstanding* is a “syntactic nut” in Culicover’s sense, then there should be no way to assign to it a syntactic category, or set of syntactic categories, in a manner that derives all of these properties. There may be no single syntactic category one can assign to *notwithstanding* that could account for all of its behavior, but its behavior can be accounted for if we assume that there are two forms of *notwithstanding* with different syntactic categories. I propose that when *notwithstanding* appears before its argument, the argument functions as its object, and *notwithstanding* is a preposition. This is *notwithstanding_P*. When *notwithstanding* appears after the argument, *notwithstanding* is a present participle, and the argument functions as its subject. This is *notwithstanding_V*.

The participial *notwithstanding* (*notwithstanding_V*) is restricted to *absolute constructions*, which are illustrated in the following examples:

(38) No other business arising, the meeting was adjourned.

(39) The horse loped across the yard, her foal trailing behind her.

(40) His hands gripping the door, he let out a volley of curses.

These constructions involve a sentence-level modifier that itself contains a subject (e.g. *no other business*) and a participial predicate (e.g. *arising*). Together, the phrase including the subject and the predicate applies to the sentence it modifies (as opposed to the subject of the sentence it modifies, as in, for example: *Limping, John left*). Because the argument of *notwithstanding*_V is its subject, *notwithstanding* can follow its argument.

This analysis accounts for the pied-piping behavior of *notwithstanding* as follows. As a preposition, *notwithstanding*_P precedes its argument, of course, and can pied-pipe, maintaining canonical order. As a subject-taking participle, *notwithstanding*_V follows its argument and is correctly not expected to be able to pied-pipe, because pied-piping of absolute modifier phrases is impossible in general:

(41) *Here is the foal, which trailing behind her, the horse loped across the yard.

(42) *These are the hands, which gripping the door, he let out a volley of curses.

Why is pied-piping of absolute modifier phrases, as in (41) and (42), unacceptable? The unacceptability of these examples cannot be chalked up to the size of the pied-piped constituent, nor to the fact that it is headed by a verbal element, because it is possible to pied-pipe large VPs (Nanni and Stillings 1978; Pollard and Sag 1994):

(43) The elegant parties, [to be admitted to one of which] was a privilege, had usually been held at Delmonico’s.

The reason that absolute modifiers resist pied-piping could be, however, that they are clausal. In general, clauses (conceived of as phrases that contain a subject) seem to resist pied-piping (Pollard and Sag 1994):

(44) *The elegant parties, [for us to be admitted to one of which] was a privilege, had usually been held at Delmonico’s.

Absolute modifiers, which also contain a subject and a predicate, are also clausal, and may not be able to pied-pipe for that reason.

The *notwithstanding_P*/*notwithstanding_V* analysis thus captures the pied-piping facts, but the stranding behavior of *notwithstanding* requires further explanation. Under the assumption that *notwithstanding* can function as a preposition, it should be able to strand, in the absence of an independent factor ruling this behavior out. There are two possible independent explanations for its inability to strand, which may work in concert.

One possible explanation comes from the fact that *notwithstanding* is extremely formal. As discussed in §4.2.2, stranding is informal (at least compared to pied-piping). As Silva and Zwicky (1975) show, stylistic discord can arise when a formal lexical item occurs in an informal construction. In the following example, the formal lexical item such as *eschew* conflicts with the casual syntactic process of topicalization:

(45) ?Men who eschew controversy we are not in need of.

In Silva and Zwicky's system (described above in §4.2.2), a formal lexical item like *eschew* has a formality rating of +7, and topicalization has a formality rating of -5, yielding a stylistic discord value of 12 for (45). In a similar way, the extreme formality of *notwithstanding* may conflict with the relative informality of preposition stranding.

Another viable explanation of the inability of *notwithstanding* to strand comes from the Single Event Condition, given in (23). As mentioned above, Truswell (2008) suggests that extraction from the complement of *notwithstanding* is ruled out because its object is not causally related to the main clause, but is, in fact, a hindrance to that event. Because the two events are not causally related, the unacceptability of stranding with *notwithstanding* is predicted by the Single Event Condition.

To summarize, the behavior of *notwithstanding* can be understood by assuming that there are two forms of *notwithstanding* with different parts of speech (a subject-taking participle and a preposition), that it occurs only in absolute constructions, and that it is a formal word. Beyond this, nothing about *notwithstanding* needs to be said *per se* in order to account for its syntactic properties.

4.3.4 *out* and *off*

In its use as a preposition with a direct nominal complement, *out* fails to pied-pipe:

(46) *This is the door out which he went.

This property is shared by *off*:⁸

(47) *This is the bridge off which he jumped.

I argue that these two observations fall under a larger generalization.

To avoid confusion, note that *out* (unlike *in*, surprisingly) only takes direct nominal complements when its complement describes an aperture:

(48) a. He went out the door/*room.

b. He went in the door/room.

Out must be followed by *of* when its complement describes an enclosure such as a room (*in* disallows *of*):

(49) a. John went out *(of) the room.

b. John went in (*of) the room.

⁸I agree with Culicover’s judgment that (47) is awkward, if not unacceptable, but other speakers find it acceptable. To the extent that it is acceptable, *off* behaves like a normal preposition and does not give rise to an exception to be accounted for.

The reason for this contrast between *in* and *out* is not important for our purposes.

(With *of*, *out* pied-pipes:

(50) This is the room out of which he went.

It is only the prepositional use of *out* with nominal, aperture-denoting complements that is unable to pied-pipe.)

Like *out*, *in* is restricted in its ability to pied-pipe. With complements denoting enclosures such as rooms, *in* is ambiguous between a static location reading and a dynamic reading on which the enclosure is the goal of the motion (on the latter reading, *in* is equivalent to *into*):

(51) John ran in the room.

In pied-piping constructions, the dynamic reading disappears.

(52) This is the room in which he ran.

The reading of *in* as *into* is not available in (52).⁹ With complements denoting apertures such as doors, *in* is unambiguous:

(53) John ran in the door.

In (53), the door is not interpreted as a location for the entire running event, but rather an aperture through which John passes at some point during the running event. This can be considered a second kind of dynamic reading in addition to the *into* reading. Following Jackendoff (1983:165), I will use the term *route* to describe the meaning of prepositional phrases whose object is to be interpreted as located along the path of the motion being described, such as an aperture. When *in* is pied-piped with an aperture-denoting complement, this dynamic reading disappears again:

⁹Replacing *ran* with *went* seems to ameliorate this sentence. This may be due to the fact that *went* signals goal-directed motion.

(54) *This is the door in which he ran.

In this case, because only a dynamic reading would be available, the sentence is unacceptable. Thus, in general, dynamic readings are unavailable for *in* when it is pied-piped.

It is not the case that prepositions describing movement do not pied-pipe as a rule, since pied-piping is possible on dynamic readings with *through*, *across*, *to*, *towards*, and *from*:

(55) This is the door through which he went/ran.

(cf. He ran through the door.)

(56) This is the bridge across which they travelled.

(cf. He travelled across the bridge.)

(57) This is the city to which he moved.

(cf. He moved to the city.)

(58) This is the monument towards which he was walking.

(cf. He was walking towards the monument.)

(59) This a prison from which he cannot escape.

(cf. We escaped from the prison.)

However, *off*, *out*, and *in* are not alone in their inability to pied-pipe; *up* and *down* are also awkward in pied-piping contexts such as the following:

(60) ?These are the stairs up which he ran.

(cf. He ran up the stairs.)

(61) ?This is the chute down which he fell.

(cf. He fell down the chute.)

Furthermore, on a dynamic reading (with *the table* as the goal of motion), *on* does not pied-pipe:

- (62) *This is the table on which he jumped.
 (cf. He jumped on the table)

I suggest that these facts are all related.

The unacceptability of pied-piping with dynamic (or “directional”) *in* and *on* is also pointed out by Thomas (2004), in the context of a series of *adjacency effects*. Thomas’s pied-piping examples are as follows:

- (63) a. John fell in/into the pool. [T.’s 15a]
 b. The pool ?*in/into which John fell (is extremely deep). [T.’s 15b]

The inability of directional *in* and *on* to pied-pipe is an “adjacency effect” in the sense that it reflects a requirement that directional *in* and *on* be adjacent to the verb that licenses it. The other such effects she identifies are as follows:

(i) Modifiers intervening between motion verbs and the preposition. These worsen directional *in* much more than *into*:

- (64) a. John ran ?in/into the house. [T.’s 12a]
 b. John ran at top speed *in/into the house. [T.’s 12b]

(ii) Conjunction with another directional prepositional phrase. This reduces acceptability of sentences with directional *in* phrases:

- (65) a. He came ?in/into the living room. [T.’s 13a]
 b. He came through the hall and *in/into the living room. [T.’s 13b]

(iii) Prepositional phrase fronting. *Onto* phrases can be fronted much more easily than directional *on* phrases:

- (66) a. Mike jumped on/onto a moving train. [T.’s 14a]
 b. ?On/onto a moving train jumped Mike. [T.’s 14b]

In addition to their failure to pied-pipe, *out* and *off* also show at least one adjacency effect. They are both unable to undergo prepositional phrase fronting (without help from *through* or *of*, respectively):

(67) Out *(through) the door ran John.

(68) Off *(of) the cliff jumped John.

Admittedly, *out* and *off* do not show all of the adjacency effects that *in* and *on* show:

- (69) a. John ran at top speed out (through) the door.
 b. John jumped with a backflip off ?(of) the bridge.
- (70) a. John went in the door and out (through) the window.
 b. John went through the curtain and off (of) the stage.

Thus, *out* and *off* are similar to directional *in* and *on* in that they resist separation from the verb they modify, but are more permissive than directional *in* and *on*, allowing intervening modifiers (69) and conjunction (70). The separations from the verb that *out* and *off* tolerate can be seen as less “severe” than fronting, because they do not dramatically alter the configurational relationship between the verb and the prepositional phrase; the prepositional phrase is still within the verb phrase in these cases. The fact that *out* and *off* do show adjacency effects is the point of interest here.

How can these adjacency effects be explained? According to Thomas (2004), *in* and *on* are basically atelic, and basically atelic prepositions require adjacency of the prepositional phrase to the governing verb in order to receive a telic interpretation.

Hence, these prepositions must be adjacent to the verb in order to acquire the telic, directional reading (as *into* or *onto*).

Further evidence for the treatment of *in* as primarily a static location marker (atelic) comes from Nikitina (2008). In a corpus study of *in* vs. *into*, comparing static (e.g. *I am in the house*) vs. dynamic (e.g. *I went in the house*) uses of *in*, Nikitina (2008) finds that *in* tends to be used for expressing goals more often when the directional meaning can be inferred from other elements in the sentence, such as the verb. This suggests that the interpretation of the argument of *in* as a goal of motion arises as a pragmatic inference rather than being specifically lexically encoded by *in*; the default interpretation for *in* is as a marker of static location, rather than goal of motion. Only the complex form *into* explicitly marks the argument as a goal. Since *in* does not lexically encode a directional meaning, it does not suffice as a marker of the goal of motion.

I propose a related explanation for the inability of *in*, *out*, *down*, and *up* to pied-pipe. In particular, I claim that they do not adequately mark the role of their object, something which syntactic displacement requires. This requirement can be stated as follows:

(71) **Marking Generalization**

When a prepositional phrase is syntactically displaced from the verb phrase it modifies, the role of the prepositional object must be explicitly marked.¹⁰

As I will discuss below, the contrasts in the ability to pied-pipe described above follow from this generalization.

An assumption behind the principle in (71) is that prepositions do not always explicitly mark their objects as bearing the roles that they bear. Jackendoff (1983) provides a framework for describing the types of interpretations involved. As he

¹⁰In the discussion that follows, I assume that the preposition is what must mark the role of the object, but a verb may be capable of explicitly marking the role as well.

shows, prepositional phrases that normally denote places can denote paths of motion when “path functions” are applied to their meaning. This is the source of ambiguity in the following sentence (Jackendoff’s example 9.11):

(72) The mouse ran under the table.

On the place reading, the running event takes place entirely under the table; on the path reading, the prepositional phrase denotes the goal of the running movement. Jackendoff analyzes this effect as deriving from the application of the path function ‘TO’ to the meaning of *under the table*, which denotes a place.¹¹ A path interpretation can be explicitly specified by preceding *under* with, for example, *from*:

(73) The mouse ran from under the table

According to Jackendoff’s analysis, *from* denotes a path function (‘FROM’). On the path reading of (72), there is also a path function (‘TO’), but it is implicit. Because *under* takes on path readings through context rather than explicitly indicating them, *under* does not explicitly mark its argument as a goal.

How do these ideas help explain the observations given above? Let us begin with goals.¹² According to the Marking Principle in (71), a prepositional phrase with a goal argument must be headed by a preposition that marks its argument as a goal in a displacement construction such as pied-piping. The prepositions *to*, *towards* and *on* can all occur with goal-denoting objects, but only *to* and *towards* explicitly mark the object as a goal; *on* expresses only location. The object of *on* can take on the interpretation of being a goal through context, even though this interpretation is not explicitly indicated. Hence, the Marking Generalization predicts that *to* and *towards*

¹¹In fact, Jackendoff is careful not to assert that the place reading is basic. All he does to suggest that is to represent the denotation of *under* on the place reading as ‘UNDER’ (in all capital letters), and on the path reading, ‘TO(UNDER...)’. This representational choice suggests that the place reading is basic, but does not strictly imply that.

¹²For the purpose of discussion, I assume that it is the noun phrase, rather than the prepositional phrase as a whole, that serves as a “goal.”

should be able to pied-pipe with goal-denoting objects, as in (57) and (58) but *on* should not be able to, as in (62).

Turning to sources, the Marking Generalization implies that a prepositional phrase introducing the source of motion must be headed by a preposition that marks its object as a source, in a displacement construction. *From* and *off* occur in general with arguments interpreted as the source of motion, but only *from* is an explicit source marker; I assume that *off* is like *on* in marking only place because they are opposites. A prepositional phrase like *off the chair* is therefore correctly predicted not to be able to pied-pipe, as in (47).

Finally, let us consider prepositional phrases denoting routes, such as *in the door*. In such phrases, the prepositional object is interpreted as being located along a route, rather than as a goal (as in *go in the room*) or a static location (as in *be in the room*). Let us refer to the role played by the object noun phrase in a route-denoting prepositional phrase as a *passageway*. Just as the complex preposition *into* is the explicit goal marker corresponding to *in*, the combination *in through* (as in *in through the door*) explicitly marks the prepositional object as a passageway. The object of *in* can only take on a passageway interpretation through context, for example when the argument describes an aperture such as a door or a window. According to the Marking Generalization, a displaced prepositional phrase with an object interpreted as a passageway must be headed by a preposition that marks the object as such. This rules out piedpiping *in* with passageway objects as in (54), and also applies to pied-piping with *out*, as in (46) assuming that *out* is literally a static location marker like *in*, being its opposite. This means that the Marking Generalization also rules out pied-piping of prepositional phrases headed by *out* with passageway objects, such as *out the door*.

Other facts about prepositions with passageway objects can be accounted for using the Marking Generalization as well. I suggest that *down* and *up* are similar

to *in* and *out* in that they appear with passageway objects but are not passageway markers; rather, they explicitly mark only orientation. Evidence for this comes from the fact that they can be used outside of motion contexts, as in for example, *I’m facing down/up*. Under this assumption, the Marking Generalization accounts for the inability of *down* and *up* to pied-pipe as well. In contrast, *through* can be argued to be a passageway marker on the grounds that it specifies the nature of the passageway. *Through* implies that the passageway partially or fully surrounds the entity moving through it, in the vertical dimension. Although one can move *through* a field, saying so suggests that the grass is relatively tall; one would not speak of moving through a field of astroturf. Hence, the Marking Generalization correctly includes pied-piping of prepositional phrases headed by *through* with passageway objects. *Across* specifies an orientation (of perception or movement) that is perpendicular to the central axis of an object that functions as a passageway. Because the passageway is a crucial part of the meaning of *across*, this preposition can also be considered a passageway marker. Therefore, the Marking Generalization also predicts that prepositional phrases headed by *across* with passageway objects should be able to pied-pipe.

I conclude that the inability of *off* and *out* to pied-pipe are not idiosyncratic facts about these two prepositions, but fall under a larger generalization, namely the Marking Generalization in (71). It may be possible to derive this generalization from deeper principles, but the conclusion stands that these are not arbitrary exceptions.

4.4 Summary and conclusion

In her review of *Syntactic Nuts*, Fodor (2001:381) argues that “the route we have to take toward a true theory of the periphery” is to evaluate conjectures which “relate the stipulations to the general ecology of natural language grammars.” When apparent idiosyncrasies are placed against the background of the general ecology of natural

language grammars, the need for stipulations sometimes even disappears. In this chapter, I have argued that the chaotic picture that Culicover presents actually has an underlying orderliness. The revised set of behaviors to account for, given in Table 4.2, fall under several deeper generalizations:

- Stylistic discord can lead to unacceptability, and pied-piping is formal and stranding is informal.
- The “Left Branch Condition” or equivalent.
- Specifiers precede their heads, and heads precede their complements.
- Clauses do not pied-pipe.
- The Single Event Condition given in (23).
- The Marking Generalization given in (71).

Some of these generalizations correspond to theoretical principles; some are merely descriptive generalizations. Developing a theory capable of deriving these generalizations as consequences would be ideal, but the existence of these generalizations suffices to prove the main point under consideration in this chapter. They show that it is not necessary to learn individual restrictions on individual prepositions regarding ordering properties or their ability to strand or piedpipe.

Along with basic principles and descriptive generalizations, I have made use of some lexical stipulations: *ago* is intransitive and requires a specifier, *notwithstanding* is limited to absolute constructions, and prepositions have differing inherent levels of formality. The existence of this type of lexical idiosyncrasy, however, does not contradict the basic thesis that this chapter is devoted to supporting: that there are no prepositions that arbitrarily fail to strand or pied-pipe.

I conclude that it is not necessary to stipulate restrictions on the ability of individual prepositions to strand or pied-pipe in order to have a descriptively adequate account of their behavior. This assessment of the linguistic situation means that learners need not be attentive to the use of particular prepositions in stranding or pied-piping constructions, for example, by setting the features [STRAND] and [PIED-PIPE] individually on the basis of positive experience. It is more likely that the learner seeks out larger generalizations.