Richard K. Larson  Bare-NP Adverbs

In this article I examine a class of noun phrases in English that have the ability to function as adverbial modifiers, unaccompanied by a preposition or any other indicator of adjunct status. These are the so-called bare-NP adverbs, examples of which are given in (1a–c):

(1) a. I saw John \[ \{ \text{NP that day} \} \{ \text{NP someplace you’d never guess} \} \].
   b. John was headed \[ \{ \text{NP that way} \} \].
   c. Max pronounced my name \[ \{ \text{NP every way imaginable} \} \].

I argue that although the proper treatment of bare-NP adverbs is problematic within traditional approaches to syntax, which have crucially linked distribution with category membership, the phenomenon can be given an interesting analysis within the Government-Binding (GB) theory developed in Chomsky (1981; 1982) and elsewhere. The central proposal is that a certain feature borne by a limited class of nouns be analyzed as assigning abstract Oblique Case. The result is that certain NPs have the capacity to receive Case and thematic role (θ-role) through the lexical properties of their own heads. I examine the interaction of this proposal with various principles of GB theory and show that the feature posited here plays an important part in determining the range of possible heads available in English adverbial relative clauses.

1. Basic Data

1.1. Bare-NP Adverbs of Time

Modern English exhibits bare-NP adverbs in a variety of semantic functions, including temporal modifier, locative modifier, adverbial of direction, and adverbial of manner. Of these, the largest class is that of temporal bare-NP adverbs. Many NPs that can be construed as referring to a point or period of time can function as temporal modifiers—for example, NPs headed by common nouns that refer to calendrical units such as days,

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months, and years,

(2) a. John arrived [that moment/minute/hour/day/week/month/year].

NPs that pick out particular intervals of the calendar year and NPs functioning as proper names for temporal periods,

(2) b. John arrived [the previous April/March 12th/Sunday/the Tuesday that I saw Max].

NPs headed by the common noun *time*,

(2) c. i. John will arrive [sometime next week].
ii. John has been here [few times that I can recall].

and the temporal proform *then* and the deictics *now, yesterday, today, and tomorrow*:

(2) d. i. John arrived [yesterday].
ii. John will arrive [tomorrow].
iii. John is arriving [now].

In view of these facts it is tempting to conclude that the capacity to occur as a temporal bare-NP adverb is a strictly semantic matter—that any NP that designates a period of time could function in this way. This conclusion would be incorrect, however:

(2) e. John arrived \{ *(on) that occasion *
\* (during) this vacation \}.

Even though occasions and vacations seem to refer to periods of time, *that occasion* and *this vacation* are not suitable bare-NP adverbs. Similarly, even such NPs as *that period of his life* and *that interval*, which are clearly temporal in reference, cannot appear as temporal modifiers unless an appropriate preposition is present:

(2) f. John stayed in New York \{ *(during) that period of his life *
\* (before) that interval \}.

In short, then, it seems that although membership in the class of bare-NP adverbs is semantically motivated—all members are inherently temporal in their reference—membership cannot be reduced to semantic considerations. NPs with inherently temporal meaning may nonetheless fail to occur as bare-NP adverbs.

1.2. Bare-NP Adverbs of Location

The distribution of locative bare-NP adverbs is parallel to that of locatives in general, but the number of permissible forms is severely restricted. To my knowledge, aside from locative proforms and deictics, the only bare-NP adverbs of location are those headed by the common noun *place*. No other NPs are possible. Thus, there are locative bare-NP adverbs headed by *place* together with a variety of determiners:
(3) a. You have lived \{someplace warm and sunny\}.
\{few places that I cared for\}
\{every place that Max has lived\}.

And there are locative bare-NP adverbs consisting of the locative proform there and the deictic here:

(3) b. You have lived [here/here].

But this exhausts the class. Proper names for locations, which would be analogous to temporal NPs like Thursday, cannot appear as bare-NP adverbs:

(3) c. i. You have lived \{*(on) 43rd St.\}.
\{*(in) Germany\}.

Moreover, NPs designating individuals that are typically associated with locations also lack the ability to function in this way:

(3) c. ii. You have lived *(near) every street I have seen.

Finally, common nouns that are near synonyms of place cannot head bare-NP locative adjuncts, showing that the restriction on the class of possible locative bare-NP adverbs is not semantic:

(3) c. iii. You have lived *(at) some \{location
address
area\} near here.

In each instance a locative preposition such as on, near, or at must be present.

1.3. Bare-NP Adverbs of Direction

Directional bare-NP adverbials show a distribution and range similar to those of locatives. Modern English lacks directional proforms equivalent to the locative there; the ablative hence ‘from here’ and thence ‘from there’ and the allatives hither ‘to here’ and thither ‘to there’ have become archaic. However, there are apparently two classes of NPs that can head bare-NP directional modifiers; those headed by the common noun way and (in my dialect) those headed by the common noun direction:

(4) We were headed \{(\text{that course})\}
\{(\text{on this bearing})\}
\{(\text{some path})\}
\{(\text{that direction})\}
\{(\text{some way})\}
\{*(\text{that course})\}
\{*(\text{some path})\}.

Thus, although any NP that can be sensibly construed as referring to a direction or path
of travel can occur in a directional prepositional phrase, the only bare-NP directional adverbs are those headed by *way* and *direction*. Even NPs headed by common nouns that are close synonyms of *way* and *direction* lack this capacity.

### 1.4. Bare-NP Adverbs of Manner

Finally, bare-NP adverbs of manner exhibit the most limited distribution of all. This class lacks a proform equivalent to *then* or *there* and contains no deictic of manner equivalent to *here* or *now*. Moreover, there is only a single, lexically determined class of NPs capable of appearing as bare-NP adverbs of manner, namely, NPs headed by the common noun *way*:

\[
\begin{align*}
\text{(5) You pronounced my name} & \quad \{ \begin{array}{l}
\text{in} \quad \{ \begin{array}{l}
\text{this fashion} \\
\text{the prescribed manner}
\end{array} \\
\text{that way}
\end{array} \\
\text{every way one could imagine} \\
\ast \text{this fashion} \\
\ast \text{the prescribed manner}
\end{array} \}.
\end{align*}
\]

Once again, since the close synonyms *way* and *manner* behave quite differently, these are evidently not semantic facts.

### 1.5. The Form and Distribution of Bare-NP Adverbs

The designation “bare-NP adverb” that is applied to phrases like *yesterday* and *this way* reflects the dual status of these constructions with respect to internal form and external distribution. In surface appearance bare-NP adverbs take the form of simple NPs. Thus, they have the same Det N structure as simple NPs, where the range of determiners is identical to that found in “normal” cases of argument NPs: *some, every, a, the*, etc. These items may be modified by restrictive relative clauses, as in *You pronounced my name [every way [that anyone could imagine]]*. And as Emonds (1976) notes, they occur in positions normally occupied only by NPs. For example, parallel to the pair of constructions in (6a) are the pairs in (6b) and (6c):

\[
\begin{align*}
\text{(6) a.} & \quad \text{i. the city’s destruction} \\
& \quad \text{ii. the destruction of the city} \\
\text{b.} & \quad \text{i. every morning’s lecture} \\
& \quad \text{ii. the lecture every morning} \\
\text{c.} & \quad \text{i. yesterday’s refusal} \\
& \quad \text{ii. the refusal yesterday}
\end{align*}
\]

In (6a-i) the phrase appearing in specifier position, *the city*, bears the logical relation of object to the nominal *destruction*—the same relation that *the city* bears to *destruction* in (6a-ii). Similarly, in (6b-i) and (6c-i) the phrases in specifier position bear the relation of adverbial modifier to their nominals, just as their counterparts in (6b-ii) and (6c-ii)
do. Since the genitive specifier position is available only to NPs, this argues that *every morning and yesterday are NPs even in their adverbial use.

On the other hand, bare-NP adverbs also exhibit distributional parallels with other "adverbial categories." Thus, they alternate freely with AdvP and PP as the arguments of certain verbs subcategorizing for adverbial phrases:

(7) a. Peter \( \{ \text{worded} \} \) the letter \( \{ ^* \text{NP that way}[^* \text{NP that manner}] \} \).

b. Peter put the letter \( \{ ^* \text{NP someplace}[^* \text{NP some location}] \}. \)

Furthermore, as Emonds (1976) points out, certain bare-NP adverbs share with certain PPs and S’s the ability to cooccur with the intensifier right:

(8) a. I saw John right \( \{ ^* \text{PP after you did}] \).

b. I ran right to the store.

c. He is arriving right now/then/this (very) day.

d. Billy, you come home right this minute!

e. Please step right this way!

Finally, bare-NP adverbs appear to conjoin readily with PP, AdvP, and S’ when the latter are functioning as adverbials:

(9) a. The entire company will be arriving \( ^* \text{PP at two o’clock} \) and/or \( \text{[the next day].} \)

b. They will be arriving \( ^* \text{AdvP subsequently}. \)

c. Do it \( ^* \text{[this way]} \) and \( ^* \text{AdvP carefully} \)!

d. John won’t live \( ^* \text{there} \) or \( ^* \text{where Max lived}. \)

From this brief inspection of data, then, we may summarize the central facts concerning bare-NP adverbs as follows: (i) Membership in the class of English bare-NP adverbs is determined on lexical grounds. The ability of an NP to occur as a bare-NP adverbial depends crucially on the specific noun that appears as its head. (ii) Bare-NP adverbs have the internal form of NPs, but the function and distribution of "adverbial categories" such as PP, AdvP, and S’.

2. Adverbials: A Puzzle for Traditional Theory

Bare-NP adverbs have received little attention and (to my knowledge) no systematic analysis in the linguistics literature. In part this is no doubt due to the rather "peripheral"
and "idiosyncratic" character of the basic phenomenon—that is, to the fact that bare-NP adjuncts comprise a highly restricted set of forms whose membership is largely unpredictable. But in part too, it seems, bare-NP adverbs have drawn little notice simply because traditional approaches to syntactic distribution have had little to say about adverbial syntax generally. And in the absence of a more general account, the analysis of bare-NP adverbs is obscure.

One central reason why adverbial elements have been problematic is that they appear to run afoul of an assumption that, until quite recently, had been considered axiomatic for syntactic theory: that the distribution of expressions in a language is to be accounted for by means of rules stated in terms of syntactic categories. This commitment has underlain a considerable amount of work in generative grammar, where the descriptive devices have traditionally included context-free phrase structure rules, formulated in terms of linear ordering and dominance relations among syntactic categories, and transformations whose structural descriptions are permitted to refer to specific categories such as NP and S.'

Implicit under the view that distribution is a matter of syntactic category is the expectation that phrases that share significant distributional properties will share categorial properties as well.2 And typically in such frameworks, shared distribution of categories X1, ..., Xn is captured in one of two ways. Either a common category Y is assumed to dominate each of X1, ..., Xn, in which case shared distribution is expressed as distribution of a single category. Alternatively, following the model of phonology, X1, ..., Xn are decomposed into some set of syntactic features (for example, those proposed in Chomsky (1970) or Jackendoff (1977)) such that they form a natural class. Shared distribution of X1, ..., Xn is then expressed as the distribution of a set of shared features.3

Given these assumptions, it is not hard to appreciate why the syntax of adverbials might be problematic. On the one hand we have a collection of phrases that, intuitively, serve a common function as modifiers and (as observed in (6)–(8)) share significant distributional behavior. Accordingly, we expect common categorial properties as well. As it turns out, however, the spectrum of adverbial categories is quite broad, including at least PP, AdvP, S', and NP, and consequently neither of the two means for expressing common distribution applies smoothly. PP, AdvP, S', and NP simply constitute no nat-

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1 A similar commitment obtains in Categorial theories of the sort typically adopted by Montague grammarians. In such frameworks the combinatorial possibilities of an expression are largely encoded in the (recursively defined) syntactic category to which the expression is assigned.

2 Linguists have traditionally appealed to this expectation in the critical evaluation of analyses. Thus, in a well-known passage Ross (1969, 2) criticizes rules referring to the sequence in (i).

(i) TNS £\{M have be\}$

on the grounds that "the items mentioned together in [(i)] have no similarity which would predispose them to function together."

3 In the analysis of auxiliaries noted in footnote 2, Ross takes the latter course and suggests that AUX "should be replaced in all rules which mention it by the entirely natural constituent ... [+V, +AUX]" (p. 2).
ural class under any generally accepted set of syntactic features. Moreover, postulating a common node requires attributing “hidden” categorial structure that is rather difficult to motivate on independent grounds.

The latter point can be illustrated with the brief analysis of bare-NP adverbs found in Bresnan and Grimshaw’s (1978) account of English free relative clauses. Here bare-NP adverbs are treated as “headless” prepositional phrases with the structure shown in (10):

(10) PP
   /\  
  /   \  
P [+F] NP [+F]
 / \  |  |
 e  α

where F is Temp, Loc, Dir, or Man

According to (10), bare-NP adverbs are NPs occurring in a PP whose head is an empty category [p\_]. On this view, the NP node dominating α accounts for the Det N structure of bare-NP adverbs, their occurrence with accompanying relative clauses and in positions reserved exclusively for NPs, and so on. The PP node accounts for the adverbial properties of these phrases—their ability to conjoin with other adverbs and to cooccur with the intensifier right.

The feature marking in (10) forms part of Bresnan and Grimshaw’s account of why only certain lexically determined classes of NPs occur as bare-NP adverbs. Although the proposal is not made completely explicit, the basic idea is clear enough and can be illustrated with the case of locatives. Assume that locative prepositions in English are marked [+Loc]. Furthermore, assume that the nouns place, here, and there are also marked [+Loc]. This feature is assumed to obey standard principles of feature induction—in particular, some version of the Head Feature Convention, according to which any feature labeling a category X also labels all higher projections of X. This principle ensures that any PP headed by a [+Loc] preposition will be [+Loc], and similarly that any NP headed by a [+Loc] common noun will be [+Loc]. Now assume (i) that the insertion of lexical items into base structures is optional, but (ii) that the grammar also has some means of ruling out surface structures that contain nodes unfilled by lexical material. Given (i), it follows that the grammar will generate structures like those in (11a) and (11b), in which the option of inserting a preposition has not been exercised:

(11) a. PP
   /\  
  /   \  
P [+Loc] NP [+Loc]
 / \  |  |
 e  few places

b. PP
   /\  
  /   \  
P [+Loc] NP [+Loc]
 / \  |  |
 e  few locations
At the same time it follows from (ii) that such configurations will result in ungrammaticality if no further rules apply. To “rescue” bare-NP adverbials from ill-formedness, Bresnan and Grimshaw propose a deletion rule that elides a P node before an NP that agrees with it on a [+F] feature:

\[(12) \quad P \text{ Deletion} \]
\[
P \rightarrow \emptyset / \quad \text{NP} \quad \text{[+F]} \quad \text{[+F]} \]

where F is Temp, Loc, Dir, or Man

In view of (12), [P e] can be deleted in (11a), yielding the well-formed bare-NP adverb *few places*. On the other hand, the empty P in (11b) cannot be eliminated; hence, the NP *few locations* is ruled out as a bare-NP adverb by the assumed constraint on unfilled nodes. In the same way the class of possible bare-NP adverbs of time, direction, and manner are controlled by the distribution of [+ Temp], [+ Dir], and [+ Man] features and by the P Deletion rule.

The above account subscribes in a clear way to the position that distribution is largely a function of syntactic category. The “adverbial behavior” of bare-NP adjuncts is analyzed in terms of membership in the category PP, and the property that allows certain NPs to function as bare-NP adverbs is analyzed in terms of features, rules, and constraints that allow them to appear unaccompanied by a surface preposition. The difficulty with this approach is that although it permits a factually correct statement of bare-NP adverb distribution, the assumptions and devices that it invokes are ad hoc and theoretically problematic. The initial attribution of PP status is at best undermotivated given the observation that bare-NP adverbs share the distribution of all other adverbial categories generally. To be convincing, any such account would also have to argue for the PP status of adverbial clauses like *when John arrived* and adverbs like *subsequently* and *locally*. Furthermore, the crucial P Deletion rule and the (unstated) constraint on unfilled nodes have no independent empirical support in the grammar, and indeed none is adduced in their behalf. Thus, despite being formulated so as to apply to prepositions generally, (12) reduces to the elimination of empty P nodes, and the assumed empty node constraint reduces to a filter on empty P nodes. Finally, the status of the features that single out potential bare-NP adverb heads is unclear. What are [+ Loc], [+ Temp], [+ Dir], and [+ Man] such that they are shared by nouns and prepositions? Would we expect to find similar features that would allow NPs to function as VPs or S’s? These are important questions, since it would entail a serious weakening of the theory of phrase structure to admit the configuration \([xP \chi e] \ YP\) in the general case; in effect, this structure permits any category YP to share the distribution of any other category XP.

3. Government-Binding Theory and Bare-NP Adverbs

The above considerations suggest that a more adequate account of bare-NP adverbs, and of adverbials in general, might involve a rather different view of syntactic distribution than has been assumed so far. Recent work in GB theory is interesting in this regard,
for within this framework the link between distribution and category membership is considerably weaker than in standard phrase structure grammars or classical transformational grammars.

To illustrate this difference, let us consider (13a), which may be assumed to have the basic categorial structure shown in (13b),

(13) a. John hit the ball over the fence.
   b. \[ \text{Inf}^\prime \text{NP} \text{John} \mid \text{Inf} \text{VP} \{ \text{hit} \} \mid \text{PP} \{ \text{over} \} \mid \text{NP} \text{the fence} \] where, in the case of a tensed clause like this, Inf\(^\prime\) contains a tense element ([+Tense]) and an agreement element (Agr).

Under more traditional approaches, the structure in (13b) would be established in an independent categorial component containing phrase structure rules like those shown in (14),

(14) a. \text{Inf}^\prime \rightarrow \text{NP Inf}^\prime
   b. \text{Inf}^\prime \rightarrow \text{Inf} \text{VP}
   c. \text{VP} \rightarrow \text{V} \text{NP} \text{PP}

which state dominance and precedence relations among specific terminal and nonterminal categories, together with their optionality or obligatoriness in a particular configuration (indicated by parentheses).

In GB theory, however, the distribution of phrases is regulated not by rules stated in terms of specific categories, such as NP or Infl, but instead by a set of general principles organized into several independent subsystems, or theories. No independent categorial component is assumed. (D-Structure) phrase markers are taken to be, in effect, freely generated, and the information about well-formed trees encoded in (14a–c) is determined by the interaction of these principles.

The possible hierarchical arrangements of terminal and nonterminal categories is given through X-bar Theory, which (following Stowell (1981)) we may take to universally specify the structures in (15):\(^4\)

(15) a. \text{X}^\prime \rightarrow \text{Spec} \text{X}^\prime, \text{X}^\prime
   b. \text{X}^\prime \rightarrow \text{X}, \text{X}^\prime

Thus, phrases are assumed to have two levels of hierarchical structure: one level (X\(^\prime\)) consisting of X\(^\prime\) and its specifiers, and a second level (X\(^\prime\)) consisting of a head X and a finite string of phrase-level complements X\(^\prime\). With respect to (13) this means that Inf\(^\prime\) must consist of a specifier of Inf\(^\prime\)—here, the subject NP John—and Inf\(^\prime\) itself. The latter in turn consists of a head Inf and its complement VP. VP consists of a head, its object, and a PP modifier, and so on.

It is assumed that languages may choose whether the X\(^\prime\)-constituent is head-initial or head-final. Order of heads and complements is thus a parameter of X-bar theory.

\(^4\) The commas separating elements to the right of the arrows in (15) are intended to indicate that these elements are not linearly ordered with respect to each other.
Languages such as Japanese fix the value of this parameter as “head last”; English fixes it as “head first.” Again, with respect to (13) this determines that Infl precedes VP, V precedes NP and PP, P precedes its object NP, and so on.

Most aspects of the linear ordering of categories are given through Case theory, whose basic principle, the Case Filter, is stated in (16):

(16)  Case Filter

\*[\text{NP } \alpha]

where \(\alpha\) has phonetic content but no Case

(abstract) Case-marking is assumed to be assigned by \([-\text{N}]\) categories (V and P) and by \([\text{+ Tense}]\) to NPs. Furthermore, this marking is assigned under the structural conditions of government and adjacency.\(^5\) Thus, the Case Filter has the effect of requiring that any phonologically nonnull NP \(\alpha\) must occur adjacent to some governing V, P, or [T] element. In (13) this correctly ensures that the subject NP (which we are assuming to be a specifier of Infl) occurs sentence-initially, adjacent to the tensed Infl node. And it correctly ensures that the direct object of hit—namely, the ball—will occur adjacent to the verb, with PP to its right, rather than the other way around (compare *John hit over the fence the ball).

Finally, the optionality and obligatoriness of categories is determined through \(\theta\)-theory. The basic principle of \(\theta\)-theory, the \(\theta\)-Criterion, is given below in somewhat simplified form:

(17)  \(\theta\)-Criterion

Each argument in Logical Form is assigned a unique \(\theta\)-role, and each \(\theta\)-role determined by a head is assigned to an argument.

Informally speaking, (17) says that any well-formed sentence S must have a logical representation in which there is a match-up between argument phrases and argument places specified by the predicates in S; there can be no “extra” or “missing” arguments. Thus, consider the variants of (13) in (18):

(18)  a.  *John hit the ball the fence.
    b.  *John hit.

We may assume the transitive verb hit to designate a two-place relation, HIT\((x, y)\), where \(x\) and \(y\) are arguments of HIT bearing thematic roles (\(\theta\)-roles) with respect to this relation. \(x\) has the role \(\theta_{\text{Agent}}\) (“hitter”) and \(y\) has the role \(\theta_{\text{Patient}}\) (or \(\theta_{\text{Theme}}\), “hittee”). The \(\theta\)-Criterion rules out both (18a) and (18b). (18a) has three argument phrases with only two

\(^5\) I assume the definition of government given in (i),

(i)  \(\alpha\) governs \(\beta\) iff
    a.  \(\alpha\) c-commands \(\beta\), and
   b.  for all maximal projections \(\gamma\), if \(\gamma\) contains \(\beta\), then \(\gamma\) contains \(\alpha\).

where, for concreteness, we may take c-command to be defined as in Reinhart (1979):

(ii) \(\alpha\) c-commands \(\beta\) iff \(\alpha\) does not dominate \(\beta\), \(\beta\) does not dominate \(\alpha\), and the first branching node
    dominating \(\alpha\) also dominates \(\beta\).
roles to distribute between them. By the first clause of the θ-Criterion two distinct argument phrases may not bear the same θ-role, and by the second clause no argument may be left without a θ-role. Similarly for (18b), which again has two θ-roles to distribute, but only a single argument phrase. In this way, then, we determine that the NP object of *hit* is obligatorily present in (13).

Consider now the PP adverbial *over the fence*. This phrase is optional in (13), a fact captured in the phrase structure rule (14c) by parentheses. Within GB theory this observation is accommodated by allowing adjunct θ-roles to be optionally assigned. The issue of where such θ-roles actually come from is interesting and complex, and there are a number of plausible analyses. Adjunct θ-roles might be assigned by some governing lexical category (for example, *V*) giving adverbials the status of optional, “implicit arguments” (McConnell-Ginet (1982), Roepel (1983)). Alternatively, the θ-roles borne by bare-NP adverbs and other adverbial elements might be “freely” assigned and licensed by the semantics of clauses. Whichever of these proposals turns out to be correct, the central point is that optionality or obligatoriness of categories such as NP or PP in a particular configuration is determined by θ-theory—that is, by the set of (optionally or obligatorily) determined thematic/semantic roles together with the θ-Criterion.

Thus, in GB theory information encoded in traditional phrase structure rules (and transformations)—information regarding hierarchical arrangement, linear order, obligatoriness of phrases, and so on—is “factored out” and allocated to distinct modules of the grammar in the form of principles. This rearrangement has a number of important consequences for linguistic theory generally. Under this view the task of grammatical investigation shifts from the formulation of rules to the discovery of principles; and, correlative, the characterization of linguistic knowledge and its acquisition shifts from a collection of rules discovered by hypothesis testing to a set of principles whose parameter values are fixed by experience (cf. Chomsky (1984)). Another important consequence concerns the correlation between distribution and category membership. Whereas under more traditional approaches this correlation is expected to be a close one because distribution is analyzed by means of rules formulated in terms of categories, this is not the case in GB theory, since nothing leads us to expect a priori that principles will be category-specific. Principles could very well apply indifferently across categories; hence, distribution need not be a matter of category membership per se. This difference between the two approaches has interesting implications for the analysis of adverbial distribution.

3.1. The [*F*] Feature

As I will show, the facts in section 1 can be analyzed in terms of these elements of GB theory. This analysis contains two basic proposals, one concerning adverbials in general

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6 For example, adopting the semantic theory of Barwise and Perry (1983), we might take the interpretation of *S* to be a (set of) situation(s) having a certain limited number of semantic “dimensions”—space/time location, individuals, properties, relations, and so forth. Free θ-roles could be viewed as assignments dealing with these dimensions (see Larson (1984) for a more precise formulation of this proposal).
and one concerning bare-NP adverbs in particular. The first proposal is that core grammar contains only a single principle pertaining to adverbial adjuncts, Adverbial θ-Rule Assignment, which makes the ability to occur as an adverbial the unmarked case for any category of phrase.\footnote{I am particularly indebted to an anonymous LI reviewer for clarification of issues raised in this section.}

(19) **Adverbial θ-Rule Assignment**

Assign an adverbial θ-role to α, where α is any phrase.

By general convention, Adverbial θ-Rule Assignment (AA) is assumed to apply optionally. Furthermore, assignment of adjunct θ-roles is assumed to be governed by the same considerations of inherent semantics that restrict the assignment of other θ-roles. That is, just as θ\text{Agent} is assigned only to animate NPs, θ\text{Temp} will be assigned only to temporal phrases, and so on. According to (19), then, θ\text{Time} can be freely assigned to any temporal PP, NP, S', AdvP, etc., and similarly for θ\text{Loc}, θ\text{Dir}, and θ\text{Manner}.

The “category neutrality” of AA clearly makes the default prediction that all phrases XP will be able to occur equally as adverbials. Moreover, assuming that AA is the only principle of core grammar governing adverbials, then if a certain class of phrases should fail to appear in this capacity, this failure must follow from other principles of the grammar that do not involve adverbial adjunct status per se. Significantly, these points suggest a reorientation with respect to bare-NP adverbs—namely, that the relevant question is not so much “What is special about this class of NPs in particular that allows them to occur as adverbials?” but rather “What is it about NPs in general that prevents them from occurring in this capacity?”

NP does have a property that singles it out from other categories: NPs need Case. Consider (20):

(20) John hit the ball over the fence [NP that day].

Since that day is not adjacent to any potential Case-assigner, under the principles sketched above we would expect sentences like this to be ungrammatical, for it would seem that the adjunct NP must fail to receive Case and hence fail to pass the Case Filter. Evidently this expectation is unjustified, however, for (20) is fully well-formed. Thus, the assumptions of GB theory together with the principle in (19) suggest two hypotheses: (i) what prevents NPs from appearing as adverbials in general is the requirement that they must bear Case and the fact that they would have no way of obtaining Case in an adjunct site, and (ii) what distinguishes bare-NP adverbs is that they have some special means of receiving Case.

Given these observations, then, and recalling that bare-NP adverbs are headed by a particular class of common nouns, I suggest that Case-assignment in bare-NP adverbs occurs through a special feature, [+F], which is borne by these nouns. This feature is inherited by any NP having such an N as its head, and it assigns an Oblique Case to the
NP it labels:

\[
\text{(21) } \quad \text{NP} \overset{\text{[+F]}}{\text{Case}} \quad \alpha
\]

This inherent Case-marking ability of [ + F] NPs allows these NPs to receive Case and to satisfy the Case Filter in the absence of any external Case-assigner, such as a verb or a preposition. I assume that once Case-marked, a [ + F] NP is free to be assigned any adjunct \( \theta \)-role consonant with its inherent semantics in accordance with (19) (\( \theta_{\text{Temp}} \) to NPs like \textit{that day} that refer to times, \( \theta_{\text{Loc}} \) to NPs like \textit{every place} that quantify over locations, and so on). Thus, what distinguishes NPs that are able to function as bare-NP adverbs is not "hidden" categorial structure, but rather an intrinsic, lexically determined Case-marking.

The two proposals advanced here, together with some assumptions about the semantics of adverbials, allow a relatively straightforward account of the adverbial distribution facts discussed earlier. Thus, the relative freedom of syntactic position observed with bare-NP adverbs, indeed with adverbials generally, can be attributed to Case theory. Receiving Case inherently or not needing Case at all, these items are not obliged to occur adjacent to some [−N] or [ + Tense] governing element; hence, within VP, for example, bare-NP adverbs will freely reorder with other "Case-independent" categories like PP and S:

\[
\text{(22) } \quad [\text{VP } \ldots \text{NP} \overset{\text{[+F]}}{\text{PP S' } \ldots}]
\]

The ability of bare-NP adverbs, but only this class of NPs, to occur with verbs subcategorizing for adverbials is also explained by Case theory (recall (7a–b)). Verbs like \textit{put} and \textit{word} take a direct object as well as an adverbial (of place and manner, respectively), and the former must occur adjacent to V to receive Objective Case. It follows that any NP occurring in the outer position cannot receive Case from V and hence must obtain Case by some other means. This then limits the class of outer NP complements to exactly the bare-NP adverbs, since these are the NPs that can obtain Case inherently.

The ability of bare-NP adverbs to conjoin with other categories of adjuncts can plausibly be attributed to semantic factors bearing on the distribution of adverbials generally. It seems clear that what permits bare-NP adverbs to conjoin with PP, AdvP, or S' in examples like (9a–d) is what also permits these elements to conjoin with each other

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8 A plausible alternative proposal might appear to be that the [ + F] feature is itself Oblique Case-marking. However, in section 4.2.2 I will consider evidence from adverbial relative clauses that argues against this view.
in examples like (23a–b):

(23) Packages will be arriving
a. \([\text{PP at two o’clock}] \land [\text{AdvP subsequently}]\).

b. \([\text{S’ when the mail comes}] \land [\text{PP in the evening}]\).

Assuming (as seems intuitively reasonable) that what licenses such conjunctions is the common adverbial semantics of the conjuncts, it follows straightforwardly that bare-NP adverbs will show such behavior as well. That is, once having received an adverbial \(\theta\)-role consonant with their intrinsic semantics, \([+F]\) NPs will be free to behave like other adverbials, which includes conjoining with other categories of adverbials such as PP, S’, and AdvP.\(^9\)

Finally, the coocurrence of some bare-NP adverbs with the intensifier right can also be attributed to certain general semantic properties of adverbials, I believe. The issue is somewhat complex; however, the basic generalization seems to be that right cooccurs with adverbials that can be taken to designate individuals. As an independent test for individual-designating status we may take the availability of a specification reading in the pseudocleft construction (Higgins (1979)). Thus, temporal and locative adverbial NPs, PPs, and S’s occur in pseudoclefts with a reading in which the postcopular phrase is understood to designate the same (space or time) individual as that picked out by the \(wh\)-clause:

(24) a. When I saw him was \[\{\text{S’ when John arrived}\} \land [\text{PP at three o’clock}]\] \land \[\text{NP that day}\].

b. Where I saw him was \[\{\text{S’ where Max hangs out}\} \land [\text{PP in the laundry room}]\] \land \[\text{NP there}\].

We have seen that this is the class of adverbials that accept the intensifier right. On the other hand, -ly adverbs do not occur smoothly in pseudoclefts with an identificational reading, nor do adverbials of manner in any category:

(25) a. *When I saw him was [AdvP recently].

b. *Where I saw him was [AdvP locally].

c. *How I did it was \[\{\text{S’ how Max told me to do it}\} \land [\text{PP in a careful manner}]\] \land \[\text{NP that way}\] \land \[\text{AdvP easily}\].

Correlatively, they do not cooccur with the intensifier right:

(26) a. *I saw him right \[\text{recently}\] \land \[\text{locally}\].

\(^9\) See Sag et al. (1984) for considerations bearing on the conjunction of adverbials.
3.2. Assignment of Case by [+F]

The proposal that some NPs are capable of receiving Case through the lexical properties of their own heads provides an interesting view of bare-NP adverb distribution. At the same time, however, its interaction with other principles and assumptions of GB theory raises several questions. In this section I will consider two of these questions, one involving Case clash and one involving the nonoccurrence of bare-NP adverbs in non-thematic (ó-)positions.

3.2.1. Case Clash. The first question concerns the following type of example:

(27) a. That day passed very quickly.
b. Few places with a view could be found.
c. We spent that day in New York.
d. We visited few places with a view.

The [+F] NPs that day and few places with a view occur as subjects of tensed clauses in (27a–b) and as objects of transitive verbs in (27c–d). The issue raised by such examples is straightforward. Given the assumption that [+F] NPs receive Oblique Case inherently, and given that Nominative and Objective Case are assigned to the subject and object positions, respectively, we would expect these examples to be ungrammatical by virtue of Case clash (Stowell (1981)). However, in fact the sentences are well-formed. This is a general result: [+F] NPs show up quite freely as “normal” argument NPs.

In response to this observation I will assume that Case-assignment by a [+F] feature is optional. This entails that even though [+F] marking is present on the subject and object NPs in (27a–b) and (27c–d), respectively, Oblique Case need not be assigned by

10 The distribution of right is in fact rather complicated. Even though right does appear in general before temporal PPs, with certain bare-NP adverbs it does not cooccur smoothly:

(i) Peter arrived right \{ yesterday \} .
(ii) He is arriving right this (very) \{ day \} .

These results are puzzling in view of the examples in (ii):

That is, reference to days or weeks does not in general appear to disqualify a bare-NP adverb from cooccurring with right. I shall leave this matter for future research.
the feature and hence no Case clash need result. This assumption might appear ad hoc, intended only to rescue the present analysis; however, in fact I believe that it has intuitive content. To see this, it is necessary to consider the notion of Case more closely.

Defined as being assigned to NPs by some adjacent, governing [-N] category or by a [+ Tense] Infl, Case is a purely structural/configurational notion, in fact a species of government (see Aoun (1981)). This view evidently diverges from a more traditional conception of Case, one deriving from morphology, wherein Case is not a structural relation in which NPs stand, but rather an attribute that NPs might possess or lack independently of any other sentence element. On the latter view verbs, prepositions, etc., select NPs that simply are of a certain Case, a status indicated perhaps by overt morphological marking. These two views can be represented as follows,

(28) a. \[
\begin{array}{c}
\text{XP} \\
\text{[-N]} \\
\hline \\
\text{X} [\text{-N}] \\
\hline \\
\beta \text{Case} \\
\end{array}
\]

b. \[
\begin{array}{c}
\text{XP} \\
\text{[-N]} \\
\hline \\
\text{X} [\text{-N}] \\
\hline \\
\beta \alpha \\
\end{array}
\]

where (28a) shows the relational notion of Case (Case assigned to NP under government by a [-N] category) and (28b) shows the nonrelational notion of Case (simple "Case-possession" by an NP (indicated by a feature)).

Suppose we take these two notions of Case to correspond to two basic possibilities for Case-assignment available to natural languages: assignment in the syntax under government, and assignment in the lexicon. The ability of a language L to have one or the other of these Case-assignment possibilities will evidently tie in with where NPs are defined in the grammar. Under the reasonable assumption that Case is assigned strictly to maximal N projections—that is, to NPs (Carlson (1983))—it will be possible for L to have lexical Case-assignment only if the category NP is available in the lexicon of L. English is not in general such a language. Apart from proper names and pronouns, which might plausibly be taken as basic NPs—that is, as being entered in the lexicon in the

---

11 This distinction appears quite reasonable under a view (attributed to Aoun in Chomsky (1982)) wherein Case-assignment is intimately tied to \( \theta \)-theory under the so-called Visibility Hypothesis. On this proposal Cases are seen as abstract "markings" that serve to identify NPs in their argument roles with respect to some predicate such as V or P. Case-assignment is a precondition for \( \theta \)-role assignment in the sense that an argument can receive a \( \theta \)-role from a predicate \( \alpha \) only if it has first received Case and thereby been made "visible" to \( \alpha \). Given this general view of Case, NPs might be visible in two basically different ways: by standing in a certain configuration with respect to some particular set of categories, or by virtue of overt lexical form. This of course suggests the familiar typological distinction between languages that make heavy use of structural relations in encoding grammatical information, but little use of overt Case-marking, and those that make heavy use of morphological case, but little use of constituent structure.

12 I ignore Case-assignment to APs here.
form \([N_P \alpha]\) — English defines maximal N projections in the syntax. Accordingly, we may assume that lexical Case-assignment is generally not possible in English.\(^{13,14}\)

Given these assumptions, Case-assignment by \([+ F]\) features in English clearly represents a "hybrid" possibility. Oblique Case-marking of NPs like \(\text{that way or few places}\) is not lexical Case — there are no such phrasal NPs in the lexicon. At the same time, however, \([+ F]\) assignment is not structural Case — that is, Case-assignment under government. I would propose, then, that this "marked" status is what is behind the optionality of Case-assignment by \([+ F]\). Intuitively, it seems that because the Oblique Case associated with having a \([+ F]\) common noun head falls under neither lexical nor structural Case-assignment, the grammar is free to ignore \([+ F]\) marking when a "genuine" Case-assigner is present. Oblique Case associated with \([+ F]\) thus has the status of a "default" Case value that certain classes of NPs can assume in the absence of any structural Case-assigner. It is in this sense, I believe, that assignment by \([+ F]\) is optional.

If correct, this general picture of Case-assignment has an interesting empirical implication. I have suggested that the optionality of Oblique Case-assignment by \([+ F]\) follows from the fact that NPs in English are in general specified in the syntax. Since most bare-NP adverbs have phrasal structure, their Oblique Case-marking is not lexical Case-marking, but simply a default Case value afforded by their head noun. This implies that a truly Case-invariant bare-NP adverb \(\alpha\) would be possible if \(\alpha\) were a simplex, lexical NP — that is, if \(\alpha\) were of the form \([N_P \alpha]\) (or perhaps \([N_P (N^\prime \alpha)]\)) — for such an NP could be entered in the lexicon and specified for an Oblique Case value. It is natural to inquire whether genuine invariant Oblique NPs exist in English. Consider the temporal proforms \(\text{now, then, and when}\) and the corresponding locative proforms \(\text{here, there, and where}\). These elements exhibit some of the dual NP/adverbial behavior also observed with \(\text{yesterday, few places, etc.}\). Thus, on the one hand, \(\text{then, there, etc.}\), cooccur with the intensifier \(\text{right}\) and can be freely conjoined with other adverbials:

\[
\begin{align*}
(29) & \quad \text{a. John fell down right then/there/here.} \\
& \quad \text{b. Packages will be arriving [then/now and at two o’clock/subsequently].} \\
& \quad \text{c. I found difficulties [here and in section 2].}
\end{align*}
\]

On the other hand, interrogative \(\text{when}\) and \(\text{where}\) can appear with a modifying restrictive relative clause:

\[
\begin{align*}
(30) & \quad \text{a. [\(N_P\) When [\(S:\text{ that you know of}\)] have I ever lied to you?]} \\
& \quad \text{b. [\(N_P\) Where [\(S:\text{ that isn’t too expensive}\)] can we vacation?]}
\end{align*}
\]

\(^{13}\) Under this view the fact that English pronouns can show Case properties is strongly linked to their status as basic NPs. The assumption is that an item can be specified for Case lexically if and only if it is an NP in the lexicon.

\(^{14}\) As analyzed by Hale (1981), the Australian aboriginal language Warlpiri is a plausible candidate for a language that defines maximal N projections in the lexicon and makes heavy use of lexical Case-assignment. Hale takes NPs in Warlpiri to be assembled in full Case-inflected form in a "word formation" component that defines maximal N projections.
And now, then, here, there, etc., occur as the objects of prepositions that subcategorize NPs, but do not take other categories of adverbial complements:

\[
\begin{align*}
(31) \ a. \ & \text{I won't be free} \ \{ \text{before} \} \ \{ \text{then/that time} \} \ \{ \text{*at that time} \} \ \{ \text{*previously} \}. \\
& \text{b. I know that Dolores lives} \ \{ \text{in} \} \ \{ \text{here/there/that place} \} \ \{ \text{*at that place} \} \ \{ \text{*locally} \}.
\end{align*}
\]

The evidence in (29)–(31) suggests bare-NP adverb status for now, here, then, there, when, and where. However, if these items are indeed bare-NP adverbs, they are bare-NP adverbs with a much more limited distribution than their fellows. The non-\textit{wh} forms do not appear happily, nor can the \textit{wh}-forms bind a trace, in subject or direct object position, and these facts hold even when the verb would be "semantically appropriate":

\[
\begin{align*}
(32) \ a. \ & \text{i. I am spending *now/*then/that day at the beach.} \\
& \text{ii. *When/Which day did you spend at the beach?} \\
& \text{b. i. *Then/That hour elapsed quickly.} \\
& \text{ii. *When/Which hour elapsed quickly?} \\
& \text{c. i. Penguins inhabit *here/*there/few places.} \\
& \text{ii. *Where/Which places do penguins inhabit?}
\end{align*}
\]

The verb \textit{spend} selects a notionally temporal object and \textit{elapse} a temporal subject; thus, we might expect the NPs now, when, and then to occur in these positions. Nonetheless, this is clearly impossible, the temporal character of when and then notwithstanding. Similarly, even though the verb \textit{inhabit} selects a notionally locative object, where and there are excluded from occurring as its object.\textsuperscript{15}

Furthermore, unlike other bare-NP adverbs, now, then, when, here, there, and where do not occur in the genitive specifier position. Contrast (6b–c) with (33a–b):

\[
\begin{align*}
(6) \ b. \ & \text{i. every morning's lecture} \\
& \text{ii. the lecture every morning} \\
& \text{c. i. yesterday's refusal} \\
& \text{ii. the refusal yesterday}
\end{align*}
\]

\textsuperscript{15} Note that although there and then can occur as PP objects, where and when have great difficulty binding a trace in this position:

\[
\begin{align*}
(i) \ a. \ & \text{Where are you living} \ \{ \text{?at} \} \ \{ \text{?near} \} \ \{ \text{*beside} \} \ e? \\
& \text{b. When will you arrive} \ \{ \text{*on} \} \ \{ \text{*during} \} \ \{ \text{*before/after} \} \ e? \\
\end{align*}
\]

I must assume that this (rather mysterious) asymmetry in the distribution of the \textit{wh} and non-\textit{wh} proforms is due to factors other than Case.
BARE-NP ADVERBS

(33) a.  i. *then’s/now’s/there’s/here’s lecture
       ii. the lecture then/now/there/here
b. i. *When’s lecture did you attend?
       ii. Which day’s lecture did you attend?

Thus, in their capacity as NPs now, then, when, here, there, and where seem to be confined to adjunct positions. They can occur as bare-NP adverbs or as the object of an appropriate preposition, but they cannot appear as the subject of a clause or a nominal, nor can they appear as direct objects.

The distribution of the temporal and locative proforms looks puzzling at first, but in fact it is exactly what would be predicted for NPs that bore an invariant Oblique Case. Such NPs would show the joint NP/adverbial behavior of bare-NP adverbs; however, given their obligatory Oblique Case they would be strictly banned from positions to which Nominative, Genitive, or Objective Case is assigned—subject and direct object positions—because of Case clash. The only lexically governed position in which they could occur without Case conflict would be PP object position, where (presumably) Oblique Case is also assigned. Finally, such NPs would be simplex, having no internal phrasal structure. These are precisely the properties of the temporal and locative proforms in English. Hence, these facts appear to provide confirming evidence for a Case-theoretic account of bare-NP adverbs, and for the general view that Case theory should countenance a nonrelational notion of Case along with the structural notion.

3.2.2. The Nonexistence of Adverbial Raising. A second apparent problem for the proposed analysis involves the nonoccurrence of bare-NP adverbs in so-called non-Ø-positions (Ø-positions). Chomsky (1981) proposes that various classes of verbs and adjectives be analyzed as assigning no Ø-role to their syntactic subjects. The Vs and As appearing in Raising, “tough,” and “weather” constructions are examples:

(34) a. It appears that John will win.
       b. It was certain that Mary lied.
       c. It is hard to be a dentist.
       d. It was raining in Boston.

In (34a–d) the nonthematic character of the subject position is signaled by the presence of pleonastic or “weather” it.

Under the principles of GB theory, movement of an NP into a Ø-position is permitted if the moved NP has received a Ø-role from some other source. Such movements are assumed in the usual analysis of passives such as John was defeated. At D-Structure John is the object of defeated. The passive morphology associated with the verb alters its Case and Ø-role-assigning properties such that the subject is dethematized and the object receives no Case. The former allows, and the latter compels, John to move into the Ø, Nominative Case-marked subject position:

(35) [s[NP, John] be defeated [NP, e]]
Now consider the following examples:

(36) a. i. *It appeared [S: that John would learn to swim] [NP: that period].
    ii. *[NP: That period] appeared [S: that John would learn to swim] [NP, e].

b. i. *It was tough [S: PRO to visit China] [NP: that occasion].
    ii. *[NP: That occasion] was tough [S: PRO to visit China] [NP, e].

c. i. *It rained [NP: that location].
    ii. *[NP: That location] rained [NP, e].

Each (i)-sentence contains a θ matrix subject position and a "potential bare-NP adverb"—that is, an NP whose inherent semantics is appropriately temporal or locative, but which bears no [+ F] feature, hence cannot receive Case, and hence cannot function as a bare-NP adverb in the adjunct site. Given the above discussion, and in the absence of other considerations, we might expect to be able to rescue these NPs as bare-NP adverbs by moving them into the subject position, where they could receive Case and (presumably) an adjunct interpretation. As the (ii)-examples show, however, this expectation is not met. In each instance, replacement of it by the "adverbial NP" results in ungrammaticality.

The second problem for the proposed analysis is therefore as follows: if [+ F] simply provides Case for its associated NP—if this is all that distinguishes bare-NP adverbs like few places from synonymous nonadverbial counterparts like few locations—why can't this "Case deficit" be made up by "raising" the adverb to a Case-marked θ-position?

An answer is suggested by the data in (37):

(37) a. i. It seemed [e: to appear [S: that John would win] [NP: yesterday]].
    ii. *It seemed [[NP, yesterday] to appear [S: that John would win] [NP, e]].

b. i. It appears [e: to be tough [S: PRO to visit China] [NP: this year]].
    ii. *It appears [[NP, this year] to be tough [S: PRO to visit China] [NP, e]].

c. i. It seemed [e: to rain [NP: that day]].
    ii. *It seemed [[NP, that day] to rain [NP, e]].

If what is wrong with the failed adverbial raising examples in (36) were simply a matter of Case—of the potential bare-NP adverb having no Case or the wrong Case when it moves to the subject position—then we might expect the (ii)-examples in (37) to be fully grammatical. In these examples there can be no possibility of Case deficit (since the NPs are [+ F]), Case clash (since the embedded subject position is Case-free), or θ-Criterion violations (since the embedded subject position is a θ-position). Nonetheless, these sentences are no better than their counterparts in (36).

It is possible that examples like these are ruled out by considerations of the sort discussed by Williams (1980; 1983). Briefly, we might speculate that the verb and its
internal and external arguments form one thematic complex, while adverbial modifiers and other kinds of predication adjuncts form another, and that the impossibility of "adverbial raising" follows from a quite general prohibition on the "scrambling" of thematic complexes. In any event it is clear that the failure of adverbial raising is not a matter of Case and hence does not jeopardize the account of bare-NP adverbs pursued here.

4. Adverbial Relative Clauses

I have argued that the distribution of English bare-NP adverbs is determined by a feature [+F] that optionally assigns Case to the NPs that bear it. In this section I will show that this feature also interacts with the syntax of adverbial relative clauses—relative clauses containing an empty category in adjunct position. Specifically, I will show that [+F] governs the distribution of heads in adverbial relatives.

4.1. The Distribution of Heads in Adverbial Relatives

Modern English has three strategies for forming wh-relative clauses into adjunct position. The first two involve a wh-PP in Comp or an appropriate relative adverb:16

(38) a. the month \{\text{when} \{\text{during which}\}\} you traveled to France \(e\)
b. the best month \{\text{during which}\} to travel to France \(e\)
c. the place \{\text{where} \{\text{near which}\}\} Peter is currently working \(e\)
d. the neighborhood \{\text{near which}\} to live \(e\)
e. the strange fashion in which you pronounced my name \(e\)
f. a strange manner in which to pronounce my name \(e\)

Third, the wh-word which may be used with an obligatory stranded preposition in the complement clause:

(39) a. the ceremony \{\text{which you arrived} \{\text{during}\}\} \(e\)
b. the city \{\text{which you live} \{\text{near}\}\} \(e\)
c. the direction \{\text{which Max walked off} \{\text{in}\}\} \(e\)

In such constructions the range of permissible heads is determined largely on semantic grounds. For instance, in temporal relatives such as (38a–b) and (39a), almost any NP that can be sensibly construed as referring to a point or interval of time can head a wh-

16 As is well known (but not well understood), English only permits headed PPs in the complementizer position of infinitival relatives. Accordingly, there are no infinitival relatives either with a relative bare-NP adverb such as when, where, or which day in Comp, or with which and a stranded preposition.
temporal relative. Thus, NPs like *the month* and *that day* that intuitively refer directly to temporal locations are fully acceptable, as are NPs like *the ceremony* whose connection to time is largely inferential. Similarly, in locative relatives like (38c–d) and (39b), NPs like *the place* that refer to a point or region of space and NPs like *the city* that can plausibly be associated with a spatial point or region can head a *wh*-locative relative clause.

The distribution of heads in non-*wh* relative clauses—relatives in which no overt *wh*-element appears in Comp—displays a rather different pattern. Non-*wh* relatives with preposition stranding do show the same semantically determined range of heads as before:

(40) a. the ceremony (that) you arrived during e
   b. the city (that) you live near e
   c. the direction (that) Max walked off in e

However, in non-*wh* relatives without preposition stranding the distribution of heads is determined on lexical grounds. In particular, the only possible NP heads are precisely those NPs we have already analyzed as bearing the [+ F] Case-marking feature. Consider (41a):

(41) a. the month
day
year
*vacation
*occasion
{(that) you traveled to France e}
{(for you) to travel to France e}

(month
year
*vacation
*occasion
{(that) you traveled to France e}
{(for you) to travel to France e}

*Month* is [+ F], and correspondingly *the month* is an acceptable relative clause head. On the other hand, *vacation* is [− F], and correspondingly *the vacation* is not an acceptable head.

Precisely analogous facts hold in the case of locative relatives and relative clauses of direction and manner:

(41) b. the place
*location
*street

way
direction
*course
*path
{(that) you live e}
{(for you) to live e}

(41) c. the way
direction
*course
*path
{(that) we are traveling e}
{(for you) to travel e}

(41) d. the way
*manner
*fashion
{(that) you talk e}
{(for you) to talk e}

Only NPs headed by [+ F] common nouns such as *place* and *way*—that is, only possible bare-NP adverbs of place, direction, and manner—can head non-*wh* adverbial relatives without preposition stranding.
4.2. Relative Clause Formation

These data can be accounted for in a straightforward way under the proposal that [+ F] is indeed a feature that assigns Case-marking, and under the view of relative clauses suggested in Chomsky (1982). Briefly, this view assumes that relative clause formation involves movement of an operator phrase to Comp. In the case of wh-relatives the operator is a wh-phrase such as who, which man, or when, whereas in the case of non-wh relatives it is a phonologically null element O that is marked [+ wh] but otherwise contains no intrinsic feature content. To take some examples, (42a–b) give the s-structures underlying the finite relative clauses the man who I saw and the man (that) I saw, respectively: 17

(42) a. [NP the man [S[Comp who, that] I saw [NP, e]]]
   b. [NP the man [S[Comp O, that] I saw [NP, e]]]

Like wh-words generally, the empty operator O is assumed to be able to receive some feature content from the relative clause head. Thus, like who and which, O obtains number agreement information from the head:

(43) a. the things which e come to mind
    [± SING]

(b) the thing which e comes to mind

b. the things O (that) e come to mind
    [± SING]

(c) the thing O (that) e comes to mind

Let us consider now the general case of wh and non-wh relative clauses in which an operator of category NP moves from an adjunct position that is not PP object position:

(44) a. [NP NP [S[Comp wh,] John saw Mary [NP, e]]]
   b. [NP NP [S[Comp O,] John saw Mary [NP, e]]]

Under GB theory, operators like wh and O are assumed to bind traces that are variables—essentially, empty categories in Case-marked positions. And failure to bind a variable violates a quite general principle forbidding vacuous quantification in natural language (Chomsky (1982), Koopman and Sportiche (1982)). Now we know that adjunct positions are not typically positions to which Case is assigned. It follows, then, that in the general

17 Movement of who triggers obligatory deletion of the complementizer that under the constraint that Comp contain no more than one phonological matrix (the Doubly Filled Comp Filter).
instance of relative clause structures like (44), the trace *wh* or O will fail to receive Case and hence these operators will fail to bind a variable. Such relatives are therefore predicted to be ill-formed for the same reason that structures with a full lexical NP in adjunct position are typically ill-formed: lack of Case-assignment to the adjunct position.

Just as certain NPs may appear “unexpectedly” in adjunct position, unaccompanied by a governing preposition, because of intrinsic Case-marking, so the “unexpected” well-formedness of adverbial relative structures like those in (38) and (41) can be attributed in this analysis to inherent Case. Consider first *wh*-adverbial relatives such as the *wh*-temporal relative in (45):

(45) \[ \text{[NP NP [S[Comp when]] John saw Mary [NP, e]]} \]

Given earlier remarks, we may assume that *when* (along with *now* and *then*) is marked in the lexicon as bearing Oblique Case. Then, supposing Case to be transmitted through the trace relation, [NP, e] will receive Case-marking and have the status of a variable. (45) will thus entail no violation of the “no vacuous quantification” prohibition, predicting that adverbial relatives with *when* are grammatical, as desired. Notice that under this analysis the [+F] feature value of the relative clause head will be irrelevant to the well-formedness of such structures.

Consider next adverbial relatives involving the operator O, where again no preposition stranding is involved:

(46) \[ \text{[NP NP [S[Comp O]] John saw Mary [NP, e]]} \]

As mentioned earlier, O is assumed to bear no feature content apart from [+wh], and in particular it bears no invariant Case. Unlike *when* and *where*, then, O will have no capacity to Case-mark its trace through its lexical properties. However, given that O may obtain feature content from its head, it is possible for O and its trace to receive Case indirectly. Specifically, if the relative clause head is [+F], this feature may be absorbed by O with subsequent Case-marking along the lines suggested above for *when*. On the other hand, if the head is [−F], there will be no way for O to receive Case. This correctly predicts, therefore, that the well-formedness of non-*wh* adverbial relatives without preposition stranding (that is, with relativization into bare-NP adverb position) will be crucially dependent on the [+F] feature status of the head. Such relatives will be well-formed if and only if the head is [+F]—that is, if and only if the head is a potential bare-NP adverbial.

Finally, consider adverbial relatives with *which* in Comp. Such relative clauses are well-formed if and only if the complement clause contains a stranded preposition, regardless of the [+F] feature status of the head. This distribution can be accommodated smoothly in our analysis under the simple and quite plausible assumption that *which* is [−F]. Thus, if preposition stranding takes place with *which*, [NP, e] will occur in a Case-marked position—object of P—and the relative will be well-formed. On the other hand, if no stranding occurs, [NP, e] will once again be in a non-Case-marked position. Fur-
thermore, *which* will be prohibited from obtaining a [+F] feature from the relative clause head in view of its explicit [−F] marking. Such a relative will therefore be ill-formed under the constraint against vacuous quantification.

Thus, the assumption that [+F] is a Case-marking feature, taken together with independent assumptions of GB theory and the analysis of relatives sketched above, correctly accounts for the apparently idiosyncratic distribution of heads in English *wh* and non-*wh* adverbial relative clauses.

4.2.1. Distribution of Adverbial S'. The analysis of adverbial relatives suggested here also accounts for some limitations in the adverbial distribution of S'. As is well known, although *wh*-clauses can appear both as relative clauses and as adverbials, non-*wh* clauses have only the former possibility. Thus, in (47a–b) the *wh* and non-*wh* clauses both function as adverbial relatives.

(47) a. the week \[S_\text{when} \text{John was in Paris} \]
    \[e_1\]

b. the week \[S_\text{O} \text{(that) John was in Paris} \]

Moreover, in (48a) the *wh*-clause in (47a) appears as a temporal adverbial. However, as (48b) shows, there is no non-*wh* counterpart to (48a). Non-*wh* clauses cannot appear as adverbials:

(48) a. Mary was in Rome \[S_\text{when} \text{John was in Paris} \]
    \[e_1\]

b. *Mary was in Rome \[S_\text{O} \text{(that) John was in Paris} \]

The proposed account easily explains this difference. We know that the empty operator in the non-*wh* clause can bind a variable, creating an open sentence interpretation for S', only if it has some means of receiving Case. This can occur in (47b), where O can pick up a [+F] feature from the relative clause head. However, there is no such possibility in (48b)—hence the ungrammaticality of such constructions.18

4.2.2. [+F] Is Not Oblique Case-marking. We are now in a position to verify a claim made earlier in the discussion of [+F] marking—namely, that the [+F] feature itself does not represent Oblique Case-marking, but rather must be analyzed as an (optional) Case-assigner. Consider (49):

(49) \[NP \text{The hours that John spent sleeping that he was supposed to have been on watch} \]
    nearly cost him his stripes.

18 Certain questions about adverbial clauses remain. Notice that like non-*wh* clauses, *wh*-clauses with PP in Comp occur as relatives, but not as adverbials:

(i) a. i. the place \[S_\text{where John found the knife}\]
    i. the place \[S_\text{at which John found the knife}\]

b. i. I found the compass \[S_\text{where John found the knife}\]

There can be no explanation involving Case-marking through [+F] here, since a relative clause with a *wh*-PP in Comp does not require a [+F] feature on its head. The ill-formedness of (ib–ii) seems to be part of the more general fact that when it is interpreted as a predicate, a *wh*-clause with pied piping must be predicated of a head. Thus, the ungrammaticality of (ib–ii) is presumably related to the fact that there are no pied-piped free relatives or headless relatives (Bresnan and Grimshaw (1978)).
The bracketed NP is a stacked relative clause with the structure shown in (50):

(50)

By assumptions, the relatives in (50) involve movement to Comp of the empty operators \( O_1 \) and \( O_2 \), which then obtain feature content from their respective NP heads (NP\(_1\) and NP\(_2\)). In the lower relative \( O_1 \) moves from an argument position, whereas in the higher relative \( O_2 \) moves from an adjunct position. Now in order for \( O_1 \) to receive the [+F] feature it needs in order to ensure Case-marking on its trace, [+F] marking must be present on NP\(_2\). Accordingly, we must assume [+F] marking on NP\(_1\), which percolates up to NP\(_2\). But if [+F] percolates from NP\(_1\) to NP\(_2\), then it will also percolate from NP\(_2\) to NP\(_3\), where the latter is in argument position in the matrix clause. Hence, we conclude that NPs bearing [+F] marking occur in argument positions. And from this it follows that [+F] marking cannot itself be considered Case-marking: if it were so considered, examples like (49) would involve Case clash, since the [+F] NP occurs in a position to which Nominative Case is assigned.

References


Department of Linguistics
University of Pennsylvania
Philadelphia, Pennsylvania 19104