People seem never to have taken prepositions seriously. One proposal in print (Fillmore (1968)) treats prepositions as case markers, having equal status with the case inflections of Latin or German. Another proposal (Postal (1971)) treats them as realizations of features on noun phrases. Still another (Becker and Arms (1969)) tries to reduce prepositions to a subclass of the category “verb.” What all these proposals have in common is that they deny that the category “preposition” has any real intrinsic syntactic interest other than as an annoying little surface peculiarity of English.

The neglect of prepositions arises from the assumption that prepositional phrases invariably take the form P–NP: if this were the case, prepositions would indeed be dull. However, I will show here that such an analysis is not adequate and that prepositional phrases are by no means as trivial as generally supposed.

1. PP → P

Klima (1965) realized that prepositions are more than markers on NPs. He showed that many “adverbs” such as home, downstairs, and afterward can advantageously be identified as “intransitive prepositions,” that is, prepositions that do not take an object. Emonds (1970) argued that the traditional “particles” of verb-particle combinations such as look up, give out, and show off are also best analyzed as “intransitive prepositions.”

The arguments for the existence of intransitive prepositions are straightforward. First, we note in (1) the close phonological relation (often identity) obtaining between many ordinary prepositions and the words in question:

(1) (a) Chico ran into the opera house

(Continued)
The Base Rules for Prepositional Phrases

(b) The elevator operator kicked Groucho down the stairs after the first act after
    downstairs afterward
(c) He didn't play the harp before Zeppo walked in before
    inside the hotel inside

In fact, all the particles in verb-particle constructions (down, up, in, out, through, over, by, and so on) are phonologically identical to ordinary prepositions. As Emonds points out, this fact can hardly be accidental; if the grammar treated it as such, there would be no more reason to expect this result than a class of particles made up partly of nouns, partly of verbs, partly of modals, and partly of adjectives. By treating particles as a type of preposition, we can claim that particles are related to the corresponding prepositions in much the same way that intransitive verbs such as eat, drink, and smoke are related to their transitive counterparts.

A second argument concerns the strict subcategorization of verbs such as put, which require after the direct object a normal prepositional phrase, a "directional adverb," or a particle, as illustrated in (2):

(2) (a) *Irving put the books on the shelf
    (b) Irving put the books away there
        in the closet inside
    (c) Sheila put the clothes on

The particles are distinguished from other directional phrases only in that they may also occur before the direct object, as shown in (3):

(3) (a) Irving put the books on the shelf there away
    (b) Sheila put the clothes on in the closet inside

The occurrence of just these three kinds of constituents with put to the exclusion of all other kinds is easily expressed if all three are analyzed as prepositional phrases, thereby simplifying the strict subcategorization of put.

A third argument favoring intransitive prepositions concerns the construction illustrated in (4):

(4) (a) Into the opera house raced Harpo
    (b) Up the stairs wafted the fragrant smell of airplane glue
    (c) On the corner stood a frightened Venustian cookie monster

In such sentences a preposed locational or directional prepositional phrase causes inversion of an intransitive verb with the subject when there are no auxiliary verbs. The only other constituents which can cause this particular inversion are locational
and directional "adverbs," particles, and certain participial constructions containing
directionals or locationals, as shown, respectively, in (a), (b), and (c) of (5):

(5) (a) There goes Chico
    Outside stood three cases of Romanian beer
    Downstairs rolled the two screaming dentists
(b) Off came Harpo's fake beard
    Away flew the remnants of your tattered hat
    On trundled the weary heroes
(c) Bouncing out of the operating room came the happy patients
    Screaming down the hall ran two celebrated linguists
    Wiping his nose in a corner stood a bedraggled hobbit
    Buried here lies the producer of A Night at the Opera

Of course, not all particles take part in this construction, particularly not those that
impart an idomatic meaning to the verb, as in (6):

(6) *Up threw John

But nondirectional "adverbs" and nondirectional prepositional phrases do not take
part either, as shown in (7):

(7) (a) *Beforehand left John
(b) *In the twinkling of an eye collapsed the enchanted fortress

The rule forming this construction will be simplified if it has to refer only to the
category "PP" (aside from participials) rather than to three independent categories.
In an especially curious construction in English, sentences are formed from a
directional phrase followed by with and a definite noun phrase. Directional prepo-
ositional phrases, "adverbs," and particles are all possible here, as shown in (8):

(8) (a) Into the dungeon with the traitors!
    Down the well with your money!
(b) Outdoors with these noisy machines!
    Upstairs with this illegal card game!
(c) Off with his nose!
    Away with the evidence!

Once again, no matter how this construction is derived, it will be simpler if all three
types of phrases are considered PPs.
As illustrated in (9), the modifier right occurs only with standard prepositional
phrases, the particular class of "adverbs" we have been discussing, and particles (in
their post-object position):

(9) (a) Mr. Gottlieb staggered right into Mrs. Claypool's stateroom
    The collapse came right after Ricardo's arrival
(b) The eager dwarves rushed right inside
    Nobody could figure out what had happened right afterward
(c) The scenery caved right in under Gummo's weight
    Frodo put the ring right on when he saw Mrs. Claypool coming

Right with this sense does not occur in standard English before any other kind of
constituent, including adjectives and true adverbs, as shown in (10):

(10) (a) *The scenery right collapsed under Gummo's weight
(b) *Fredonia went to war with Rohan right quickly
(c) *Bilbo had become right fat during his stay

Again, the description of right can be simplified if all three types of phrases are described as PPs.

These arguments are given in more detail by Emonds (1970), who goes on to describe the Particle-Movement Rule within this framework. What the arguments imply is that the base rule for PP should be altered by the addition of parentheses, as in (11):

(11) PP → P–(NP)

Prepositions, like verbs, will then contain strict subcategorization features in their lexical entries. For example, down, up, before, in, and out will have the feature [+–(NP)]; of, for, and toward will have the feature [+ ___NP]; and home, afterward, and beforehand will have the feature [+ ___].

2. PP → P–PP

Combinations of two prepositions followed by a noun phrase as in (12) are quite common (though frequently overlooked):

(12) (a) Harpo rode the horse out of the barn
(b) Sam disappeared down into the darkness
(c) A great howl of pain emerged from inside the rain barrel

Phrases of this form satisfy the five criteria established in the last section for prepositional phrases: (a) they begin with words that are obviously of the category "preposition"; (b) they occur in the complements of verbs such as put, which strictly subcategorize PPs; (c) they condition subject-verb inversion under appropriate circumstances, as shown in (13):

(13) (a) Out of the night appeared the nine black riders
(b) Up into the clouds shot a riderless broomstick
(c) Back from his successes in the Faroe Islands comes that star of stage and screen, Frodo Marx!

(d) they occur in the with-construction, as in (14):

(14) (a) Up to your bedroom with you, young man!
(b) Back in the box with you, Jack!

(e) they occur with right, as can be seen by adding right in the appropriate place in any of the sentences in (12), (13), and (14).

To account for these constructions, we can permit prepositions to strictly subcategorize PPs in their complements. For example, out, in, up, and down allow an NP, a PP, or nothing; from must have a complement, but this may be either an NP or a PP; away and back allow either a PP or no complement but cannot be followed by an NP.

Given the existence of intransitive prepositions, a string of the form P–P–NP has, in fact, two possible analyses, as shown in (15):
(15) (a) \[ \text{VP} \quad \text{PP} \quad \text{PP} \quad \text{P} \quad \text{NP} \]
(b) \[ \text{VP} \quad \text{PP} \quad \text{PP} \quad \text{P} \quad \text{P} \quad \text{NP} \]

In (15a) there is a preposition whose complement is a PP; in (15b) there is an intransitive preposition followed by a normal PP. Both of these structures do exist, as illustrated, respectively, in (16a) and (16b):

(16) (a) Chico raced away from Mrs. Claypool
    (b) Otis T. Flywheel raced away in a battered Ford

We observe in (17) and (18) that these sentences give opposite results in terms of acceptability when the PP-Preposing Rule is applied in two conceivable ways:

(17) (a) Away from Mrs. Claypool raced Chico
      (b) *Away in a battered Ford raced Otis T. Flywheel
(18) (a) *Away raced Chico from Mrs. Claypool
      (b) Away raced Otis T. Flywheel in a battered Ford

If we make the reasonable assumption that PP-Preposing applies to single complete PPs, the difference between (15a) and (15b) predicts these results: away from Mrs. Claypool, being a constituent of the form PP in (15a), preposes as a unit and cannot be separated; away in a battered Ford, on the other hand, is analyzed as in (15b), and, since this is not a constituent, only the first PP, away, preposes. Furthermore, as shown in (19), only (16b) permits a manner adverb to be interposed comfortably between the prepositions, as might be predicted from the structures (15a,b):

(19) (a) *Chico raced away quickly from Mrs. Claypool
      (b) Otis T. Flywheel raced away quickly in a battered Ford

Certain combinations of directional prepositions seem to be ambiguous between the constructions (15a) and (15b) since, as illustrated in (20), either of the preposed forms parallel to (17)-(18) is possible:

(20) (a) The kite went up into the clouds
       The bomb plunged down toward the village
      (b) Up into the clouds went the kite
         Down toward the village plunged the bomb
      (c) Up went the kite into the clouds
         Down plunged the bomb toward the village

An adverb may also be interposed with these combinations, as in (21):

(21) (a) The kite went up slowly into the clouds
       (b) The bomb plunged down precipitously toward the village

However, if a locational preposition is substituted for the second directional
The Base Rules for Prepositional Phrases

preposition, only the structure (15a) is possible with the sense intended, as illustrated in (22):¹

(22) (a) The kite went up in the clouds
The bomb plunged down at the village
(b) Up in the clouds went the kite
Down at the village plunged the bomb
(c) ?*Up went the kite in the clouds
?*Down plunged the bomb at the village
(d) *The kite went up slowly in the clouds *(in the intended sense)*
?*The bomb plunged down precipitously at the ground

These syntactic differences seem sufficient to justify the existence of both structures
in (15).

If there are prepositional phrases of the form P–PP, we would expect to find
 certain structures in addition to (15a). One such is (23), in which the inner PP consists
of an intransitive preposition:

(23)

```
PP

P       PP
       |
       P
```

And, in fact, (23) is the appropriate analysis for such phrases as over here, down there, 
back home, and from within.

We might also expect the inner PP itself to expand as P–PP, yielding a string of
three prepositions within one constituent. This prediction is borne out by sentences
like (24), in which the preposing is a clear indication of constituency:

(24) (a) From out of the darkness hurtled a masked hobbit on a broomstick
(b) Down from above the altar groaned a mysterious voice

The PPs can iterate further, generating unwieldy but genuine PPs such as (25):

(25) Back out from inside of the hole squirmed Groucho

3. PP → P–NP–PP

We have thus far left open the question of how the phrase structure rule for (15a)
generalizes with the phrase structure rule (11). Two possibilities are given in (26):

(26) (a) PP → P–{(NP)
PP }
(b) PP → P–(NP)–(PP)

Both (26a) and (26b) are consistent with the investigation up to this point. The second

¹ The use of locational prepositions in a directional sense is discussed by Gruber (1965) under
the rubric "simplification of secondary expression of goal." Although Gruber reaches somewhat
different conclusions, his discussion was instrumental in suggesting to me the analysis presented in
this section and the next.
alternative, however, makes an interesting prediction: there should be PPs of the form P--NP--PP. The sentences in (27) do indeed contain phrases which seem likely candidates for such a structure:

(27) (a) A Martian grzh lumbered down the street toward the frightened garbage collector
(b) A drunken bassoonist staggered into the smoky room from out of the cold
(c) The mice raced from one end of the park to the other
(d) Max sent the trilogy to Bill in New York

To justify the existence of this structure, shown in (28a), it is important to distinguish its properties from those of two other structures producing the same string, shown in (28b) and (28c):

(28)
(a) VP
   /\  \
  V   PP
 /\  /\  \
 P  NP PP

(b) VP
   /\  \
  V   PP
 /\  /\  \
 P  NP P

(c) VP
   /\  \
  V   PP
 /\  /\  \
 P  NP NP

The structure (28b) occurs in such sentences as *they went to the house in the woods*, where the *house in the woods* forms a constituent that can be used independently, for instance as the subject of a sentence. This is clearly impossible, on the other hand, for the phrases in (27), as shown in (29):

(29) (a) *The street toward the frightened garbage collector was littered with broken bassoon reeds
(b) *The smoky room from out of the cold had too many movie stars and hobbits in it
(c) *One end of the park to the other was a mess
(d) *Bill in New York liked reading the trilogy

To show that the relevant phrases in (27) have the structure (28a) rather than (28c), we must show that they can behave as single constituents. The first piece of evidence, presented in (30), comes from the Preposing Rule:

(30) (a) Down the street toward the frightened garbage collector lumbered a Martian grzh
(b) Into the smoky room from out of the cold staggered a drunken bassoonist

(Continued)
(c) From one end of the park to the other raced the mice
(d) To Bill in New York, Max sent the trilogy

A sentence that definitely contains the structure (28c) is (31a), which has only the preposed variant (31b) and not (31c); since the two PPs do not form a constituent, only the first can prepose:

(31) (a) Harpo paraded down the aisle with Margaret Dumont
       (b) Down the aisle paraded Harpo with Margaret Dumont
       (c) *Down the aisle with Margaret Dumont paraded Harpo

Sentences (27a) and, perhaps, (27b) are ambiguous between structures (28a) and (28c), since, as shown in (a) and (b) of (32), these sentences have forms parallel to (31b). But, as shown in (c) and (d) of (32), the sentences (27c,d) do not have this preposed form and thus can have only the structure (28a):

(32) (a) Down the street lumbered a Martian grzech toward the frightened garbage collector
       (b) *Into the smoky room staggered a drunken bassoonist from out of the cold
       (c) *From one end of the park raced the mice to the other
       (d) *To Bill, Max sent the trilogy in New York

As in the previous section, we find it possible to interpose a manner adverb between the two PPs just in case they can be split by the Preposing Rule. We illustrate in (33):

(33) (a) A fearsome grzech lumbered down the street noisily(,) toward the frightened garbage collector
       (b) *A bassoonist staggered into the smoky room drunkenly(,) from out of the cold
       (c) *The mice raced from one end of the park rapidly(,) to the other
       (d) *Max sent the trilogy to Bill quickly(,) in New York
       (e) Harpo paraded down the aisle grandly with Margaret Dumont

Cleft sentences provide further evidence that the relevant phrases in (27) constitute a constituent. Prepositional phrases (except, for some unexplained reason, those consisting of a single intransitive preposition) can appear in the focus position of cleft sentences, as in (34):

(34) (a) It wasn’t in Australia that Boromir encountered Chico
       (b) It was around six o’clock that the bassoon turned into a toad
       (c) It was down in the grease pit that Chico found his piano

Strings of the form P–NP–PP can occur in this position as well, given appropriate opportunities for semantic contrast, as in (35):

(35) (a) It wasn’t down the street toward Harpo that the garbage collector ran
       (b) It was to Bill in New York that Max sent the trilogy
       (c) It was (only) from Sunday to Thursday that Gandalf’s teeth itched

Since, in general, only single constituents can cleft, the sentences in (35) give additional reason to believe in the existence of structures like (28a). Note from (36) that sentence

3 Subject-verb inversion is prevented here by the presence of the direct object.
(31a), which was claimed to have the structure (28c), can cleft one or the other of the PPs but not both at once:

(36) (a) It was down the aisle that Harpo paraded with Margaret Dumont
(b) It was with Margaret Dumont that Harpo paraded down the aisle
(c) ?It was down the aisle with Margaret Dumont that Harpo paraded

Finally, we observe from (37) that strings of the form P–NP–PP can serve as antecedents for appositive relative clauses:

(37) (a) A prepositional phrase can be found across the copula from a measure phrase, which is a significant position
(b) We progressed from abstract deep structure to generative semantics, which seems like a formidable conceptual distance, in less than two years
(c) Solving this problem will take from now until doomsday, which is more time than we’ve got, my dear

Since, presumably, relative clauses have single constituents as their antecedents,\(^4\) (28c) is not a possible structure for the relevant PP strings in (37).\(^5\)

We now have three independent pieces of evidence, from preposing, clefting, and appositive formation, showing that there are single PPs of the form P–NP–PP. Of course, (28a) is not the only possible structure for this form. One could claim, for example, that such strings are analyzed as in (38a) or (38b):

(38)

```
(a) PP
   / \  
P   NP  P
   \   
PP
(b) PP
    / \  
P   NP  P
   \   
PP
```

The structure (38a) might be proposed in the belief that from . . . to and across . . . from, for example, are a sort of discontinuous “compound preposition” which takes two NP or PP arguments. Structure (38b) would be preferred if complex PPs were closely related to conjoined PPs—for instance if up the hall into the kitchen were derived from up the hall and into the kitchen. However, neither of these structures seems as satisfactory an analysis as (28a). Structure (38a) suffers in that it requires a new base rule and some explanation of why the “compound prepositions” happen all to be formed from the stock of ordinary prepositions. And (38b) suffers in that a conjunction deletion is needed. Furthermore, not all complex PPs can be related to conjoined PPs; for example, none of the PPs in (37) can be replaced by conjunction. On the other hand, when we seek to generalize the already needed base rules PP \(\rightarrow\) P–NP and PP \(\rightarrow\) P–PP, one of the possible ways of combining them predicts

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\(^4\) The only cases I know where relative clauses have split antecedents are those mentioned by Perlmuter and Ross (1970), in which the two antecedents occupy parallel positions in conjoined clauses. There is no relation between these cases and those given here.

\(^5\) Note that I am arguing only that the PPs form a constituent, not that they form an NP, as is often argued for antecedents of relative clauses. Since so many kinds of constituents (NP, S, AP, AdvP, and now PP) can serve as antecedents for appositives, the latter argument makes the notion NP syntactically rather vacuous.
automatically the existence of forms having the structure (28a). This is therefore the simplest structure we can produce for complex PPs in terms of extra rules needed in the grammar, for it results from an actual simplification of the grammar.

4. THE SPECIFIER

Is it a coincidence that the correct generalization of the base rules for PPs is P-(NP)-(PP) and not P-(NP)-(PP) or P-(PP)-(NP) (which we did not suggest earlier)? There is one other syntactic category which allows NPs rather than just PPs in its complement, namely, the verb. And in verb phrases the NPs in the complement precede the PPs. This suggests that the structure of PPs is in fact not accidental.

The Lexicalist Hypothesis of Chomsky (1970) is an attempt to capture similarities of this sort. The claim is that similarities are to be expected among various constituents and that these similarities are expressed in generalized schemata for the base rules. The first base rule schema can be expressed as (39), where \( X \) represents any lexical category and \( \overline{X} \) is the node directly dominating it:

\[
(39) \quad \overline{X} \rightarrow X \text{-Com} \overline{X}
\]

The realizations of this schema for the various lexical categories are shown in (40):

\[
(40) \quad \begin{align*}
\text{VP} & \rightarrow V-(\text{NP}) & \rightarrow (\text{NP})^6 & \rightarrow (\text{PP})^* \\
\text{N} & \rightarrow N \\
\text{A} & \rightarrow A \\
\text{Adv} & \rightarrow \text{Adv} \\
\text{P} & \rightarrow \text{P}-(\text{NP}) & \rightarrow (\text{PP})
\end{align*}
\]

We see that the complements of N, A, Adv, and P are all subsets of the complement of V. Note that I have not identified \( \overline{P} \) with the node PP, for reasons which will appear in a moment.

Chomsky's second base rule schema, (41), claims that for any lexical category \( X \), \( \overline{X} \) is preceded by a system of phrases called the "specifier":

\[
(41) \quad \overline{X} \rightarrow \text{Spec}_X \overline{X}
\]

In the case where \( X \) is a verb, \( \overline{V} \) is the traditional node VP, \( \overline{V} \) is the traditional node S, and Spec_V includes the subject and Aux nodes, as in (42):\(^7\)

\[
(42) \quad \overline{V} \rightarrow \text{NP-Aux-} \overline{V}
\]

When \( X \) is a noun, \( \overline{N} \) is the traditional node NP and Spec_X includes the traditional determiner system. \( \overline{A} \) and \( \overline{Adv} \) are the traditional nodes AP and AdvP, and Spec_X and Spec_AP both include the system of degree phrases.

Similarly, we should expect a system of phrases to appear within PPs before the preposition, justifying the base rule (43):

\[
(43) \quad \overline{X} \rightarrow \text{Com} \overline{X}
\]

\(^6\) This constituent in the expansion of VP is necessary for such VPs as *call Max an idiot* and *cook the meat dry*.

\(^7\) This differs from the analysis in Chomsky (1970). In Jackendoff (1968) I have tried to justify this analysis over Chomsky's.
(43) PP → SpecP-P

And in fact there are such phrases, as illustrated in (44):

(44) \[
\begin{array}{l}
\text{(a) Right} \\
\text{Far} \\
\text{Six miles} \\
\text{A long way} \\
\text{Halfway}
\end{array}
\]
down the road Frodo saw an approaching band of grzches

(b) The curious sounds of a harp could be heard \[
\begin{array}{l}
\text{right} \\
\text{far} \\
\text{four hours} \\
\text{a long time}
\end{array}
\]
after the landing of the saucer

(c) The class of prepositions is made up \[
\begin{array}{l}
\text{entirely} \\
\text{partly}
\end{array}
\]
of verbs

PPs take even, only, just, and comparatives, just like all the other phrase nodes (S, NP, AP, AdvP), as shown in (45):

(45) (a) Groucho found swarming hobbits even in the kitchen
(b) Harpo stopped playing only after a long interval
(c) Chico got out just before the arrival of the cops
(d) Zeppo was more out of that movie than (he was) in it

Thus some of the permissible specifier phrases are also specifiers for other constituents, and some (such as right) are peculiar to PPs.

This situation is what the Lexicalist Hypothesis leads us to expect: constituents of comparable level (that is, all X or all X̄) should have parallel structure up to a point, but they are likely to differ in some respects. PPs seem like APs in their specifier structure because of the use of measure phrases. In their complement structure they seem like Ss because of the presence of NP. On the other hand, they resemble NPs in that they undergo cleft formation and AdvPs in that they prepose freely. The PP structures we have observed therefore provide a modest confirmation of the Lexicalist Hypothesis.

We have seen that prepositions determine a much larger range of structures than the P-NP construction usually attributed to them. Our rather simple observations make it far more difficult to treat prepositions merely as features on verbs or nouns, phonologically realized through trivial transformations. Prepositions must instead be accorded the right to a small but dignified syntactic category of their own.

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