0. Introduction.
The topic of this paper is the rule of \( \text{es} \)-insertion, one of several sources of \( \text{es} \) in German. It is exemplified by:

1) Es stieß ihn jemand von der Brücke, der ihn nie vorher
   It pushed him someone off the bridge who him never before
   Someone who had never seen him before pushed him off the
   seen
   had
   bridge.

2) Es träumten die drei Kinder in ihren Betten.
   It dreamed the three children in their beds.
   The three children dream in their beds.

3) Es wird hier sogar an Sonntag gearbeitet.
   It is here even on Sunday worked.
   Work goes on here even on Sunday.

This \( \text{es} \) is different from the extraposition \( \text{es} \), exemplified by 4),
and also from the \( \text{es} \) which appears in a certain group of impersonal
expressions, exemplified by 5).

4a) Es ist möglich, dass Erich spurlos
   It is possible that Erich without a trace disappeared is.
   It is possible that Erich has disappeared without a trace.
   verschwunden ist.

b) Es ist leicht autofahren.
   It is easy to drive (a car).

5a) Es regnet.
   It is raining.

b) Es gibt jeden Tag Schweinebraten.
   It gives every day roast pork.
   Every day there is roast pork.

The inserted \( \text{es} \) is restricted to initial position in matrix declarative clauses, whereas the extraposition and weather \( \text{es} \)'s are not; on the other hand, \( \text{es} \)-insertion is not lexically governed, whereas extraposition (and weather \( \text{es} \)-insertion, if this is a rule) are.

I will use these properties of \( \text{es} \)-insertion to demonstrate that
it is post-cyclic. The formulation which will be advanced involves
two rules. The first moves new-information subjects rightward.
The second inserts \( \text{es} \) before the verb in a matrix declarative clause
just when no other constituent occupies that position — when no con-
stituent has been fronted, and there is no subject (as in (3)) or the
subject has moved rightward (as in (1 — 2)). There are three arg-
uments for this formulation over a cyclic formulation. They are
presented in Section 1 — Section 3. Section 4 is devoted to a
defense of the subject-rightward rule.
1. A globality argument.

I will argue first that if es-insertion were cyclic, it would be necessary to posit an ad hoc and probably global es-deletion rule. It was mentioned above that the inserted es occurs only in initial position in matrix declarative sentences. This means that es is never found in embedded sentences:

6a) Es wurde den Kindern geholfen.
   It was the children(dat) helped.
   b) Er sagte, dass (*es) den Kindern geholfen wurde.
      He said that (*it) the children(dat) was helped.
   c) Die Kinder, denen (*es) geholfen wurde, sind sehr jung.
      The children, whom(dat) (*it) was helped, are very young.

and also that es does not appear when a noncyclic rule such as question formation or fronting would ordinarily trigger subject-verb inversion. Compare examples 7) to examples 8).

7a) Den Kindern wurde (*es) geholfen.
   The children(dat) was (*it) helped.
   b) Wurde (*es) den Kindern geholfen?
      Was (*it) the children(dat) helped?
      Were the children helped?
   c) Wem wurde (*es) geholfen?
      Whom(dat) was (*it) helped?

8a) Über 100,000 Exemplare wurden im letzten Jahr verkauft.
   Over 100,000 copies were in the last year.
   b) Im letzten Jahr wurden über 100,000 Exemplare verkauft.
   In the last year were over 100,000 copies sold.

If es is inserted cyclically, it will be inserted into embedded clauses and, in matrix clauses, it will be subjected post-cyclically to subject-verb inversion. Hence, we will need a post-cyclic rule to remove the non-matrix-sentence initial es's.

9) es $\rightarrow$ # noninitially

But the rule as stated will not work; we must avoid deleting extraposition es's and the impersonal es's which can appear noninitially and in embedded sentences.

10a) Es ist natürlich möglich, dass Erich spurlos verschwunden ist.
    It is of course possible that Erich has disappeared without a trace.
   b) Natürlich ist es/# möglich, dass Erich spurlos verschwunden ist.
      Of course is it/# possible, .......
   c) Ist es/# möglich, dass Erich spurlos verschwunden ist?
      Is it/# possible, .......
11a) Erich sagte, dass es schon wieder gehagelt hat.
    Erich said that it already again hailed has.
    Erich said that it has already hailed again.
To generate the correct sentences, the es-deletion rule must have either global power or a structural description which lists as exceptions the lexical items which take an impersonal es and the structural change of the extraposition rule. The second is redundant, and the first is entirely unmotivated, since its sole function is to allow the grammar to escape the consequences we expect to follow from extraposition being cyclic. Instead of positing a rule to make es-insertion look post-cyclic, we would conclude that it is post-cyclic.

2. Lexical government.

The second argument is based on the generalization that post-cyclic rules are not lexically governed. The body of this section will be a set of examples which points toward the conclusion that es-insertion is not lexically governed. A post-cyclic formulation of the rule can explain this, while a cyclic formulation cannot; this suggests that the rule is post-cyclic. It is of course not possible to prove that a rule is not lexically governed without searching the language exhaustively. However, it is possible to produce a sufficient range of examples to shift the burden of proof to the opposite viewpoint. This is what I have tried to do.

Like English there-insertion, es-insertion applies in passives and with intransitive verbs connoting appearance and disappearance:

13a) Es ist gerade ein Gemälde gefunden worden, dass aus A painting which was stolen from the Louvre in 1920 has den Louvre im Jahre 1920 gestohlen worden ist.
14a) Es ist ein kleiner Mensch aufgesprungen. A little person jumped out.

However, es-insertion also applies with transitive verbs and verbs having nothing to do with appearance or disappearance:

1) Es stiess ihn jemand von der Brücke, der ihn nie vorher
It pushed him someone off the bridge who him never before
1) Someone who had never seen him before pushed him off the bridge.

15) Es steuerte eine böse Hexe die Frösche bei. It contributed a wicked witch the frogs.

16) Es kämpfte nur ein Mensch weiter, der an Utopien glaubte. It fought only one person who believed in utopias, fought on.

2) Es träumten die drei Kinder in ihren Betten. It dreamed the three children in their beds.

The three children dreamed in their beds.

Em-insertion also applies with a variety of predicate adjectives:

17a) Es sind schon fünf Gäste betrunken. It are already five guests drunk.

Five guests are already drunk.

b) Es werden fünf Fragen schwer sein. It will five questions hard be.

Five questions will be hard.

c) Es sind fünf Flötze vorrätig. It are five places available.

There are five places available.

and with predicate prepositional phrases:

18) Es sind heutzutage immer mehr Dinge aus Plastik. It are these days more and more things of plastic.

More and more things are of plastic these days.

I couldn't find any predicate which blocked em-insertion. So it seems safe to conclude that em-insertion is not lexically governed and so might be suspected to be post-cyclic.

It is also true that em-insertion is not constrained by tense; one finds em-insertion sentences in future, past, perfect and present, as well as with modals:

19a) Es haben trotzdem drei Vorfahrengeseite mitgewirkt. It have nevertheless three passersby cooperated.

Nevertheless, three passersby cooperated.

b) Es ist eine Schar Hühner in den Fluten zu grunde gegangen. It is a flock of chickens in the flood to the bottom gone.

A flock of chickens perished in the flood.

(See also (14) = (15) and (16))

20a) Es dürfen hier keine Kinder spielen. It may(pl) here no children play.

No children may play here.
20b) Es soll jemand das Dach reparieren.
It should someone the roof repair.
Someone should repair the roof.

3. The verb-second constraint.
There is a well-known surface structure constraint in German
which requires that the tensed part of the verb appear as the sec-
ond constituent in a matrix declarative sentence. This section
will show that a post-cyclic formulation of am-insertion can be mot-
ivated by this constraint, whereas a cyclic formulation cannot.
The verb-second constraint is posited to account for two pheno-
mena which occur in matrix declarative sentences. The first is
that if the sentence has an overt subject, the subject must move
after the verb if any rule moves some constituent into initial posi-
tion:

21a) Sie gehen heute in die Oper.
They are going today to the opera.
b) Heute gehen sie/ *sie gehen in die Oper.
Today go they/ they go to the opera.
c) Wenn es regnet, gehen sie/ *sie gehen in die Oper.
If it rains go they/ *they go to the opera.

The second is that if the sentence lacks a subject, some other con-
stituent must be found to take the position before the verb. (22)
is a subjectless expression which is rendered grammatical by plac-
ing the accusative NP before the verb:

22a) *Hungert mich.
Hungers me(acc).
I'm hungry.
b) Mich hungert.
Me(acc) hungers.

(23) and (24) are impersonal passives (see Breckenridge (1975) for
arguments that impersonal passives are subjectless); in (23b) an
adverb has been fronted to satisfy the verb-second constraint, and
in (24b) and expletive am has been inserted:

23a) *Wird hier sogar am Sonntag gearbeitet.
Is here even on Sunday worked.
b) Hier wird sogar am Sonntag gearbeitet.
Here is even on Sunday worked.
24a) *Wurde getanzt.
Was danced.
b) Es wurde getanzt.
It was danced.
There was dancing.
Note that in (26) **es**-insertion is obligatory because the sentence has no NPs or adverbs which could be fronted. **Es**-insertion would also be necessary in (23) if the speaker, for whatever reasons, did not choose to front one of the adverbs. (23), in short, may also be salvaged as in (25):

25) **Es wird hier sogar am Sonntag gearbeitet.**
   It is even on Sunday worked.

It is a short step from this to John Haiman's idea (Haiman 1971) that the verb-second constraint motivates the **es**-insertion rule. **Es**-insertion exists to supply an initial constituent to sentences which reach the end of the derivation and are on the verge of being scrapped for failure to meet the verb-second constraint. It applies, then, in sentences where no constituent has been moved into initial position, and the subject is either lacking, as in (22)-(24) or has been moved rightward, as in (13)-(20).

This idea not only explains the existence of **es**-insertion, it also explains the interaction of the rule with other post-cyclic rules. If **es**-insertion were just any post-cyclic rule, we would expect other post-cyclic rules to apply after it. Even after an **es** was inserted, the structural descriptions for fronting and wh-question movement would still be met; it would be possible to generate ungrammatical sentences like (26):

26a) **Hier wird es sogar am Sonntag gearbeitet.**
   Here is it even on Sunday worked.

26b) **Wo wird es sogar am Sonntag gearbeitet?**
   Where is it even on Sunday worked?

However, I am claiming that **es**-insertion is not just a post-cyclic rule, but a surface structure adjustment. There is no reason to expect that other post-cyclic rules will apply after the last touch to the structure has been added.2

A cyclic **es**-insertion rule cannot be related to the verb-second constraint. The constraint pertains only to matrix clauses, and it applies at the level of surface structure rather than during the cycle. Clearly the post-cyclic **es**-deletion rule which is a concomitant of a cyclic **es**-insertion rule cannot be motivated by the verb-second constraint, either: the deletion rule applies in embedded as well as matrix sentences, and its effect has nothing to do with satisfying the constraint. This means that the combination of cyclic **es**-insertion and post-cyclic **es**-deletion constitutes at best a description of the facts. The post-cyclic formulation of **es**-insertion, on the other hand, is an explanation.

4. The Subject-Rightward Rule.

The formulation of **es**-insertion as a surface structure adjustment which inserts a dummy to satisfy the verb-second constraint depends on the existence of a rule which moves new information subjects rightward, leaving the pre-verbal slot empty. This section
presents evidence for this rule.

Em-insertion applies freely in subjectless constructions; sentences which do have subjects do not always have em-insertion paraphrases. It works like this: If the sentence has an indefinite subject, an em-insertion paraphrase with subject moved rightward is generally possible; Sections 1-3 provide a plethora of examples. Note that the subject does not just move to after the verb, as it would had the sentence forced it out of initial position, but can also cross an adverb or pronominal object:

27a) Es steuerte sie eine böse Hexe bei.
    It contributed them a wicked witch.
    A wicked witch contributed them.
    b) Es werden hier Schuhe repariert.
    It are here shoes repaired.
    Shoes are repaired here.

If the sentence has a definite subject, an em-insertion variant is not ordinarily available. Compare (17a) and (28) to (29):

17a) Es sind schon fünf Gäste betrunken.
    It are already five guests drunk.
    Five guests are already drunk.
28) Es stieß ihn ein Soldat von der Brücke.
    It pushed him a soldier off the bridge.
    A soldier pushed him off the bridge.
29a) *Es sind schon die Gäste betrunken.
    It are already the guests drunk.
    b) *Es stieß ihn der Soldat von der Brücke.
    It pushed him the soldier off the bridge.

However, em-insertion sentences with a definite subject can be salvaged in either of two ways. They are all right with contrastive stress on the subject:

30a) Es sind schon die Gäste betrunken.
    The guests are already drunk.
    b) Es stieß ihn der Soldat von der Brücke.
    The soldier pushed him off the bridge.

In such cases, the subject, though definite, is new information. Even though die Gäste and der Soldat have been mentioned before, it is new information that these rather than the host and the civilian are the people in question.

Also, it seems that sentences like (29) can be improved by the addition of a relative clause.4

31a) Er stieß ihn der Soldat von der Brücke, der ihn 10 Minuten
    It pushed him the soldier off the bridge who him 10 minutes
    The soldier who had seen him 10 minutes before pushed him
31a) (cont.)

vorher gesehen hatte.
before seen had.
off the bridge.

b) Es sind schon die Gäste betrunken, die immer betrunken sind.
It are already the guests drunk, who always drunk are.
The guests who are always drunk are already drunk.

Again, the information content of the subject has been increased. I should add that a relative clause or contrast also adds to the acceptability of an "es"-insertion sentence with an indefinite subject. The most usual and felicitous "es"-insertion sentences with a subject are those with a heavy or contrastive indefinite subject. "Es"-insertion sentences with pronominal subjects are almost always ungrammatical:

32a) *Es kam sie.
It came she.
She came.

b) *Es soll das verkauft werden.
It should that sold be.
That should be sold.

Our analysis explains this; pronouns are typically purely anaphoric, so they are not ordinarily moved rightward as new information. This means that the "verb-second" constraint is satisfied by the subject, and "es"-insertion does not get a chance to apply. The only case where pronouns might qualify as new information is where they are really contrastive. We predict that "es"-insertion sentences with pronominal subjects will be possible in heavily contrastive situations, and this prediction is correct:

33a) Es kam nicht sie, dafür aber ihre Schwester.
It came not her, but her sister.
It wasn't she who came, but her sister.

b) Es soll nicht dies verkauft werden, sondern jenes.
It should not this sold be, but that.
It isn't this that should be sold, but that.

So far I have established that sentences with a subject have an "es"-insertion paraphrase just when the subject is new information. It is not yet clear whether we have the two rules I have posited, or just one, which inserts "es" freely into subjectless constructions and under certain discourse conditions into constructions with subjects, causing the subject to move rightward. There are two arguments against having just one rule. First, with just one rule, we would lose the "verb-second" motivation for "es"-insertion, since the rule would apply in sentences where the constraint was satisfied by the subject in its usual sentence-initial position. Second, we find sentences where there is no trace of "es"-insertion, but the subject is further rightward than subject-verb inversion would take it:
34a) Gestern stiess ihn jemand von der Brücke, der ihn nie gesehen hatte.
昨天有人从桥上推他，他从没见过。

b) Jetzt sind schon fünf Gäste betrunken.
现在已经有五个客人喝醉了。

To generate such sentences under this alternative formulation would again require an \textit{as}-deletion rule, to remove the \textit{as} which was inserted to get the subject to the right.

So we are left with the two rule proposal: one, a discourse-governed rule which moves subjects rightward, and two, a rule which inserts \textit{as} to satisfy the verb-second constraint. This set-up yields a fourth, somewhat tentative, argument that \textit{as}-insertion is post-cyclic. Jorge Hankamer has proposed (Hankamer, 1973 and 1974) that only post-cyclic rules can be discourse-governed. If this proposal is correct, the subject-rightward rule must be post-cyclic. But then \textit{as}-insertion must likewise be post-cyclic, since it applies after a post-cyclic rule.

5. Conclusion
Thus we have three and a half arguments that \textit{as}-insertion is post-cyclic: one, a post-cyclic \textit{as}-insertion rule does not need an ad hoc and possibly global \textit{as}-deletion rule, as a cyclic \textit{as}-insertion rule would; two, a post-cyclic formulation of \textit{as}-insertion explains why the rule is not lexically governed; three, the verb-second constraint can motivate a post-cyclic but not a cyclic version of \textit{as}-insertion; and a half, \textit{as}-insertion follows a discourse-governed rule.

This conclusion has interesting cross-linguistic consequences. \textit{Es}-insertion has obvious parallels to English \textit{there}-insertion, which is known to be cyclic. We would like our theory to capture the similarities between these two rules, and among dummy-insertion rules in general. One effort to accomplish this is the relational grammar account of dummy-insertion rules (presented in lectures by Perlisutter at MIT) as cyclic rules which create a new subject or object; once we know that \textit{as}-insertion is a counterexample to this account, we need some other way for linguistic theory to capture the similarities in effect and motivation of dummy-insertion rules.

Footnotes
1. This means that \textit{as} is not the subject. The only way \textit{as} behaves like a subject is that it appears in initial position; it does not govern verb-agreement or undergo the cyclic rules which define subject-like behaviour. Initial position is weaker evidence indeed of subjecthood in German; word order is quite free, and governed more by discourse considerations than by grammatical relations. To call the inserted \textit{as} the subject under these circumstances would be to evacuate the notion of subject.

2. The way \textit{as}-insertion interacts with post-cyclic rules allows us to rule out the possibility that it is last-cyclic rather than
post-cyclic. Since it is in effect the very last rule, if it is 
last-cyclic, all post-cyclic rules in German must be reclassified as 
last-cyclic. Substituting a class of last-cyclic rules for that of 
post-cyclic rules in turn forces us to sacrifice the insight that ap-
lications of post-cyclic rules do not have to be interspersed among 
applications of cyclic rules on the top cycle. There is no reason to 
think any rules, let alone as-insertion in German, are last-cyclic 
rather than post-cyclic.

3. Impersonal object-raising constructions are the only excep-
tion to this statement that I know of: Object-raising in German has 
a variant in which non-objects float from the lower clause into the 
top clause:

1) Viele Dinge sind ihr leicht bezubringen. 
   Many things(nom) are her(dat) easy to teach.
   Many things are easy to teach to her.

An impersonal counterpart of this construction is also found. It can 
be shown that it lacks in underlying structure an NP eligible to 
undergo object-raising and also that it has no surface subject. 
Examples are:

11) Ihr ist leicht bezubringen. 
Herr(dat) is easy to teach.

111) Dem Spion war schwer zu folgen. 
The spy(dat) was hard to follow.

In (11) and (111), the dative NPs have the same underlying and derived 
status as ihr in (1). Surprisingly, es cannot be inserted into this 
impersonal construction:

iv) Es war dem Spion schwer zu folgen. 
It was the spy(dat) hard to follow.

Since es can be inserted into personal object-raising constructions:

v) Es war nur ein Zebra schwer zu fangen. 
It was only one zebra(nom) hard to catch.

Only one zebra was hard to catch.

the only explanation for (iv) seems to be transderivational: es-ins-
ertion does not apply when its output would look like an extrapo-
sition sentence. Impersonal object-raising constructions with an as 
inserted always look like extraposition sentences with an adverb or 
Equi controller in the matrix sentence. Sentences like (v) are 
saved from looking like extraposition sentences by the presence of 
an upstairs nominative NP which could only have gotten there by ob-
ject raising. (See Breckenridge (1975) for more detailed discussion 
of sentence like (1)-(iii).)
4. There are also a few expressions which contain an inserted *es* and a non-contrastive non-heavy definite subject.

i) Es klingen die Glocken.
   It rings the bells.
   The bells ring.

ii) Es kommt der Bräutigam.
    It comes the groom.
    Here comes the groom.

These appear to be fossilized expressions; my informants tell me, for instance, that *die Glocken* in (i) can refer only to Christmas bells, though in other contexts it can refer to bells of any sort.

5. Jorge Hankamer points out that this situation has a certain parallelism to Heavy NP Shift in English, where both syntactic and semantic weight seem to play a part. Even a fairly short NP can be shifted if it is sufficiently surprising or emphatic: Compare (i) and (ii).

i) John embezzled yesterday his own money.
ii) *John embezzled yesterday his firm's money.*

6. Evidence against Postal and Perlmutter's claim is also available in French, where *qu* -extraposition can be shown to be post-cyclic. (Pinkham, 1975)

Bibliography

Breckenridge, Janet (1975) *Rules Which Nothing Undergoes: An Investigation of Impersonal Passives and Object-Raising Constructions in German*, Harvard University honors B.A.
thesis, reproduced by the Bell Laboratories Linguistics
Department, Murray Hill, New Jersey.

Haizan, John (1971) *Targets and Syntactic Change*, Janua

Hankamer, Jorge (1973) "The Discourse Cycle", delivered at the
San Diego Winter LSA Meetings.

(1974) "On the Noncyclic Nature of WH Clefting", *Papers
From the Tenth Regional Meeting of the Chicago Linguistic
Society*, Chicago Linguistic Society, Chicago.

Pinkham, Jessie (1975) "Post-cyclic Rule Interaction", unpublished
paper.

Part of the work on this paper was carried out in June through August
1974 at Bell Laboratories in connection with the Speech Analysis Project.