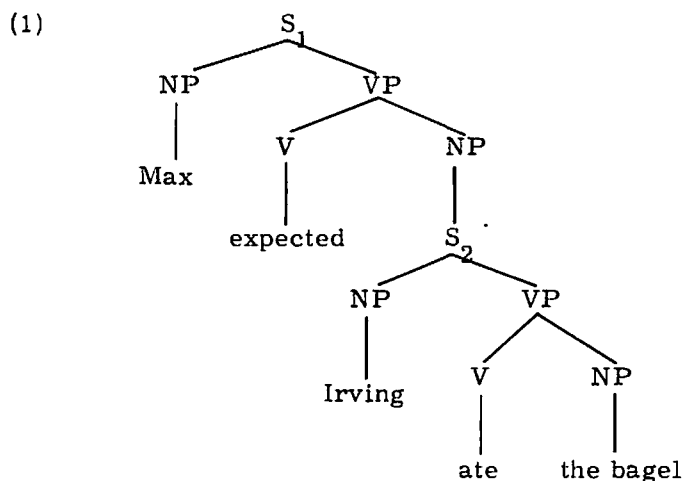# EVIDENCE FOR THE CYCLE IN JAPANESE*

David M. Perlmutter

1. Traditional Arguments for the Cycle

Traditionally, arguments for the cyclical theory of grammar have taken the form of showing that there are derivations in which some rule A must apply before another rule B, and derivations in which B must apply before A. Most convincingly, it has been shown that there are derivations which require the order of application: A, B, A. For example, Lakoff (1966) showed that there is a derivation from the underlying structure[1]

(1)

which requires that the rules of Passive and Subject Raising[2] apply in the
order: Passive, Subject Raising, Passive, so that the sentence

(2) The bagel was expected by Max to have been eaten by Irving.

can be generated. There is a further generalization: the rule (Passive) that
applies twice in the derivation of (2) applies first in the complement sentence
and later in the matrix sentence (rather than the other way around). Lakoff
concluded that the grammaticality of sentences like (2) in English therefore
constitutes evidence for the cyclical theory of grammar proposed in Chomsky
(1965).

Closer examination of Lakoff's argument for the cycle reveals that it is
based on the assumption that syntactic rules are extrinsically ordered. Only
if it is assumed that syntactic rules are extrinsically ordered does the required
order of application Passive, Subject Raising, Passive, constitute a problem
in the absence of the cyclical principle. However, recent work by Koutsoudas
(1971, 1972, 1973a, 1973b), Lehmann (1972), and Ringen (1972) has called into
question the extrinsic ordering of syntactic rules, showing that some of the
arguments for rule ordering that have been given in the past show only that if
two rules are extrinsically ordered, they must be ordered in one way and not
the other; the arguments in question do not show that the rules must be extrinsi-
cally ordered. While there are still examples in grammar where, in the ab-
sence of general principles that predict the order of application of rules, ex-
trinsic rule ordering still appears to be necessary,[3] there is no evidence to
support the claim that the rules of a grammar are necessarily ordered. The
assumption that grammatical rules are extrinsically ordered is therefore gra-
tuitous.

I will refer to a theory of grammar in which rules are not extrinsically
ordered, but rather apply whenever their structural description is satisfied, as
the Free Application Theory. Under the Free Application Theory, (2) can be
derived without recourse to the cyclical principle. Passive will apply in S_2 in
(1), followed by application of Subject Raising to the derived subject of S_2 (the
bagel), and then Passive in S_1.[4] Each rule applies when its structural des-
cription is satisfied, and neither extrinsic ordering statements nor the cyclical
principle are necessary to derive (2) from (1). The grammaticality of (2)

therefore does not constitute evidence for the cyclical principle.

It is important to note that for Lakoff's argument for the cycle to be invalid it is not necessary for it to be demonstrated that there is no extrinsic ordering of rules in grammars. His argument depends on the assumption that Passive and Raising are extrinsically ordered, which followed from his broader assumption that all rules are extrinsically ordered. Since there is, to my knowledge, no evidence that these two rules must be extrinsically ordered, Lakoff's argument of the cycle does not go through, even if it is shown that there are some rules in grammars that are extrinsically ordered.

J. D. McCawley (1972) has given an argument for the cycle in Japanese which, like Lakoff's argument, depends on the assumption that the rules in a grammar are linearly ordered. McCawley shows that, under this assumption, application of Passive in a given S precedes Reflexivization in that S, Reflexivization in a given S precedes Predicate Raising[5] on the next highest S, and that application of Predicate Raising in a given S precedes that of Passive in that S. In' the absence of the cyclical principle, there is no way to order the three rules linearly so as to obtain the correct results. McCawley therefore proposes that the three rules are cyclical and ordered as follows:

(3) Predicate Raising

Passive

Reflexivization

This proposal makes the correct predictions about the class of sentences he considers, thereby providing support for the cyclical principle. Since the argument depends on the assumption that rules are linearly ordered, however, once that assumption is given up the argument no longer goes through.[6]

The same thing can be said of a traditional-type argument for the cycle in Japanese that can be based on Kuno's (1973, Chapters 4 and 27) analysis of case marking in desiderative and potential constructions in Japanese. Kuno points out that some stative verbals mark their objects with the nominative particle ga, and that desiderative and potential verb forms generally allow their objects to be marked with either the nominative ga or the accusative particle o. Thus, both sentences in (4) are grammatical:

(4) a. Boku wa biiru o nomitai.
     I   drink+want
     'I want to drink some beer. '

   b. Boku wa biiru ga nomitai.
     'I want to drink some beer. '

Noting that the desiderative and potential verbals in question are stative verbals derived from non-stative stems, Kuno proposes to account for the grammaticality of both _ga_ and _o_ in sentences like (4) by having Case Marking apply cyclically. The structure underlying (4) is roughly[7]

(5)
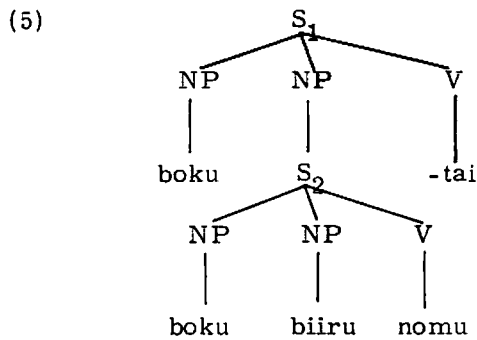
Application of Case Marking on the first cycle marks the object of S_2 with the accusative particle _o_.[8] Equi-NP Deletion deletes the complement subject, Predicate Raising merges the complement verb with the matrix verb, and the S_2 node is pruned,[9] resulting in the derived structure

(6)
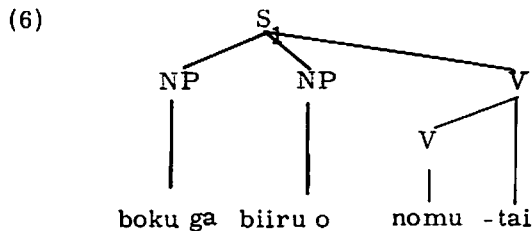
At this point, under Kuno's proposal, Case Marking can apply optionally,[10] marking biiru with the nominative particle _ga_ because it is the object of the (derived) stative verbal nomitai 'want to drink. ' This will produce the string[11]

(7)   [boku ga biiru o ga nomitai]

(7) will undergo the rule of Ga/O Deletion proposed by Kuroda (1965a, b)
which deletes ga and o when they are followed by some other particle.   The
resulting sentence (after Topicalization of the subject) is (4b).   If Case Mark-
ing does not apply on the second cycle, the o that resulted from the application
of Case Marking on the first cycle will remain, and (4a) will be derived.   In
this way, both (4a) and (4b) are derived from the same underlying structure.

    If Kuno's analysis of case marking in these constructions is correct, it
offers a traditional-type argument for the cycle because it depends on Case
Marking applying both before Equi-NP Deletion and Predicate Raising reduce
the two clauses to one, and again after that has happened.   However, the analy-
sis   does not provide an argument against the Free Application Theory.   As-
suming Kuno's rules for case marking, both (4a) and (4b) can be derived from
the same underlying structure by the free application of rules, without recourse
to the cyclical principle.   Since the rules in question can apply whenever their
structural descriptions are met, in some derivations Case Marking will apply
before Equi and Predicate Raising reduce the two clauses to one.   If Case
Marking applies again after the clauses have been reduced, (4b) will be de-
rived; if it does not, (4a) will result.   In other derivations, Case Marking will
not apply before Equi and Predicate Raising;   in these derivations, application
of Case Marking after the clauses have been reduced to one will produce (4b).
Although (4b) can be derived in two different ways, the correct sentences are
generated from the same underlying structure without recourse to the cyclical
principle.

    In brief, traditional arguments for the cycle have assumed extrinsic rule
ordering and have not specifically provided evidence against the Free Applica-
tion Theory.   It is the purpose of this paper to show that there are facts in
Japanese which lead one to abandon the Free Application Theory in favor of the
Cyclical Theory of grammar.[12]

2. Reflexivization Triggers in Japanese
    It has been pointed out in the generative grammatical literature on Japan-
ese that only the subject of a sentence can trigger Reflexivization of an NP that

it commands.[13] Consider the following sentences:

(8) Kanda wa Kitagawa ni zibun no syasin o   miseta.
                           Dat self Gen picture Acc showed
    'Kanda$_i$ showed Kitagawa a picture of himself$_i$.'
(9) Kanda wa Kitagawa ni zibun no koto   ni tuite hanasita.
                          Dat self Gen matter about   talked
    'Kanda$_i$ talked to Kitagawa about himself$_i$.'
(10) Kanda wa Kitagawa o zibun no ie   de   korosita.
                         Acc self Gen house Loc killed
     'Kanda$_i$ killed Kitagawa in his$_i$ own house.'

If either a subject or an object could trigger Reflexivization in Japanese, then the reflexive morpheme _zibun_ in (8-10) would be ambiguous, referring either to _Kanda_ or to _Kitagawa_. Since _zibun_ in these sentences can refer only to the subject (_Kanda_)[14] it is necessary to conclude that only the subject can trigger Reflexivization in Japanese.[15]

This property of Reflexivization in Japanese, coupled with the fact that Reflexivization is obligatory, provides the basis of the arguments for the cycle presented here.

3. Interaction of Reflexivization and Subject Raising

Kuno (1972) has shown that the grammar of Japanese contains a rule of Subject Raising that applies to structures like

(11) Watasi wa Mitiko ga   baka da to omotte   iru.
     I   Nom   fool is that thinking am
     'I think that Michiko is a fool.'

converting them into structures like

(12) Watasi wa Mitiko o   baka da to omotte iru.
                     Acc
     'I think Michiko to be a fool.'

Note that the complement subject _Mitiko_ has the nominative case marker _ga_ in (11), but the accusative case marker _o_ in (12), as a result of the application of Subject Raising, which makes it the derived object of the main verb.

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To consider the interaction of Subject Raising with Reflexivization, we must use examples in which Reflexivization is obligatory. The sentence

    (13) Mitiko wa zibun ni   tyuuzitu da.
                    self   Dat faithful is
        'Michiko is faithful to herself.' [16]

is a natural sentence of Japanese. For most speakers, though not for all, (13) is the only way the underlying structure in question can be actualized. In the sentences

    (14) Mitiko wa Mitiko ni tyuuzitu da.
          'Michiko$_i$ is faithful to Michiko$_j$.'

and

    (15) Mitiko wa kanozyo ni tyuuzitu da.
                  her
        'Michiko$_i$ is faithful to her$_j$.'

Mitiko and kanozyo cannot refer to the subject of the sentence (Mitiko). For these speakers, then, Reflexivization is obligatory here. Some speakers report that Mitiko and kanozyo in (14) and (15) can refer to the subject. The facts of this variety of Japanese neither support nor disconfirm the conclusion that I will draw here. The argument that I present here is valid in its present form only for those speakers for whom Reflexivization is obligatory in the crucial sentences.

    Now consider the interaction of Subject Raising with Reflexivization. In the sentence

    (16) Watasi wa Mitiko ga   zibun ni   tyuuzitu da to omotte   iru.
          I   Nom self Dat faithful is that thinking am
        'I think that Michiko is faithful to herself.'

the reflexive pronoun zibun refers to Mitiko, the subject of the complement. In the sentences

    (17) Watasi wa Mitiko ga Mitiko ni tyuuzitu da to omotte iru.
          'I think that Michiko$_i$ is faithful to Michiko$_j$.'

and

(18) Watasi wa Mitiko ga kanozyo ni tyuuzitu da to omotte iru.
            her
    'I think that Michiko$_i$ is faithful to her$_j$.'

the dative Mitiko and non-reflexive pronoun kanozyo necessarily refer to some-
one other than the Mitiko that is the subject of the complement. This follows
from the fact that Reflexivization is obligatory.[17]

In the sentence

(19) Watasi wa Mitiko o zibun ni tyuuzitu da to omotte iru.
    'I think Michiko to be faithful to herself.'

in which Mitiko has been raised to become the object of the main verb,[18] the
reflexive pronoun zibun again refers to Mitiko. But in the derived constituent
structure of (19), as Kuno (1972) shows, Mitiko is an object, and objects in
Japanese cannot trigger Reflexivization. Thus, Reflexivization must have
applied to (19) before Subject Raising. Crucially, in the sentences

(20) Watasi wa Mitiko o Mitiko ni tyuuzitu da to omotte iru.
    'I think Michiko$_i$ to be faithful to Michiko$_j$.'
and
(21) Watasi wa Mitiko o kanozyo ni tyuuzitu da to omotte iru.
    'I think Michiko$_i$ to be faithful to her$_j$.'

Mitiko and the non-reflexive pronoun kanozyo cannot refer to the Mitiko that
is the underlying subject of the complement. While the Free Application The-
ory can generate (19) by letting Reflexivization apply before Subject Raising,
it would also let Subject Raising apply before Reflexivization in some deriva-
tions, and therefore it cannot prevent the generation of (20) and (21) from an
underlying structure in which the correspondents of Mitiko and kanozyo are
coreferential with the Mitiko that is the underlying subject of the complement.
Under the Free Application Theory, then, it is necessary to add a special re-
striction to the grammar:

(22) Subject Raising out of a clause S_i cannot apply until after
    the application of Reflexivization in S_i.

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Such a move requires the addition of an extra rule (namely, (22)) to the grammar, and fails to explain why the grammar contains this rule rather than, say:

(23) *Reflexivization in a clause S_i cannot apply until after the application of Subject Raising out of S_i.

Under the cyclical theory, on the other hand, (22) is not necessary; the restriction follows automatically from the fact that the domain of Reflexivization is a single S, while the domain of Subject Raising is an S and its complement. Thus, Reflexivization will apply on the first cycle, while Subject Raising will not be able to apply until the second cycle. As a result, the underlying structure in question will be realized only as (19) and not as (20) or (21).

4. Interaction of Reflexivization and Relativization

Relativization in Japanese deletes an NP in the relative clause that is coreferential with the head. Thus, from the structure

(24)

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                    NP
          S                    NP
   NP    NP     V               |
   |     |      |               |
 zyosei Tanaka korosita      zyosei
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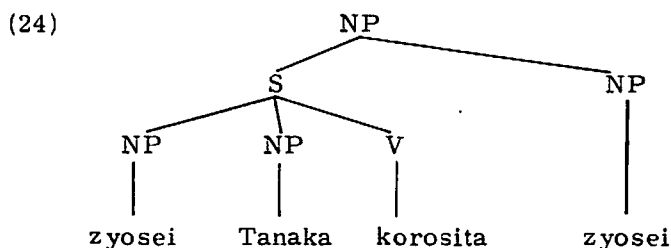
Relativization produces the relative clause

(25) Tanaka o   korosita zyosei
          Acc killed   woman
     'the woman who killed Tanaka'

by deletion of the coreferent of the head (zyosei) that is the underlying subject of the relative clause.[19]

Now, if the direct object of the relative clause is not Tanaka but rather zyosei no otto 'the woman's husband, ' where the possessive zyosei is corefer-

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ential with the subject and head of the relative clause, the resulting relative clause is

(26) zibun no   otto   o   korosita zyosei
      self   Gen   husband Acc killed   woman
      'the woman$_i$ who killed her$_i$ husband'

In the relative clause

(27) kanozyo no otto o korosita zyosei
      'the woman$_i$ who killed her$_j$ husband'

the non-reflexive pronoun kanozyo cannot refer to the head of the relative clause. If Relativization deletes the subject of the relative clause before Reflexivization has had a chance to apply inside the relative clause, however, (27) will be generated. In order to ensure that the underlying structure in question ends up as (26) instead of (27), it would be necessary to add a restriction to the grammar:

(28) Relativization cannot delete a constituent of a clause S_i until after Reflexivization has had a chance to apply in S_i.

Under the Cyclical Theory, however, the facts follow automatically, and a restriction such as (28) is unnecessary. The domain of Reflexivization is a single S; it will therefore apply on the first cycle. Since the domain of Relativization includes both the relative clause and its head, Relativization cannot apply until the following cycle. The fact that zibun in (26) refers to the head while kanozyo in (27) cannot is thus an automatic consequence of the Cyclical Theory.

5. Interaction of Reflexivization and Equi

     Equi-NP Deletion (henceforth 'Equi') deletes the subject of a complement sentence under coreference with an NP in the matrix sentence. For example, in the derivation of the sentence

(29) Noboru wa Haruko ni   Honoruru ni iku   yoo ni itta.
                       Dat   to go   said
        'Noboru told Haruko to go to Honolulu. '

the subject of the complement (Haruko), which is coreferential with the indirect
object of the matrix sentence,   is deleted by Equi in the course of the deri-
vation. [20]

    It is possible to test the interaction of Reflexivization and Equi for
speakers with the following paradigms:

(30) Haruki wa zibun no   kane   o   tukau.
                  self   Gen money Acc use
        'Haruko$_i$ uses her$_i$ own money. '

(31) Haruko wa Haruko no kane o tukau.
        'Haruko$_i$ uses Haruko$_j$'s money. '

(32) Haruko wa kanozyo no kane o tukau.
        'Haruko$_i$ uses her$_j$ money. '

Haruko and kanozyo in (31) and (32) cannot refer to the subject. For some
speakers they can; such a dialect neither supports nor disconfirms the hypo-
thesis advanced here, and will therefore be ignored below.
    Now consider the interaction of Reflexivization and Equi. In the sentence

(33) Noboru wa Haruko ni   zibun no   kane   o   tukau yoo ni itta.
                       Dat self   Gen money Acc use   said
        'Noboru told Haruko to use her own money. '

the reflexive pronoun zibun refers to Haruko, [21] and since only a subject can
trigger Reflexivization in Japanese, Reflexivization must have applied prior
to the deletion of the complement subject by Equi. If Equi applied before Re-
flexivization, Reflexivization would no longer be able to apply, and the under-- ·
lying structure in question would be realized not as (33) but rather as

(34) Noboru wa Haruko ni Haruko no kane o tukau yoo ni itta.
        'Noboru told Haruko$_i$ to use Haruko$_j$'s money. '

or as

(35) Noboru wa Haruko ni kanozyo no kane o tukau yoo ni itta.
'Noboru told Haruko$_i$ to use her$_j$ money.'

But in (34) and (35), Haruko and kanozyo cannot refer to the indirect object
of the matrix sentence. In an adequate grammar of Japanese, then, some-
thing must prevent Equi from applying before Reflexivization in the comple-
ment sentence. Under the Free Application Theory, the grammar would
have to contain an additional rule:

(36) Equi cannot delete the subject of a clause S$_i$ until after
Reflexivization has had a chance to apply in S$_i$.

Under the Cyclical Theory, on the other hand, the fact that Equi cannot delete
the subject of a clause until after Reflexivization has applied in that clause will
follow automatically from the fact that the structural description of Reflexivi-
zation will be satisfied on the first cycle, while that of Equi will not be satis-
fied until the second cycle. The Cyclical Theory thus makes the addition of
(36) to the grammar unnecessary.

Furthermore, the Cyclical Theory achieves a measure of explanation
which the Free Application Theory lacks. Under the Free Application Theory,
there is no explanation for why the grammar contains the restriction (36) in-
stead of the opposite restriction *(37):

(37) *Reflexivization cannot apply in a clause S$_j$ until after
Equi has had a chance to delete the subject of S$_i$.

In a grammar that included *(37), (34) and (35) would have the meaning of (33),
while (33) would be ungrammatical. The Cyclical Theory, on the other hand,
explains why the facts are as they are; under the Cyclical Theory, the facts
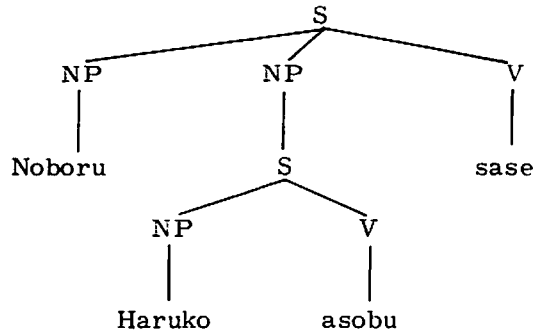could not be the other way around.

6. Interaction of Reflexivization and Predicate Raising

Predicate Raising applies in the derivation of causative sentences like

(38) Noboru wa Harukoni   asobaseta.
                                    Dat play+Cause+Past
      'Noboru let Haruko play. '

from the underlying structure[22]

(39)

The important point for the present argument is that after the application of
Predicate Raising, the underlying subject of the complement (Haruko) becomes
the indirect object of the derived causative verb (asobaseta) and is consequent-
ly marked with the dative particle ni in (38).

   The interaction of Predicate Raising and Reflexivization provides evi-
dence for the cycle in the dialect in which Reflexivization is obligatory. In
this dialect, not only does the reflexive pronoun zibun in

(40) Haruko wa zibun no   ie   de   asonde   ita.
                     self Gen house Loc playing   was
      'Haruko was playing in her own house. '

refer to Haruko, but also, the non-reflexive pronoun kanozyo in

(41) Haruko wa kanozyo no ie de asonde ita.
      'Haruko$_i$ was playing in her$_j$ house. '

cannot refer to the subject Haruko.[23]

   The sentence

(42) Noboru wa Haruko ni   zibun no   ie   de   asobaseta.
                             Dat self Gen house Loc play+Cause+Past
     'Noboru let Haruko play in her own house. '

is ambiguous; the reflexive pronoun zibun can refer either to Noboru or to
Haruko. I will be concerned here only with the reading on which zibun refers
to Haruko. In order for (42) to be generated with this reading, Reflexivization
must apply before Predicate Raising makes the underlying subject of the com-
plement into the object of the derived verb asobase-, since only a subject
can trigger Reflexivization. If Predicate Raising applied before Reflexiviza-
tion, the underlying structure in question would be realized as

(43) Noboru wa Haruko ni kanozyo no ie de asobaseta.
     'Noboru let Haruko$_i$ play in her$_j$ house. '

But in the dialect in which Reflexivization is obligatory, kanozyo cannot refer
to Haruko in (43), just as it cannot in (41). Thus, Predicate Raising must be
prevented from applying before the application of Reflexivization in the com-
plement.

     Under the Free Application Theory, an additional rule must be added to
the grammar:

(44) Predicate Raising cannot raise the predicate of a clause
     S_i until after the application of Reflexivization in S_i.

Under the Cyclical Theory, on the other hand, this apparent restriction is an
automatic consequence of the fact that the conditions for the application of Re-
flexivization are met on the first cycle, while Predicate Raising, whose do-
main of application necessarily includes two clauses, cannot apply until the
second cycle. The Cyclical Theory thus explains why Predicate Raising does
not apply until after Reflexivization has already applied in the complement.

7.   Conclusions

7. 1.   A Generalization

     It has been shown here that under the Free Application Theory, it would

be necessary to add the following additional rules to the grammar of Japanese:

(22) Subject Raising out of a clause S_i cannot apply until after the application of Reflexivization in S_i.   •

(28) Relativization cannot delete a constituent of a clause S_i until after Reflexivization has had a chance to apply in S_i.

(36) Equi cannot delete the subject of a clause S_i until after Reflexivization has had a chance to apply in S_i.

(44) Predicate Raising cannot raise the predicate of a clause S_i until after the application of Reflexivization in S_i.

Under the Cyclical Theory, on the other hand, these additional rules are not necessary. The fact that Reflexivization applies before each of these four rules follows automatically from the fact that the conditions for the application of Reflexivization are satisfied on the first cycle, while the conditions necessary for application of the other four rules will not be met until the second cycle. The Cyclical Theory thus explains why it is Reflexivization that must apply first in each case, rather than the other way around. The Cyclical Theory captures the crucial generalization: a rule that can apply within the embedded sentence alone will necessarily apply before any rule whose domain of application includes both the matrix sentence and the complement. The Cyclical Theory thus explains why it is Subject Raising, Relativization, Equi, and Predicate Raising that cannot apply until after application of Reflexivization in the complement, rather than some other group of four rules. Under the Free Application Theory, on the other hand, this generalization eludes capture.

Looking at the situation in a slightly different way, the Free Application Theory is forced to attribute the interaction of Reflexivization with the four rules in question to four independent statements that must be added to the grammar. The Cyclical Theory, on the other hand, attributes the facts to a general principle — that of the cycle. The cyclical principle provides an explanation of the facts.

7. 2. On the Status of Extrinsic Rule Ordering Statements in Grammar

Contrasting the Cyclical Theory with the Free Application Theory, I have shown how the Free Application Theory is forced to state as ad hoc facts what are automatic consequences of the Cyclical Theory. As a result, these facts not only provide evidence for the Cyclical Theory, but also show how a general principle like that of the cycle can do some of the work that would otherwise have to be done by statements of extrinsic rule ordering.

It is important to note, however, that the argument I have given here does not depend on the assumption that grammars contain no statements of extrinsic ordering among rules. In fact, Reflexivization in Japanese offers an example where, in the absence of some general principle that predicts the order of application of rules, extrinsic rule ordering appears to be necessary.[24] It has been pointed out in the generative grammatical literature on Japanese that in simple passive sentences like

(45) Suzuki wa doroboo ni zibun no pisutoru de korosareta.
            burglar by self Gen   Loc kill+Passive+Past
    'Suzuki$_i$ was killed by a burglar with his$_i$ own pistol. '

the reflexive pronoun zibun refers only to the derived subject of the passive (Suzuki) and not to the underlying subject (doroboo).[25] If Passive does not apply in the derivation, the sentence

(46) Doroboo wa Suzuki o kare no pisutoru de korosita.
                   Acc he   with kill+Past
    'The/A burglar. killed Suzuki$_i$ with his$_i$ own pistol. '

will be generated.[26] In the derivation of (46) kare has not undergone Reflexivization because the antecedent (Suzuki) is an object, which cannot trigger Reflexivization. There is, however, another underlying structure, in which the burglar is the possessor of the pistol, and this underlying structure is realized as

(47) Doroboo wa Suzuki o zibun no pisutoru de korosita.
    'The/A burglar$_i$ killed Suzuki with his$_i$ own pistol. '

If Passive applies to the structure underlying (47), however, the resulting surface structure is

(48) Suzuki wa doroboo ni kare no pisutoru de korosareta.
    'Suzuki was killed by a burglar$_i$ with his$_i$ pistol. '

in which the possessor of the pistol is realized as the non-reflexive pronoun kare; the reflexive zibun can be used here only if the possessor of the pistol is coreferential with the derived subject (Suzuki, as in (45). If Reflexivization is allowed to apply before Passive, however, the structure underlying (48) will undergo Reflexivization, just as it does in (47), and it will be incorrectly realized as (45). To prevent this, then, the grammar must contain the restriction:

(49) Reflexivization cannot apply in a clause S_i until a point in the derivation at which Passive can no longer apply in S_i. [27]

In the absence of a general principle that predicts (49), (49) must be included in an adequate grammar of Japanese.

While it would of course be preferable to find a general principle from which (49) follows as an automatic consequence,[28] at worst (49) must be included in the grammar. But even in that case, one cannot conclude that extrinsic ordering statements are necessary in grammars, and that therefore they are 'free,' i.e., can be used at will. The criticisms of the extrinsic ordering statements that were made in §3-6 still hold, and a theory such as the Cyclical Theory, which makes them follow automatically, is still preferable to a theory in which each one must be stated as an ad hoc fact. Regardless of the status of such extrinsic rule ordering statements in linguistic theory, the Cyclical Theory is to be preferred over the Free Application Theory because it makes four such statements unnecessary, predicting and explaining the facts which, under the Free Application Theory, require ad hoc statements. The arguments presented here, then, not only provide grounds for adopting the Cyclical Theory over the Free Application Theory, but also show how a general principle (such as that of the cycle) can do the work that would otherwise have to be done by ad hoc statements of extrinsic rule ordering. It is hoped that this way of thinking about extrinsic rule ordering will lead to the discovery of other general principles that can do the work that is now attributed to extrinsic ordering statements. Using such general principles instead of extrinsic ordering statements can lead to a greater measure of explanation, since extrinsic ordering statements, while they make it possible to state certain facts, do nothing to explain them.

7.3 Pre-Cycle and Post-Cycle

The evidence presented here leads to adoption of the Cyclical Theory of Grammar. The simplest assumption consistent with this conclusion is that all grammatical rules apply cyclically. The question of whether or not there are also pre-cyclical rules or post-cyclical rules in grammar must be left for future research.

Notes

1. Tree diagrams given here are simplified where such simplification does not affect the argument.

2. I use the term 'Subject Raising' to refer to the rule called 'IT-Replacement' in Lakoff (1966) and Rosenbaum (1967). The most extensive study of this rule is to be found in Postal (in press).

3. One such case is discussed in § 7.2.

4. Under the Free Application Theory, (2) can also be derived in a different way, but that is not relevant to the present discussion.

5. J. D. McCawley (1972) refers to this rule as 'Verb Raising.'

6. The Japanese data discussed by McCawley includes a fact that cannot be handled by the Free Application Theory alone. This is discussed in § 7.2 below.

7. I assume here that there is no VP constituent. Nothing essential to the present argument hinges on this assumption.

8. The subject will also be marked with ga.

9. Ross, (1967, 1969) has proposed that an S-node is pruned when it no longer immediately dominates more than one constituent. Postal (in press) proposes to account for the same facts by means of the notion of 'quasi-clause.' Be that as it may, it is clear that application of Predicate Raising causes the two clauses to collapse into one, if the facts of case marking in Japanese that are discussed in the text here and in Note 10 are to be accounted for.

10. This is the weakest point in Kuno's analysis. Under all other circumstances, Case Marking is obligatory. But just in the case of derived statives (i. e., desideratives and potentials), normally obligatory Case Marking is optional if the object has already been marked with o. This strange condition is necessary if both (4a) and (4b) are to be derived from (5) with Kuno's rules. But this condition is ad hoc in three respects. First, optionality

of Case Marking is not a general property of stative verbals. Thus, while

> (i) Inaba-san wa sukii ga suki da.
>   fond is
>   'Mr. Inaba likes skiing. '

in which the object of the stative verbal <u>suki</u> has been marked with the nominative particle <u>ga</u> is grammatical, the sentence that would be produced if Case Marking for objects of stative verbals were optional is ungrammatical:

> (ii) *Inaba-san wa sukii suki da.

Second, following Kuroda (1965a, b), Kuno makes use of case marking rules that refer to the notion 'unmarked NP. ' An NP is 'unmarked' if it has no particle at all, or has the particle <u>ga</u> or <u>o</u>. In order to account for case marking with derived statives, however, Kuno is forced to refer especially to <u>o</u>-marked NPs, although they are otherwise considered 'unmarked' as far as Case Marking is concerned. Third, the optionality of Case Marking that is needed here is not a general property of Case Marking with derived verbals, but is specified to desideratives and potentials — the derived stative verbals. For example, if a structure like (5) is embedded beneath -<u>garu</u> 'show signs of, ' which is active, Case Marking is not optional but obligatory on the third cycle. Thus, from the underlying structure

(iii)

$$
\begin{array}{c}
S_1 \\
\diagup \quad | \quad \diagdown \\
NP \quad\quad NP \quad\quad V \\
| \quad\quad\quad | \quad\quad\quad | \\
Gakutyan \quad S_2 \quad\quad -garu \\
\end{array}
$$

Gakutyan
  NP   NP   V
   | | |
 Gakutyan   S₃   -tai
       NP NP   V
       | | |
   Gakutyan koora hurooto nomu

it is necessary to derive

> (iv) a. Gakutyan wa koora hurooto o nomitagatte iru yo.
>   drink+want+show-signs-of
>   'Gaku sure looks like he's hankerin' for a cola float! '

> b. *Gakutyan wa koora hurooto ga nomitagatte iru yo.

as Kuno (1973, 84 and 337) points out. Since application of Case Mark-

ing at the stage of derivations at which S_1 and S_2 have collapsed into a single verbal that marks its object with ga would mark koora hurooto with ga (on the second cycle), it is necessary that Case Marking apply after the verbs of all three sentences have become a single verbal (on the third cycle). The derived verbal nomitagaru, being active, will mark the object with o, and Ga/O Deletion will delete the particles o and ga inserted on previous cycles. In this way, (iv-a) is generated and *(iv-b) is not. Making Case Marking optional on the third cycle would make it possible for *(iv-b) to be generated. Thus, the optionality of Case Marking with desideratives and potentials is ad hoc for that case, and is not a general property of Case Marking with derived verbals.

To make matters worse, Shibatani (1972) has pointed out that with desideratives, sentences in which the object is marked with ga are fully grammatical only if the ga-marked object immediately precedes the verbal. The more material that intervenes between the ga-marked object and the verbal, the less the acceptability of the resulting sentence. Shibatani proposes an output condition that states this fact.

It is clear, then, that we do not at present have an explanation of case marking phenomena with derived verbals. At best, we have a collection of observationally adequate rules and conditions. As a result, arguments for linguistic universals (such as the cycle) that are based on these analyses are not likely to have a very long half-life.

11. I use square brackets to indicate pre-surface strings. Actually, (7) should be represented as [boku ga ga biiru o ga nomitai], since Case Marking will mark boku with the nominative particle ga again after the two clauses have merged to one. Ga/O deletion will subsequently delete ga or o if followed by another particle.

12. For similar arguments based on English, see Perlmutter (to appear a).

13. See, for example, Kuroda (1965 a, Chapter 5), Kuno (1973, Chapter 25), and N. A. McCawley (1972a, 1972b). There are reportedly some speakers in whose grammars non-subjects can also trigger Reflexivization; for such speakers, (8-10) would be ambiguous. In a group of thirty to forty native speakers of Japanese who attended a talk on this subject at International Christian University in Tokyo, no more than four or five thought that (8-10) might be ambiguous. Since the arguments given in this paper depend on the subject alone being able to trigger Reflexivization, these arguments are valid only for the majority dialect.

14. For some speakers, zibun can also refer to the speaker of the sentence. For these speakers, (8) can mean: 'Kanda showed Kitagawa a picture of me. ' Since cases where zibun refers to the speaker of the sentence are not relevant to the argument developed here, this reading is systematically ignored in this paper.

15. N. A. McCawley (1972b) is devoted to a thorough defense of this claim.

16. Although the English gloss is somewhat strange, (13) is a perfectly natural sentence in Japanese. It means something like: 'Michiko is faithful

to her principles. ' I will continue to gloss such sentences literally in order to maintain the parallel with the Japanese original.

17. Recall that this argument is based on those varieties of Japanese in which Reflexivization is obligatory.

18. For some speakers, sentences in which the raised complement subject does not immediately precede the embedded predicate are not grammatical. For these speakers, the fact that zibun ni, Mitiko ni, and kanozyo ni intervene between Mitiko o and tyuuzitu in (19-21) makes these sentences ungrammatical. For such speakers, it is apparently impossible to test the interaction between Subject Raising and Reflexivization.

19. It is not clear whether the coreferent of the head (zyosei) inside the relative clause is represented as a full NP or as a pronoun in underlying structure. There is evidence, however, for a stage of derivations at which it is represented as a pronoun prior to being deleted; see Kuno (1973, Chapters 20-21) and Perlmutter (1972).

20. For justification of this claim and discussion of Equi in Japanese, see Nakau (1973, Chapter 6).

21. (33) also has another reading, on which zibun refers to Noboru, but since this reading is irrelevant to the present discussion it will be ignored here.

22. The argument that I give here is based on the assumption that ni-causatives in Japanese are derived from underlying structures like (39), in which the NP that ends up as the ni-phrase is the underlying subject of the complement, and there is no NP coreferential with the complement subject in the matrix sentence. In this, I essentially follow Shibatani (1973), although Shibatani draws his trees in a different way. I also assume that the rule involved in the derivation of (38) is Predicate Raising. Shibatani states that Subject Raising puts the complement subject in the matrix sentence, but adds in a footnote that it would not matter for his argument if Predicate Raising were the rule involved. The fact that Predicate Raising and not Subject Raising is involved here follows from the fact that Subject Raising in Japanese is quite different. First, NPs raised by Subject Raising bear the accusative particle o, as in (12) and (19), and not the dative particle ni, as in (38). Second, Subject Raising applies only if the predicate of the complement is a non-verb:

> (v) a. Watasi wa usi ga sinu to omotte iru.
>   I   cow Nom die that thinking am
>   'I think the cow is dying. '
>
>   b. *Watasi wa usi o sinu to omotte iru.

The sentence *(v-b), in which usi has been raised to become the object of the main clause, is ungrammatical because the complement predicate is a true verb. Subject Raising can apply if the complement predicate is an ordinary adjective (e. g. omosiroi 'interesting'), a nominal adjective

(e. g. kantan 'simple'), or a predicate nominal (e. g. baka 'fool'), but not if it is a true verb. From this it follows that it is Predicate Raising and not Subject Raising that applies in the derivation of (38). Note also that Predicate Raising has the effect of collapsing the two clauses of underlying structures like (39) into a single clause, while there is no reason to suppose that Subject Raising has the same effect.

23. The dialect of speakers who can use either Haruko no ie or kanozyo no ie in (41) to refer to Haruko's house provides no evidence either for or against the Cyclical Theory, as far as the interaction of Reflexivization and Predicate Raising is concerned.

24. Japanese Reflexivization is thus one of the examples overlooked by Koutsoudas (1972, 1973a, 1973b), Lehmann (1972), and Ringen (1972) in their claim that there are no cases on record that require extrinsic rule ordering.

25. This fact has been used by Kuno (1973, Chapter 25) and N. A. McCawley (1972a, 1972b) as a strong argument that simple passives and so-called 'adversative' or 'affective' passives in Japanese have different underlying structures.

26. (46) also differs from (45) in that doroboo has undergone Topicalization in (46), while Suzuki has in (45). Since Topicalization is not relevant to the present discussion, I ignore the differences produced by Topicalization between (45) and (46), on the one hand, and between (47) and (48), on the other.

27. Note that it will not suffice to say merely that Reflexivization cannot apply before Passive, because there are derivations (such as that of (47)) in which Reflexivization must apply even though Passive does not apply at all. And it will not suffice to say that Reflexivization cannot apply until Passive has had a chance to apply, because Passive must be prevented from re-applying after Reflexivization has applied; such re-application would produce (45) instead of (48) from the underlying structure in which Suzuki is the possessor of the pistol.

28. For a proposal along these lines, see Perlmutter (to appear b). The proposal made there eliminates the need for extrinsic rule ordering, as well as the problems mentioned in Note 27.

References

Chomsky, N. (1965) Aspects of the Theory of Syntax, The MIT Press, Cambridge.

Koutsoudas, A. (1971) "Gapping, Conjunction Reduction, and Co-ordinate Deletion, " Foundations of Language 7, 337-386.

Koutsoudas, A. (1972) "The Strict Order Fallacy," Language 48, 88-96.

Koutsoudas, A. (1973a) "Extrinsic Order and the Complex NP Constraint, " Linguistic Inquiry 4, 69-81.

Koutsoudas, A. (1973b) "Unordered Rule Hypotheses," Indiana University Linguistics Club mimeograph.

Kuno, S. (1972) "Evidence for Subject Raising in Japanese, " Papers in Japanese Linguistics 1, 24-51.

Kuno, S. (1973) The Structure of the Japanese Language, The MIT Press, Cambridge.

Kuroda, S.-Y. (1965a) Generative Grammatical Studies in the Japanese Language, unpublished doctoral dissertation, MIT.

Kuroda, S.-Y. (1965b) "Ga, o, oyobi ni ni tuite," Kokugogaku 63, 75-85.

Lakoff, G. (1966) "Deep and Surface Grammar, " unpublished paper, Harvard University (mimeograph available from Indiana University Linguistics Club).

Lehmann, T. (1972) "Some Arguments against Ordered Rules, " Language 48, 541-550.

McCawley, J. D. (1972) "An Argument for a Cycle in Japanese, " Papers in Japanese Linguistics 1, 69-73.

McCawley, N. A. (1972a) "On the Treatment of Japanese Passives, " Papers from the Eighth Regional Meeting, Chicago Linguistic Society.

McCawley, N. A. (1972b) A Study of Japanese Reflexivization, unpublished doctoral dissertation, University of Illinois.

Nakau, M. (1973) Sentential Complementation in Japanese, Kaitakusha, Tokyo.

Perlmutter, D. (1972) "Evidence for Shadow Pronouns in French Relativization, " in P. Peranteau et al. (eds.) The Chicago Which Hunt, Chicago Linguistic Society.

Perlmutter, D. (to appear a) "The Cyclical Principle. "

Perlmutter, D. (to appear b) "Unordered Rules and the Obligatory-Optional Principle. "

Postal, P. (in press) On Raising, The MIT Press, Cambridge.

Ringen, C. (1972) "On Arguments for Rule Ordering, " Foundations of Language 8, 266-273.

Rosenbaum, P. (1967) The Grammar of English Predicate Complement Constructions. The MIT Press, Cambridge.

Ross, J. R. (1967) Constraints on Variables in Syntax, unpublished doctoral dissertation, MIT.

Ross, J. R. (1969) "A Proposed Rule of Tree-Pruning," in D. Reibel and S. Schane (eds.) Modern Studies in English, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Shibatani, M. (1972) "Ga-O Conversion and an Output Condition," Papers in Japanese Linguistics 1, 296-300.

Shibatani, M. (1973) "The Semantics of Japanese Causativization," Foundations of Language 9, 327-373.