CASE-LINKING

A THEORY OF CASE AND VERB DIATHESIS

APPLIED TO CLASSICAL SANSKRIT

by

NICHOLAS DAVID MACLACHLAN OSTLER

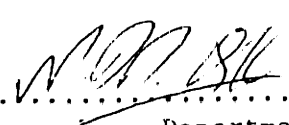B.A., University of Oxford
(1975)

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE
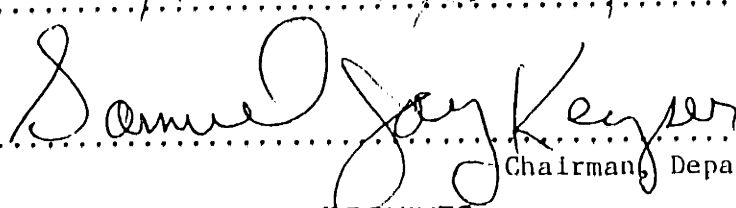DEGREE OF

DOCTOR OF PHILOSOPHY

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

(September 1979)

Signature of Author ....
Department of Linguistics and Philosophy,
4 September 1979

Certified by..
Thesis Supervisor

Accepted by..
Chairman, Departmental Committee

CASE-LINKING :

A THEORY OF CASE AND VERB DIATHESIS

APPLIED TO CLASSICAL SANSKRIT

by

NICHOLAS DAVID MACLACHLAN OSTLER

Submitted to the Department of Linguistics and Philosophy

on 4 September 1979 in partial fulfillment of the requirements

for the Degree of Doctor of Philosophy.

ABSTRACT

In this work a proposal is made for the integration of Case into syntactic and semantic theory. Case is the province of three components of the grammar, each of which has its own internal structure. These are: the domain of Case Incidence, whose rules govern the occurrence of relevant morphological categories, in particular the Formal Cases, on the basis of syntactic information; the domain of Functional Structure, which is the framework relating Participant Roles (similar to Fillmore's 'Deep Cases') to types of predicate; and the domain of Linking itself, which establishes systematic correspondences between the morphological categories and the participant roles.

In Chapter 1, these three components are laid out. The rules of Case Incidence are a part of the syntax. They interact particularly closely with Phrase Structure, but evidence is presented (from Japanese) which suggests that the power of these rules goes beyond that of context-free PS rules. Previous attempts to formulate partial theories of functional structure are reviewed, and a new and more comprehensive attempt is made, which is localist in orientation: the concepts of Source, Goal, Theme and Path play key roles. A system of binary features is introduced, which is intended to map out the whole domain, and to provide intrinsic connexions between types of predicate and types of participant role. Linking principles are shown to be of two kinds, Semantic and Grammatical. Semantic linking rules make use of the feature system to establish intrinsic connexions between particular formal cases and particular classes of roles. Grammatical linking rules presuppose total orderings of the roles and cases respectively, and establish links on the basis of priority determined by these orderings. Extensive illustrations of these various principles are given, from Japanese and other languages. And the whole system is integrated with

Bresnan's 'Realistic Transformational Grammar'. The place of the Lexicon in the application of all these components is crucial, and it is suggested that lexical rules provide a neat formulation for the complex phenomena of Verb Diathesis which interact with Case.

In the remaining four chapters of the work the system is applied to the analysis of Classical Sanskrit. A substantially complete analysis of Sanskrit phrase-structure and case-incidence is given. All the traditional cases are given representations in the framework which are illustrated in extenso. In Chapter 4, alternations in transitivity are investigated from the standpoint of a theory of Sanskrit lexical entries. And in Chapter 5, the Sanskrit Passive is discussed. Besides giving an analysis of it as a Diathesis within the terms of the system, the chapter also shows it to present evidence against other current theories of the passive, those due to Relational Grammar and the Revised Extended Standard Theory.

Thesis Supervisor: Rene Paul Viktor Kiparsky

Title: Professor of Linguistics

TABLE OF CONTENTS

LIST OF FIGURES

To the Memory

of

My Mother,

Who Always Hoped

that I Would Do Something with My Languages.

ACKNOWLEDGEMENTS

Our systematic theology ... has been many times altered and
sometimes improved ... But has it meant anything more than the
turning over of a sick man in his bed for the sake of change?

> Karl Barth
> "The Word of God and the Task of the Ministry"

Only connect.

> E.M. Forster, O.T.
> "Howard's End"

1.1 INTRODUCTION

The central topic of this work is Case: the part of grammatical theory which concerns the means available for expressing the various relations which may hold between a predicate and its arguments.[1]

A priori it is reasonable to suppose that this subject matter will have been successfully analyzed if it can be made plain (1) just what these relations are, (2) what are the properties of the formal mechanism which is used to express them, and (3) how various states of the mechanism are correlated with the various relations of predicate and argument. So expressed, this outline agenda for 'Case Grammar' is fairly inexplicit as to what the properties of natural language in this area will turn out to be.

It leaves open, for instance, the possibility that the formal mechanism has no properties of its own: that its structure is essentially determined when the predicate-argument relations in (1) have been specified, along with the correlations in (3). This would be a schematic

---

[1]Strictly speaking this is an oversimplification -- though one that will hold good for the purposes of this thesis as a whole. It is difficult to identify a predicate-word in an expression such as Drake's drum; yet we should presumably want to analyze 's here as a case-marker. It might be thought necessary, therefore, to extend the domain of Case Grammar beyond the definition given. However, this work will leave untouched the analysis of such relations as partitivity and possession, characteristically signified by adnominal genetives like this. All the same, we shall have something to say about the syntactic incidence of the genitive case itself. As examples like Minamoto's conquest of Japan show, the genitive is one of the means available for the expression of predicate-argument relations, even if the mechanism is usually put to other uses.

account of Fillmore's position in <u>The Case for Case</u> (1968), where the interesting task within Case Grammar is taken to be the identification of the "deep cases" (i.e. types of predicate-argument relation), and little or no attention is given to any language's surface-case or voice inflexion system in its own right. Fillmore's account of the incidence of prepositions in English, and his rule of Subject Selection, all clearly fall under (3), since they make crucial reference to Deep Cases.

On the other hand, it might turn out that there is nothing interesting to say about (1). The formal system of grammatical formatives and their interactions might have a coherence of its own. And although its elements and their combinations would have meanings, any account of these which diverged from the order imposed by the formal mechanism would inevitably be piecemeal and unenlightening, at least if considered as a contribution to linguistics.

This position is difficult to identify with any particular linguist's work. But its emphasis on the formal systems constituted by linguistic forms, without reference to their interpretation in terms of some universal semantic framework, is reminiscent of structuralism, both European and American. Consider, for instance, these words of Hjelmslev:

> D'une facon générale le système casuel n'est presque jamais le même en passant d'un état de langue à un autre. Les significationu assignées à la catégorie des cas sont reparties differemment sur les cas reconnus par la langue en question. Il n'y a pas un seul cas finnois dont l'étendue de signification soit le même que celle d'un cas de l'allemand. Cela n'empêche pas de reconnaître que le finnois possède des cas au même titre que l'allemand. De même, en passant d'un système casuel exprimé par des formants explicites à un autre exprimé par des formants implicites, les significations de chacun des cas deviennent differentes, mais la catégorie des cas ne cesse pas pour cela d'exister. (1935, p. 69.)

For Hjelmslev, the system of formal oppositions which made use of a certain set of categories was the essential feature of case-theory. The categories he uses have a certain intrinsic semantic content (e.g.

direction, coherence, subjectivity): but the array of possible semantic relations that they implicitly define has no independent status, and no role in universal grammar. The categories are used, often very metaphorically, simply to give reasons for fitting each case into its place in the matrix.

Closer to home, the "Revised Extended Standard Theory" (REST), aspects of which are discussed in Chomsky and Lasnik 1977 and Chomsky forthcoming, might also be seen in this light. In that theory, Deep Case relations, (like all other semantic properties with which the theory deals), are derived from properties of some level of syntactic structure:

> We assume further that semantic relations such as Agent, Goal, Instrument, etc. (what have been called 'thematic' or 'case' relations in various theories) are determined by the interaction of deep structure configurations and lexical properties. Under the trace theory of movement rules, which we assume here, surface structures suffice to provide the relevant configurations, carried over under transformations from deep structure. (1977, pp. 448-9.)

Left like this, we should assume that the relations in question were being left to follow as a corollary of certain properties of syntactic structure, with an extra sprinkling of randomness added by lexical influence. Chomsky and Lasnik do, however, mention immediately below that there are extra well-formedness conditions on Logical Form to be specified (LF is the nearest thing REST possesses to a semantic representation): so it is possible that this work might be supplemented with a theory of the constraints holding on these semantic relations. (The prospects for the incorporation of an adequate representation of functional structure into REST are discussed in 1.4.1.3. below).

It is noteworthy, however, that additions to REST having to do with Case, proposed in Chomsky forthcoming all concern the use of case-marking as a further formal constraint on the well-formedness of surface structures: that is to say, they are a further elaboration of (2).

It does not seem to be possible to devalue (3) in a corresponding way: clearly, such formal properties of sentences as the case-inflexion of their nouns and the diathesis of their verbs have something to do with their predicate-argument structure. But theories will, of course, differ in their accounts of how this relation is mediated. Classically, analyses veering towards a 'generative-semantic' approach have viewed the relation as an operation on semantic representations to obtain formal structures; those with an 'interpretivist' bent will see the operation working in the opposite direction. Considering that sentences must clearly have both a formal analysis and a meaning, it is not immediately obvious why it should matter which of these is taken as primary. But it is understandable that those who see the interesting aspect of Case as lying in the Deep Case relations of predicate and argument should take these as a desirably concrete base of operations for the generation of the formal structures; whereas their opponents will find it natural to start from the other end.

In this work I shall take the position that there is something interesting to be said about each of the three aspects of Case Grammar that I have distinguished.

First, I shall claim that there is a universal set of predicate argument relations; and that these follow from a certain theory of Functional Structure (henceforth, FS), which is appropriate universally as one component of the semantic representation of sentences. Essentially, I offer the basis for a theory of the internal structure of the predicate, distinguishing different types of argument, which will be called roles. The basis for the classification is a set of cross-cutting features, role-features, whose fundamental interpretation is localistic.

Second, I maintain that many of the formal categories which characteristically designate how NPs are to be associated with roles (e.g. formal case-marking on nouns, verbal voice-marking, word-order) are affected in their incidence by purely formal, syntactic properties of the grammar, which have nothing to do with meaning or interpretation. In particular, I shall argue that some case-marking of nouns is assigned on the basis of the noun's structural context within the sentence. Quite aside from the interest of their morphological paradigms, then, there are formal generalizations to be captured here which have nothing to do with what the forms in question signify. The essential items here are called Formal Cases, which are assigned to NPs in phrase-structural configurations. Their morphological realization can take various forms, of which the most characteristic are case-inflexions and pre- or post-positions.

And third, I suggest that the correlation between Functional Structures (FS) and Syntactic structures within the domain of Case Grammar is best thought of as a system of Linking Rules (cf. Carter 1977) which simply establish the alignment of NPs and roles, without taking either one or the other as primary. The Linking Rules are of two types: Semantic Linking Rules, which align a given formal case with a natural class of roles in FS; and Grammatical Linking Rules, which refer to hierarchies defined implicitly both on semantic roles and formal cases, in order to link highest with highest, lowest with lowest, etc.

This linking of role and formal case is very largely mediated through the lexical entry of the predicate-word in question: linking rules fill out the content of lexical entries, a fact that makes them, from one point of view, a highly specific form of lexical redundancy rule. Lexical entries play an important part in the linking mechanism of the grammar, then.

But besides this part in the linking of even the simplest sentences, lexical entries are important in the generation of the different diatheses of predicate-words. 'Diathesis' is used in this work in an extremely wide sense, to cover any derived form of a predicate-word which might affect its complement of NPs. Hence within English, for example, the comparative and superlative forms will be diatheses of the adjectival inflexion (they make possible extra than+NP and of+NP complements respectively), the past participle a diathesis of the verb. Other languages are richer than English in this respect: within the Sanskrit and Japanese verbal paradigms, for instance, we find derived passive, causative and desiderative inflexions, as well as various participial and agentive formations, all of which may, in some cases, affect the linking and the case-marking of co-occurring NPs. Following Bresnan's Realistic Transformational Grammar model (and in coincidence, also, with the Lexicase framework — cf. Starosta 1978), we account for these systematic changes by postulating lexical rules, which create derived lexical entries with the required properties for the diathetical forms. The formal constraints on these lexical rules, as on the lexical entries which they modify, is a matter to which we give some attention.

In the following sections of this chapter, we shall expound in much greater detail the various components of the theory, drawing attention to differences with, and parallels to, other theories in the field. Since the theory is intended as a contribution to universal grammar, we shall try to give some breadth to our choice of languages for examples. However, the adequacy of a theory is tested as much by its capacity to give a thoroughgoing analysis for a single language as in reflecting superficial properties of a large number of them.

The following chapters apply the theory to a range of Sanskrit case and diathesis phenomena. This account is not complete: in particular, no account is given of the government of formal case by Sanskrit adpositions, nor of the middle, causative or desiderative diatheses of Sanskrit verb. But it is hoped that the topics covered, which include all the inflexional cases, as well as Transitivization and Passive in the Sanskrit verb, will be enough to allow some assessment of the potential of Case Linking, and its utility in the full-scale analysis of a language. An example of its application to very different phenomena in Japanese can be found in Ostler forthcoming.

In the sections that follow, we treat first the formal, syntactic, aspects of Case, which we have designated (2) in this introduction. Our discussion of these constitutes section 1.2. This is followed by section 1.3, which outlines the system of Functional Structure (1), and section 1.4, which explains the principles by which the formal case-markings are associated with functional roles — Linking (3). After these three major sections, which contain the substance of our contribution to the analysis of Case as such, section 1.5 suggests how the ideas can be implemented within a particular theory of Lexical Entries and their interactions with sentence, syntax and interpretation. This section also takes up the theory of predicate diathesis within this theory.

1.2 STRUCTURALLY INDUCED CASE

1.2.1 INTRODUCTION

Our decision to consider one part of the formal mechanism available
for expressing functional roles, viz. the formal case-markers, before
giving an account of the roles themselves, is advantageous in the long
run: there are intricate and intrinsic connexions between functional
structure and the principles of Linking which make it convenient to
analyze them one after the other: Linking's connexion with the intrinsic
properties of the surface cases, on the other hand, is more remote. But
it leaves a slight problem in the short run, since without knowing what
the functional roles are it is difficult to pinpoint which mechanisms of
language are relevant to their expression. Hjelmslev remarks that this
difficulty was never really overcome by pre-modern linguistics, which
could never offer a unified conception for the meanings of the categories
of case inflexion:

> ...le paradigme concret qui se présente à l'observation avant
> toute analyse, se divide en trois catégories, dont les deux, celle
> du nombre et celle du genre, reçoivent des definitions qui permet-
> tent une délimitation rigoureuse. La troisième, qui a été de tout
> temps considérée comme la principale, n'a reçu aucune définition
> exacte, et est restée une résidue inexpliqué, où dont on s'est
> disputé l'explication.

> ...C'est ainsi que la définition provisoire que l'on a dû donner
> a la catégorie casuelle est celle qui consiste à définir les cas
> comme ce qui reste dans la declinaison quand les catégories de
> genre et de nombre en ont été écartées.   (1935, p. 74.)

For modern theories, on the other hand, the problem has been at once solved and dissolved. On the one hand, we can offer a unified system of concepts, which come as close to the 'distinctive meaning' of the formal category of Case as sex and cardinality do for the other two categories of nominal inflexion of Indo-European, viz. Gender and Number. This system is to be expounded in section 1.3. But on the other hand, if we take the view that language is a natural phenomenon with its own natural order, there is no longer any need to provide rigorous delineations of the various aspects of it that we study. They should have an internal coherence of their own; and it is no more necessary for a linguist studying the system of formal cases to begin with a formal criterion of what is to count as a case, than it is for a biologist to begin with a strict definition of Mammal, which might quite arbitrarily exclude a natural member of the class hitherto unknown, just like the platypus.

Our designation "the formal mechanism used to express functional roles", then, is intended as a pointer, nothing more. The formal mechanism may express other semantic relations; and there is no guarantee that the parts of the entity that fall under the designation will form a single coherent whole. In fact, there is prima facie reason to believe that they do not, since both categories of verbal inflexion (diathesis) and nominal inflexion (Case proper) are important here. This section will concern itself exclusively with the latter: diathesis is postponed until section 1.5.

We shall be concerned with this mechanism of nominal marking from a purely syntactic point of view. All connexion with 'meaning' is deferred to section 1.4, on Linking. And we are not concerned with the precise realization of these instances of the Case category morphologically. Some

languages will use complex processes of inflexion (e.g. Latin, Sanskrit, Russian); others use relatively simple processes of affixation (Turkish, Warlpiri), or use accompanying particles before or after the work in question (Cebuano, Japanese); some languages may make such marking comprehensively obligatory on all nouns; others (as English, Chinese) may restrict explicit formal marking very severely. We shall however assume that all languages make some use of the category whose instances are variously labeled in the grammars of the world's languages as Nominative, Absolutive, Accusative, Ergative, Genitive, Dative, Ablative, Partitive, etc., etc. It is clear that all these cases play a role in the determination of their noun's semantic relation to the predicate of the sentence: what concerns us here is whether anything can be said as to the relation between their incidence and the formal syntax of a sentence.

An answer to this question can only be given convincingly in the context of an extended analysis of a particular language's grammar. Only in such a framework is it possible to see whether a superficially plausible idea is likely to be true or merely specious. Such an extended analysis, of the syntax of Sanskrit sentences, is given in chapter 2 of this work. There the hypothesis of structurally induced incidence for the cases Nominative, Accusative and Genitive is explored, however, it cannot be claimed that there is telling evidence in favour of this analysis, as against others which might attribute less phrase structure to the Sanskrit sentence. It seems, therefore, that the concept of structurally induced case, which has a distinctive place within the framework of Case Linking theory, could usefully be given some further support here.

1.2.2 THE ADNOMINAL GENITIVE AND THE POWER OF STRUCTURAL ·CASE-MARKING

The first such support that we offer comes from the realm of the quasi-universal phenomenon of Adnominal Genitive.

There is no room here for an extended analysis of any of the languages in question; but the fact remains of prima facie evidence from a number of sources that there is a necessary connexion between the incidence of a certain case, the Genitive, and structural configurations where there is a noun dependent within a phrase of a nominal type, i.e. a noun-phrase or adjectival phrase. To illustrate this claim we give below example sentences which exemplify the following facts about the languages in question:

1. A certain morpheme is used to express some functional role when used within the context of a finite sentence. It is clearly a Case-marker: i.e. part of the formal mechanism of the language available for expressing functional roles, and attached particularly to nouns.

2. This same morpheme is used to mark nouns occurring adnominally, i.e. as dependents of some nominal head, viz. a noun or an adjective. The only constant in such constructions is that the head must be of this syntactic category: the meaning relations between marked noun and head are too various to have any non-vacuous semantic definition.

   A. Finnish (courtesy of Lauri Henrik Carlson)

      (1) a. Louhe-n kavi huonosti   (Used in finite sentences)

            LouhiG went3sg badly

            'It went badly for Louhi (the Old Woman of the North).'

b. Louhe-n onnistui paeta   (do.)

   LouhiG succeeded3sg
                       escapeINF

   'Louhi succeeded in escaping'

(2) a. Väinamöise-n kannel   (Possessor)

      Vai.G   zither, kantele

      'Väinamöinen's kantele'

   b. hintoje-n nousu   (Theme)

      pricesG rise

      'the rise in prices'

   c. kansa-n tahto   (Mental agent)

      peopleG will

      'the people's will'

   d. Lemminkäisen sotaanlähtö   (Agent)

      Lemm.G   going-to-war

      'Lemminkäinen's going to war'

   e. Lemminkäisen henkiinherättäminen (Patient)

      Lemm.G   resuscitation

      'the resuscitation of Lemminkäinen'

   f. potilaan on vaikea hengittää   (Dependent on
                                        adjective)
      patientG is difficult breatheINF
                   ADJ
      'It is hard for the patient to breathe.'

B. Hindi (cf. Kellogg 1893, pp. 412ff.)

   (1) a. ṭaṭṭū ke bhī jīv hai   (Used in finite
                                        sentences)
         pony GEN too soul is

         'The pony too has a soul.'

(In Hindi the genitive case particle is inflected to agree with its head

noun: kā masc.sg., kī fem. The form ke is used for the masc.pl., and also

as here where the particle is used non-adnominally, i.e. without a head

that is a noun. Adjectival heads (cf. (2)f. and g. below) also use this form.

(2) a. rājā kā mandir   (Possessor)

       king G palace

       'the king's palace'

   b. jagm ke bhikhārī   (Respect,
                                      Characteristic)

       birth G beggars

       'beggars by birth'

   c. khāne kā padārth   (Purpose)

       eating G provision

       'provisions for eating'

   d. mujhe dir kiskā hai   (Mental Object)

       meD fear whoG is

       'Who do I fear?'

   e. kañcan ke mandir   (material)

       gold   G temples

       'temples made of gold'

   f. calne ke lāyak   (dependent on adjective)

       walking G fit

       'fit to walk'

   g. keval tap ke dhanī   (do.)

       only penanceG rich

       'rich only in austerities'

C. English

   (1) I told him <u>of</u> the events.

      It does not admit <u>of</u> exceptions.

(2) A man of property

The property of the man.

A pearl of great price.

The defeat of Byzantium.

The victory of Byzantium.

Proud of our Albert.

Ashamed of one's doings.

Desirous of further conquests.

Similar phenomena are reportable for the genitive in many (if not all) Indo-European languages, for -nin in Turkish and no in Japanese though for some of these it is difficult to find any use other than the adnominal one for the morpheme in question.

Assuming that Universal Grammar is responsible for giving some sort of account of this joint phenomenon (though admitting that a serious analysis would have tᴏ be based on a much more thoroughgoing statement of the relevant facts for each language in turn), the question arises as to how the syntax is to treat the connexion between adnominal dependency and the genitive. Two options suggest themselves.

One is to make genitival case-marking a consequence of the phrase structure rules -- by assigning a certaᵢn feature specification (abbreviated here as GEN) to any $\overline{\overline{N}}$ occurring in the output of a rule with $[\overline{+N}]$ as the input.

$$(1.1) \quad [\overline{+N}] \longrightarrow \quad \ldots \quad (\underset{GEN}{\overline{\overline{N}}}) \quad [+N] \quad \ldots$$

This captures the facts of adnominal dependency. ' + N ' represents the feature of 'nominality' shared by nouns and adjectives (cf. Chomsky and Lasnik 1977, p. 430); and by the X Bar Convention (cf. Jackendoff 1977),

[$\overline{+N}$] will represent any phrasal category of the first order which has this feature, ambiguously NP or AdjP. Alternatively, within a dependency rather than a constituency framework, a rule could state that nominals receive genitive-marked nouns as their dependents, without postulating any higher phrasal node at all. (For a discussion of the relation between dependency syntax and the X Bar Convention, see Ostler 1979, where the rule for Adnominal Genitive also figures as a crucial example.)

It is often assumed that there is a problem in such a use of PS rules: that $\overline{\overline{N}}_{GEN}$ is, by its position in the PS output, made a unitary symbol which would have nothing in common with other $\overline{\overline{N}}$s: hence that is is useless as a representation of "the $\overline{\overline{N}}$ with the following extra property ...".

But nowadays syntactic categories are themselves viewed as complexes of features (cf. Jackendoff 1977, pp. 31ff.) with significant internal structure, so that PS rule schemata, for instance, may refer to underspecified complexes of these features (cf. Jackendoff 1977, pp. 81ff., and Gazdar 1979, Appendix C). So there can be nothing wrong in adding an extra feature or two to the $\overline{\overline{N}}$ complex in order to specify Case: this will not impair the functional unity of $\overline{\overline{N}}$ for other purposes.

A problem remains for the interaction of syntax and morphology, for the Genitive morpheme will typically be attached to the noun which is the head of $\overline{\overline{N}}_{GEN}$, not to the phrase as a whole. Cf. section 2.7 for a general discussion of the formal options open here.

Opposed to this phrase-structure mechanism is the option of positing an additional rule of Case Marking, sensitive to the structural position of the noun or NP marked. This has been proposed by Chomsky <u>forthcoming</u> in a set of case-marking rules for English. This is not just a 'nota-

tional variant' of the PS proposal, since there are significantly fewer re-strictions on the contextual specifications possible with such a marking rule. A context-free PS rule is, by definition, restricted to mentioning nothing more than the immediately dominating node. It cannot refer to the syntactic context of that node, nor to any higher node. In Chomsky forth-coming, the greater power is used to make reference to facts of Government (or rection), though these are not formally analyzed in terms of command and indirect dominance, as they might perhaps be. However, there is a fairly strong argument from Japanese genitive placement that the PS formu-lation of case-marking is too weak, and a stronger, separate, rule of Case Marking is required.

The Japanese particle no is a classic genitival marker, as the fol-lowing examples show. It has a very wide adnominal use, although it seems to be without use as a case particle in simple finite sentences. (Cf. Be-dell 1972 for more details on its syntax.)

(1.2) a. ano hito no boosi   (Possessor)

       that man G hat   'that man's hat'

b. boosi no hito   (Characteristic)

       hat   G man   'the man in the hat'

c. Minamoto Yoritomo no e   (Mental Object)

       Minamoto Yoritomo G picture

       'the picture of Minamoto Yoritomo'

d. Pikaso no e   (Agent)

       Picasso G picture

       'a picture by Picasso'

e. Amerika no tanken   (Patient)

       America G exploration

       'the exploration of America'

f. Igirisuzin no tomodati   (Predicate)

    Englishman G friend

    'my friend the Englishman'

In Japanese, adjectives have, in general, far less in common syn-
tactically with nouns than with verbs: so it is not surprising that no is
not found used to mark adjectival dependents.

However, no's association with adnominal dependents is not limited
to these instances of one noun directly dependent on another. No is also
used optionally to substitute for the nominative ga marking, when this oc-
curs on a noun inside an adnominal sentence -- i.e. in a relative clause,
pseudo-relative, or nominalization equivalent to something like the English
'the fact that ...'. Hence we find:

(1.3) a. [Taroo ga/no yonda]$_S$ hon

          Taro NOM/GEN read book

          'the book that Taro read'

       b. [gasu ga/no hidoku moreru]$_S$ nioi

          gas NOM/GEN awfully leak   smell

          'the smell of gas leaking awfully'

       c. [kare ga/no supootu ga/no heta na]$_S$ koto nara ...

          he NOM/GEN sportsNOM/GEN in- be thing if-it-is
                                    compentent ᵢ

          'if it's the case that he's bad at sports ...'

                    (Examples b. and c. from Martin 1975, p. 660.)

The alternation seems to be remarkably sensitive to the synchronic
status of the heads of these clauses as nouns. Martin 1975, p. 661, reports
that the alternation is not possible in clauses that look like adnominal
sentences, but where the head so commonly receives an adnominal sentence
that it has come to be felt as no more than a clause auxiliary -- cf.

(1.4) a. John ga/*no kita yoo desu

JohnNOM/GEN came appear- is
                            ance

'It seems that J. has come.'

b. Mary ga/*no kuru hazu desu

MaryNOM/GEN come expec- is
                            tation

'Mary is likely to come.'

Since both this no and the more orthodox genitival no are both cued
by contexts where one NP is directly or indirectly a constituent of another
NP, i.e. dependent on a head noun, it would clearly be a gain to the gram-
mar of Japanese to unify these two rules. In Ostler 1978 I have shown how
this can be done within a general theory of Japanese case marking and link-
ing, not too different in principle from the one to be developed in this
work for Sanskrit. (Within this framework, the alternation with ga follows
from the linking rules for ga and no, and has nothing to do with the syn-
tactic questions at issue here.)

However, it is clear that if we accept such a solution we forfeit
the claim that the restricted, phrase-structural theory of structurally
induced case-marking could be adequate: for the Ns marked with no in (8)
are not immediately dominated by N, as (1) would required. An S intervenes.

In fact it seems that there is no restriction that can be placed on
the degree of depth to which this marking of virtual nominatives with no
can apply. It can reach down into S marked with the complementizer to as
(1.5) shows:

(1.5) [utyuuhikoosi no [[tuki ni seibutu ga/no inai]$_S$ to]$_{S?}$iu happyoo]$_N$

       astronaut GEN   moonDAT living-NOM/GEN   COMP say announce-
                          thing   be-not   ment

'the astronaut's announcement to the effect that there was no
life on the moon'

Instead of the PS rule in (1.1) we shall need a case-marking rule of a transformational type. A possible formulation is given in (1.6).

(1.6) SD: Non-final $\bar{\bar{N}}$ inside $\bar{\bar{N}}$

SC: Mark with Genitive

The terming of this rule as 'transformational' is not intended to have theoretical import, beyond the point that it is intrinsically more powerful than a PS rule. As it happens, (1.5) also suggests that it is not subject to the proposed constraint on the application of transformations called Subjacency (cf. Chomsky 1973, p. 247) since no such rule is expected to operate directly across the boundary of a cyclic node. Either S or $\bar{S}$ is likely to be cyclic.

This is the only evidence known to me that rules of structurally induced case <u>cannot</u> be formulated universally as a type of PS rule. In deference to it, all the rules of structurally induced case in this work are formulated as case-marking transformations applying to phrase structures. But it would be a significant advance for the theory if a way round this evidence would be found: for then we might make the claim that the only effect of structure on Formal Case was by context-free PS rule -- a claim that would both simplify and constrain the treatment of case within formal syntax.

1.2.3 JAPANESE CASE ARRAYS AND THE STRUCTURAL CONTEXT OF PARTICULAR CASES

More evidence for the existence of structurally induced case inci-
dence comes from a more central area in the Japanese case system. Shiba-
tani 1977 has postulated a "Surface Case Canon" for Japanese as in (1.7).

(1.7) NOM_1^n DAT_0^n ACC_0^1 ...

> "The schema states that, at the surface level, a non-embedded clause
> of Japanese may have more than one NOM NP, but it requires at least
> one such NP. Optional ACC and DAT NPs have different restrictions;
> only one ACC NP is allowed, while more than one DAT may occur."

Here NOM, DAT and ACC refer to NPs marked with ga, ni and o respectively.

This canon acts to explain restrictions on a number of alternations
found in Japanese. Most saliently, it accounts for the following three
facts.

A. Restriction on o-Causativization

Whereas there are two possible causative forms corresponding to
intransitive verbs, transitives are only allowed one. E.g.:

(1.8) a. dare ga waratta ka   b. Taroo wa dare ni/o warawaseta ka

           who NOM laughed ?   Taro TOP who DAT/ACC laugh-   ?
                                                                caused

           'Who laughed?'   'Who did Taro cause to laugh?'

(1.9) a. dare ga hon o yonda ka

           who NOM book ACC read?

           'Who read a book?'

       b. Taroo wa dare ni/*o hon o yomaseta ka

           Taro TOP who DAT/ACC   ACC read-
                                   book   caused?

           'Who did Taro cause to read a book?'

The ACC maximum in (1.7) eliminates the o̲ version of (1.9)b.

B. Restriction on 'adverbial' accusatives

A. generalizes even to accusatives which represents directional path or source added to intransitive verbs of motion. E.g.:

(1.10) a. Yooko wa (hamabe o) aruita.

Yoko TOP beach ACC walked

'Yoko walked (along the beach).'

b. John wa Yooko o (*hamabe o) arukaseta

John TOP Yoko ACC beach ACC walk-caused

'John had Yoko walk along the beach.'

However, in this case, the possibility of pseudo-clefts as in (1.11) demonstrates that there is nothing wrong with the purported meaning of (1-10)b. + hamabe o.

(1.11) John wa Yooko o arukaseta no wa hamabe (o) desita

John TOP Yoko ACC walk-   one TOP beach ACC was
                 caused

'Whta John had Yoko walk along was the beach.'

It is just that, with hamabe o, (1.10)b. would contain more than the maximum of accusatives for a single clause. The "Double o̲ Constraint" formulated by Harada 1973 is a special case of (1.7), which similarly eliminates the starred variants of (1.9)b and (1.10)b.

C. Restriction on Dativization

In connexion with the potential diathesis of the Japanese verb (and also certain simple verbs), simple sentence accusatives may be replaced by nominatives.

(1.11) a. dare ga eigo o hanasu ka

who NOM English speak ?
            ACC

'Who speaks English?'

  b. dare ga eigo o/ga hanaseru ka

   who NOM English speak- ?
         ACC/NOM can

  'Who can speak English?'

Furthermore, if a double nominative is created in this way, the original nominative can be replaced with dative marking n̄i.

  (1.12) a. dare ni eigo ga hanāseru ka

    who DAT English speak- ?
          NOM can

   'Who can speak English?'

But this dative-replacement is blocked in the case of transitives whose object still appears marked with o, and also in the case of all intransitive verbs:

  (1.13) *dare ni eigo o hanaseru ka
      DAT ACC

  (1.14) dare ga/*ni moo arukeru ka. akatyan desu yo.

    who NOM/DAT already ? baby is
         walk-can

  'Who can walk already? Baby can.'

These facts follow from (1.7), since (1.13) and (1.14) with ni both lack the minimum of one nominative.

To account for these facts, Shibatani has appealed to (1.7), a surface filter which is baldly stipulated and follows from nothing. But is is easy to show that the same facts emerge from a theory which makes the incidence of nominative ga and accusative o contingent on the immediate dominance of S and V respectively. Postulate for example a fairly orthodox set of PS-rules (given the X Bar Theory of Jackendoff 1977) as in (1.15).

(1.15) a. S $\longrightarrow$ $\bar{\bar{N}}$ $\Big\{$ S

   b. $\bar{\bar{V}}$

   c. $\bar{\bar{V}}$ $\longrightarrow$ $(\bar{\bar{N}})$* V

   d. $\bar{V}$ $\longrightarrow$ $(\bar{\bar{N}})$ V

Now if we posit case-marking rules as in (1.16), (1.7) emerges as the surface case canon generated by the rules in toto.

(1.16) <u>Case Marking</u>

   a. Mark $\bar{\bar{N}}$ immediately dominated by S: Nominative

   b.   " $\bar{\bar{V}}$: Oblique

   c.   " $\bar{V}$: Accusative

S is a recursive node by rule (1.15)a., and a sentence will have just as many nominatives as there are S's — for, by (1.15)a. and b., every S will immediately dominate one N. Since S is the initial symbol, there will be at least one in every sentence's structure, and hence by (1.16)a., at least one nominative. This accounts for NOM_1^n. There will be any number of oblique-case Ns by rules (1.15)c. and (1.16)b., and this accounts for DAT_0^n, provided that we identify oblique-case with dative (something of an oversimplification, but not essentially vicious). ACC_0^1 follows from the interaction of rules (1.15)d. and (1.16)c.

Naturally this will not do for a complete PS analysis of Japanese, any more than (1.7) will suffice as a complete representation of Japanese surface NP patterns. But it will form the essential core of an analysis of the structurally induced cases of Japanese.

Of course, in identifying the output of our rules with Shibatani's surface canon, we are presuming that nothing like the transformations postulated by Shibatani intervenes between the PS and the surface structure of Japanese sentences. In fact we postulate lexical rules of the type argued

for in section 1.5.3 below to account for the phenomena traditionally ana-

lyzed in terms of causativization, potentialization transformations etc.

(For details of the particular analysis suggested for some of the Japanese

diatheses, see Ostler _forthcoming_.)

In one point the analysis given above differs from the predictions

of the Shibatani Surface Case Canon. This is in the handling of accusatives.

Our theory is not committed to introduce all of them by (1.15)d. and (1.16)c:

it is possible that some of the accusatives, set apart as adverbials, might

be generated as a species of oblique-case marking. (They would in any case

need to be interpreted separately from the other accusatives, by Semantic,

rather than Grammatical, linking -- see 1.4.5 below.) If so, then we should

expect considerable laxity in the 'Double o Constraint' when it affects

these accusatives. This expectation is in fact borne out. For, as the fol-

lowing examples, quoted from Martin 1975, p. 255, show, the generalization

will need to be severely weakened in just this area in order to be adequate

to the facts of the language.

(1.17) a. hikooki o anzen ni Haneda o tataseru tame ni ...

　　　　　　plane ACC safely   Haneda ACC leave- for-the
　　　　　　　　　　　　　　　　　　　　　　　　　　cause purpose

　　　　　　'In order to have planes leave Haneda safely ...'

　　　　b. yoru no haiuee o kare wa kuruma o hasiraseta ...

　　　　　　evening G highwayACC he TOP car ACC run-caused

　　　　　　'He sped the car down the night-darkened highway ...'

　　　　c. kodomo o benti o tataseta

　　　　　　child ACC benchACC stand-caused

　　　　　　'He made the child get up from the bench.'

This suggestion of a multiple origin for Japanese accusatives gives

an opportunity to point out that not all case is structurally induced. With-

in Japanese, a whole host of different cases and types of postpositional phrase might be introduced under the Oblique category; and within Sanskrit, as we shall see in some detail (2.3 below), the $\bar{P}$ node covers a considerable variety of constituents. The choice of these elements is subject to no syntactic conditioning at all; it depends simply on whether they can be linked with some role in FS. Within syntax, then, we may simply say that the different elements we generated freely under an appropriate general node. (For a short discussion of the connexion between structurally induced case and grammatical linking, see 1.4.9 below.)

If this new analysis is correct, it will mean considerable progress in our understanding of those mysterious entities of Universal Grammar, nominative, accusative and genitive. For it will mean that in two languages as different as Japanese and Sanskrit, the essential generalizations about the incidence of these central cases will have been explained on the basis of a common hypothesis: viz. that the nominative is the case of the NP directly dominated by S, the accusative that of the NP directly dominated by $\bar{V}$, and the genitive that of the NP dominated (as in the case of Japanese, even indirectly) by $\bar{N}$. (See 2.6.7 below.)[2] This is all the more interesting, since the Linking rules for these cases within Sanskrit and Japanese differ quite considerably.

Even if the strong hypotehsis proves to be wrong, the facts adduced here in connexion with Shibatani's canon are important. For they, like the facts of adnominal genitive incidence in 1.2.2, and the facts explained by formal case-marking and syntactic filters in Chomsky forthcoming, all help

---

[2]For reasons explained ad loc., the formulation of the Sanskrit case-incidence rules as in fact in terms of c-command rather than dominance. But the point is an extremely technical one, and may be mistaken. At any rate there is no doubt about intrinsic connexion between NOM and S, ACC and verbal phrases, GEN and nominal phrases.

to show that there really is a domain for Formal Case Theory -- syntactic generalizations which make crucial reference to cases, but which are independent of those cases' semantic force.

1.2.4   FORMAL CASE AND MORPHOLOGY

This work will not devote much attention to details of the morpho-
logical exponence of the formal cases, nor offer a complete theory of the
interaction of morphology with syntax. However, some suggestions are made
in this direction for Sanskrit, in 2.2.2 (on finite verbal morphology) and
in 2.7 (on case inflexion). Lapointe forthcoming is a work devoted to the
general questions at issue here.

Some remarks are in order, though, on the bounds that this work
will set to the concept of 'case-marking'. A line has to be drawn some-
where on the morphological continuum that extends from word-internal case-
inflexion, through affixes and adpositions, to prepositional phrases,
which are really nothing other than complexes of nouns (e.g. in English,
through the agency of, in the place of). How many of these will be ana-
lyzed as formal cases, and how many as lexical heads in their own right,
governing formal cases of their own? There is a parallel question for
functional structure, of course: how many represent distinct participant-
roles with a place in the system of FS, and how many represent meanings
which give a further specification of a particular role?

As with all questions about the adjudication of borderline cases,
no answer is possible until a theory has been suggested. Even then, how-
ever, each language will require answers of its own. In Sanskrit we give
a theory of sentence-structure in which all cases and adpositional phrases
can occur under a common node $\overline{P}$, but only nominative, accusative and geni-
tive are, in addition, structurally induced. The Normal Hierarchy postu-

lated as the core of the Linking rules, mentions only accusative, genitive, instrumental (and implicitly nominative): all other cases are always semantically linked. Yet there is no sense in which the morphological formation of these special cases is distinguished from that of the other inflexional cases -- indeed, the genitive singular is, within most form-classes of nouns, indistinguishable from the ablative singular.

The examples of Sanskrit semantic linking given in 3.1 are all restricted to the analysis of inflexionally-marked cases: but all Japanese case is marked with postpositions, and in the section on Turkish, an account is given of two simple postpositions as well. There is no reason to suppose that semantic linking in these languages is restricted to quite the same extent that our account is.

A supplement to the system of semantic representation provided by FS will be needed for those meanings whose detail exceeds the fairly gross distinctions needed to separate one participant-role from another. For example, the sphere of possible locational distinctions is grossly underdetermined by the division into Locus, Goal, Source and Path. We shall make no serious suggestions on this score, though occasionally, e.g. in 4.4.2, an ad hoc notation is introduced in order to bridge the gap. Once again there is no reason to suppose that there will be a clear-cut correlation of morphological exponence-type with the grosser as against the more finely detailed meanings. Finnish, for example, has a system of case-inflexion which distinguishes locational meanings quite finely; in Turkish, on the other hand, the same semantic ground is covered by postpositional phrases composed of the oblique forms of various independent nouns of position (like English top, bottom, front etc.).

If there is any generalization to be made about the relation between morphological exponence and formal case, it will have to be at the level of general tendencies. If we posit once again the morphological continuum from inflexion through to adpositional phrases, it seems to be true that structurally induced cases are more likely to be at the former end than the latter. This generalization is comparable with that which associates inflexion with grammatical linking at the end of 1.4.9 below. It is doubtful whether the study of morpho-syntax will yield any sharper or more vigorous general principles than these. But we live in hope.

1.3 FUNCTIONAL STRUCTURE

1.3.1 INTRODUCTION

In this next section our aim is to uncover the internal structure of the predicate from the point of view of its meaning. We ask: what sorts of predicates are there, and how do the different sorts relate to the different arrays of functional roles with which they can be interpreted?

In our discussion of these questions, which terminates in a proposed typology of predicate meanings and a classification system for the functional roles, we shall not appeal to facts of particular languages. Instead, we lead the reader, via a number of considerations of a philosophical nature, to the system that we have in mind. This system is localistic: its primitive components can be understood as relations of position and motion in space, interpreted more or less metaphorically (cf. Anderson 1971, esp. pp. 12-3, on this term). The argument is of a philosophical and methodological kind, since an organized series of appeals to plausibility is all that is needed at present. The previous systems which might be considered as rivals to the one proposed here, from Panini's kārakas through to Jackendoff's Thematic Relations, are very little at variance with what is prpposed here: essentially, our system can be viewed as an extension of the various suggestions from the past, more informative, systematic and complete than any of them. This near unanimity of previous theorists on a topic in the area of conceptual structure -- where the imagination is subject to few empirical constraints -- is impressive in itself.

Furthermore, the fact that we have abstained from purely linguistic evidence in this section will in the end strengthen the claims of the systems to validity: in the sections that follow, especially 1.4, it will be seen that this purely notionally-based system is extremely convenient for the expression of generalizations about linguistic facts. When the interpretation relation is formulated in the right terms, as a Linking theory, the consensus picture of Functional Structure, once systematized, can throw a lot of light on Case Grammar. And the benefit is mutual: in line with the program proposed in Jackendoff 1978, Grammar as Evidence for Conceptual Structure, evidence from case-marking and diathesis tells us something of the properties of what the characteristically human way is of viewing the world.

1.3.2 PREVIOUS APPROACHES

1.3.2.1 LOGIC & PHILOSOPHY

In approaching the question of an appropriate form for Functional Structure, we are attempting to build up a level of representation on a par with the traditional notation of symbolic logic, due essentially to Russell and Whitehead's <u>Principia Mathematica</u>. In that system, and in all well-known developments of it, a predicate is represented as a primitive symbol. Arbitrary stipulations may be made as to how many arguments a given predicate takes, and as to the types of entity which may be entered in each of the argument-places (e.g. individual, property, set, function, etc.). But no theory of componential analysis for predicates has been given, which might establish a link between the semantic type of a predicate and its combinatorial properties as to types of argument.

Within logic, this is perhaps justifiable: within its traditional frame of reference, objects are classified in terms of their ontological status: there is no purchase for a theory that would aim to classify arguments with respect to their participant role in a predicate. As a result, when the resources of mathematical logic are pressed into the service of grammar (as, <u>par excellence,</u> in Montague 1974), we are offered a formalism which can tell intensional objects of verbs from referential ones, but cannot tell agentive from non-agentive subjects. Intensionality can be made to inhere in the entity that acts as argument, whereas agentivity must follow from the nature of the relation between predicate and argument.

There has been no attempt, within this tradition, to ground the different functional roles, their interrelations within a predicate, and their connexions with different types of predicate, in a more fine-grained analysis of the internal structure of the predicate. Simply to state that, by convention, the first argument of some predicates will be interpreted as the predicate's agent, the second its patient, and so on, does not amount to such a theory: it tells us nothing about the logical relation which holds between two entities when one is the agent and another the patient of some predicate; it tells us nothing about what the properties of a predicate are which enable us to call one of its arguments its agent. (This latter point is the essence of the question "How do actions differ from other predicates?")

Potts 1978 has a good idea of the problem, although he does not move us very far towards a solution. Aspectual theories like those in Dowty 1972 and Nordenfelt 1977 give componential analyses of predicate meaning which incidentally throw some light on the relation of verbs to the functional roles of agent, cause and instrument. But illumination of functional roles is not their main aim; and they do not extend the analysis to other roles.

1.3.2.2 FILLMORE'S 'CASE GRAMMAR'

Such explicit theories of functional roles as have been given

within the purely linguistic literature have tended to take the roles as

primitives, without giving an accompanying theory of predicate structure

to integrate them. Most notable in this reppect is Fillmore 1968, where

notional definitions in terms of states and actions are given for a number

of roles (called 'Cases'). These definitions are set out here so that they

may be conveniently compared with what follows:

> "The cases that appear to be needed include:
> Agentive, the case of the typically animate perceived instigator
> of the action identified by the verb.
> Instrumental, the case of the inanimate force or object casually
> involved in the action or state identified by the verb.
> Dative, the case of the animate being affected by the state or
> action identified by the verb.
> Factitive, the case of the object or being resulting from the
> action or state, or understood as a part of the meaning of the
> verb.
> Locative, the case which identifies the location or spatial
> orientation of the state or action identified by the verb.
> Objective, the semantically most neutral case, the case of any-
> thing representable by a noun whose role in the action or state
> identified by the verb is identified by the semantic interpreta-
> tion of the verb itself, conceivably the concept should be limited
> to things which are affected by the action or state identified by
> the verb..." (1968, pp. 24-5).

Something like this is clearly required. But it is no more than a

preliminary step in the right direction. There is no sense that these

'cases' form a complete, coherent system: for instance, there is no

accompanying theory of what makes some of these roles compatible with states,

some with actions and some with both. In later work (1977), Fillmore

suggests that the cases should be relativized to a theory of scenes,

a theory which seems to have something in common with the componential

analysis of predicates that I am about to propose. But again no concrete theory is forthcoming: the problem is recognized, but we get no more than hints as to what might constitute a solution. It does not appear that the various epigoni of Fillmore's "Case Grammar" have made any further steps in the direction of grounding the Cases more firmly (though cf. Cook 1978). One heretic branch (Starosta 1978) has even suggested that the direct link between Fillmorean Case and participant role be severed, so that Cases are looked on primarily as primitives of 'syntactic theory, primitives whose main distinguishing property is that only one instance of each can occur per sentence: apparently, it is a purely arbitrary matter of lexical selection which Cases accompany which verb or adjective. Not even an outline is given of what, on the new view, the relevance of the Cases is to semantic interpretation.

1.3.2.3 HALLIDAY'S 'TRANSITIVITY SYSTEMS'

One researcher who has made some attempt to relate predicate type with participant role is M. A. K. Halliday. In a paper written in 1969 (Halliday 1976) he distinguishes three major 'types of process', Action, Mental Process and Relation.

Processes are defined as "any phenomena to which a specification of time may be attached": but it is not clear whether this reference to time narrows the field down at all. I know of no evidence that the distinction between eternal and temporally-specific propositions is an important one in giving semantics for natural language, and this is confirmed by Halliday's own example of a 'relational process': "Jupiter is the largest of the planets." This is, for most purposes, as timeless a truth as "Hesperus is Phosphorus" or "2 + 2 = 4".

On the other hand it may be that Halliday is simply looking for an operational criterion to detect 'processes' in English ser.tences, and picks one that will eliminate no complete sentence. It is always grammatical to add some temporal modifier to an English sentence that lacks one. If so, this is a manifestation of a central weakness in his work. This weakness is the failure (or refusal) to distinguish between universal and English-specific aspects of his account. In his account of participant roles, for instance, he seems to mention only what can be expressed by an NP without a preposition in some sentence of English.

The three major types of process are further divided, on purely notional grounds. The only subdivision with a relevance to participant

roles is that of Action into actions proper (with animate actor), events

(inanimate actor) and natural phenomena (no actor). This last subdivision

(consisting mainly of weather verbs) is the only exception to the claim

that all actions must have an actor as an inherent participant. Some

actions restrict their inherent participants to this alone (e.g. _John is_

voting, _the sun is shining_, _his popularity declined_); but others also

involve a goal (e.g. _John is tying the string_).

Mental processes all involve an animate being whose consciousness

is involved, the Processor, and a Phenomenon which impinges on it. Mental

process clauses are of four main types: perception (_see_, _look_) reaction

(_please_, _like_) cognition (_convince_, _believe_, _wonder_) and verbalization

(_say_, _speak_). From the chart in which all this is related to categories

in Roget's Thesaurus (Halliday claims that his classification is exhaustive,

p. 172) it would seem that expressions of volition are to be considered

not here, but under Actions.

Halliday distinguishes two subtypes of Relation — Attribution,

involving an attribuend and an attribute (_Mary is a teacher_, _Mary looks_

happy); and Identification, involving an Identified and an Identifier

(_John is the treasurer_, _the tall one is John_). The essential difference

here is a semantic one, but Halliday's only exposition of this is:

"Attribution is a relation of class inclusion (_sic_): the meaning is

"Mary belongs to the class of teachers". It is thus a relation between

entities of the same order of abstraction but differing in generality."

Compare his account of Identification: "The relation between the elements

is one of identity, not inclusion. It is the relation of Identified to

Identifier,... where the two are alike in generality but of a different

order of abstraction..." (p. 167). Quite what Halliday intends by

"abstraction" and "generality" here never becomes clear, though he does

add some explanation of the different situations in which the two types

of relation are used, and some tests for distinguishing them, based on

English intonation and word order. In the theory of functional structure

to be proposed below Attribution and Identification are not distinguished.

(See section 1.3.3).

In addition to these various processes and participants, Halliday

recognizes that to many of the processes an Initiator, a sort of causer,

can be added: e.g. the children kept quiet, the teacher kept the children

quiet. Halliday identifies this role with the actor of action predicates.

Halliday thus usefully indicates what constitutes a minimal set of

processes and participant roles. (In Halliday 1967 three more are given:

Beneficiary; Condition (e.g. I eat it raw); and Range, whose uses are

vague but extensive (e.g. he jumped the wall, he suffered a severe shock).

But his types of process are in some cases so broad as to make a

unitary semantic characterization look implausible. It is doubtful, for

instance, whether there is anything in common between the predicates wait,

shine, and decline, all classed as Actions, beyond the fact that they may

all co-occur with a single argument. Halliday does make a distinction

between 'affected' and 'causer' actors (the door opened vs. Mary opened

the door). But he does not press it: "if there is any general pattern

of transitivity functions, common to all clause types, it is probably to

be sought in the concept of 'affected' and 'causer' rather than in those

of actor and goal, although this should not be pressed too far; action,

mental process and relational clauses embody fairly distinct functions,

even if all of them exhibit some form of causative relation..." (p. 173).

Another unfulfilled desideratum is some account of the other

arguments that may be added: "John waited for his mistress", "the sun is

shining on the sea", "his popularity declined by 10%". All these pre-

positional phrases express types of argument that can equally occur in English as goals or ranges (cf. <u>John awaited his mistress</u>; <u>the sun is irradiating the sea</u>; <u>his popularity declined 10%</u>). But Halliday pays no attention to these same roles when expressed prepositionally. Nor does he provide the differentiation of the gross categories 'goal' and 'range' which the selection of different prepositions shows to be necessary.

In sum, it seems fair to conclude that Halliday offers no more than a notionally-based account of the surface relations of verb to noun-phrase in English which are not mediated by prepositions. He has not attempted an articulated theory of types of predicate and participant role.

1.3.2.4 WALLACE CHAFE

Some progress has been made by Chafe 1970, who classifies predi-
cates into a number of overlapping types, and points out the implication
relations between these types and the sorts of argument that he distin-
guishes.

Chafe's classification presupposes that many verbs that are
lexically simple are semantically complex: e.g. show, teach and remind
are causatively derived from see, learn and remember (p. 146). But
his classification system is intended to apply only to verbs that are
semantically simple. The types of predicate (he calls them 'verbs')
which are distinguished by his system, together with the examples he gives,
can be represented as in Figure 1.

FIGURE 1: CHAFE'S SYSTEM OF PREDICATE TYPES
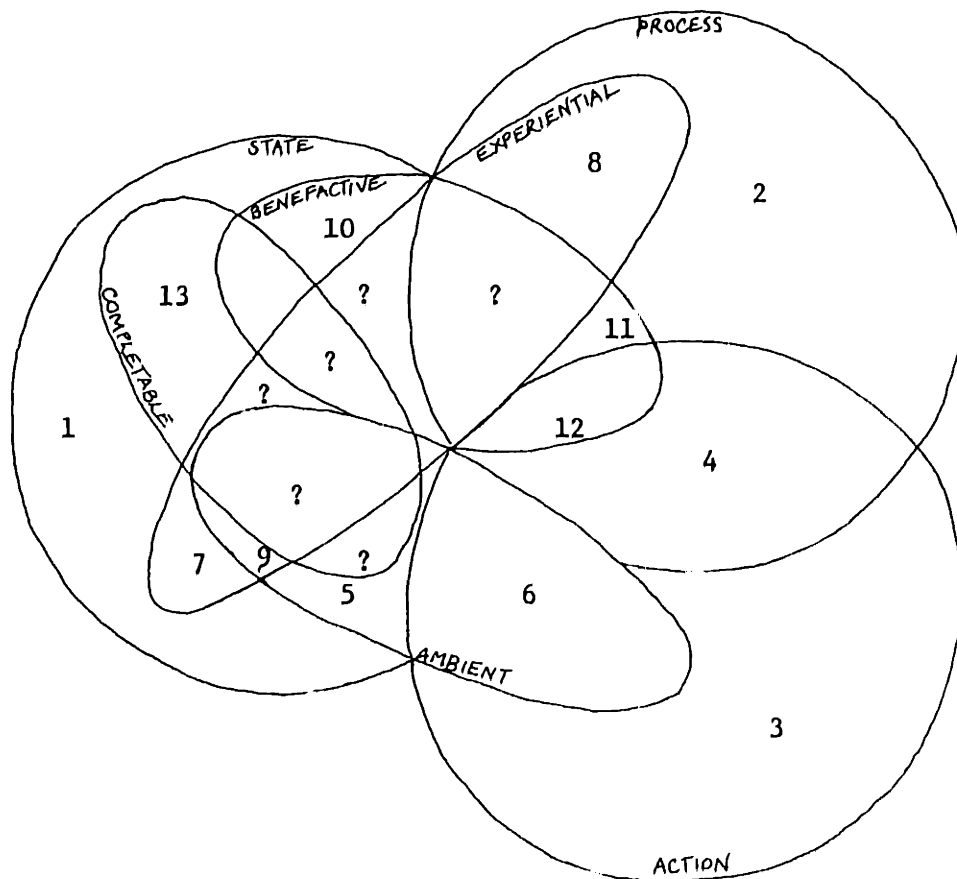
1. <u>dry</u> in <u>The wood is dry</u>.
2. <u>dried</u> in <u>The wood dried</u>.
3. <u>sang</u> in <u>Harriet sang</u>.
4. <u>dried</u> in <u>Michael dried the wood</u>.
5. <u>hot</u> in <u>It's hot</u> (of the weather).
6. <u>It is raining</u>.
7. <u>want, know, like</u>.
8. <u>see, hear, feel</u>.
9. <u>hot</u> in <u>Tom is hot</u>.
10. <u>have, own</u>.
11. <u>lose, win</u>.
12. <u>buy, send</u>.
13. <u>weigh</u> in <u>The book weighs a pound</u>.

The diagram only covers lexical items in English whose semantic structure is obligatorily specified for these properties. In addition, any Action can be optionally specified as Benefactive, and any non-Process as Completable -- meaning, as we shall see, that they can be accompanied, respectively, by a Beneficiary or Complement NP in semantic structure. For example, Mary knitted (Tom) a sweater, Mary sang (for Tom) are both instances of optional benefactives, presumably because if the bracketed phrases are omitted, there is no sense of ellipsis: both actions might take place without any Beneficiary in mind. Similarly, among optional Completables we find Mary sang (a song), The children played (touch football).

In addition to these there are 'verbs' which express intrinsic locative states (in, on, under); moreover other roots may be 'locativized'. Locativization is a process on the semantic plane; and it often produces surface results in English which are ambiguous. This is because locative phrases may also be added to non-locativized verbs. The distinction between a locativized (semantic) verb, and a combination of a locative phrase with a non-locative verb can be illustrated by the pair in (1.18).

(1.18)   a.   He's fallen in/into the water.
         b.   John fell on the home straight.

The distinction here seems to correspond to Starosta's 1978 distinction between Locus and Place, or Gruber's 1976 (p. 75) distinction of Location-Goal with or without 'Accompaniment': is the location predicated of the theme alone, or does it provide a frame of reference for the sentence as a whole? If the former, the verb is locativized on Chafe's view.

Chafe uses these types of predicate to predict the co-occurrence of participant roles. The implications he suggests may be summed up as in (1.19).

(1.19) State or Process → Patient

Action → Agent (and may → Instrument)

Experiential → Experiencer

Benefactive → Beneficiary

Completable → Complement

Locative → Location

This is the beginning of what we are looking for. But we cannot rest here. First, there is no formalism for the representation of these semantic structures. And furthermore, the only structure that there is to the theory, the only natural or necessary connexion between its terms, is expressed in the list of implications in (1.19). But what of the fairly complex set of relations between the properties of the semantic verbs shown in Figure 1, and the statements following it? These need to be reduced to order. As the diagram shows, a large number of the combinations of properties which Chafe's exposition might lead us to expect are not instantiated by him: and this number would grow phenomenally if the optional specifications for Benefactive and Completable, plus the Locative's incidence. were added to the chart. A more integrated and organized system is clearly needed.

And from a less general viewpoint, there are criticisms to be made of the plausibility of some of the statement in (1.19). What do state and process have in common such that they both take a Patient? Surely it should be this common property which is made the key conditioning for the role's occurrence. What is the relation between Agent and Instrument? As is well known (cf. Huddleston 1970), animacy is not a good criterion here,

although it may have something to do with it. And why the mysterious optionality in the implication to Instrument? (This means in effect that the occurrence of an Instrument expression in a sentence implies that the verb must express action — but not nice cersa.) A final salient weakness in these rules is the status of Completable: what semantic property do verbs like weigh 10 lb, cost $10, measure 10 ft., (the Completable states) have in common with verbs like win a victory, sing a song or smile an inscrutable smile (the Completable actions)? It looks suspiciously as if all these semantically obscure NP complements (= Halliday's 'Ranges') have been linked together under the heading of Complement, and then used to unify a heterogeneous class of verbs under the heading 'Completable'.

1.3.2.5 ANDERSON'S 'LOCALIST CASE GRAMMAR'

John M. Anderson (1971, 1977) proposes a basis for what he calls
Localist Case Grammar. This involves a much smaller set of primitives
than Fillmore's or Chafe's theories, largely because it is combinations
of these primitives, rather than the primitives themselves, which corre-
spond to the Cases. The primitives are <u>loc</u>ative, <u>erg</u>ative, <u>abs</u>olutive and
<u>abl</u>ative; and these are to be taken as 'unary features' or 'components':
i.e. their presence in a complex corresponds to the positive value of a
comparable feature, their absence to its negative value. Anderson proposes
a system whereby lexical entries for predicate words are assigned a certain
combination of these units; and general rules predict where participant
roles (defined with the same units) must accompany the predicates.
Anderson does not give a definitive list of the combinatorial possibilities
of his system — but some examples may make its general properties clearer.

$$
(1.20) \quad \underline{occupy} \begin{bmatrix} loc \\ erg \\ abs \end{bmatrix} \quad
\begin{array}{l} \text{The army occupied the city.} \\ \begin{bmatrix} abs \\ erg \end{bmatrix} \qquad\qquad \begin{bmatrix} loc \\ abs \end{bmatrix} \end{array}
$$

$$
(1.21) \quad \underline{swarm} \begin{bmatrix} loc \\ (abs) \end{bmatrix} \quad
\begin{array}{l} \text{The garden is swarming with bees.} \\ \begin{bmatrix} loc \\ abs \end{bmatrix} \qquad\qquad\qquad [abs] \end{array}
$$

But also:

Bees are swarming in the garden.
[abs]   [loc]

$$
(1.22) \quad \underline{know} \begin{bmatrix} loc \\ erg \end{bmatrix} \quad
\begin{array}{l} \text{John knows his '2 x 'table} \\ \begin{bmatrix} loc \\ erg \end{bmatrix} \qquad\qquad [abs] \end{array}
$$

(1.23)   faint $\begin{bmatrix} abs \\ abs \end{bmatrix}$ Mildred fainted.

(1.24)   <u>roll</u> $\begin{bmatrix} abs \\ loc \\ erg \end{bmatrix}$ The ball rolled from the door to the window.
$[abs]$ $\begin{bmatrix} abs \\ abl \end{bmatrix}$ $\begin{bmatrix} abs \\ loc \end{bmatrix}$

(1.25)   <u>walk</u> $\begin{bmatrix} abs \\ loc \\ erg \\ abl \end{bmatrix}$ Mabel walked the streets.
$\begin{bmatrix} abs \\ erg \end{bmatrix}$ $\begin{bmatrix} loc \\ abl \end{bmatrix}$

It seems, then, that the components are to be used to reconstruct the traditional Case roles. But the multiple assignment of components allows for finer discrimination within the roles (Compare the representation of <u>the garden</u> in the two sentences of (1.21), as well as the capturing of distributional overlaps (e.g. Path in (1.25) is defined as loc, abl , combining the roles of (directed) location and source: i.e. Path is a mixture of Source and Goal. We shall incorporate this last claim into our own system: see 1.3.4 below.

Anderson's system is promising, but it suffers from various defects, at least viewed as an attempt to answer our current questions. It does impose some structure on the relations between roles, and the relation between predicates and the arguments they select. But it has no accompanying theory of predicate structure: within Anderson's theory, this means that there is no statement of what the possible combinations of components are which make up a predicate's lexical entry. If the answer is that all possible combinations are legitimate, this should be exemplified en masse.

And what is the status of the component <u>erg</u>? It sticks out as against the other components, which seem to have a more directly localist interpretation. Perhaps this is correct: in the system to be proposed below, actional predicates, which have agents (and patients, and means), are sharply distinguished from the more narrowly localist relational

predicates (1.3.6 below). But at one point (1977, p. 119) Anderson suggests that _erg_ can itself be eliminated. All the same, the suggestion is not followed up in the sequel.

This is characteristic of Anderson 1977 as a whole. A number of pertinent criticisms and useful observations are made in the course of the book; and we shall have reason to allude to many of these in the pages that follow. And some extremely constructive suggestions are made with a view to solving the problems. But the author nowhere gives a general assessment of his system, and of its degree of success in answering what he takes to be the important questions in Case Theory. He is fond of quoting earlier suggestions of his own, from a voluminous body of writings on Case. But it is sometimes obscure whether the point of view quoted is intended as a part of his current theory, or as an alternative to it. (Particular examples of this are his reduction of the four Case components to two on p. 115, and the discussion of _erg_, on p. 119) Final assessment of his system must await a more systematic presentation of it.

1.3.2.6 THEORIES BASED ON EMBEDDING: CARTER, JACKENDOFF

Two further authors have made substantial contributions to the solution of the problems at issue here. Richard Carter (1976, 1977, 1978a,b,c) has proposed a theory of semantic representations for predicate words which involves the embedding of simple verbal primes, like BE, HAVE and CAUSE, inside each other: each prime has open spaces for arguments to represent the functional roles. For example, the predicate give might be represented as "x CAUSE(y HAVE z)".

And Ray Jackendoff (1976, 1977b, 1978) has developed a similar system based on embedding and reserved positions for arguments. In his case, the primes of the system are overwhelmingly localist predicates like BE, STAY and GO, which, interpreted along various parameters (positional, possessional, circumstantial etc.) give a fairly rich range of semantic nuance. The coherence of the main terms of the theory gives Jackendoff's approach an advantage over Carter's: the building blocks of Carter's theory are just so many independent primes. Within this theory give would instead be analyzed as "CAUSE(x,(GO$_{Poss}$(z,y)))". If x gives x to y, x causes z to go possessionally to y. CAUSE too, it is suggested (1976, p. 136fn), might be analyzed as circumstantial going, with the causer as the source, and the caused event as the theme, the 'goer'. Jackendoff's work is based originally on work by Jeffrey Gruber (cf. Gruber 1976).

These two approaches are very similar in spirit to the one to be proposed here — so much so that it would cause a fair amount of repetition if I were to try to expound the theories at length and criticize them before

developing my own.   Instead, I hereby acknowledge my debt to these theorists,

and set about establishing my own theory from scratch.   In the course of

the exposition I shall draw attention to the crucial points at issue

between Carter, Jackendoff and myself, and some points at which my theory

goes significantly beyond theirs.

1.3.3 POSITIONAL AND IDENTIFICATIONAL PREDICATES

Turning from these earlier attempts to impose order on the internal structure of the predicate, we begin the systematic development of our own ideas.

A fair point from which to start is found in the simplest form of preposition, one where it is difficult to envisage adding much to the traditional representation of symbolic logic. This is the proposition which attributed a property to a given entity. Within conventional symbolic logic, the property's representation, a one-place predicate expression (e.g. "F( )". forms the core of the proposition's structure. The entity is represented by a referring expression (e.g. "A"), placed in the argument-place. And that is all. F(a).

It was held to be a great step forward in logic that, within this system, there is no particular limit on the number of argument places a predicate expression can have, and no particular privileges attaching to any particular one of them.

But this was when the system was seen as an antidote to previous theories (e.g. F. H. Bradley's), which stressed that every proposition contained a privileged subject term, and alongside it a predicate, and that all other arguments were more or less important constituents of the predicate. These theories were held to have vicious consequences for metaphysics, as well as complicating logic unnecessarily.

But for our purposes, this egalitarianism in the system is a vice, since it eliminates the first vestiges of internal structure within the

proposition. Whatever the results of our enquiry, we claim no implications

for metaphysics. It might tell us a little about cognitive psychology,

and even that is contingetn upon the system that we arrive at proving

its worth when faced with the linguistic facts. For the moment, we are

simply following paths of expediency. And therefore we presume that in the

basic form of the proposition a property is attributed to a single entity.

We trust that a suitable place will be found for other participants in

due course.

Furthermore, since we are interested in types of predicate,

and their relation to types of functional role, it will be of advantage

to achieve a representation of the predicate which separates the features

relevant to the type of proposition and selection of participant roles

from others. As yet, we have not distinguished the features of predicates

in any way. But to facilitate developments to come we propose a basic

representation for these property-attribution propositions as in (1.26).

(1.26)   BE: x   y

"x" represents the entity to which the property y is attributed.

"y" will thus encompass many different types of things. If (1.26) is

an identity statement, y will represent an individual under some designation.

If (1.26) states that some quality inheres in x, then 'y' will be some repre-

sentation of that quality. If (1.26) is a locational statement, then

'y' will represent a place. These three categories coincide very

approximately with characteristic meanings of noun phrases, adjectival

phrases and prepositional phrases in English (cf. Carter 1978c). As such,

we might suppose that a notional equivalent of these is available in

semantic structure, so that further specification of semantic representations

can be given, in ways irrelevant to the general formal operators

(like BE) that we shall be interested in. For the differentiation of

different roles, however, it will be necessary to make some distinction

between the different sorts of attribution just mentioned.

We might write:

(1,27) a. BE_{Ident}:   x   y

       b. BE_{Qual}:   x   y

       c. BE_{Posit}:   x   y

However, it seems unnecessary to distinguish between (1.27) a. and

b. Ture, there are logical differences between identification and quali-

tative predication. For instance, qualitative predications are not

reversible -- e.g. if Thatcher is the P.M., then the P.M. is Thatcher; but

Thatcher is female does not reverse. But Quine (1960, sections 37-38) has

remarked that from a logical point of view it is enough to analyze identity

propositions as special cases of predication where the predicate is satisfied

by a unique entity: i.e., no false inferences will be entailed if we

simply subsume (1.27)a. to (1.27)b. The reversibility facts are a quirk

of identity propositions caused by the uniqueness property and the fact

that the same expression can in general be used both to refer to an entity,

and to designate the concept of being that entity. So much for logic, we

can leave to philosophers the puzzle of the relation between an entity and

the property of being it. From the point of view of language, on the other

---

[3] Kenneth Hale (p.c.) has pointed out to me that there are languages
(e.g. Navajo, Irish, Warlpiri) which do distinguish "BE_{Qual}" from "BE_{Ident}".
In two of these (Irish & Warlpiri) it seems more appropriate, in fact, to
collapse "BE_{Qual}" with "BE_{Posit}". However, the binary opposition +/- Abs ,
of which BE_{Ident} BE_{Posit} in an instance, is what is really crucial to the
system of FS, rather than a particular assignation of meanings to one side
or the other. It is to be hoped that this binary contrast can be preserved
when these languages are analyzed in detail.

hand, there seems to be little reason to distinguish BE_{Ident} and BE_{Qual}[3].

Following Gruber 1976 and Jackendoff 1976, I shall (somewhat irrationally,

in that the identificational use is a special case of the qualitative,

rather than vice versa.

Semantically, then, we distinguish at this stage two kinds of

BE, i.e. of static predication: identificational and positional. These

might be designated with the feature $\pm$ Abstract.

(1.28) BE_{Posit} – Abs

BE_{Ident} + Abs

1.3.4 THEMES, GOALS, SOURCE AND PATHS

So far we have been looking at predicates as if they all designated some static state of affairs. But of course there are propositions (and these include all actions) that indicate change. Corresponding to the two basic types of predicate that we have distinguished so far, there will be dynamic predicates of becoming and of movement. We shall take "GO" as the usual designation of these two, distinguished as before with the subscripts Ident and Posit.

Moreover, it now becomes possible to identify the two argument positions represented above by "x" and "y" with more revealing terminology. It is natural to identify the Goal (G) of movement with the Location of the state which it achieves. Similarly, we can identify the entity that moves or changes with its alter ego in static propositions. We call this latter the Theme (T), following Gruber and Jackendoff. This gives us the following array of distinguishable types of predicate, with their accompanying participant roles.

(1.29)	BE Posit	T	'Stationary theme'
		G	Location
	BE Ident	T	Attribuend
		G	Attribute (two terms taken from Halliday 1974)
	GO Posit	T	'Moving theme'
		G	Endpoint
	GO Ident	T	'Changing theme'
		G	'Destiny'

	Abs	Dy
(1.30) BE		
Posit	–	–
BE		
Ident	+	–
GO		
Posit	–	+
Go		
Ident	+	+

We have, then, the beginnings of a highly articulated theory.

Talk of Goal, of course, immediately promotes speculation about its opposite, Source (S). We turn then to the question of how source is to be integrated into our formalism. In his time, Jackendoff has suggested two different answers. In 1976 and 1977b he suggests that it should simply be added as a co-equal argument to the theme and goal within change-of-state predicates, which he too represents as GO. But in 1978, p. 219, he prefers to collapse both source and goal into a single argument position, which he calls Path (another term taken from Gruber, 1976 p. 75). Under this hypothesis, source-goal pairs in (1.31) a. are precisely parallel to path expressions of the type in b.

(1.31)   a.   The train travelled from Detroit to Cincinatti.

         b.   The hawk flew over the prairie.

But if there is anything in Fillmore's 1968 claim that only one of a given participant type (a Fillmorean 'case') can appear in a given sentence, it tells against this identification of Jackendoff's: for Path and Goal+Source can both be specified together.

(1.32)   a.   The train traveled across the Mid West from D. to C.

         b.   The hawk flew over the prairie from its nest to the river.

I propose that the four roles introduced, Theme, Goal, Source, and Path, should be identified as complexes of two binary features $\pm$ So and $\pm$ Go.

(1.33)

	Go	So
Theme (T)	−	−
Goal (G)	+	−
Source (S)	−	+
Path (P)	+	+

This characterization of the Path as sharing properties with both 'Source and Goal is not new. One might claim that it is implicit in Jackendoff's claim that S and G together constitute an entity on a par with P. And in Anderson 1971 (11.1) it is suggested (with a mention of a precursor analysis in Hjelmslev 1937) that 'directional' phrases with "along", "across", "around" and "through" should be analyzed as jointly loc (roughly equivalent to our G) and abl (roughly equivalent to our S). However, it should be emphasized that the Path is not simply a conjunction of all the properties of Source and Goal: it is rather an entity formed by pooling a distinctive property from each ([+So], [+Go]). In fact, the theme is itself as much a combination of the two as Path is, since it shares the two opposite features ([−So] and [−Go]).

The features can be given a semantic characterization.

(1.34) An entity x is + So in "GO_α...x..."

iff (i) x is distinct from the theme of "GO_α"

and (ii) the theme is at x not later than when GO_α...x...

(1.35) An entity x is + Go in "GO_α...x..."

iff (i) x is distinct from the theme of "GO_α"

and (ii) the theme is at x not earlier than when GO_α...x...

The theme is thus classified as[- So, - Go] because the first clauses of the definitions rule it out. The source is [+ So, - Go] since it is distinct from the theme, and the theme is at it earlier than, but not later than, the predicate as a whole is true. Vice versa for the goal. And the path is + So, + Go since the theme of the predicate is at it neither later than nor earlier than the predicate as a whole is true -- viz. at some time during its truth period.

We assume then that a dynamic ([+ Dy]) predicate holds argument positions (which may or may not be filled) for one of each of the roles, T, G, S, and P. It immediately becomes clear why paths co-occur with sources and goals, as in (1.32).

There is an important weakness in the definition of Source and Goal provided by the feature definitions in (1.34-5). They give no inkling of the fact that besides representing the starts and endpoints of motion, sources and goals can also indicate direction -- the points away from or toward which the theme moves, regardless of whether it is ever at either of them. The co-occurrence test confirms that these represent the same role as the starts and endpoints that we have successfully defined.

(1.36)   *Skylab hurtled toward the earth to its resting-place at
         Calgoorlie.

         *The rider galloped out of the corral away from the ranch.

And this impression is confirmed by (1.37), which shows that like other goals and sources they occur quite unexceptionally with paths.

(1.37)   Skylab hurtled through the atmosphere towards the earth.

         The rider galloped over the range away from Texas.

This ambivalence of Source and Goal seems not to have been directly confronted in the literature. For instance, with respect to sources, and the meaning of the word "from" in particular, Gruber 1976 resolutely takes

the view that their essence lies in direction away from. He suggests that the startpoint sense, e.g. in <u>John ran from the house,</u> is derived from a reading where it means something more like 'to the complement of'. However, it is noticeable that he omits all mention of expressions like <u>my friend is from Japan,</u> where there is not a trace of the directional meaning.

Jackendoff, on the other hand, takes the other sense as central: "we will call the phrase describing the Theme's initial position the Source" (p. 93) (though in his analyses "from" is often represented by a negated goal). Again the arguments favouring the opposing theory are not mentioned: yet if Jimmy keeps away from Sin City, it is neither his initial position, nor any subsequent one.

It is probably possible to remedy the worst failings in (1.34-5) by substituting <u>is closer to</u> for <u>is at.</u> But this introduction of a comparative destroys the rigour of the formulation. (There is an implicit third term: "the theme is closer to x than it is at other times" — which other times?) And patching this up would lead us too far astray into barren intricacies. The root of the problem lies in the fact that we are trying to define essentially dynamic roles (<u>to(wards) x</u> and <u>(away) from x</u>) in terms of static states (<u>at x later</u> and <u>at x earlier</u>). To remedy this, however, are terms of an explicit theory of direction, is beyond the scope of this treatment. Having pointed to the logical inadequacies of our definitions, we shall henceforth use S and G nevertheless in both directional and start/finish senses.

The addition of the four dynamic roles challenges the theory, in that it predicts clear meanings for the identificational correlates of of theme, goal, source and path interpreted dynamically. We shall interpret 'dynamic' here in a very wide sense, covering the idea of moving from

one entity to compare it with another, as well as the more closer analogous idea of temporal becoming.

It is natural to take the Identificational Goal as the result of a tendency or of a process of becoming. This might be extended to extremely abstract goals, such as Mary in <u>John is similar to Mary</u>, <u>John is getting used to Mary</u>. We shall call this role the <u>Tendency</u>. The abstract source we interpret as the <u>Point of Reference</u>, e.g. Birmingham in <u>London is larger than Birmingham</u>, <u>Glasgow is a long way to the north of Birmingham</u> (<u>north</u> here à tendency?). The abstract path will denote the Respect or characteristic in which the predicate holds: David is long <u>in the leg</u>; this store is unbeatable <u>for value</u>. The theme we presume differs from the static theme only in being dynamic, and as the examples above show, in the abstract sense this is not sharply demarcated from the static theme. It is possible to look on a variety of relations as dynamic, even though they do not change over time: e.g. similarity implies that the features of one item 'approach' those of another in some respects - even though the degree of difference is quite unchanging.

It might be complained that these roles do not follow particularly slickly from the semantic specification of the features <u>So</u> and <u>Go</u> in (1.34-5), even if the caveats about directionality are charitably taken as read. The point is well taken. But our main task at the moment is to classify the extremely various semantic roles which are found in connexion with the predicates of human language. I do not think it can be denied that the roles distinguished here do have some intrinsic relation to the position T, G, S and P: and we shall see in section 1.4 that various languages of the world recognize these relation through the semantic linking of their case-markers.

Some points will now be made with a view to reinforcing our iden-
tification, hitherto quite bald, of Location as a type of goal.

Let us return to a more neutral position. From the point of view
of feature analysis there is a choice open to us. Static predicates take
only two roles, so that we only require one feature to distinguish them:
should this feature be Go or So? If it is Go, we shall be assuming de facto
that both the static roles are [-So]. The theme will have to be [- Go,
- So], as in the dynamic predicates; and the location will be [+ Go, - So],
the same as the dynamic goal. If we choose So as the distinguishing
feature, however, the theme will still be [- Go, - So]; but the location
will not be identified with the dynamic source: [- Go, + So]. Hence a
choice of Go as the distinctive feature within statics reinforces our
previous decision to identify the dynamic goal with the dynamic goal with
the static Location. A choice of So, on the other hand, would force us
to revise it.

If we take a strictly logical view of the choice, whereby we are
neutral as to the directionality of time, there is nothing to choose
between the two options. For the issue boils down to deciding whether
the characteristic static predicate corresponding to a dynamic one describes
the state before or after the event. If before, then we prefer to identify
the static location with the dynamic source. If after, then we identify the
dynamic goal with the static location.

To resolve this impasse, it seems desirable to diverge a little from
from our principles, and note a few anecdotal linguistic facts. Carter 1976
points out that dynamic derivatives associated with stative adjectives in
English almost all refer to the process of becoming the state in question.
not to leaving it. So a whistle is wet after being wetted, dry before;
soup is thick after being thickened, or thickening; a wound is clean after

being cleansed. There are a few derivatives which work the other way, but they always involve some negative morpheme -- e.g. unman, disable.

Furthermore, as we shall find when we come to consider semantic linking, languages commonly collapse the marking for a dynamic goal with that for a static location (e.g. Sanskrit locative, Japanese ni, English at).

All this combines to suggest that the state or locus resulting from an event is more closely connected with it than the state or locus   ·
which preceded it: and hence that the goal, and not the source, is the correct choice for identification with the static location.

We retain therefore our previous identification. Simple static predicates will have two participants, T and G, simple dynamic ones four, T, G, S and P. The feature So therefore is only distinctive in connexion with a [+ Dy] predicate: otherwise it occurs in its unmarked value [- So]. Within the feature system to be developed here, minus is universally the unmarked value. The features which specify the types of predicate can be thought of as applying by transference to their accompanying participant roles too. This connexion between Dy and So features can therefore equivalently be expressed by the feature redundancy rule (1.38)[4].

(1.38)   [+ So] → [+ Dy]

It might be noted that the need to characterize the context of occurrence of the two further roles, S and P, constitutes one strong reason

---

[4] There are one or two exceptions to this. Arguably, sources should
be recognized in statements of origin (I'm from Kent, the Nile originates
in Lake Victoria) and certain negative loci (I was absent from class). Pre-
dicates which take such aberrant sources do not allow normal loci to co-occur
(*I am in the USA from Kent, *he is absent from class in bed). So perhaps
the individual predicates involved, though simple statics and hence two-
place predicates, could be marked as co-occurring with significant So rather
than Go. This would be a strange sort of 'marking', since it would charac-
terize certain universal 'meanings' -- i.e. semantic predicates -- not the
lexical entries of particular words in particular languages. E.G. (P.T.O.)

for recognizing the dynamic predicates as a separate type of simple predicate from the static type. Carter 1977, 1978b and c, suggests instead that dynamic predicates should be analyzed as derived by embedding a static predicate inside the operator "(__)CHANGE". Since this operator contains no extra argument place, this predicts that dynamic predicates should have no more argument places than corresponding static ones. This is not the case as is especially clear for positional dynamic predicates: locus is replaced by source, goal and path of motion. It seems that there is no place for these expressions of path and source within Carter's theory, especially when all roles are present simultaneously.

Furthermore in Carter 1978b, the concept of (p)CHANGE is itself analyzed as (p)NOT AND THEN (p): e.g. "shrink" is analyzed as (x BE SMALL) NOT AND THEN (x BE SMALL). Such a further analysis is even worse than its analysandum, from the point of vies of roles; since it is now not even possible to introduce Source and Path by modifying the CHANGE operator to encompass extra arguments. The Path in particular is a concept that only makes sense when a change-of-state is viewed as a whole process: to segment it into its initial and final states, as Carter has done, is to lose the concept of the path: for this is what links the two states.

Origin BE_{Posit}: T S = Pred, [- Abs, - Dy, - Go]

Absence BE_{Ident}: T S = Pred, [+ Abs, - Dy, - Go]

Perhaps this special marking could be identified with a negation operator: that is to say, a negation occurring in a predicate would change [- So, + Go] to [+ So, - Go]. This might go some way towards explaining the relationship between source and negation, mentioned in connexion with Gruber's work (1976, pp. 53-4). A systematic investigation of the relation between negation and the source-goal opposition would probably entail substantial revisions in this system.

To recapitulate this section, we have now posited two basic types of predicate, positional and identificational, both of which come in two varieties, static and dynamic. The static predicates co-occur with a theme and a goal, the dynamic ones with a source and path in addition. The precise significance of each of the combinations is set our summarily in the following chart.

(1.39)

	T	G	S	P
Static				
Positional	Theme	Locus	-	-
Identification	"	Attribute	-	-
Dynamic				
Positional	"	Goal	Source	Path
Identification	"	Tendency	Pt. of Reference	Respect

1.3.5 POSSESSIONAL AND COGNITIONAL PREDICATES; INVERSION

This same distinction of static and dynamic, and of the four roles, is very naturally transferred to the realm of Possession. Here the static goal is the owner, the theme the object possessed. In the dynamic equivalent, the goal will be the recipient of the object, and the source of the old possessor in any transaction. So much is already prefigured in Gruber's and Jackendoff's work.

However, we can also add a role for the possessional path: this is the medium of exchange, the object in return for which the theme passes from the source to the goal. This, besides confirming once again the essential rightness of this fourfold division of functional roles within every domain, also solves a problem that had vexed Carter 1976: why are there four participant roles involved in verbs of commercial transaction, when (according to Carter) no more than three are required elsewhere? The answer lies in seeing that four roles are implicit even in verbs of physical motion, so that the commercial just constitute the special case where the parameter of the predicate is possessional.

The same approach has not yet to my knowledge been applied in the cognitive domain, except in Gruber 1967, which does not apply it thoroughly, but just makes a localist suggestion for the analysis of a pair of English verbs, look and see. But if the mental object of a cognitive state is taken as a theme, it is easy once again to apply the paradigm. The Experiencer, a familiar role in the literature since Fillmore 1968, becomes the goal. In the case where the mental object experienced is some sort of information,

it is possible to designate the source of this information as the Source:

e.g. I learnt of John's death _from the obituary column._ In this same case,

the Path will be the Medium of Communication (I told him the news _over the_

phone); and this notion generalizes to take in all sorts of perceptual

means and mental faculties: I heard it _with my own ears._ Joan witnessed

the spectacle _with unbelieving eyes._ It is difficult to make much sense

of the distinction between static and dynamic within this field (though

distinctions as between _know_ and _realize_ seem relevant). But since we

have designated sources and paths here too, the system commits to view

at least those predicates which co-occur with these roles as dynamic.

No claim is made here that a complete and perfect analysis of this

area, that of cognitive concepts, has been made. The profusion of different

expressions, even in English, for a number of particular ideas all classed

together here as Medium of Communication (e.g. over the phone, on the

radio, with a telescope, by word of mouth) already suggests that natural

languages and a considerable degree of further definition or idiosyncratic

variation to these concepts. In particular, it seems likely that communica-

tion of information, where the concepts of medium of communication and

source of information are clearly applicable, might be haved off from the

less definitely structured realm of other perceptual and cognitive predicates,

where it is much more difficult, e.g., to separate the means of knowledge

or perception from its source.

We have simply been interested in showing that the localist gestalt

of T, G, S and P can be applied here: and that the result is to distinguish

a number of different roles on a more or less natural basis.

An extra feature of these two domains is the phenomenon of _Inversion._

This is a semantic operation, in that it reverses the interpretation of the

roles T and G, and changes the interpretation of S and P. But its motivation

comes largely from noticing that when languages use positional predicates

metaphorically with possessional or cognitional meanings, the assignment

of roles does not always accord with what we have just sketched out.

After noticing the analogy already outlined of possessional with

positional predicates, Jackendoff 1976 (following some remarks of Gruber

1976, pp. 56-7) notes that in some idioms of English where positional

prepositions are used with a possessional sense, the theme seems to corre-

spond to the owner in the possessional sentences, rather than to the

object possessed.

(1.40) a. Nelson ran out of money.

          b. Ari is in the money.

          c. Fred came into a lot of money.

He there suggests that in the context of $"GO_{Poss^{-1}}"$ and $"BE_{Poss^{-1}}"$

(the converses of $"GO_{Poss}"$ and $"BE_{Poss}"$) the theme will represent the

possessor or recipient, the goal the item possessed. He jibs at repre-

senting money in (1.40)a. as a source, postulating rather a negated goal,

a complex whose relation to source within his system is not clear. In

fact, in this context it seems more natural to assume that money is the

source, representing the object lost: the possessor has moved away from

a possession, just as in (1.40)c he has arrived at it. It is not clear

what the Path of such inverted possessional motion would be. (1.40)b

suggests that this inversion of the possessional predicate is also possible

for static possessional predicates.

Section 3.2.5. below presents evidence from Sanskrit for the

existence of inversion in possessional predicates. It also adds evidence

suggesting that this should be extended to the cognitional field. Under

this hypothesis, an inverted cognitive predicate would have its T and G

reversed, as in the possessional case. This theme would represent the

experiencer or sentient being; the goal would represent the object of the cognitional act. As with the possessives, this would make a radically different interpretation of S and P necessary. The experiencer is now thought of as the moving theme, so it makes no sense to think of the source as the source of his experience. Rather it should be the information state from which he is moving — e.g. an item forgotten, disregarded or unknown.

Before going any further with the development of the cognitive field it is probably helpful to sum up the identifications that have been made so far. We have two charts precisely comparable to (1.39).

(1.41)

	T	G	S	P
Standard Values				
Static				
Possession	Owned Object	Owner	-	-
Cognition	Mental Object	Experiencer	-	-
Dynamic				
Possession	Transferred Object	Recipient	Ex-owner	Medium of exchange
Cognition	Percept,	Experiencer	Source of	Medium of communication, mental faculty.

(1.42)

	T	G	S	P
Inverted values				
Static				
Possession	Owner	Owned object	-	-
Cognition	Experiencer	Mental object	-	-
Dynamic				
Possession	Recipient	Transferred object	Item lost	?
Cognition	Experiencer	Percept, Information	Item unknown	?

Before attempting to unify this with what has gone before by postulating a few more features, we should look at an area of mental conceptual space not yet touched. This is the Will, and roles which can only be understood in terms of it.

It is a commonplace of English and other languages to identify an item aimed at as the goal of one's endeavours; and this provides a natural starting point for our exploration of Volitional roles. With this in hand, it is an obvious next move to identify the volitional source with the object which is avoided or abhorred, i.e. what the wishe-theme is trying to move away from in his quest for the volitional goal. The identity of the Path in this context is rather less clear. We shall tentatively identify it with the Strategem, or means by which the theme's desires are to be ful-'filled.

We thus have the following set of volitional roles:

(1.43)

	T	G	S	P
Volitional:	Wisher	Aim	Aversion	Strategem
(dynamic)				

We now turn to the possibilities of providing a feature system to unify these various metaphorical uses of the localistic T G S P system with the others so far expounded.

The most notable way in which the possessional, cognitional and volitional domains differ from the positional and identificational ones is that the former three all involve a sentient actor. We shall therefore distinguish these types of predicate as + Sentient ([+ Se]).

Among the sentient predicates that we have looked at so far (there will be one more to be added in the next section) the possessional and cognitional predicates exhibit a neat parallelism. Both have inverse forms, and in both the path role is not clearly identifiable, for reasons that we have not been able to lay bare. Furthermore, the cognitional might in some obscure sense be taken as an abstract equivalent of the possessional.

1.3.6 ACTIONAL PREDICATES

We shall add one further major class of predicates to this system. This is the type of Actional Predicates, which represent doings and happenings.

One role which is typical of this class is that of Instigator, the agent who causes some event. It is noteworthy that each of the major predicate types distinguished so far (except Volitionals) can have an instigator added to it. This is so natural an addition that English and other languages offer lexical items which represent predicates of all these major types with an instigator added. For example, as against the simple go, become, receive, see, we have send, make, give, show, all of which represent actions in which the subject instigates a non-actional event in something else.

This fact has provoked many linguists to try to analyze all actions as semantically complex, with an instigator or agent causing some state or process in something else. For instance Dowty 1972 analyzes all activities, accomplishments and actions as consisting of a state predicate at some level of embedding inside an operator representing Causation or Human Agency. Nordenfelt 1977 criticizes the fact that all these should require a state as their innermost simplex core ("For many activities there is no obvious object state to be discovered... Dowty's treatment... lacks a discussion of what should count as the state components of such activities as walking, painting, bicycling and treating." p. 29). But Nordenfelt's own analysis, although it replaces the ubiquitous states with a triple

One characteristic relation of physical objects to a sentient subject -- indeed perhaps the earliest leant -- is that of ownership; and the mental objects which are cognitional themes belong to their experiencer in some sense.

These are the sort of considerations that self-respecting linguists are ashamed to adduce -- and rightly so, for these faint analogies are not strong enough to serve as cogent arguments for a theory. But they are enough to furnish motivation for a classification system, which we hope will be given empirical content later by its contribution to the simplification of language-specific linking rules.

We suppose then that cognitional predicates are the abstract equivalent of possessional ones. So the features <u>Abs</u> and <u>Se</u> cross-cut as follows:

(1.44)

Sentient/Abstract	-	+
-	Position	Identification
+	Possession	Cognition

We presume that the feature $\pm$ Inverse (<u>Inv</u>) is linked to the feature <u>Se</u> (just as <u>So</u> was to <u>Dy</u>), by the following feature redundancy rule.

(1.45)   [+ Inv]   -->   [+ Se]

But what of volitional predicates? These show a remarkable similarity with the inverse cognitionals: aim corresponds to mental object, wisher to experiencer, object of aversion to object unknown, and the paths are similarly obscure. One is tempted to try to collapse them. But given the examples which motivate cognitive inverses in

Sanskrit (3.2.5), it seems impossible to do this: the words seem to have nothing to do with volition. Pending future research, the, we content ourselves with a redundancy rule:

(1.46)

$$[+ \text{ Volit}] \longrightarrow \begin{bmatrix} + \text{ Se} \\ + \text{ Abs} \\ + \text{ Inv} \\ + \text{ Dy} \end{bmatrix}$$

possibility of 'enduring states', 'enduring processes' and 'events', still treats all agentive and causative predicates as complex, with an instigator added to some non-agentive core predicate.

Carter's system of semantic representation (1976ff.) does not include any simple actional predicates: the only verbal primes used are BE, HAVE, CHANGE AND CAUSE; and of these CAUSE and CHANGE are only used with an embedded stative. And Jackendoff 1976, after expounding a system which contains only GO, BE and STAY as simplex predicates, which may be embedded inside the operators CAUSE and LET, remarks (p. 110): "The strongest claim one could make[5] is that the five functions presented here are the only functions in semantic theory that when used alone represent verbs... Such a substantive universal in semantic theory would be highly significant, and I do not find it implausible."

These scholars do not appear to have considered the problems in representing verbs like <u>hit</u>, <u>kiss</u>, <u>swive</u>, <u>stroke</u>, <u>press</u>, <u>tug</u>, <u>fillip</u>, which might be classified as <u>verbs of impact</u>. The predicates in question entail action on some object the agency or causation of another physical entity. When the actor is animate, in fact, there is a presumption that the action is deliberate. But the predicates carry no implication that this agency or causation brings about any particular state, or change of state in the affected object.

---

[5] It is not strictly true that Jackendoff's proposal here is the strongest claim one could make in this field. Carter 1976ff. makes an implicitly stronger claim, since he would analyze Jackendoff's primitive "STAY" as a complex "NOT CHANGE NOT" (cf. Carter 1978b, c). Presumably "LET" would also go, analyzed as "NOT CAUSE NOT". Jackendoff's "GO" is broadly equivalent to Carter's "CHANGE". I shall take no position on such issues here, since they do not materially affect the functional roles involved. Within the system to be outlined, the 'permissor' inherent in Jackendoff's "LET" operator is not distinguished from the 'Instigator'. the external actional source.

This absence of implied effect is borne out in various ways. First of all, and most directly, there is no simple English word to describe the state of an item affected by one of these predicates: if John tugs a cord, kisses a girl or hits a brickwall, all that this implies about the affected object is that they are tugged, kissed or hit respectively. Contrast the behavious of effective causatives: if John throws a ball, it must fly away some distance. Otherwise he has not succeeded in throwing it.

One might try to maintain that there is an effect, but due to the nature of the circumstances it is a temporary and invisible one. But this is the statement of a theoretical physicist, not an inhabitant of the everyday world. There is not the slightest contradiction in saying "I've been hitting this wall for hours, and haven't made the slight impression." Indeed it is at least logically possible that the most rigorous scrutiny possible would reveal no change in the state of the wall.

But more convincing than this appeal to logical possibility is the fact that these verbs of impact are indefinitely repeatable. One can hit a ball twice with one swing of a racquet, kiss a child any number of times without decreasing the qualification of the later actions to be called kisses. But true effective causatives require that their original effect should have been dissipated or annulled before they can re-apply: one cannot kill a fly twice unless it arises from the dead; nor can you roll a ball that is already rolling from a previous impulse.

Indeed so clear is it that these simple actional predicates do not entail an effect that they can even apply a number of times separately but simultaneously. If Bertha simultaneously hits Jules with a club in the chest and a rolling-pin in the back, it is natural to say she hit him

twice at the same time. But if he keels over as a result of this double

assault, it would be impossible to say that she felled him twice at the

same time, even if either blow would have been sufficient to do the job

alone.

There is evidence, then, of the existence of simple actional verbs

that do not embed a resultant state. (Naturally, it is not ruled out that

they are to be found in other semantic areas than that of Impact, although

I have found no good examples elsewhere.) The question now arises of

how they can be represented within our system.

It turns out that the dynamic framework of T G S P will fit quite

well. The object affected by the impact will be the goal of the action;

the actor will naturally be the source. As for the theme, we look for

something that passes from source to goal: the natural candidate for this

is the action itself. Indeed, some such idea is already implicit in the

term 'transitive' itself, implying a transition of the action from source

to goal, agent to patient.

As for the Path, two natural identifications suggest themselves.

If we consider first of all what is likely to be the path of an action,

i.e. that through or over which the actor inflicts the action on the goal,

the most natural identification is with the Means through which the action

is completed. This will be the familiar role of Instrument as a subcase.

On the other hand it is possible to reach another conclusion by looking

at the feature specification of path: [+ So, + Go] . This suggests

that it have the properties both of actional source and goal, of agent

and patient. This brings to mind the Reciprocal role in expressions

like "John talked <u>with Mary</u>", "the president met <u>with his ministers</u>".

Since both of these roles need to be mentioned in our system we shall

accept that the actional path can be interpreted either way.[6] This

decision will be confirmed when we come to consider Semantic Linking: it

will become clear that languages often conflate the marking for these two

roles. If it is necessary to distinguish the two, the feature [± Animate]

can be pressed into service, a feature which otherwise we had not needed.[7]

This identification of instrumental means as the action path explains

a point which has been noticed by Gruber 1976, p. 163: "an instrument

phrase can only occur if the subject is an agent". (And cf. Chafe 1970's

implication relation, noted in (1,19) above.) Instruments can only

appear in actional predicates. Agents (S) outrank instruments (P) on

the hierarchy of functional roles, but actional P outranks all other

actional roles. Hence instruments will occur as surface subjects unless

there is an agent expression present (e.g. <u>The key opened the door</u>).

Hency instruments will only occur on the surface represented by an

oblique phrase if there is an agent present to take the surface subject

slot. For details of this in Sanskrit, see section 3.2.3 below.

---

[6]The conflation of Means and Reciprocal in this intimate way is not
satisfactory. Semantically, the roles are very different, and to reflect
this difference we are forced to introduce the otherwise unmotivated feature
Animate. However, the semantic linking of such case-markers as English <u>with</u>
and the Sanskrit Instrumental does show the two to be members of a natural
class. And the FS system otherwise has nowhere to put the roles Reciprocal
and (its External equivalent) Accompaniment. (Cf. 1.3.7.)

[7]A parallelism of relational goal with patient, source with agent,
and path with instrument or means has also been suggested in Anderson
1971, pp. 173ff. His evidence is of the kind that we shall introduce below
under the heading of semantic linking.

It is also possible to extend the use of the feature Se to cross-cut the domain of actional predicates. As before, we use it of predicates which entail that one of their participants at least is sentient. Beforehand we used it to distinguish Possession and Cognition from Position and Identification. Now we use it within the realm of Actional predicates, to distinguish Agentive from Eventive predicates. Agentive predicates require that the action originate in an animate cause, an agent. The roles which co-occur with these two different types of actional predicate are set out in (1,47).

(1.47)	T	G	S	P
Eventive (-Se)	Event	Patient	Cause	Circumstance
Agentive (+Se)	Action	Victim	Agent	Means/Reciprocal

The two types can be illustrated in the sentences: The dam-burst (S) hit the village (G) with a wall of water (P) in the worst disaster of the century (T). Helga (S) hit Sigurd (G) a hefty blow (T) with the milking-pail (P).

We shall posit a new feature ± Ac to distinguish actional predicates as a class from all the others, which we shall henceforth term Relational ([- Ac]). This classification makes sense semantically, since actional predicates are those where the moving entity is essentially abstract, an action tranmitted from source to goal by the source's power. In relational predicates, on the other hand, although the entity that moves may not be a material object (e.g. in the case of cognitional predicates, it is a mental object -- cf. the discussion of this in Jackendoff 1978, pp. 213ff.), the motion is not necessarily controlled. The theme is thus the centre of interest within a predicate, the source in an actional one. And this difference is brought out in the determina-

tion of the hierarchy of participant roles to be discussed under the heading of grammatical linking in 1.4.6. Themes are the highest roles within relational predicates, sources within actional ones.

Actional predicates, involving S and P as they do, must be included in the + Dy class. This is semantically natural since they all connote events, which like motions and processes contrast with persisting states. We express this with the feature redundancy:

(1.48) $[+ Ac] \longrightarrow [+ Dy]$

For convenience, just as we have been representing the relational predicates with subscripted varieties of "GO" and "BE", so we shall use "DO" as the shorthand for actional predicates.

We are now in a position to set out the full set of participant roles that form part of simplex predicates. These will be augmented in the next session, 1.3.7, when we come to consider how the same basic role-meanings are transmuted in connexion with predicate embedding.

(1.49) <u>Chart of Internal Functional Roles</u>

	Ac	Se	Abs	Dy	Inv	Vol				
BE_{Posit}	−	−	−	−	−	−	Theme	Locus	−	−
GO_{Posit}	−	−	−	+	−	−	Theme	Goal	Source	Path
BE_{Ident}	−	−	+	−	−	−	Theme	Attribute	−	−
GO_{Ident}	−	−	+	+	−	−	Theme	Tendency	Pt. of Ref'ce	Respect
BE_{Poss}	−	+	−	−	−	−	Owned	Owner	−	−
$BE_{Poss'}$	−	+	−	−	+	−	Owner	Possession	−	−
GO_{Poss}	−	+	−	+	−	−	Transferred Object	Recipient	Ex-owner	Medium of Exchange
$GO_{Poss'}$	−	+	−	+	+	−	Recipient	Acquisition	Lost obj.	?
BE_{Cognit}	−	+	+	−	−	−	Mental obj.	Experiencer	−	−
$BE_{Cognit'}$	−	+	+	−	+	−	Experiencer	Experience	−	−
GO_{Cognit}	−	+	+	+	−	−	Mental obj.	Experiencer	Source of Info.	Faculty/ Means of Comm.
$GO_{Cognit'}$	−	+	+	+	+	−	Experiencer	Experience	Object Unknown	?
GO_{Volit}	−	+	+	+	+	+	Wisher	Aim	Aversion	Strategem
DO_{Ev}	+	−	−	+	−	−	Event	Patient	Cause	Circumstance
DO_{Ag}	+	+	−	+	−	−	Action	Victim	Agent	Means/ Reciprocal

The feature system proposed here is not the first such attempt to characterize the participant roles. (Cf. Nilsen 1972, who also summarizes the previous system of McCoy 1969.) It is, however, the one that uses its features most economically: compare its 8 features used to designate 48 separate roles with Nilsen's 6 features for 6 roles or McCoy's 13 features for 15 roles. It is therefore the richest in predicting natural classes of roles, classes which we shall see utilized in the specification of Case-Linking rules.

1.3.7 EMBEDDING. EXTERNAL ROLES.

We have an analysis for tne simple actional. But we have not
yet given one for the true causatives with which we so laboriously con-
trasted them. Following a large number of predecessors, we shall represent
them semantically as an embedded structure, the predicate that represents
the resultant state (BE) or process (GO) embedded inside a causal operator
which makes space for an extra argument place, that of the Instigator.

But what is this causal operator? Is it necessary to posit a
new primitive in the system or is it possible to make do with something
already at hand? If we introduce a new primitive, it will be necessary
to stipulate arbitrarily the properties which these causatives share
with the simple actionals -- viz. their co-occurrence with agent and
cause roles, and with instruments (a sub-type of Means). It is justified,
then, in the interests of capturing a generalization, as well as on grounds
of theoretical economy, to identify the causal operator with the Actional
predicate itself. Since one of its arguments, the Theme, represents the
action itself, it is clear that it is under this role that the subordinate
predicate must be embedded. The truth of the complex proposition as a
whole entails the truth of the proposition embedded within. Causatives
are 'factive' structures.

This new role of Instigator is the first of the External roles
that we have distinguished -- i.e. participant roles associated with a
predicate into which another predicate, with other (Internal) roles, is
embedded.

Causative FS are often realized lexically with a predicate-word that incorporates the meaning of the outer predicate: hence <u>show</u> differs from <u>see</u>, even though the innermost predicate of both is the same, "GO$_{Cognit}$': T G P(eyes)". But this is not always so. Consider for instance the sentence in (1.50).

(1.50) Bertie washes his car in the garage.

Here the action is located in the garage, and it is most straightforward to represent this as in (1.51).

(1.51) BE$_{Posit}$: T(DO: T(wash) G(car) S(Bertie)) G(in garage)

Here the whole proposition that Bertie washes his car is embedded inside the theme of the locative predicate "BE$_{Posit}$". (We introduce here a notation of which we shall make a lot of use: the item which constitutes a particular role appears in parentheses after the initial of that role.)

This formulation coincides neatly with Starosta 1978's distinction of Locus and Place. Starosta observes that a Locus (an inner locative) specifies the position of the Patient alone (our Theme, in the present context), while the Place (outer locative) sets the scene for the action or state as a whole" (p. 495). Contrasting with the outer locative in (1.50), we have the inner locative in (1.52), analyzed semantically as in (1.53).

(1.52) Bertie keeps his car in the garage.

(1.53) DO: T(BE$_{Posit}$: T(car) G(in garage)) S(Bertie)

It will be seen that in both (1.51) and (1.53), the locative expression, "G(in garage)", specifies the location of the Theme of its predicate. It is just that in (1.51), that theme is a whole embedded proposition.

What then can be said about the potentialities of predicate embedding within this framework?

There is no space here for a discussion of how the role inter-
pretations differ when the roles occur externally, i.e. with a proposition
embedded inside their corresponding theme. It is clear, though, as a
comparison of the two tables (1.49) and (1.54) makes clear, that our
framework, developed for the internal roles, provides good candidates for
most, if not all, of the external roles that we shall want to recognize.
Some explanations, and notes on particular difficulties follow.

(1.54) External Roles (excluding Volitional)

	G	S	P
BE_{Posit}	Place	-	-
BE_{Ident}	Time	-	-
GO_{Posit}	Limit	Pt. of Origin	Extent
GO_{Ident}	'Until'	'Since'	Duration
GO_{Poss}	Beneficiary	'Thanks to'	?
GO_{Cognit}	Ethic Dative?	Subject-matter?	Criterion?
DO_{Ev}	Affectee	Cause	Manner
DO_{Ag}	Affectee	Instigator	Accompaniment

Clearly there are gaps here, but the framework seems promising
as a starting point. The Actional, and the Positional and Identificational
parameters among the Relational, are the most satisfactory. "Affectee"
will be used to represent the adversely affected entity in constructions
like the Japanese adversatives, and cf. on me in "They confiscated my
license on me!". And the positional/identificational opposition has been
exploited to distinguish space and time. This is neat, but I know of
no evidence in its favor: perhaps both space and time should be included
indifferently under Positional. Note the use of the Path participant to
represent extent and duration. Evidence from Sanskrit which strongly

supports this will be presented in 3.1.2.3 below.

As for the others, the suggestions must be taken as extremely tentative, merely intended to suggest the potential of this sort of framework. The casting of the goal of GO_{poss} as Beneficiary, though semantically natural, does not explain the correlation with agentive predicates noted by Chafe (cf. (1.19) above). 'Subject-matter' is intended to represent the meaning of English about or concerning, 'Criterion' the sort of by used in oaths: it corresponds to the critical means used in cognitional predicates of judging: he knew him by his curious gait.

We might note that volitional predicates also admit of embedding. But here it seems most natural to embed under the Path slot, the Stratagem by which the desire is to be brought about. Then the goal, corresponding to the object aimed at, will be the Intention of the embedded proposition: he went out for some milk. The source will represent the entity for fear of which the embedded proposition takes place. Apparently, a number of Australian languages have a special case-marking semantically linked with this role: see, e.g. Dixon 1977, p. 350.

The theme might be the Wisher himself, often realized within desiderative sentences for example. But this poses a problem. The embedded proposition, representing what the wisher desires, should be embedded under the G, rather than the P, which represents the wisher's stratagem. Perhaps this desiderative 'wisher' role, then, should be regarded as a variety of 'Ethic Dative', i.e. as an external cognitional goal? But there are other reasons for doubting whether desiderative sentences involve quite this sort of embedding. All other instances reviewed here, including Causatives, Locative Specification and the rest, have the property that the truth of the whole complex entails the truth

of the embedded proposition. If John shows Mary a picture, Mary sees a picture. If Bertie washes his car in the garage, Bertie washes his car. This is not true of desideratives: if Antinous desires to wed Penelope, this wish implies nothing about his success.

We are left with the following incomplete pattern for volitional embedding:

(1.55) <u>External Volitional Roles</u>

	T	G	S	P
GO_{Volit}	?	Purpose	Fear	?

We introduce the feature $\pm$ External (<u>Ext</u>) to distinguish between those instances of a given role that occur with a predicate that has a further proposition (predicate + roles) embedded in it.

Before leaving the subject of Embedding, we also mention another notational convenience. Since embedding always takes place inside the theme slot of the Lost predicate, we shall omit the predictable 'T' which would mark this role. Hence to represent the FS of 'John washes his car in the garage' we shall typically write, instead of (1.56), the formula shown in (1.57) for the identity of the various roles, cf. (1.51) above.

(1.56) BE_{Posit}: T(DO: T G S) G

(1.57) BE_{Posit}: (DO: T G S) G

1.3.8 FORMATION RULES FOR FUNCTIONAL STRUCTURE. BINDING.

It is now possible to give a set of formulation rules to charac-
terize the co-occurrence of participant roles with types of predicate.

(1.58) Functional Structure Formation Rules

i.
$$\begin{bmatrix} \text{Proposition} \\ \\ \alpha \text{ Features} \end{bmatrix} \longrightarrow \begin{bmatrix} \text{Predicate} \\ \\ \alpha \text{ F} \end{bmatrix} \left(\begin{bmatrix} \text{T} \\ \\ \alpha \text{F} \end{bmatrix}\right) \left(\begin{bmatrix} \text{G} \\ \\ \alpha \text{F} \end{bmatrix}\right) \left(\begin{bmatrix} \text{S} \\ \\ \alpha \text{F} \end{bmatrix}\right) \left(\begin{bmatrix} \text{P} \\ \\ \alpha \text{F} \end{bmatrix}\right)$$

ii.
$$\begin{bmatrix} \text{T} \\ \\ + \text{ Ext} \end{bmatrix} \longrightarrow \begin{bmatrix} \text{Proposition} \\ \\ - \text{ Ext} \end{bmatrix}$$

Proposition is the initial symbol of this rule-system, and terminal

symbols are Predicate, T, G, S, and P; but [T, + Ext] is not a terminal

symbol, so that rule ii must apply whenever it can.

'α Features' (or 'αF') stands for a complex of plus/minus specifi-

cations for all the features Ext, Ac, Se, Abs, Dy, Inv and Vol. These

specifications are assigned arbitrarily to propositions, and are transmitted

to each of the symbols that they dominate, by i. If T is marked [+ Ext]

in this way, it will trigger rule ii, causing i to re-apply to expand

the new, embedded, proposition. But there will be no more embedding than

this: by ii the embedded proposition will be [- Ext], so that its Theme

will be [- Ext] too, and ii will not be triggered. T, G, S and P are

of course themselves complexes of features. Each is of quite optional

occurrence.

Restrictions among the feature-complexes permitted are given

by the Redundancy Rules, which have been noted above when their motivations

were being discussed. They are restated here for convenience.

(1.58) <u>Feature Redundancies</u>

      i. [+ So]   —→   [+ Dy]

     ii. [+ Inv]   —→ [+ Se]

    iii. [+Volit]   —→ [+ Se, + Abs, + Inv, + Dy]

     iv. [+ Ac]   —→ [+ Dy]

These can be thought of as filters on the output of the formation

rules. Not all the entities generated by the arbitrary combination of

feature values have been identified, and it may be that more redundancies

can be discovered. But the fewer they are, the greater is the justification

for using a binary feature system to represent the structure of this

semantic domain.

These rules constitute a theory of the internal structure of the

predicate, relating the participant roles they select to the properties

of the predicate in question. The structures they generate constitute the

mass of functional structures available as the semantic component of lexical

entries, and in principle represent all the different relations of argument

to predicate possible in natural language.

The rules do not constitute a general theory of the semantic

structure of sentences, which needless to say would be far more complicated

and extensive. But we do claim that they are a necessary component of

such a theory.

Finally, it should be noted that the roles specified in functional

structure will not always be independent of each other. In particular,

it can be specified that one of the external roles <u>binds</u> one of the roles

within the embedded predicate -- i.e. that the two are obligatorily

co-referent. This will be necessary, e.g., in the representation of

desiderative predicates, where the wisher is often coreferent with the agent of the embedded action, or theme of the embedded relation. We shall mark this by subscripting the two arguments with the same lower case letter, typically i.

The binding is only possible between an external and an internal role; and furthermore a bound internal role is not available for purposes of Linking. (See 1.4. below.) A bound internal role may therefore be considered exactly on a par with an orthodox bound variable. The binding role, on the other hand, which will occur externally, is no different from any other role for purposes of linking.

1.3.9 CONCLUSION

The system of predicate types and associated participant roles
expounded here is extensive, and is intended to be exhaustive in its
coverage of the relation between predicate and different types of argument.
But of course, it is not a complete theory of predicate type, nor of all
the kinds of relation that a referring expression can bear within a pro-
position. We have said nothing, for instance, of aspectual differences
between predicates. And we have made no attempt to outline a theory of
the varied semantic relations which may interpret adnominal noun-phrases --
e.g. a pound of chocolate, a man of honour, the City of Rome, a ring of
gold, Ur of the Chaldees.

What we have provided is at the moment no more than a system for
the organization of reality. Although we have nodded a few times in our
determination to keep the exposition free of linguistic argumentation,
the system has as yet very little empirical content.

This will come when we start to specify the rules which link
expressions of natural languages with the various entities in this
semantic theory, and the constraints on the form of these rules. Some of
these will be suggested in the three sections of the introduction
remaining. Under Linking Rules we shall look to the features of FS
to define natural classes of roles which can be linked with particular
case- or preposition-marked NPs in various languages; and to define a
hierarchy on these roles in the context of particular predicates, a
hierarchy which will be the basis for grammatical linking. Under Lexical
Entries we shall look to the embedding structure of FS to determine the

maximum complexity of a fragment assigned as the meaning of a predicate-word. And under Diathesis, we shall again look to FS, this time for neat characterization of the meaning-changes which correspond to the different diatheses of predicate-words.

1.4 LINKING RULES

1.4.1 INTRODUCTORY OVERVIEW

1.4.1.1 A SKETCH OF CASE LINKING. ITS RELATION TO BRESNAN'S 'REALISTIC TRANSFORMATIONAL GRAMMAR'.

So far, we have discussed one or two aspects of the syntactic incidence of case-markers, and outlined a system for the representation of the meaning of predicates and their co-occurrence with various participant roles. We now turn to the rules which relate case-marked NPs to participant-roles, the Linking Rules.

The need for such rules -- the concrete embodiment of the relation between form and interpretation within the realm of Case -- is largely independent of any particular model of syntax and semantics. In every model that covers the same ground that we do, there will have to be a representation of propositional meaning, of sentence form, and of how the two are interrelated.

I shall use a particular model which seems to me the most promising of those available at the moment, where the three areas of Meaning, Form and Linking constitute autonomous components; and the Lexicon plays a large role in determining the well-formedness of sentences and in assigning Links. The model is essentially compatible with, and may be thought of as an extension of, Bresnan's 'Realistic Transformational Grammar' (1978 -- henceforth RTG). It also bears some resemblance to

Starosta's 'Lexicase' model, though in this case the likeness is not genetic.

In the remainder of this subsection, I shall sketch out the nature and scope of the rules of Linking, and their interaction with the other components of the model. I shall then compare and contract it with the Lexicase model. I shall then pick out the corresponding areas in two rival types of theory, a very broadly drawn 'Generative Semantics' (including Relational Grammar and Panini's k̄araka theory), and Chomsky's Revised Extended Standard Theory. I do this in the hope that linguists who embrace these points of view will be able to see the relevance of Linking to their own concerns, even when they do not accept the way that the principles are formulated here.

Bresnan's RTG posits a powerful lexicon. Entries for predicate-words include considerable information about their syntactic context of occurrence, including a statement of which NPs co-occur in their phrase; they also relate these and other NPs to argument-positions in the word's functional representation (FR). (Bresnan uses the term 'functional structure' to refer both to the complete functional representation of a sentence, and to the fragment of this which will occur as part of a lexical entry. We shall systematically use 'functional representation' (FR) to refer to this part of the lexical entry, preserving 'functional structure' (FS) to refer to the complete structures which interpret whole sentences and to the system of representation itself.)

For example, lie, rely, and hit receive lexical entries as in (1.59). (cf. Bresnan 1978, p. 17.)

(1,59) a. lie   V, $[\underline{\quad}PP]$ NP_1 LIE LOC

        b. rely V, $[\underline{\quad}PP[\underline{on}\ NP]]$ NP_1 RELY-ON NP_{on}

        c. hit   V, $[\underline{\quad}N\bar{P}]$ NP_1 HIT NP_2

This verb lie, then, may only be inserted into a syntactic struc-
ture where it precedes a PP in its phrase, and rely only where it precedes
a PP in its phrase, a PP whose preposition, moreover, must be on. Hit
must be inserted before an NP, i.e. it is transitive. The right-hand
constituent of these entries, the FR, ensures that, in the interpretation
of sentences containing these words, the predicates LIE/RELY-ON/HIT are
involved; that the syntactic subject NP (designated as 'NP$_1$') is associated
with their left arguments; that the PP interpreted as right argument
of LIE is a locative expression; that the NP governed by on is right
argument of RELY-ON; and that the structural direct object (NP$_2$) -- i.e.
the NP directly dominated by VP -- is interpreted as the right argument of
HIT.

Our essential purpose in this work is to propose some refinements
in this account, chiefly in the sphere of the FR. We propose a new
formalism, that of FS in 1.3 above, to represent these items. This
gives a clear sense of which argument is which, in place of the vague
'left argument' and 'right argument'. And, following Carter 1976, we
propose that the association of NPs with argument positions is not
arbitrary, as it might well have been, given Bresnan's notation. For
example, Bresnan's notation would allow in principle "NP$_2$ HIT NP$_1$" as a
possible FR for hit.

We propose the existence of general principles of Linking between
NPs and participant roles (or argument-positions). NPs are identified in
terms of their formal case, within the language in question, a case which
may or may not be structurally induced. Participant roles are identified
in terms of their feature specification within FS.

Ideally, then, it would be possible to eliminate all stipulation of the association of NPs with argument positions. Lexical entries would include only the minimal syntactic characterization of the predicate's incidence, and its meaning or FR, given in the FS formalism. Linking principles would ensure that all the necessary case-marked NPs co-occurred in order to associate one with each of the roles required by the FR; and the same principles would ensure that the necessary associations were established.

In practice, however, it seems that some stipulation of Linking within lexical entries is necessary. But this, as we shall see, can be limited to a stipulation of the role associated with the object NP of a transitive verb, and (in marked items) of the role associated with the surface subject.

It is possible, therefore, to rewrite the sample lexical entries as in (1.60).

(1.60)   a. <u>lie</u>   V intrans. BE_{Posit}: T G P(prone)

         b. <u>rely</u> V intrans; <u>on</u> NP BE_{Cognit}: T G P(trust)

         c. <u>hit</u>   V trans. (G)   DO: S T(impact) G..

By its FR, <u>lie</u> has two arguments to fill, theme and goal, representing prone party and location respectively: this identification follows from the theory of FS. Two NPs are thus required if this verb is to occur in a sentence where it can be interpreted. We may presume that one NP, which will be marked nominative, will be generated obligatorily in every sentence of English -- the familiar 'NP dominated by S'. A rule of Grammatical Linking will associate this NP with the highest argument position, here T. Another NP will be required, and this will have to occur in a PP: PPs are very freely generable in English phrase structure.

(No transitive object NP is possible with the intransitive lie.) Since the NP must be linked with a goal, only certain locative prepositions, mentioned in the Semantic Linking rules that associate NPs with positional goals will do. The role of path (P) which gives a more specific flavour to the basic "BE$_{Posit}$" which represents locative states, is taken as already filled. Together, then, our principles will predict that a nominative subject and a locative preposition phrase will just suit lie.

Similar reasoning will show the adequacy of the other two entries. Rely obligatorily selects on as its co-occurring preposition; and the same semantic linking rule that takes care of on in The cat lies on the mat. will associate it with the goal. (Note that the theory has succeeded in capturing even the extremely obscure semantic parallelism between lie on and rely on: BE$_{Cognit}$' differs from BE$_{Posit}$ only in the features Se, Abs and Inv, and the specification of meaning in the path slot.) Hit is transitive, hence will co-occur with both nominative and accusative. The transitivity specification requires in this case that the accusative be linked with the goal (i.e. the Patient, by the theory of actional predicates). Hence the other NP will be linked with the source, the Agent or Cause. In fact this association would have been predicted anyway by the Normal Hierarchy of grammatical linking. But we shall see that there are cases where this specification of transitive object linking is required.

This short example has assumed, that English NPs are case-marked in virtue of their structural position (somewhat as is suggested in Chomsky, forthcoming). But it would not be a major divergence from the system to suppose that English NPs are not marked for Case, and that Linking pays attention simply to their structural positions and the prepositions that govern them. This would be more in accord with the

surface facts of the language, where overt case-marking is vestigial. But the claim that cases are involved does not, apparently differ empirically from this, while making the properties of Linking easier to state in universal terms.

An important point to notice is that <u>the Linking Rules are not restricted to application within lexical entries</u>. The locative prepositional phrase that co-occurs with <u>lie</u> does not figure in its lexical syntactic context. More radically, it may happen that external roles figure in neither syntactic context, nor in the FR of a predicate-word with which, nevertheless, they may co-occur. For instance, in <u>John washes his car in the garage</u>, the phrase <u>in the garage</u> has no place either in the syntactic context of <u>wash</u> or in its FR. Yet there is an FS for the sentence as a whole: "BE$_{\text{Posit}}$: (DO: S T(wash) G) G". (Cf. 1.3.7 above, for some discussion of this FS.) And the semantic linking rule that associated the positional goal here with the PP <u>in the garage</u> is, ceteris paribus, best identified with the linking rule that associates the same phrase in <u>John keeps his car in the garage</u>, where the goal would appear in the FR of <u>keep</u>, "DO: S (BE: T G)". We shall in fact want to claim (see 1.5.2 below) that Grammatical linking rules apply only within lexical entries; but that Semantic linking rules apply both here, and within whatever component of the grammar associates FS's with fully specified phrase-markers for sentences. Linking rules, then, are not just a means of reducing arbitrariness in lexical entries: they play a role in sentence grammar too.

Another point is that <u>not all the association of NPs with positions in FS is the business of Linking Rules</u>. In particular, when dealing with phenomena of Agreement in Sanskrit (largely comparable to those in other highly inflected Indo-European languages), we shall want to claim that the

relation between an NP and the predicate word (verb or adjective) that
agrees with it is interpreted not via Linking, but through a rule of
Predication. (See below, sections 3.3.2 to 3.3.4.) This means that
the argument-place to be occupied by the 'subject' of the predicate-word
must be held open when the process of Linking applies. This is achieved
through the introduction of a concept of 'Empty Slot'. a dummy element
that is linked along with formal cases. When the Predication rule applies,
an NP which bears the same overt markers for person, number, gender and
case as the predicate-word will be associated with the predicate-role
held by ES. There seems to be no reason why this device should not be
adopted for English, which also has Agreement phenomena, though on a much
less extended scale than Sanskrit.

The rule of Predication will be just one of the rules which establish
associations between constituents of complete lexically specified sentences
with complete semantic structures. FS's constitute the core of these
latter.

The lexicon, in Bresnan's model, contains separate representations
for the derived forms of predicate words -- e.g., for past participles.
So, for instance, the past participles corresponding to (1.59)b and c
have lexical entries as in (1,61)   (Cf. Bresnan 1978, p. 20.)

(1.61)   b. <u>reli+ed</u>   :   V, $\left[\text{be} \underline{\quad} \left[\text{on} \right] \right]$ (Ex) x RELY-ON NP_1

         c. hit+$\emptyset$:   V, $\left[\text{be} \underline{\quad} \right]$ (Ex) x HIT NP_1

The linking of NP_1 has changed here. It is now associated with
the right argument. Bresnan captures this by incorporating in her
lexical rule of Passive the stipulations: <u>Eliminate NP_1</u>, and either
<u>Replace NP_2</u> <u>by NP_1</u> or <u>Replace NP_p</u> <u>by NP_1</u> (p. 21). We can replace these
arbitrary stipulations by supposing that verb diatheses (defined in 1.1.

above); and cf. 1.5.3) are to be analyzed with lexical rules that act on

the morphological form, syntactic content and FS of lexical entries, but

make little or no appeal to specific linking principles. For example,

in the case of the English passive, we may posit a change in FR (along

with morphological and syntactic changes that we will not go into here).

(1.62)   <u>Passive</u>   FR: Delete highest role.

This will mean that for the passives of the verbs in (1.60), we

get the FRs in (1.63).

(1.63)   a. <u>lain</u> BE_{Posit}:   G P(prone)

         b. <u>relied</u> $BE_{Cognit'}$:   G P(trust)

         c. <u>hit</u>   DO: T(impact) G

Grammatical linking will not associate the ES with the highest

role available, just as it did before. The only difference is that now

a different role is highest, so that a different association will be made.

Needless to say, this is not a complete analysis of the English

passive. We have said nothing about <u>by</u>-phrases, or why <u>lie</u> does not have

a passive while <u>rely</u> and <u>hit</u> do. The aim of this example was purely

illustrative: to show the Case Linking approach to verbal diathesis,

and hence throw a little more light on the linking rules, as principles

that have greater generality than the particular lexical entries in which

they apply. More complete analysis of the Sanskrit passive will be

offered below (chapter 5); and an analysis of the Japanese passive along

these lines will be found in Ostler <u>forthcoming</u>.

We have not specified an algorithm for the application of Linking

Rules and the other principles involved in the generation and interpre-

tation of sentences in a natural language. Rather, our approach is to

formulate definite principles of linking etc. which legitimize certain

associations. Any sentence that is well-formed formally, and has all constituents adequately interpreted in accordance with these principles, will count as a well-formed interpreted sentence. All that is required of a generative theory is that it be explicit and complete; and we shall do our best to approach these two ideals, at least in our analysis of the substantial fragment of Sanskrit which forms the body of this thesis. But we shall not attempt to realize this theory as a model of language production or comprehension. (See Bresnan 1978, pp. 50ff., for some discussion of how grammars of this type may be realized for these purposes.)

However, it will be helpful to give a quasi-flow-chart of how the various components of the grammar mentioned here interact. It is only a quasi-flow-chart, since there is no particular Start or Finish. Various routes through the set of interacting principles could be specified: but each would constitute an abstract attempt to construct a realization model.

This work will have little to say about transformational rules of movement or deletion. It is assumed that they have no role in either formal or interpretive Case phenomena. Wasow 1978 has shown that the distinctions in types of passive made in Wasow 1977 do not have to be interpreted as showing that the passive must be at least partly transformational. We shall follow him in assuming it to be wholly lexical -- at least in the main language at issue in this work, Sanskrit. The more universal suggestion proposed here is that all the rules which generate the diatheses of predicate-words are lexical in this sense. (Cf. 1.5.3 below.) It is unfortunate that Bresnan 1978 picks Agreement in English as an example of a transformation, since if our remarks above (and in 3.3.2-4) are correct, there will be no Agreement rule as such in the syntax of English at all: agreement is rather a phenomenon of semantic matching, a formal constraint on the interpretive process of Predication.

FIGURE 2: CASE LINKING: INTERACTION
OF THE VARIOUS COMPONENTS

F U N C T I O N A L
S E M A N T I C S   S Y N T A X

| Functional
Structure
Formation
Rules | =======> FS   PS <======== | Phrase-
Structure
Rules |

| Constraints
on Binding | =====> FS
with
Binding   Case-
marked <=====
PS | Case-
Incidence
Rules |

| | Trans-
formations | Morphology,
Phonology |

L E X I C A L
E N T R I E S

| General
Syntactic
Context
(GSC) | ==============> Lexically
Specified ———> Surface ——> Phonetic
PS   Struc- Strings
tures |

| Functional
Representation
(FR) | =====>· Initially
Matched
FS + PS |

L I N K I N G

| Linking
Specifications
(LS) | =======> FR-
Linked <===============
FS + PS <============= | Grammatical
Linking:
Normal
Hierarchy |

Diathetical
Rules

Completely <===========
Linked
FS + PS

| Semantic
Linking Rules |

O T H E R
I N T E R -
P R E T A T I O N

Completely   <======== Predication
Interpreted   <=========
FS + PS   <========= Coreference

. . .

1.4.1.2 COMPARISON WITH 'LEXICASE'

Some readers will have noticed a similarity in this conception of grammar to the Lexicase model, familiar to me from Taylor 1971 and Starosta 1978.

In this theory there is again a very large role for the lexicon, which is the only formal component of the grammar besides the base rules. In Taylor's 1971 grammar of Japanese, the lexical entries for predicate-words are required to mention all the formal cases which can co-occur with a given predicate. Furthermore, each such marking for the co-occurence of a case contains within it a specification, in terms of Fillmore's Case-system somewhat extended, of the participant-role of the NP in question. Besides this, nouns receive a separate lexical entry for each of their case-marked forms, (← a little strange in Japanese, where this case-marking is all perfectly simple and regular, using one suffixed particle for each case).

In all these areas, where patterns are observed, lexical redundancy rules are postulated in order to capture the regularities. Co-occurrence restrictions ensure that when these nouns and predicate-words are inserted into a base-structure, incompatible combinations are filtered out. There is also a claim that transformational rules do not exist (e.g. voiced in Starosta 1978, pp. 463-4): a single base-structure, with lexical items ordered from left to right as in the surface string, is allowed for each sentence. Hence, again as in Case Linking theory and Bresnan's RTG, verb

diatheses are handled by lexical (redundancy) rule, each form of the verb
having its own lexical entry.

This is not the place for a detailed criticism of Taylor's analysis
of Japanese. But it is admitted that the grammar does provide a description,
which is substantially adequate observationally, of the association of
case-marking with grammatical role, and of the syntagmatic formal con-
straints on the incidence of case-marking in surface structures. Furthermore,
the device of lexical redundancy rules enables it to state most of the
generalizations to be observed.

However, it is at the explanatory level at which the theory suffers
from a comparison with Case Linking. Lexical redundancy rules become a
remarkably heterogeneous set of rules when they are made to do this much
work. Perhaps they might serve as the basis for a typology of rules
which would advance our understanding of what sort of rules there are:
but within the Lexicase framework the work has not yet, to my knowledge,
been done. (It may be that Lexicase theorists consider it premature to
begin such work until a large number of grammatical studies have been
completed in this relatively non-committal format.) Case Linking theory,
on the other hand, has distinct components for Case Incidence, Semantic
linking rules, Grammatical linking rules, and principles of Functional
Structure, as well as having a well-defined place within a general theory
of grammar.

Furthermore, there is no treatment in Lexicase of the relations
of predicate type to co-occurrent role: there is nothing to compare with
the extensive theory of FS. It has already been remarked (in 1.3.2.2)
that Fillmore's 'Case Grammar' lacks any theory to ground the roles it
distinguishes: Lexicase has not remedied this inadequacy in its development
of the Fillmorean system.

Finally, of course, neither Case Linking theory nor Bresnan's RTG contains any claim that trnasformations are totally dispensable. Indeed, it seems desirable to embrace the distinction between lexical rules and transformational ones in order to have some formal explanation of the different properties of structure-preserving as against non-structure-preserving rules (cf. Emonds 1976, Wasow 1977). This will, however, not be a point much at issue in this work.

1.4.1.3 COMPARISON WITH GENERATIVE SEMANTICS: RELATIONAL GRAMMAR, PANINI'S 'KARAKA' SYSTEM

Within the Generative Semantics model, FS will be taken as the basic representation of all sentences; our Linking Rules will then correspond to the derivational rules which map semantic into syntactic structure. What we analyze as structurally-induced case will be treated either by transderivational constraints on these rules, or else by surface filters on their output. The classic representatives of this approach to Case are Fillmore 1968, and his followers, e.g. Sasaki 1971, Stockwell et al. 1973, Cook 1978.

The main substantive difference between this model and what is to be proposed here lies in the issue as to whether derivations are necessary to establish the relation between participant-role and case-marking: i.e. must there be intermediate representations of the entities in question, or can the relation be established immediately by Linking Rules? (For a good statement of the issues here, see Marantz 1979.)

These intermediate representations are the essence of Grammatical Relations (subject, direct object, indirect object, etc.). Postal and Perlmutter's 'Relational Grammar" (RG)[8] falls under the heading of 'generative semantics' as used here. This theory posits an indefinite

---

[8] Concrete expositions of RG are hard to come by; but see Harris 1976, Bell 1976, Perlmutter and Postal 1977, Trithart 1975. Two volumes entitled Studies in Relational Grammar 1 and 2 are scheduled to appear, edited by Perlmutter. It appears that Postal and Perlmutter are no longer developing their ideas jointly.

number of intermediate levels, of 'strata', at all of which the participants
in a preposition are assigned grammatical relations (GRs) from a common
universal set (subject, direct object,..., benefactive, locative...).
Unfortunately, although it is claimed that the initial stratum's
assignation of GRs follows somehow from the semantics, this relation has
never been specified. Case Linking, by giving explicit rules which relate
to a well-defined system of FS, has therefore gone significantly beyond
RG in this respect.[9]

It is a real question, though, whether derivations, or stratal
matrices, of indefinite length are required. As we shall see (1.4.6.2),
Case Linking does have the potential to define one, and possibly two, quasi-
intermediate levels between functional role and case-marked NP, by defining
hierarchies on the set of roles and cases respectively, and referring to
entities in terms of their position on the hierarchy. If more than
this is required, this would constitute serious evidence that the Case
Linking framework is not rich enough, and the intrinsically more powerful
'stratal matrices' will be needed. (See 3.2.4 below for discussion of a
concrete case in point.) However, this issue is resolved, RG will still
need to be supplemented with a semantic basis comparable to FS.

Another significant theory of Case which falls under the designa-
tion of 'generative semantics' is Panini's system of k̄araka's. (See, e.g.,
Kiparsky and Staal 1969, Cardona 1974, Joshi and Roodbergen 1975.) This

---

[9] It is a recurrent claim of Postal and Perlmutter that RG is non-
derivational (see, e.g., Postal and Perlmutter to appear). It is not
clear what this claim amounts to, since intermediate strata are essential
to the theory. Perhaps all that P. & P. wish to deny is a particular
directional or temporal interpretation of their strata, with initial
strata somehow 'preceding' later ones. But unless the theory is intended
as a performance model of sentence production, this point is meaningless.

in fact is the direct competitor to the analysis of Sanskrit case and

diathesis which follows. Kāraka's are postulated as an intermediate level

between their defining conditions (largely, but not wholly, semantic) and

the assignation of case-inflexion, vibhakti. Within Case Linking, FS

corresponds broadly to the semantic categories used to define the incidence

of the kāraka's, and formal case to vibhakti.

1.4.1.4 COMPARISON WITH CHOMSKY'S 'REVISED EXTENDED STANDARD THEORY'

Chomsky and Lasnik 1977 (p. 431) posit a model of grammar organization as in (1.64).

(1.64) <u>The R.E.S.T.</u>

1. Base

2. Transformations (movement, adjunction, substitution)

3a. Deletion	3b.. Construal
4a. Filters	4b. Quantifier Interpretation, etc.
5a. Phonology	
6a. Stylistic rules	

The output of 1 followed by 2 is 'surface structures', which undergo further formal modification by the processes in the left-hand column, and are interpreted, independently of all this, by the rules in the right-hand column. This format is essentially endorsed in Chomsky <u>forthcoming</u>, where 5a and 6a are, however, lumped together as a single component, and a component 5b, 'Conditions on Binding', is added at the bottom of the right-hand column.

In Chomsky <u>forthcoming</u> a number of principles of Case Assignment are proposed. These principles apply both "at surface structure", and also before the actual adjunction part of movement rules in the case of [+ Comp] element, the interrogative and relative pronouns in English. Regardless of the details, then, Case-Marking (presumably analogous to our structurally induced case marking) applies as one of the processes which jointly output 'surface structures'. This is necessary anyway, since case-markings

so assigned are referred to both by Filters (in column a), and by the

Nominative Island Condition "which figures in the LF-interpretation component

of the grammar, 3b, 4b..."

Chomsky's model has, as yet, no explicit analysis of participant

roles. Presumably, however, if he considers them capable of systematic

treatment at all, they will be one aspect of LF, the partial semantic re-

presentation derived from surface structures by the components on the

right-hand side. There seems, however, to be little hope of identifying

the extremely abstract structures postulated for FS in Case Linking theory

with LFs, which are no more than variants of surface structures with a

number of different types of cross-reference (indexing, binding, etc.)

established between various constituents. It might be possible, however,

to include Linking as one of the right-hand side processes, which would

establish links between LF in some form and an independent level of repre-

sentation, FS. FS would not be derived from any syntactic representation

of the sentence, but autonomously generated as in 1.3.8. But it seems

preferable to try to abolish LF altogether, and graft its useful properties

as to co-reference and quantifier interpretation onto an extended form of

FS, as is done within Bresnan's framework.[10]

What does not seem to be possible is to incorporate some analogue

of Linking Rules without an autonomous system of FS to link sentences to.

---

[10]Another attempt to derive a form of semantic representation
from syntactic structure is made in Kac's 'Co-Representational Grammar'
(Kac 1978). But this suffers from one of the same faults as RG --
viz. it does not establish any relation between GRs and participant roles:
'SUBJ' and 'OBJ' are primitives of the semantic representations.

Any theory competent to deal with Case must specify the relations between

formal case and the different participant roles, and this is the essential

job of Linking. But eliminating the system of FS which unifies these

roles means that these relations can only be specified on a piece-meal basis.

(Cf., e.g., the discussion of 'thematic relations' in Chomsky 1970, p. 190.)

1.4.2 SEMANTIC AND GRAMMATICAL LINKING

It is traditional to distinguish between grammatical (abstract)

and local (concrete) cases. So for instance, Hjelmslev 1935 summarizes

the mature theory of the Indo-Europeanists on case function:

> ....le nominatif, l'accusatif et le génitif sont concus d'ordinaire
> comme des cas "grammaticaux", et conformément à la theorie localiste,
> mais en accentuant plus le côte concret et matériel de la significa-
> tion, l'ablatif, le locatif, le datif et l'instrumental sont concus
> comme des cas locaux.

And Dixon 1977, analyzing the Australian language (.57) Yidin dis-

tinguished as local cases the locative, allative and ablative, setting

against them the syntactic cases: absolutive, ergative, instrumental,

fear, dative, purposive and causal (p. 124).

However, there seems to be some dispute as to how this traditional

distinction should be interpreted.

Lyons 1968 (pp. 295ff.) seems to have concluded that its essence

lies in the domain of reference of the cases, corresponding pretty much

to what we have been calling the actional/relational opposition. As a

result he includes instrumental, agentive and comitative among the

grammatical functions: and his practice here conveys the implicit claim

that is possible to talk about these 'functions' in abstraction from

any particular language. This confirms the impression that he is talking

more about functional roles here than formal cases.

Hjelmslev 1935, however, seems to see the distinction much more

in terms of two different means by which types of case may be interpreted.

Talking of Rumpel's prototypical 'syntactic' theory of case, which led to

the concept of abstract, grammatical case, he says:

> Cette théorie énonce tout simplement que le nominatif est le cas du
> sujet, l'accusatif le cas de l'objet direct, le datif le cas de
> l'objet indirect, et le genitif une détermination adnominale du
> sujet ou de l'objet. Elle ajoute que le nominatif et l'accusatif
> indiquent une relation au verbe, le génitif une relation au nom, et le
> datif une relation à la phrase entiere...La théorie opere sur des con-
> cepts qui n'ont pas ete définis: les concepts de sujet et d'objet,
> de verbe et de nom.   (p. 48)

On such a theory, abstract cases can be interpreted only in connexion with the word on which they depend, in contrast to the concrete cases, which indicate a specific meaning of their own regardless of whether it is strictly local in kind. A case which always signifies Instrument, say, is no less a concrete case for that.

It is this latter conception of the distinction that we shall develop in our theory of Grammatical and Semantic Linking.

It is not possible to divide cases as such into the abstract and the concrete -- certainly not cross-linguistically, and even within particular languages the typical state of affairs is for some cases to have both abstract and concrete uses. In Japanese, for instance, the accusative, marked with the suffix o, is used in connexion with verbs of arbitrary FR to express their 'direct object' if they are transitive; but it is also used quite generally with intransitive verbs to indicate directional path, along or over. In Classical Greek, the genitive case has abstract uses as befits the standard adnominal marker; but it also occurs freely to designate the Means of Exchange (the possessional path), and Time or Space Within Which (a kind of external relational path). Typically an abstract use of a case will entail its being linked, effectively, with a wide variety of different roles, depending on the FR of the predicate-word on which it depends. Concrete uses, on the other hand, are by definition linked with specific roles, or classes of roles.

The means is already at hand to organize the representation of con-
crete uses of Case. It is enough to associate with a given formal case
a specific set of functional roles which it can signify. We shall turn
presently to the problem of how to state this association. This is the
problem of how to formulate rules of <u>Semantic</u> linking.

But the abstract, grammatical use of Case involves an extra level
of complexity. By definition, cases so used are to be interpreted in
connexion with the predicate-words on which they depend -- or, more
precisely, with their FRs. (As throughout this work, we ignore the problem
of how to specify the interpretation when a predicate FR is not involved,
as in the case of the possessive genitive.) But FRs typically involve
several roles: how are we to associate the right case-marked NP with
the right role? The answer is to define two hierarchies, one of functional
roles (which is universal) and another of formal cases (which will have
to be determined anew in each language.) Then roles and cases will be
associated with each other in order of precedence. These hierarchies are
the essence of <u>Grammatical</u> linking. Where linking takes place at variance
with the predictions of these hierarchies, special Linking Specifications
are required in addition. But adding these complicates the grammar;
and they are, in general, rare.

1.4.3   ROLE-FEATURES AND THE CHARACTERIZATION OF
FORMAL CASES.   CASE SYNCRETISM.

It might be noted at this point that the feature specifications,
which the theory makes available for assignation to formal cases in order
to determine their semantic linking, are not intended as definitions of
the cases themselves. Within Case Linking theory, features define roles,
not cases.

It may be possible to invent another feature system to organize
the formal cases on a universal basis, but this would presuppose success
in the difficult task of identifying formal cases across languages. (Cf.
the remarks on nominative, accusative and genitive in 1.2.3 above.) Or
perhaps, in line with Hjelmslev 1935-7 and Jakobson 1936, feature-systems
for formal cases might be devised on a language-specific basis. Case
Linking theory is sharply to be distinguished from these latter attempts,
which do not sufficiently distinguish the system of roles from that of
the formal cases. Indeed, within Case Linking theory, it would be quite
possible for a formal case in a given language to have no feature specifi-
cation at all: all that would be necessary would be for the linking of the
case to be exclusively grammatical. The nominative seems to be such a
case in many languages.

This means that Case Linking has no direct contribution to make
to the analysis of Case Syncretism. This is primarily a relation between
formal case and its morphological realization. Two cases are syncretized
when they are morphologically identical but syntactically distinct.

The concept is typically invoked in Indo-European studies when two cases morphologically distinct in some parts of the paradigm are identical elsewhere (e.g. Kuryłowicz 1964, p. 199f.). More loosely, the term might be used diachronically, or in other situations where an identification of formal cases cross-linguistically is relatively easy, to refer to the situation where a number of formal cases in one language correspond to a single formal case, or a single morphological case-marking, in another (usually a descendant). Hence Blake 1977, p. 60, gives a table which lists the major syntactically distinguishable (i.e. formal) cases, claimed to occur in all or most Australian languages, bracketing together those which, in some Australian language or other, are realized with the same morphology.

Although Case Linking has nothing to say about syncretism as such, it is possible that certain problems traditionally thought of as syncretistic are in fact within its sphere. Blake 1977, for instance, notes a widespread 'syncretism' of Instrumental with either Ergative or Locative in Australia; and Dixon 1976 devotes a substantial section to documenting this (pp. 313-420). 'Instrumental' is naturally identified with the participant role of Actional Path (means), 'Locative' with Positional Goal (Location), and 'Ergative' with Actional Source (Agent). Blake admits (p. 61) that certain of the languages whose grammars his table summarizes may not afford syntactic evidence that two 'syncretized' roles are distinct cases. If so, the table may not dis-tinguish between instances where one formal case is linked with two roles, and where one morph realizes two formal cases. It is possible, therefore, that part of the explanation for the 'syncretism' observed superficially is that in some languages there is a formal case with the feature specification [+ 'So, + Ac], and in others there is one which is assigned [+ Go]. The former situation would characterize semantic linking with

1.4.4 SEMANTIC LINKING I: MINIMAL FEATURE SPECIFICATION OR PROTOTYPE ROLE?

Roles that are directly associated in language with a certain formal case usually come in groups. It is an advantage of the system of FS set out in 1.3 that its features can be used to characterize these natural classes of functional roles, as is shown by the illustrative analyses of Japanese and Turkish cases in 1.4.5, and of course by the more extensive treatment of Sanskrit in 3.1. These two sections of analysis, however, manifest two rather different conceptions of how the features might be used in the rules of semantic linking.

However, there are two seeming inadequacies in this approach.

On the one hand, of course there will be empirical problems, when a feature-complex which is adequate to encompass the substance of a natural class of roles associated with a given case nevertheless also includes some roles with which that case does not link, or else excludes a few with which it does. At the moment, with the feature system itself in a fairly exploratory state, all that can be done is to note such exceptions as they occur, and try if possible to formulate them in terms of feature-redundancies.

More interestingly, there is the fact that the vast majority of semantically linked cases seem to have locational roles as, in some sense, their central meanings. This is not universally true (cf. the entries for Japanese _to_ (1.4.5.2), Turkish _ile_ and _için_ (1.4.5.3), or the Sanskrit genitive (3.1.7)). But it seems desirable to try to give it some recognition within our framework.

This theory would make a clear prediction for language acquisition.
A child, confronted with a new case-formative and evidence that it could
be interpreted as a fairly recondite role, such as cognitional path or
possessional source (Means of Exchange, Ex-owner), should immediately
infer that it could also be used of simple positional paths and sources.
But the converse inference should not be made. Some work related to this
idea has already been carried out (see De Villiers, to appear), though the
tests made use of roles grammatically linked in the context of English
verbs, rather than semantically linked. The results hitherto, though
promising, are inconclusive. (See also the comments on the experiment
in Marantz 1979.)

If the positional roles are central in this way, this would be
some confirmation of the general claim that the negative values of all the
FS features are unmarked. Within the context of semantic linking rules,
however, this 'markedness' has to be interpreted differently for the
features So and Go, which apply only to roles, than for the others, which
apply to both predicates and roles. With respect to So and Go, the
least marked role would be the Theme, with the negative values for both.
However, it will be noticed that in the analyses that follow, no theme is
ever semantically linked. We must suppose, then, that a semantic linking
specification for a case always involves a certain limited markedness.
It will always contain one, and perhaps both of the feature values $\begin{bmatrix} + \text{So} \end{bmatrix}$
and $\begin{bmatrix} + \text{Go} \end{bmatrix}$. However, for the other features, whose semantic essence lies
in the sort of predicate rather than in the way in which the role partici-
pates in the predicate, the principle holds that a positive specification
is presumed to be absent unless it is explicitly given.

In our illustrative analyses of Japanese and Turkish, we try to make use of this property to minimize the semantic linking specifications. Within this convention, only positive values of features are explicitly noted: hence we can dispense with the '+' sign, and (like Anderson 1971, 1977 -- cf. 1.3.2.5 above) treat our feature symbols as unary symbols, 'components'. This contrasts with our practice in 3.1, where the non-mention of a feature means that both positive and negative values would be instantiated; here in 1.4.5, non-mention means that only the negative value is found, whereas mention of a feature (without a '+' sign) means that both positive and negative values are found.

The result of this notational innovation is that now, the more specific a semantic linking rule is (provided it refers to prototype role) the shorter it will be. But bearing in mind the special nature of the feature So and Go, we shall not apply the convention there. Hence a case semantically linked with paths will be +So, +Go , with sources +So, -Go, with goals -So, -Go . A case that can be linked with both path and source will be designated +So ; one that represents both path and goal +Go .

Where it has been difficult to find an example for a given role the space is filled with a question-mark. A question-mark in parentheses accompanies examples that seem a bit inappropriate. The reader is referred back to (1.49) in 1.3.6, and (1.54) and (1.55) in 1.3.7, for convenient lists of the sets of roles falling under each feature specification.

1.4.5 SEMANTIC LINKING II: CASE STUDIES IN JAPANESE AND TURKISH

1.4.5.1 INTRODUCTION

What follows is intended to provide prima facie evidence that the device for semantic linking constituted by the FS feature-system is substantially adequate. The most important monomorphemic cases and post-positions of Japanese and Turkish are assigned feature specifications, and illustrations are given to show that the variety of roles which these predict are in fact found linked with the forms. Since the aim is not to provide in-depth analyses of Case in Japanese and Turkish as whole languages, but simply to show that the theory is largely capable of accounting for known bodies of facts, most of the data comes from secondary sources (Martin 1975, Katsumata 1954, Lewis 1953, 1967).

1.4.5.2   JAPANESE

<u>de</u>:   [+So, +Go]   Abs, Se, Ac, Ext

Path: mura ni tikamiti de ikimasita

I went to the village <u>by a short-cut</u>

<u>Abs</u>

Respect: eigo de hito ni sugurete iru

to surpass a person <u>in (ability at) English</u>

<u>Se</u>

Med. Exch.:   sono hon wa nisenen de katta/utta

I bought/sold that book <u>for 2000 yen.</u>

Medium of   kono koto o sinbun de yomi, razio de kiki,
Communica-   eigo de syaberimasita.
tion:

This affair I read about <u>in the newspaper</u>,
heard about <u>on the radio</u>, and talked about
<u>in English</u>.

<u>Ac</u>

Circumstance: byooki de nete iru

to be in bed <u>with an illness</u>.

Means: ohasi de taberu.   kuruma de iku.

to eat <u>with chopsticks</u>.   to go <u>by car</u>.

<u>Ext</u>

Extent: ?

Duration: sono keiken wa itiniti de owatta.

That experience was over <u>within a day</u>.

Criterion: watasi no tokei de ima sanji da.

By my watch it's now 3 o'clock.

Manner: gasorin wa rittoru de urarete iru. minna de ikoo.

Gasoline is sold by the litre.   Let's all go.

It is possible that the major omission here, de used to express
the location of an action or activity, should be analyzed with a
separate feature-specification ([-So, +Go, -Ac, -Se, -Dy, +Ext]).
But perhaps it should instead be taken to fill the external positional
path ('Extent') slot left blank above. This latter option receives
some slight confirmation from the fact that in some dialects kara,
which also has some Path uses, is used to designate this role. (See
Martin 1975 (p. 46), and the analysis of kara below.)

to: [+So, +Go]   Se, [+Ac] Ext

Here no non-actional roles are found, suggesting that actional
roles may act as prototypes in their own right.

Reciprocal: dareka to tatakau/au/butukaru/soodan-suru

to fight/meet/collide/consult with someone

No uses as Means are found, a fact which suggests that some use
must be made of the extra feature (Animate?) suggested in 1.3.6.

Ext

Accompaniment: titi to kita

I came with my father.

kara: [+So, -Go]   Abs, Se, Ac, Ext

Source: tookyoo kara kita

I came from Tokyo.

Abs

Pt. of   syakaitekikenti kara sureba ...   (?)
Reference:
            from a social point of view ...

Se

Ex-owner: kodomo kara okasi o totta.

I took the candy from the child.

Source of   kono koto kara wakaru yoo ni ...
Information:

          as you can see from this fact ...

<u>Ac</u>

Cause: ryooke no syakaiteki tii no mondai kara, kono kekkon no
       hanasi wa hadan ni natta.

       The marriage talks were broken off <u>because of the</u>
       <u>(different) social positions of the families.</u>

Agent: teki kara koogeki sareta

       We were attacked <u>by the enemy</u>.

<u>Ext</u>

Point of koo iu kuruma wa hyakuman-en kara arimasu.
Origin:
       This kind of car is (priced) <u>from a million yen up</u>.

'Since': kinoo kara nanimo site inai.

       I have done nothing <u>since yesterday</u>.

'Thanks to': kono sityuu ga aru kara, ie wa taorenai.

       <u>Thanks to this prop</u>, the house can't fall down.

Subject-   kazu kara ieba ...   (?)
matter:
       Speaking <u>of numbers</u> ... (i.e. from the point of view of
                         numbers)

Investigator: watasi kara nakigoto o kikaseru no sae, huyukosi ni
          omowareru desyoo.

       You even seem unhappy that <u>I</u> let you hear me weep.

Fear: ?

Martin 1975 (p. 46) reports that in dialects <u>kara</u> can be used to
mark vehicular means and dynamic location (cf. <u>de</u> above). For
these dialects, <u>kara</u> might be given the designation [+So]   ,
rather than [+So, -Go], and hence include certain paths. It does
not seem that quite such a variety of paths can be signified by
<u>kara</u> as can of sources. But compare the following border-line
<u>expressions</u> between path and source even in the standard language:

Positional Path: doroboo wa mado kara haitta rasii

The thief obviously got in <u>through the window.</u>

Mental Faculty   watasi no me kara mireba ...

looking at it <u>through my eyes</u> ...

Medium of   mado kara heya no naka o nozokeru
Cognition

you can peep inside the room <u>through the window</u>

Criterion?   korera no zizitu kara handan suru to ..

judging <u>from/by these facts</u>,...

<u>**e**</u>: <u>[-So, +Go, +Dy]</u>   Se, Ac

Here we encounter a difficulty fro the prototype-based system of representation, since <u>e</u> only marks dynamic goals. As with the similar problem presented by the meanings of <u>to</u> above, we have marked the relevant feature with a '+', to show that negative values are not found.

Positional Goal: tookyoo e itta

I went <u>to Tokyo.</u>

<div align="center"><u>Se</u></div>

Recipient: sore wa anata e ageta mono desu

That is something that I gave <u>to you.</u>

According to Martin 1975, p. 46, this usage is restricted to downtown Tokyo speakers.

<div align="center"><u>Ac</u></div>

Victim: kiristo e no uragiri

the betrayal <u>of Christ</u>

<u>**o**</u>: <u>[+So, +Go]</u>   Ext

Path: hamabe o aruku

to walk along the beach

<div align="center"><u>Ext</u></div>

Extent: nanazyuu-nendai o ikiru

to live through the seventies.

This example again suggests that the fine tuning, especially of the external roles, is not quite right. 'Duration' would be a more natural characterization for this role.

1.4.5.3 TURKISH

Ablative (-DEN):   [+So]

> Here the two major groups, Source and Path, seem to differ in their further specification. Source includes Volit (hence, also, by (1.58 iii) Inv), and also Ext, whereas Path does not. As a result the two have been kept separate below.

1. [+So, -Go]   Abs, Se, Volit, Ac, Ext

Positional Source: vapur Ingiltere'den Turkiye'ye gitti.

The steamer went <u>from England</u> to Turkey.

Abs

Pt. of
Reference:

bu şundan büyüktür   bundan başka

This is bigger <u>than that</u>.   other <u>than this</u>

bir antikacidan iceri girdik.

We went inside <u>an antique-shop</u>. ('inside, from
the antique-shop's point of view')

Se

Ex-owner   elma anneden aldim

I got an apple <u>from Mother</u>.

Source of   birisinden haber almak
Information:
to learn <u>from someone</u>

Inv

Lost Object: bu gidiş onu yerinden edecek

This behavior will do him <u>out of his job</u>.

Object   birşeyden haberi olmamak
Unknown:
have no news <u>of something</u>

<u>Volit</u>

Aversion: birisinden korkmak/şüphelenmek/nefret etmek

to fear/suspect/loathe <u>someone</u>

<u>Ac</u>

Cause: muvaffakiyetten sarhoş

drunk <u>from success</u>

Agent: fincan hizmetçi tarafından kırıldı

The cup was broken <u>by the servant</u>. (lit. from the side
of the servant)

<u>Ext</u>

Pt. of   perşembeden itibaren her gün
Origin:
             starting <u>from Thursday</u> every day

'Since': ocaktan beri burda oturuyorum

I have been here since <u>January</u>.

Subject- bundan eminim
matter:
             I am sure <u>of this</u>.

Fear: ?   (But cf. under 'Aversion' above.)

2. <u>[+So, +Go]</u>   Abs, Se, Ac

Positional pencereden girdi
Path:
             He came in <u>through the window</u>.

<u>Abs</u>

Respect: o kız kafadan sakattır

That girl is weak <u>in the head</u>.

<u>Se</u>

Medium of bu elmaları kactan aldın?
Exchange:
             <u>At what price</u> did you buy these apples?

Means of   haber radyodan yayıldı
Communication:
             The news was broadcast <u>by radio</u>.

Ac

Means: hırsızı kolundan tuttum.

I held the thief <u>by the arm</u>.

<u>Dative -E:</u> <u>[-So, +Go, +Dy], Abs, Se, Inv, Ext</u>

Again only dynamic instances of this goal-case are found -- cf. <u>e</u> in Japanese, analyzed above 1.4.5.1.

Positional Goal: Türkiye'ye döndüler.   şişeyi masaya koydu.

They returned <u>to Turkey</u>. He put the bottle <u>on the table</u>.

Abs

Tendency: kardeşine benziyor   o şapka size yakışmaz.

He resembles <u>his brother</u>. That hat doesn't suit <u>you</u>.

Se

Recipient: cocuğa bir palto vereceğiz

We shall give <u>the child</u> a coat.

Experiencer: mektubu Ali'ye gösterdim.

I showed the letter <u>to Ali</u>.

o hoşuma gidiyor

I like that. (<u>lit.</u> 'That goes <u>to my pleasure.</u>')

Inv

Acquisition: ?

Experience: birşeye memnun olmak

to like <u>something</u>

Volit

Aim: resimlere/hastalara bakmak

to look <u>at pictures/after patients</u>

<u>Ext</u>

Limit: o köye kadar

      up to <u>that village</u>

'Until': bugüne kadar

      until <u>today</u>

Beneficiary: oglana bir palto alacağız

      We shall buy a coat <u>for the boy</u>.

Ethic Dative: ?

Purpose: talebe imtihana hazırlanıyor.

      The student is preparing for the examination.

The use of the dative to mark the Medium of Exchange does not fit well within this system.

<u>Locative: (-DE)</u>: [+Go, -So, -Dy], Abs, Se, Ext

This case is only linked with static goals.

    Locus: tiyatrodadır.   sudadır.

      He is at the theatre.   It's in the water.

<div align="center"><u>Abs</u></div>

Attribute: o kılıkta bir adam

      a man <u>of that appearance</u>

<div align="center"><u>Se</u></div>

Possessor: bende beş lira var.

      <u>I</u>'ve got five lira <u>on me</u>.

Experiencer: ?

<div align="center"><u>Ext</u></div>

Place: tiyatroda iyi piyes gördüm

      I saw a good play <u>at the theatre</u>.

Time: beş eylûlde evlendim

      I got married <u>on 5 September</u>.

ile (-(y)lE): [+So, +Go, +Ac]

This item gives more evidence (cf. Japanese _to_ above) that actional roles should be accepted as prototypes in their own right.

Means: bunu zamk ile yapɪştɪrdɪm.

I stuck this <u>with glue</u>.

Reciprocal: ?

Manner: kilo ile satmak

to sell <u>by the kilo</u>

Accompaniment: kimin ile gittiniz?

<u>with whom</u> did you come?

İçin: [-So, +Go, +Inv]

Once again, the facts of usage compel us to diverge from the strict prototype theory of semantic linking. In general, it is a fair characterization of için's meaning to say that it designates Inverse Goals. Of these, all except Aim are instanced below.

Acquisition: böyle bir ev için bu kadar para verilir mi?

Does one pay so much money <u>for such a house</u>?

Experience: bu teklif için ne düşünüyorsun?

What do you think <u>of this proposal</u>?

Aim: ?

Purpose: bunu yurdun iyiliği için yaptɪ.

He did this <u>for the good of the country.</u>

This leaves one major orphaned role: the non-inverse external possessional role of Beneficiary. Like all the roles under [-So, -Go, +Inv]. This is also Sentient. But it is not Inverse.

Beneficiary: bunu sizin için aldɪm.

I bought this for you.

1.4.5.4 CONCLUSION

This section of practical examples of semantic linking when combined with section 3.1 on Sanskrit, and perhaps a system that the reader can draft for himself to cover the English prepositions, is intended to show that the classes of roles which emerge from the use of Source, Goal and Path, and the various predicate features, are natural classes. At the same time, it is clear that we have not yet reached a satisfactory formulation of how exactly the features are to be used in semantic linking rules. Further discussion of this, with reference to Sanskrit and the 'minimal specification' theory, will be found in section 3.1.8.

1.4.6   GRAMMATICAL LINKING I

1.4.6.1   HIERARCHIES OF ROLE AND CASE

Cases do not always possess determinate meanings of the kind cap-
tured by semantic linking rules. In the examples from Japanese below,
for instance, the cases nominative, dative and accusative, marked with
ga, ni and o respectively, are not correlated with any given role.

(1.65)   a.   dare ga bongo o yomeru ka

who NOM Sansk.ACC can-?
                                read
                                             'Who can read Sanskrit?'

b.   dare ni bongo ga yomeru ka

DAT   NOM

(1.66)   a.   sensei ga Hanako ni manten o ataeta

teacherNOM H.   DAT full-ACC awarded
                              marks
'The teacher gave Hanako full marks.'

b.   Hanako ga sensei ni manten o moratta

H.   NOM   t. DAT full-ACC received
                              marks
'Hanako got full marks from the teacher.'

Nevertheless, given the identity of the verb, the alignment of
a set of cases with a set of roles is determinate. Note that cases have
to be considered in groups here, not individually as was possible with
semantic linking: a nominative in connexion with yomeru can be inter-
preted as either experiencer or experienced, depending on how the other
NP in the sentence is marked.

Carter 1977 has noted that in instances like this, the relation between role and NP is not determined arbitrarily: so a theory like Bresnan's RTG or many that preceded it, which allows lexical entries to specify any old linking is significantly too powerful. (Carter originated this use of the term 'Linking', as far as I know.) Carter discerns some linking regularities, which he phrases in terms of his own system of semantic representation on the functional side, and of English word-order and preposition-marking on the formal side. (He does not distinguish Grammatical from Semantic Linking.)

We shall attempt to re-couch the more important of these results within the more adequate semantic formalism of FS, and the more general theory of Formal Case. However, we shall not be able to provide a universal framework of cases, as we have of roles. The universals of grammatical linking that we propose, therefore, will be formal rather than substantive universals.

Carter's basic rules are given in (1.67).

(1.67)   Carter's Linking Rules

    LR1:   NP(S)   = left most argument

    LR2:   NP(VP) = second available argument from the left

    LR3:   NP(PP) = any unlinked argument

Here the parentheses stand for 'immediately dominated by'.

This does justice, for example, to $_S$[John$_{VP}$[gave the apple$_{PP}$[to Mary]]], which is associated with the semantic representation (John) CAUSE ((apple) BE TO (Mary)). The essential idea here is that a hierarchy, by which we shall mean a total ordering, (here represented by the left-right order) is imposed on argument-positions, and formal properties of NPs in sentences are found to correlate with relative positions in the hierarchy.

(1.72) <u>Hierarchy of Roles with Actional Predicates</u>[11]

      Source - Path - Theme - Goal

These rankings are illustrated by the English sentences in (1.73).

(1.73) John hit Mary.   DO: S   T (impact) G

       John sang a song.   DO: S   T

The multifarious relative rankings of roles that (1.68, 70 and 72) predict have been illustrated, not fully justified, and indeed hardly even motivated, by the English examples we have given. More of their consequences will be explored in the discussions that follow, with reference to facts in English, Japanese and Sanskrit. (See especially 3.2.2 below.) For the moment it may be noted that the orderings in (1.68 and 72) fit tolerably well with the feature specifications of T, G, S and P. In both of these orderings, [-Go] roles outrank [+Go] ones. In relational predicates [-So] outranks [+So]; in actional ones (which are exclusively dynamic [+So] outranks [-So]. This squares with the feature redundancy (1.581), which connects [+So] with [+Dy].

From this point on, FS will always be written incorporating these hierarchical principles into its left-right ordering. Hence for instance in actional predicates, S and P appear to the left of T and G.

The roles of FS can, then, be effectively assigned a total order. To found a system of grammatical linking we have to do as much for the formal cases. Ideally, we should be able to posit a universal canon of

---

[11] This special hierarchy for actional predicates may not be present in all languages. Later in this section we speculate that 'highly ergative' languages such as Dyirbal should perhaps we analyzed as using the General Hierarchy (1.68) for all predicates.

formal cases, with an ordering that would hold good universally. However, at the present stage of research, it is not possible to establish firm cross-linguistic identifications of formal case. Within this work, then, we shall restrict ourselves to the looser hypothesis that each language defines its own ordering of the formal cases that apply to NPs. This ordering we call the language's Normal Hierarchy. We shall call the linking that occurs according to the relative positions of roles and cases on their respective hierarchies application of the Normal Rule.

1.4.6.2 THE SUBJECT AND ERGATIVITY

These hierarchies have immediate implications for two traditional

problems in linguistics, that of the definition of 'Subject' and that of

the analysis of Ergativity. There is no space here for an extended treat-

ment of these problems. We simply point out the directions in which

Case Linking theory pushes us.

Rules of grammar which make reference to the Subject (a variety

of candidate phenomena are described in Keenan 1976) essentially have

two concepts in Case Linking theory onto which they can latch. These

are: the highest role to occur in the FS of the sentence in question:

and the highest case on the Normal Hierarchy to occur in the sentence's

surface structure. In most examples, these two concepts will characterize

the same NP, for by the Normal Rule, the highest role is matched with

the highest case. But in instances where lexical entries, or special

rules, condition marked linking,they may differ.

We presume that both concepts are available in universal grammar.

For an example of reference to Subject qua highest role, see the next

sub-section, 1.4.7, which contains a sketch of Japanese grammatical

linking.

As for Subject qua highest case, the example of the focus for

Agreement in Sanskrit finite verbs suggests itself. It is the sentence's

nominative constituent which conditions agreement on the finite verb,

regardless of the diathesis of the verb, or of the role with which the

nominative is associated. In fact, as is argued in 3.3.2, the case

nominative does not appear in the Sanskrit Normal Hierarchy, the highest
place being taken by ES, the dummy marker of the 'Empty Slot'. Predi-
cation, however, has the effect of invariably assigning the nominative
to the ES of a predicate-word which is a finite verb. And agreement is
in fact just a formal constraint on the application of Predication. So
there is a close, if slightly indirect, relation between Agreement and
the highest item on the Normal Hierarchy.

Case Linking, then, has a (derived) concept of deep, semantic,
subject, and another which corresponds to the intuitive notion of
'surface subject'. But it has nothing intermediate.

As for Ergativity, a useful summary of the known facts and intel-
ligent assessment of the literature can be found in Dixon 1979.

Ergativity involves, by definition, the sharing of some
characteristics between the object NP of a transitive verb and the
subject NP of an intransitive. These NPs are both said to bear
'absolutive' case, the transitive's subject occurring with ergative case.
'Subject' and 'object' have their semantic senses here: prototypically,
the 'subject NP of an intransitive' will be the theme of a stative, the
'object NP of a transitive' the patient of an action or the mental
object of a cognitional predicate; the 'subject of a transitive' will
be an agent or experiencer.

In most so-called ergative languages, the shared characteristics
do not extend beyond morphology: the Intransitive Subject and Transitive
Object share a case-marking, but for all syntactic purposes, e.g. Control
phenomena, the Intransitive Subject patterns with the Transitive Subject.
For such languages it seems adequate to postulate a special linking rule
for the ergative case, assigning it to the highest role in actional and

inverse cognitional predicates.[12] The absolutive NP will then be attached

as highly as possible after the ergative has been linked. All processes

which lump together Transitive Subject and Intransitive Subject will in fact

be referring to the Highest Role -- i.e. the theme in relational, and the

source in actional, predicates. An example of this type of situation is

found in Japanese in 1.4.7.

One language is notorious, however, for pressing ergativity into

the realm of syntax: Dyirbal requires the absolutive NP in a sentence to

act as control for the 'missing NP' in various types of phrase that lack an

explicit (surface) subject. Dixon 1979 calls this function the pivot. For

this language, a more radical analysis is needed.

There is, however, something available in the resources of Case

Linking theory. We can suppose that, in Dyirbal, the universal hierarchy

of functional roles is disturbed: actional predicates revert to the basic

relational order of T - G - S - P. Hence the patient (actional goal) is

now higher than the agent or instrument (actional source or path). It is

now possible to assume that the absolutive case in Dyirbal is linked every-

where with the highest role. And the highest role will also be chosen as

'pivot'.

---

[12]This natural class is not captured by the feature system for FS
developed in 1.3. It may be that there should be a feature-value which
would group together the Sentient Actional predicates (viz. actions) with
the Sentient Inverse Relational predicates (viz. inverse cognition and
possession). It is comforting for the present system to be able to note
that in Caucasian Avar verbs of cognition pattern differently verbs of
action, and the ergative case here is restricted to true agents: per-
ceivers are marked with locative (naturally for a goal-type role). (Data
from Cerny 1971, apud Dixon 1979, p. 103.)

To restructure FS on a language-specific basis is a radical departure: and this alone will account for the rarity of Dyirbal-type phenomena in the languages of the world. But the restructuring itself is, if anything, a simplification of the FS system: so one also gets a glimmer of why it might be a tractable problem for children learning the language, even though all children presumably have innate reasons for expecting the ordering of FS roles to be as in (1.68, 70 and 72).

These tentative suggestions for the analysis of ergative languages are much too superficial to count as a significant contribution to the literature on the subject. They are included simply in order to show that Case Linking theory has the potential to cover the gamut of natural language Case phenomena.

1.4.7. GRAMMATICAL LINKING IN JAPANESE: AN ILLUSTRATION

In sections 1.2.2 and 1.2.3 above we have already introduced the case-markers no, ga, o and ni, indicative of the genitive, nomitative, accusative and dative cases respectively. For purposes of grammatical linking, we posit a Normal Hierarchy of cases as in (1.74).

    (1.74)   Normal Hierarchy: Japanese

                1. Nominative (ga)/Genitive (no)

                2.   Accusative (o)

                3.   Dative (ni)

The co-equal status of nominative and genitive at the head of the hierarchy ensures the correct interpretation of "subject-marking" no, which was mentioned in 1.2.2, and discussed at some length in Ostler 1978. The relevant facts will not be introduced here (but cf. examples (1.3) a, b and c above).

Note how different the Japanese hierarchy is from that posited for Sanskrit in 3.3.2 below, and repeated here for convenience.

    (1.75)   Normal Hierarchy: Sanskrit

                1. Empty Slot ('ES')

                2. Instrumental

                3. Accusative

                4. Genitive

The degree of difference here underlines the difficulties which would beset an attempt to unify the linking hierarchies which Case linking theory posits for each language. Accusative and genitive in both hier-

archies have comparable structural incidence, accusative being the case governed by transitive verbs, and genitive the case of adnominal dependents. But in Sanskrit, the genitive is also the characteristic case of the 'indirect object'; whereas in Japanese, it may function to mark the 'subject' of adnominal clauses. Hence their different relative positions on the hierarchy. The Japanese Normal Hierarchy is made up exclusively of structurally induced cases. But in Sanskrit the instrumental is not a structurally induced case; and the ES is not a case at all, but a proxy place-holder which plays an essential role in the analysis of Agreement, both of verbs and adjectives (discussed in 3.3.2-4). There is no Agreement in Japanese: hence it is possible to establish a direct link between nominative and the highest position on the hierarchy. Even in Sanskrit, when the predicate in question is a finite verb, the nominative will end up assigned to the highest position, held for it by ES.

We now turn to some illustrations of the Normal Hierarchy in use in Japanese. Consider first the sentence in (1.76).

(1.76)   kare ga imooto ni hon o yaru

        he NOM sister DAT ACC give
                         book

'He gives a book to his sister.'

Yaru 'give' is a verb, whose lexical entry will be as in (1.77).

GSC = 'general syntactic context'; FS = 'functional representation'.

(1.77)   yar- :   GSC: V trans.; DAT

              FR: DO: S $(GO_{poss}: T \ G \ )$

Transitive verbs co-occur with accusatives.[13] yar-, as a transitive

verb subcategorized to co-occur with a dative, will be insertable only into

structures containing a dative and an accusative in their verb phrase. Fur-

thermore, all structures contain a minimum of one nominative (cf. the rules

in 1.2.3 above.)[14]

Given these facts, the association of roles with NPs is determined.

By the Normal Hierarchy, the nominative, accusative and dative must go with

the three available roles in order of precedence: hence kare ga is assigned

to the external source, hon o to the internal theme, and imooto ni to the

internal goal. We end up with the linking shown in (1.78), which effective-

ly represents the cognitive meaning of (1.76).

(1.78)   DO: S (GO$_{Poss}$: T G)

        S = kare ga (Nom)

        T = hon o   (Acc)

        G = imooto ni (Dat)

Morau 'receive' is a verb with structural context similar to yaru

but a different FR. Its lexical entry and an example sentence are given in

(1.79) and (1.80).

(1.79)   moraw-: GSC: V trans.; (DAT)

        FR: DO: G$_1$ (GO$_{Poss}$: T G$_1$ S)

---

[13]It does not seem necessary in Japanese to make transitive verbs
determine which role in their FR will be linked with the accusative NP.
Japanese transitive verbs therefore have simpler lexical entries than their
analogues in English or Sanskrit. (Cf. 1.5.1 fin. below.)

[14]These statements abstract from the fact that virtually every main
constituent of the Japanese sentence is omissible in actual speech. Such
sentences have a clearly elliptical flavor, however. Furthermore, nomina-
tive and accusative NPs are likely to be represented by topicalized forms,
marked with wa, mo, sae etc., and lacking any overt case-marker. Abstrac-
tions from these facts is usual in studies of the Japanese case system.

(1.80)   imooto ga kare ni hon o morau

        sister NOM him DAT book   receive
                        ACC

'His sister receives a book from him.'

Here the dative in the GSC is optional. If _morau_ is inserted into a structure where it is present (as in 1.80), the Normal Hierarchy will apply. The internal G is <u>bound</u> by the external G (cf. 1.3.8 above), and hence is not available for linking. The result is the completed linking in (1.81).

(1.81)   DO: G_i (GO_{Poss}: T G_i S)

        G = imooto ga (Nom)

        T = hon o   (Acc)

        S = kare ni   (Dat)

The cognitive meaning of the FS here is, in essence, that the goal of the external action is affected by the theme's reaching her from the source.

Remember, however, that the dative in _morau_'s GSC is optional. _Morau_, therefore, may be inserted into contexts where there is no dative in its VP. This will leave _morau_ without an NP to link with its Source, and hence the structure will not be interpretable, unless another NP can be linked to this role. But the linking may also be accomplished semantically. A PP containing the postposition <u>kara</u> may occur freely in any VP. If it occurs here, we get a sentence such as that in (1.82).

(1.82)   imooto ga kare kara hon o morau.

Now the semantic linking of <u>kara</u> is such that it can represent a possessional source (cf. 1.4.5.2 above), and hence fill the gap left by the absent dative. Hence (1.82) is essentially synonymous with (1.80).

If the freely occurring <u>kara</u>-phrase is added to a sentence like (1.76), we get (1.83).

(1.87) <u>Subject marked Nominative</u>

    i. Taroo ga Hanako ni zibun no kaban o watasita

       Taro N   H.   D self G bag   A handed

       'Taro handed Hanako his/*her own bag.'

    ii. Sensei ga otooto ni hon o o-watasi ni natta

       teacher N brother D book A handed-(Honorif.)

       'The teacher was good enough to hand a book to my brother.'

(1.88) <u>Subject marked Genitive</u>

    i. Yamada-sensei no zibun o sikaru toki ...

       Prof. Yamada G self A scold time

       'The times when Prof. Yamada scolds himself ...'

    ii. Yamada-sensei no o-nakunari'ni natta toki

       Prof. Yamada G died-(Honorif.)   time

       'The time when Prof Yamada passed away ...'

(1.89) <u>Subject marked Dative</u>

    i. Yamada ni (wa) zibun no kane ga aru

       Y.   D Top. self G money N have

       'Yamada has his own money.'

    ii. Yamada-sensei ni (wa) syakkin ga takusan o-ari ni naru

       Prof. Yamada D Top. debts N many   have-(Honorif.)

       'Prof. Yamada has many debts.'

The natural analysis within the Case Linking framework is to claim that <u>zibun</u>'s position in FS must be co-indexed with the highest role; and that in the FR of predicate words in the Honorific diathesis, the highest role must be associated with the person to be honoured.

How then to account for the linking of the formal cases? In the case of (1.87), where the subject is nominative, no special provision is necessary; the highest role is matched with the highest case. And the same goes for (1.88): the genitive will have been structurally induced by (1.6); and for the purposes of linking, the Normal Hierarchy (1.74) does not distinguish genitives from nominatives.

But the datives in (1.89) are a different matter. Dative holds a place distinct from, and below, nominative on the Normal Hierarchy (1.74). So, other things being equal, we should expect the dative to be linked with a lower role than the nominative. Such linking is found, e.g. with <u>aru</u> 'be', a homonym of the <u>aru</u> meaning 'have' in (1.89). For example:

(1.90) Hamadayama ga Tookyoo ni aru koto ...

    H.   N   Tokyo   D   be   fact

    'The fact that Hamadayama is in Tokyo ...'

    BE_{Posit}: T G   T = Hamadayama ga (Nom)

                            G = Tookyoo ni   (Dat)

Presumably this regular linking is the historical source of the sort of sentences seen in (1.89): they would originally have been analyzed simply as "<u>Nom</u> is/belongs to <u>Dat</u>" -- using the predicate "BE_{Poss}: T G", as shown in (1.91).

(1.91) BE_{Poss}: T G   T = kane/syakkin ga (Nom)

                            G = Yamada ni   (Dat)

But this analysis is impossible synchronically: the facts with reflexives and honorifics require the dative (<u>Yamada ni</u>) to be linked with the highest role.

Rather, we must follow Ken Hale's suggestion that the phenomenon here is quasi-ergative (cf. Kuroda 1978). As mentioned in 1.4.6.2, Case

Linking will postulate a special (grammatical) linking stipulation to deal
with ergativity. In Japanese, the phenomenon is particularly easy to treat
in this way, since it is restricted to a fairly small number of predicates,
among verbs most notably aru 'have', iru 'need', wakaru 'understand', dekiru
'be able', and perhaps the perceptual intransitives mieru 'can see', kikoeru
'can hear'. (Cf. Kuno 1973, pp. 90ff.) It will be possible to include in
their lexical entries a linking specification to the effect that a co-occur-
ring dative must be linked with the highest role in their FR.

The lexical entry for aru in (1.89) will therefore be as in (1.92).

(1.92) ar-:   GSC: V intrans.; (DAT)

              FR: BE_{Poss}, L T G

              LS: T   =   dative

The use of the inverse possessional predicate in the FR ensures
that the possessor, not the possessed, is in fact the highest role. Hence
the interaction with reflexives and honorifics will come out right. The
fact that aru is intransitive ensures that it will not occur with an accus-
ative NP.

Aru 'have' is in fact found with two constructions: with co-occur-
ring dative and nominative (as in (1.89)), or else with two nominatives.
This is reflected by the optional dative in the GSC. If aru is inserted
into a VP which contains a dative, this case will be linked with the theme,
according to the LS; the inevitable co-occurring nominative (directly dom-
inated by S — cf. (1.15a)) will then be linked with the highest available
role, the goal. This generates the sentences in (1.89). If aru is in-
serted into a VP without a dative, on the other hand, it still needs two cases
to link with its roles. Now if PS-rule (1.15a) applies recursively, any
number of NPs will be generated, all of which will be marked nominative by

Case-marking rule (1.16a). Multi-nominative structures exist, therefore; and if the dative-less <u>aru</u> is inserted into a structure with two nominatives, its two roles can be linked: otherwise the FR is uninterpretable, for their is nothing that can be semantically linked with a possessional inverse goal (cf. the various postpositions analyzed in 1.4.5.2).[15]

Given the rest of the Japanese linking mechanism, therefore, (1.92) seems to be adequate to determine the syntax and semantics of <u>aru</u> 'have'.

These few examples are perhaps enough to illustrate the working of the Normal Hierarchy (though not yet, of course, enough to show it fully adequate to the analysis of Case in Japanese).

They also give a first glimpse of <u>the interaction of grammatical and semantic linking</u>. The essential claim of Case Linking theory is that grammatical linking is only possible with arguments mentioned in a lexical FR -- i.e. with <u>inherent</u> arguments of the predicate-word in question (c.f. 1.5.2 below). Semantic linking can apply to link such arguments, (as it did the Source in (1.82)); and also those which occur freely in the wider context of the FS for the whole sentence, adjuncts (as the source in (1.83-4)). The case-marked NPs in question may or may not be mentioned in the GSC of the predicate-word. But grammatically linked NPs in the VP must be so mentioned. For example, the dative grammatically linked in connexion with <u>yaru, morau</u> and <u>aru</u> is mentioned in their GSCs. In the GSC of <u>toru</u>, this dative is not mentioned; and the dative cannot co-occur as a result.

It is probably not helpful to think of Linking as a derivational process. Rather, the rules of linking are a set of constraints which must

---

[15] The general analysis of multi-nominative sentences in Japanese is an intricate problem. See discussions in Kuno 1973, ch. 4; Taylor 1971, pp. 190ff.; Kuroda 1978; and Ostler <u>forthcoming</u>.

be satisfied by any set of proposed links between formal cases and partici-
pant roles. Semantic links must be validated by some semantic linking rule;
and the remaining grammatical links must accord with the hierarchical posi-
tions of roles and cases in their respective orders: i.e. no grammatical
linking lines must cross. (However, exceptions to this last principle may
be stipulated in special LS rules.) No intermediate stage of linking is
relevant to the well-formedness of the output. In this sense it is non-
derivational, and in this way it differs radically, e.g., from Postal and
Perlmutter's RG, where intermediate strata play a key role.

1.4.8 CARTER'S "BACKWARDS LINKING" VS. INVERSE PREDICATES

Carter 1977 notes that within the realm of possessional predicates
there is a set of counterexamples to the basic linking regularity embodied
in his linking rules, repeated here as (1.93)) (= (1.67) above).

(1.93) Carter's Linking Rules

   LR1. NP(S)   = leftmost argument

   LP2. NP(VP) = second available argument from the left

   LP3. NP(PP) = any unlinked argument

The basic representation in his system for 'verbs of having' (VOH),
as he calls them, is "(Object) BE TO (Owner)", where the possessed item is
on the left and the possessor is on the right. Verbs of possessional trans-
fer (giving, robbing, etc.) will be represented with this basic item em-
bedded inside one or more operators representing change, causation or nega-
tion. He predicts, therefore, by (1.93), that the NP representing the
possessed object in a surface English sentence will be NP(S) when the pos-
sessor is NP(VP); and when the possessed object is NP(VP) the possessor
will be represented by NP(PP), since NP(S) will be required to represent
the leftmost argument, typically the agent associated with the higher, em-
bedding, operator. In short, the possessed item is expected to outrank
his possessor.

This works well for such expressions as John gave the book to Mary
and The book belongs to Mary, which correspond to "(John) CAUSE ((book) BE
TO (Mary))" and "(book) BE TO (Mary)". But transitive stative verbs of

possession typically violate this regularity. As surface representations of the meaning "(book) BE TO (Mary)" we have Mary has/owns/possesses the book. The transfer predicates also involve a violation when 'Dative Movement' takes place: compare the order of elements in the semantic representation "(John) CAUSE ((book) BE TO (Mary))" with that in the English sentences John gave/bought/stole/wrote Mary the book. Here we have two NPs in the NP(VP) position, and if surface linear order means anything in English, the recipient Mary seems to be outranking the item whose ownership is in question, the book. Furthermore, there are verbs of this type where a possessed object does turn up as NP(PP): e.g. John presented the apple to Mary alternates with John presented Mary with the apple. Finally, the principles of (1.93) seem to be totally violated in the negative causative predicates in this field: corresponding to the meaning "(Ken) CAUSE (NOT (profits) BE TO (Jack))" we have Ken deprived/robbed/cheated Jack of his profits. Here the 'second available argument' is represented by NP(PP).

Carter is not in a position to do more than draw attention to this apparent pattern of deviance from his suggested principles: he calls it "backwards linking'. Case Linking theory will be faced with essentially the same problem, since the basic FS's present in the relevant predicates are "BE_{Poss}: T G" for stative predicates of possession, "DO: S (GO_{Poss}: T G)" for verbs of positive transfer (give etc.), and "DO: S (GO_{Poss}: T S)" for verbs of negative transfer (rob, cheat etc.). In all of these, the possessed item, the theme, occurs in higher position than the possessor or ex-owner. We assume, for the purposes of this discussion, that NP(S), NP(VP) and NP(PP) are terms on the Normal Hierarchy of formal cases for English.

But Case Linking theory is in a significantly better position than

Carter's theory to account for these phenomena.

In the first place, it should be remembered that not all posses-
sional predicates pose problems for these FRs. The book belongs to John,
John gave/presented/supplied the book to Mary, John took/stole the book from
Mary all have their NPs in the right structural position to be linked by the
Normal Rule. We do not, therefore, want to abolish these FRs altogether.

But the existence of inverse predicates alongside the regular ones
is one of the features that distinguishes FS from Carter's semantic repre-
sentations (cf. 1.3.5 above). Besides the possessional predicates mentioned,
we also have "BE_{Poss}': T G" where the theme represents the possessor, and
the goal is the object owned; "DO: S (GO_{Poss}': T G)", where the theme repre-
sents the getter, and the goal what he gets; and "DO: S (GO_{Poss}': T S)",
where the source represents the object lost. In these FS's, the partici-
pants are in the correct order for linking with Mary has a book, John pre-
sented Mary with a book and Ken deprived Jack of his profits.

Arguments for this extra type, of Inverse Possessional Relations,
will be found in 3.2.5 below. The arguments come from Sanskrit, and have
nothing to do with these particular facts of English.

But besides having a convenient answer for this problem in linking
theory, any system embracing the FS representation system will make a fur-
ther prediction. Possessional predicates are not the only ones to possess
inverses. We should find a similar two way linking in the realm of Cogni-
tional predicates. And we do: consider the parallelisms displayed in
(1.94).

(1.94) Inverse Predicates in English

	Regular ([- Inv])	Inverse ([+ Inv])
Simple	BE_{Poss}: T G	$BE_{Poss'}$: T P
	The book belongs to me.	I own the book.
	GO_{Cognit}: T G	$GO_{Cognit'}$: T G
	The Virgin appeared to Ignatius.	Ignatius looked at the Virgin.
Positive Transfer	DO: S (GO_{Poss}: T G)	DO: S ($GO_{Poss'}$: T G)
	John presented the book to Mary.	John presented Mary with the book.
	DO: S (GO_{Cognit}: T G)	DO: S ($GO_{Cognit'}$: T G)
	John told the news to Mary.	John informed Mary of the news.
Negative Transfer	DO: S (GO_{Poss}: T S)	DO: S ($GO_{Poss'}$: T S)
	John stole the book from Mary.	John robbed Mary of the book.
	DO: S (GO_{Cognit}: T S)	DO: S ($GO_{Cognit'}$: T S)
	John learned the news from Mary.	John distracted Mary from the news.

In three of the last four examples, the embedded source will be linked semantically. Otherwise the linking is probably all grammatical: to develop rules of semantic and grammatical linking for English is beyond the scope of this work.

the semantically linked instances in Japanese of the accusative seem to coincide with instances where it is not structurally induced (cf. 1.2.3 and 1.4.5.2). This seems to be broadly true also of the Sanskrit accusative.

But the match is not a perfect one in either language. The Japanese dative occurs freely like an oblique case: but can only be linked grammatically. And in Sanskrit, the instrumental is never structurally induced yet is often linked grammatically. The nominative is structurally induced, yet does not figure in the Normal Hierarchy in its final form (3.3.2).

Perhaps, however, a weak implication can be maintained in one direction:

(1.95)   If a case is structurally induced in a sentence, it cannot

be semantically linked in that sentence.

In fact, if the correlation were perfect, we would have evidence that the Case Linking approach, which separates incidence-rules from linking-rules, was misconceived. A simpler model, in which the two would be somehow unified, would need to be devised. As it is, the Case Linking framework does not predict the correlation (if correlation there reall is). But it would be possible to incorporate (1.95) as a constraint on well-formedness.

We turn now to a different kind of correlation between Linking and the formal structure of Case.

This work has paid little attention to the different possible morphological exponents of Formal Case. (But see 1.2.4, and the remarks on syncretism in 1.4.3 above.) However, it is perhaps possible to discern another general tendency in the relation between morphological exponence and the kind of linking employed.

Envisage a continuum of morphological intimacy in case-marking, extending from zero-marking, through word-internal inflexion, affixation,

the use of adpositions (i.e. pre- and post-positions), down to the use
of adpositional phrases (e.g. English by means of, for the sake of). Then
it seems to be true in general that the exponents of grammatically linked
cases in a language are all at the former end, and the exponents of seman-
tically linked cases at the latter (with a lot of mixing in the middle,
perhaps).

In a period when linguists are casting about more and more frantically
in search of a theory or morphology, and in particular of its relation to
syntax, it is possible that this off-hand generalization might offer an
opening for someone to achieve some substantial results.

1.5 LEXICAL ENTRIES AND LEXICAL RULES

1.5.1 THE DESCRIPTIVE POWER OF LEXICAL ENTRIES

In the preceding section, 1.4 on Linking, we have outlined the principles by which certain items in surface phrase-markers, the formal cases, are aligned with argument-positions in a more directly semantic representation, FS. These principles did not have the character of rules which constructed FS on the basis of syntactic structure: rather, they simply paired NPs with arguments when presented with a possible FS for the sentence. The actual selection of the FS corresponding to the sentence, as well as some further details of linking, is largely the responsibility of the lexical entries for the words inserted into the sentence. (Cf. 1.4.1 and Figure 2, above.)

We shall only be interested in the lexical entries of predicate-words -- i.e. those with at least one free argument-place in FS. These include all verbs, adpositions, and such nominals as can be used non-referentially.

These lexical entries will of course contain information about the morphological and phonological realization of the words involved. But this does not concern us here. More to the point, the entry must contain enough information to determine the constraints on the occurrence of the word in sentence structures. It must give the core of the FS which will interpret the phrase or sentence of which the word is a part. And it must give sufficient information to determine the linking between the constituents of the sentence and of the FS.

The precise content of lexical entries has recently been a subject of controversy (cf. especially Bresnan 1978), the question being to what extent regularities discernible in language should necessarily be represented in a grammar which claims to be the basis for a realistic model of language use. 'Lexical rules' represent regularities which orthodox linguistics would seek to capture explicitly, but which have no status in sentence-processing. (They may of course play a role in other essential aspects of human language — e.g. their presence might facilitate language learning.) In this term, the use of the word 'rule' draws attention to the fact the regularity here has some status in a full formulation of the grammar of the language. But the qualifier 'lexical' adverts to the traditional view of the lexicon as the repository of information about specific lexical items. The outputs of lexical rules are held to be stored permanently in the entries of the lexical items concerned, and are hence available to memory without fresh processing. The lexicon, therefore, is not restricted to unpredictable information about specific items.

This approach makes it clear that the question of how lexical information is actually stored in the adult mind is distinct from the question of how that information may be most economically stated.

In the formulation of lexical entries that follows, we shall aim at minimality. That is to say, we reduce lexical entries to a form in which they precisely complement the rules of semantic linking, the Normal Hierarchy, and a few constraints on the application of grammatical linking (cf. 1.5.2. below). They thus represent the contribution of individual words' peculiarities to the very largely systematic business of case linking. They thus provide a clear index of how much has to be

their relative degrees of optionality. However, within the system we are

working in, the essential difference in meaning betwee, e.g., reach and

leave lies in whether the FR contains an inherent goal or an inherent

source: "GO$_{Posit}$" T G" vs. "GO$_{Posit}$: T S". Clearly then, if FS is the

system used to represent FRs, it will not be possible to eliminate the

statement of which roles are inherent. A full FR must be given.

However, it is not possible to rely on FR alone to determine the

form of the surface nominal dependents. Consider, for instance, the

Latin verb uti. This means 'to use', and consequently its FR will be

"DO$_{Ag}$: S P", showing that it has two inherent arguments, an agent and a

means. Now ablative is the case semantically linked means in Latin; so

if nothing is said about attendant NPs in GSC of LS, we shall presume

that an ablative can be linked with this role when it figures inherently

in uti's FR. We shall generate such sentences as furcā utitur; and this

is good, for this is the natural way of saying 'he uses a fork' in Latin.

But if nothing is said in GSC or LS, we shall have no way of knowing whether

uti is transitive or intransitive, or of whether uti's means role may

be grammatically linked or not. Transitive verbs in Latin appear with

an accusative NP, presumably with the case-marking structurally induced,

like the transitive accusatives in Japanese and Sanskrit (see 1.2.3 and

2.6.2). Some intransitive verbs co-occur with a dative NP that can be

grammatically linked: e.g. parcere subiectis 'to spare the conquered'.

parere patri 'to obey one's father.' Hence without some specification

of GSC of LS we have no way of blocking *furcam utitur or *furcae utitur.

Other arguments that something beyond FR is necessary come from

various languages where two verbs of similar meaning differ in their

construction, one being significantly less permissive than the other.

In 1.4.8 we have already mentioned the contrast between _morau_ 'receive' and _toru_ 'take'. In the case of _morau_, the ex-owner can be marked either with _kara_, the postposition semantically linked in the regular way, or with _ni_, the dative-marker, which keys grammatical linking. With _toru_ on the other hand, only _kara_ is possible. This contrast can be seen holding between even closer synonyms: _ukeru_ and _uketoru_, both of which mean 'receive', pattern with _toru_, not _morau_. There seems to be no way to predict such a difference on the basis of semantic information alone.

In Sanskrit we find a comparable situation. Some verbs expressing Causative Relations (give, throw etc.) take an instrumental and an accusative, to mark the theme and the goal, or else an accusative anu a genitive (e.g. _vibhajati_ 'apportion', _kṣipati_ 'throw, pelt'); others take only the latter construction (e.g. _yacchati_ 'give'). These examples, unlike _uti_, have nothing to do with the distinction between transitive and intransitive, or between grammatical and semantic linking. Both options involve grammatical linking of transitive verbs (cf. 3.2.4 below). The only questions are: which role is to be linked with which NP, and what is the relation between this choice and the choice of instrumental or genitive to accompany the accusative 'direct object'?

It is in examples like these latter that the trade-off between GSC and LS becomes clear. For in these cases one option is to fill out the entry as in (1.95).

(1.95) _vi+bhaja-_ : GSC: V trans.; (INSTR/GEN)

FR: DO: S $(GO_{Poss}: T \quad G)$

LS: —

Given that Sanskrit has a Normal Hierarchy (ES – Instr. – Acc. – Gen.: cf. (1.75) above), this is enough to predict the facts. 'V trans.'

in GSC requires in effect that <u>vibhajati</u> co-occur with an accusative; '(INSTR/GEN)' states that either an instrumental or a genitive may accompany this accusative within $\overset{\text{\tiny m}}{V}$; (only the accusative will be within $\overline{V}$ -- cf. 2.6-7 below). If an instrumental co-occurs, it will be linked with the T and the accusative with the G; if genitive, it will be linked with the G, and the accusative with the T. This much is ensured by the Normal Hierarchy. (In both these instances, of course, ES is linked with the higher S.) If neither instrumental nor genitive co-occurs, we still need an extra NP to make sure that each role is linked. There is no case that will link semantically with the T; but the dative or locative can be semantically linked with the G (see 3.1.4, 3.1.6). So two additional possibilities are also accounted for: viz. that the verb co-occur with an accusative and dative, or with an accusative and locative.

Alternatively, the same results could be generated by assuming an entry as in (1.96).

(1.96) <u>vi+bhaja-</u>:   GSC: V trans.

                      FR: DO: S (GO$_{\text{Poss}}$: T G)

                      LS: NP$_{\text{trans}}$ = G

                                else, NP$_{\text{trans}}$ = T

The transitivity in GSC will still ensure that an accusative co-occurs. But now the LS handles all the rest. If the accusative NP is linked with the G, the rest of the linking is thereby determined. The ES must go with the highest argument, the S; and there is no case that can be semantically linked with the T. There is in fact only one item on the Normal Hierarchy between ES and accusative: so an instrumental must co-occur to be linked with the T. On the other hand, if the accusative is linked with the T, the linking of the G is totally free. It can

either be grammatical, in which case a genitive must co-occur, the case

lower on the hierarchy than the accusative. Or else it will be semantically

linked with a dative or locative.

(This particular word has so many constructions that it might be

simpler to say nothing at all in the LS, and only specify transitivity in

the GSC: all the possibilities will then be generated freely. Other words

will, however, typically only allow one or two of these constructions.)

At this stage of research it is not clear which is the preferred

way to formulate lexical entries. Both of the options make use of the

Normal Hierarchy of grammatical linking, and the FS system of functional

representation. Probably both GSC and LS should be allowed the full power

to specify co-occurrence and linking respectively. Use of this power,

however, will add a net cost to lexical entries: so a clear evaluation

metric for lexical entries is forthcoming. At the moment, however, we

have no way to decide the relative cost complicating the GSC as against

complicating the LS.

In the analysis of Sanskrit that follows, there are two types of

direct linking specification that have been found indispensable. One

type specifies the alignment of NP_{trans}, the object of a transitive

predicate-word; and the other, in marked instances, specifies the alignment

of ES, the Empty Slot. For discussion of the motivation for this, see

4.1, 4.2, 4.4.1 and 5.5.1.

1.5.2 SOME RESTRICTIONS

A principle of linking which looms large in 4.4 and chapter 5

below is the claim that <u>only inherent roles, i.e. those mentioned in the</u>

<u>FR, can be grammatically linked.</u> It is possible to make this principle

follow from the way that the grammar functions if grammatical linking is

held to be accomplished apart from sentence-derivation. Starting from

the minimally specified lexical entries we have been discussing, an intra-

lexical mechanism will act to make sure a case is assigned to each of the

inherent roles; and such cases as are necessary to complete this will be added

to the GSC.[16] This process yields Maximally Specified Lexical Entries.

And these are what govern the insertion of predicate-words into sentences,

also contributing their FRs as an input to the construction of an FS for

the sentence as a whole. Given such a double level of lexical entries,

one can stipulate that grammatical linking (which might be re-named

'lexical linking') apply only to form maximal from minimal lexical entries.

Semantic linking, on the other hand, applies both here and in the inter-

pretation of sentences as a whole.

It is likely that the formalism here proposed for lexical entries

is significantly too powerful. This is particularly likely to be the case

---

[16]In the analysis of Japanese in 1.4.7 above, we assumed that
all grammatically linked cases occurring in the VP must be mentioned in the
GSC. This was a claim about minimally specified lexical entries. At the
current stage of research, it is difficult to reach a set of postulates
for the properties of lexical entries which will be consistent across
languages.

with FRs. Carter 1976 points out that verbs seldom have more than three inherent arguments, and he proposes four as the absolute maximum. Our formalism makes up to four arguments available within any dynamic predicate, but with each level of embedding, four new arguments are addable in principle, It would of course be possible for Case Linking theory, to be restricted in this respect by simple stipulation. However, the correct form for the restriction seems likely to be more motivated and structure-dependent than this: one notes, for instance, that among external roles, inherent status is only commonly found in the actional source or Instigator. Relational goals and paths, above all representing time and space adverbials, are the least likely to get a mention in the fragment of FS which may figure as a predicate's FR. However, at this stage of research, I have no particularly helpful suggestion to offer.

1.5.3 DIATHESIS THROUGH LEXICAL RULES

This partial theory of lexical entries immediately give us a con-
venient handle on the phenomenon of <u>predicate diathesis</u>. This is a
convenient shorthand term which comprehends the fact that forms derived
from predicate-words by various processes often show systematic differences
from their bases in matters of Case.

So for instance, the adverbials in -<u>ly</u> in English systematically
lack their base adjectives' ability to co-occur with formal cases (cf.,
e.g., <u>eager for power</u> with *<u>eagerly for power</u>) -- a difference which would
be neatly caught by positing a deletion from GSC. There is a process in
English whereby transitive verbs may lose their transitivity if the base-
form involves an agent (e.g. <u>cook the rice easily/the rice cooks easily</u> vs.
<u>find an opening easily</u>/*<u>an opening finds easily</u>) -- cf. 5.5.4 below.) This
would be represented by a rule that effects a deletion from FR. And
various rules may be thought of as acting directly on linking. The Sanskrit
passive is analyzed along these lines in 5.5 below; and the German
transitivizing prefix <u>be-</u> seems to be susceptible to such an analysis --
e.g. <u>ich sprach über ihn</u> : <u>ich besprach ihn</u> (ACC) "I spoke of him';
<u>ich antwortete ihm</u> (DAT) : <u>ich beantwortete ihn</u> (ACC)'I answered him'.

All that is necessary in order to capture the relevant generalization
is a type of lexical rule, which we shall call <u>diathetical</u>. Diathetical
rules act on the lexical entries of predicate-words to produce modified
lexical entries, and may effect changes on one or more of the following
components of the lexical entry:

1. its morphological form

2. its GSC (including its syntactic category)

3. its FR

4. its LS

A diathesis of a predicate-word is then defined as the output of one of these rules. These diathetical rules apply exclusively within the lexicon (like grammatical linking), and have no part in sentence derivation. Their outputs are lexical entries in their own right (minimally specified); and once maximally specified by grammatical and semantic linking, they will make their contribution to the well-formedness conditions of the sentences into which they are inserted just like any other lexical entries for predicate-words.

In sections 4.4 and 5.5 below, we propose analyses for various phenomena of Sanskrit which crucially involve diathetical rules of this type, viz. the rules of Transitivization and Passive. In Lekach forth-coming, and Ostler forthcoming, there is an exploration of the use of this mechanism in the analysis of Japanese verb-inflexion (especially the Potential, Causative and Passive). And various recent attempts to analyze the English Passive as a lexical rule (e.g. Bresnan 1978, Wasow, 1977, 1978, Freidin 1975) can also easily be seen as validations of this approach.

CHAPTER 2: RULES OF FORM IN SANSKRIT

2.0 INTRODUCTION TO THE ANALYSIS OF SANSKRIT; TEXTS; ABBREVIATIONS

The language to be analyzed in the remainder of this work is

Sanskrit, the classical language of Aryan India, principally as attested

in the Epics (Mahābhārata, Rāmāyaṇa), the dramas of Kalidasa, Śudraka,

etc., and such popular works as the Pañcatantra, Somadeva's Kathāsaritsāgara

and the Purānas. Now and again we shall also take examples from the more

courtly literature (Kalidasa's lyrics and epics, the Kādambarī, the

Bhattikāvya etc.) and the sūtra tradition. In general we avoid reference

to the older language of the Vedas and Brahmanas.

We shall often have reason to quote Panini's analysis of the

facts at hand, as well as the discussion in the later grammatical literature,

even though some of the phenomena that we analyze (e.g. the very widespread

use of the genitive to mark the 'indirect object' of verbs) seem to have

arisen in Sanskrit after Panini's time. Some of our example-sentences

will simply be taken over from the indigenous grammatical literature,

where they have often been used to make very similar points.

Our policy in the quotation of examples will be to given word-for-

word glosses and a translation for each sentence or phrase. The transcription

follows standard practice, e.g. Burrow 1955. Each example is followed by

a reference to its place in the original work, where this is known. Where

the examples have been taken from a secondary work, this fact too is indicated

by an abbreviation and a page or paragraph reference, according to the

following scheme:

'A'	marks	<u>page</u>	references to	V.S. Apte, <u>Student's Guide to Sanskrit Composition</u> (7th edn.)
'AD, s.v.'	"	word	"	V.S. Apte's <u>Sanskrit-English Dictionary</u> edd. Gode & Karve)
'Perry'	"	page	"	E.D. Perry, <u>A Sanskrit Primer</u> (4th edition)
'R'	"	page	"	L. Renou. <u>Grammaire Sanscrite</u> 92nd edition) 1961.
'S'	"	page	"	J.S. Speijer, <u>Sanskrit Syntax</u>
'T'	"	page	"	I.J.S. Taraporewala, <u>Sanskrit Syntax</u>
'Whitney'	"	paragraph	"	W.D. Whitney, <u>Sanskrit Grammar</u> (5th edition) Leipzig 1924.
'BRD, s.v.'	"	word	"	O. Beohtlingk and R. Roth <u>Sanskrit Wörterbach</u>, St. Petersburg

(Further details of publisher and date can be found in the general bibliography.) Such references are given, where possible, in addition to citation of the original source: this redundancy should alleviate the problems caused by copying errors.

Śloka references to the Mahabharata are, wherever possible, to the critical edition of the Bhandarkar Oriental Research Institute (edd. Sukthankar, Belvalkar and Vaidya) 1933-71, though their text does not always correspond word-for-word with the variant cited in our example-sentence. References to the Ramayana follow the Bombay edition (Gujarati Printing Press 1912: the Vulgate). References to Kalidasa's Śakuntalā follow the edition of Devadhar and Suru (Motilal Banarsidass 1934), which "in the main" corresponds to the Devanagari recension of the text as represented by Monier Williams. References to Śudraka's Mṛcchakaṭika follow K.P. Parab's edition (2nd edn., Tukaram Javaji, Bombay 1904). Otherwise the reference given in the secondary source has simply been repeated, where this seemed

to be useful: Speijer's page and section references to unknown editions have not been carried over.

Abbreviations of Titles of Sanskrit Texts

Ap. S. S., ... Āpastya-Śrauta-Sūtra

Apast, ... Āpastya-Dharma-Sūtra

Aśv. Gṛh., ... Aśvalāyana-Gṛhya-Sūtra

Bhag. P., ... Bhāgavata-Purāṇa

Bk., ... Bhaṭṭi-Kāvya

Ch. Up., ... Chāndogyopaniṣad

Dasakum, ... Daśa-Kumāra-Carita

Div., ... Divyāvadāna (ed. Cowell & Neil)

H. , ... Hitopadeśa

H. Pr., ... Hitopadeśa Prastāvikā (i.e. Introduction)

Jtkm. , ... Jātaka-Mālā

K., Kād. , ... Kādambarī

Kam, ... Kāmandakīya-Nītisāra

Kas. , ... Kāśikā-Vṛtti

Kathas., ... Kathā-Sarit-Sāgara

Kav. , ... Kāvya-Darśa

Ki., ... Kirātārjunīya

Ku, Kum., ... Kumāra-Sambhava

M., ... Mahā-Bhārata (B.O.R.I. Edn.)

Malav., ... Mālavikāgnimitra

Manu, ... Mānava-Dharma-Śāstra

Megh., ... Megha-Dūta

Mhbh, ... Mahā-Bhāṣya

Mrcch, ... Mṛccha-Kaṭika

Mudr., ... Mudrā-Rākṣasa

Nala, ... Nalopākhyāna

P., ... Paṇini

Panc., ... Pañca-Tantra

Pat., ... Patañjali's Mahā-Bhāṣya (ed. Kielhorn)

Prabodh, ... Prabodha-Candrodaya

R., ... Rāmāyaṇa (Bombay edn., Vulgate)

Ragh., ... Raghu-Vaṃśa

Raj. T., ... Rāja-Taraṃginī

RV, ... Ṛg-Veda

S.K., ... Siddhānta-Kaumudhī

Śak, ... Śakuntalā

Sat. Br. , ... Śatapatha-Brāhmaṇa

Sis., ... Śisupālavadha

V., ... Vikramorvaśīya   (Bombay edn.)

Var. Yog. . . . . . . Varāhamihira's Yogayātrā

Varaham. Brhats. . . . Varāhamihira's Brhatsaṃhitā

Vg., ... Veṇī-Samhāra

Vet., ... Vetāla-Pancaviṃśati

* Priyad , ... Priya-Darsikā

Taitt. Samhit, . . . Taittirīya-Samhita

2.1   CATEGORIES

Our analysis of the syntactic form of Sanskrit sentences will con-
sist primarily of two sets of rules: phrase-structure rules, and rules to
assign grammatical case on the basis of phrase-structure. To orient case
and diathesis phenomena within the general picture of Sanskrit syntax, we
shall include in the rules details which are not strictly relevant, e.g. the
basis for relative clauses and quoted sentences. These will however facili-
tate understanding of some of the example sentences. As given here, it seems
that the rules will be broadly adequate to generate the full structural
complexity of Sanskrit sentences.[1]

Our system of categories for Sanskrit follows the $\overline{X}$ convention (cf.,
e.g., Jackendoff 1977) in positing, on the basis of the major syntactic
categories (S, N, V, P), a system of supercategories ($\overline{\overline{N}}$, $\overline{\overline{\overline{N}}}$, $\overline{\overline{V}}$, etc., etc.).
The capacities of these supercategories, which dominate phrases rather than
single items, are spelt out by phrase-structure rules, which largely take
the form:

(2.1) X^n --- ... X^{n-1} ...

---

[1]PS rules for Sanskrit have previously been offered in Staal 1967
and Davis 1978. Such rules seems to be intended as illustrative only: the
authors do not consider what would be the full extent of the devices needed
to characterize even a single component of Sanskrit syntax - say, passive,
or case-selection by verbs. Davis 1978 gives a 'strongly equivalent' alter-
native to PS rules in the form of a Montague-style categorial grammar, and
touched on matters of semantic interpretation which we shall ignore, e.g.
the differeing referential presuppositions attaching to argument positions
in functional structure. But again, the treatment is illustrative, rather
than systematic.

(The superscript numbers here refer to the number of bars over the category-symbol in the donventional representation. We shall use either, as convenient.)

We shall not need to make any crucial use of the other major characteristic of $\overline{X}$ theory - viz. that the categories themselves are cross-classified by a feature system. Nor shall we take a position on the Halitsky-Hornstein dispute as to whether S is to be analyzed as a super-category, at some level, of V (cf. Halitsky 1975, Hornstein 1977).

Of our four major categories, 'S' (sentence) and 'V' (verb) are self-explanatory. 'N' we shall be using to refer to a large class of items, including traditional substantive nouns, but also adjectives. These words differ from substantives morphologically only in that they allow a productive gender opposition of masculine, feminine and neuter: but there seems to be no good syntactic reason for separating them. Their characteristic difference in meaning from substantives (viz. being predominantly attributive rather than predominantly referential) we shall account for elsewhere (in functional representation). And as for their agreement with their head noun, this will be explained in principle as a consequence of constraints on sentence interpretation (see 3.3.2-3). Syntactic considerations, in particular the incidence of the genitive (see 2.6.3 below), favor collapsing adjectives with other nominals in Sanskrit. In universal terms, this maybe understood as Sanskrit's not making use of whatever feature distinguises nouns from adjectives in languages with a more differentiated syntax.[2]

---

[2]Compare Hale & Platero 1978 where it is claimed that Navajo too lacks the category Adjective: there, however, it seems to be replaced by an extended Verb category.

P is a wide-ranging category, covering orthodox pre- and post-positions, and also adverbs. Besides having these instances, which turn up as independent words on the surface, it will be used to govern the incidence of complementizer morphemes (as the gerund (-$\overline{\text{tva}}$, -ya) and infinitive (-tum); and it will also be the category of the semantic cases (instrumental (I), dative (D), ablative (B) and locative (L): the accusative (A) and genitive (G) can also double as semantic cases, though their primary incidence is grammatical, conditioned by the formal case-rules (CR).[3] $\overline{\text{P}}$ will in fact cover the whole class of "adverbial adjuncts" in Sanskrit, whose range is illustrated by the phrases in (2.2). In calling them "adverbial", we make no claim about which constituent of the sentence is actually modified by them in functional representation. Nor do we claim that they occur only in verbal phrases. Both of these possibilities are in fact explicitly false in our system.

(2.2)

$$
\overline{\text{ramo}} \left\{ \begin{array}{l} \text{dr}\overline{\text{a}}\text{g} \\ \text{tatra} \\ \overline{\text{a}} \ \overline{\text{pa}}\text{taliputr}\overline{\text{at}} \\ \text{govindena saha} \\ \text{paras}\overline{\text{i}}\text{kan jetum} \\ \text{prahasya} \\ \text{ayodhy}\overline{\text{a}}\text{yai} \end{array} \right\} \text{gacchati.}
$$

'Rama goes at once
there
as far as Pataliputra
with Govinda
to conquer the Persians
laughing
to Ayodha.'

But it seems justified to broaden the scope of P still more. The context of occurrence of adverbial modifiers (A.M.) coincides with that of predicate $\overline{\overline{\text{N}}}$. This is illustrated in (2.3-6).

(2.3) Qaulifying a Head Noun

A.M.   yup$\overline{\text{a}}$ya d$\overline{\text{a}}$ru\d{h}   'wood for a stake'   K$\overline{\text{a}}$\'s. 2.1.36

            stakeD   woodN

vrkebhyo bhayaḥ 'fear of wolves' Kāś. 2.1.37

wolvesB fearN

viprakāram ... rākṣasair bhavatām imām R3.6.23

harmA demonsI youG thisA

'this harm (done) to you by demons'

Pred. N̄. bhadro naraḥ 'good man'

goodN manN

nāvaḥ nārīṇām abhipūrṇas R.2.89.17

shipsN womenG filledN

'ships filled with women'

(2.4). As Sentence Predicate

A.M. kāvyam yaśase 'Poetry (makes) for fame.' Kāv. 1 (A44)

poetryN fameD

Pred. N̄. tvam ... ratnam nārīṇam Nala 1.30

youN jewelN womenG

'You are a jewel among women.'

(2.5) As Complement External to V̄

A.M. paśya [enam vañcaye katham]ₛ Kathās. 39,87
(S322)

see himA I-deceive how

'See how I deceive him!'

Pred. N̄. rāmena ṛṣiṇā jīvyate Perry 52

RamaI seerI it-was-lived

'Rama lives as a seer.'

(2.6) As a Constituent of V̄

A.M. lokaḥ pibati surām narakapāle'pi Panc. 1.327
(S105)

peopleN drinks liquorA even
human skullL

'The people drink strong liquor even from
human skulls.'

$$\underline{\text{sthalyā̄m}} \text{ pacati} \quad \text{'He cooks in a pot.'} \qquad \text{Kấś. 1.4.45}$$

potL cooks

<u>Pred. N̄.</u> tam <u>ācāryaṃ</u> pracakṣate   M. (S22)

himA teacherA they-call

        'They call him teacher.'

 pitā̄ <u>vṛddhaḥ</u> sampadyate 'The father grows old.'   (S21)

fatherN oldN grows

Faced with these facts, we include under $\bar{P}$ these predicate $\bar{N}$s, which agree in case with some other N in the sentence (the one of which they are predicated). 'P' conveniently stands for 'predicate' too. Details of the expansion are given below, along with some discussion of a possible alternative analysis. (See 2.3.4.)

2.2 THE MAJOR PS RULES

The principal PS rules are as follow:

PS1 $\bar{S}$ $\longrightarrow$ $(\bar{S})$ S   (Comp)

PS2   S $\longrightarrow$ $\bar{\bar{N}}$ $(\bar{P})*$ $\bar{\bar{V}}$

PS3 $\bar{\bar{X}}$ $\longrightarrow$ $(\bar{P})*$ $\bar{X}$

PS4 $\bar{X}$ $\longrightarrow$ $(\bar{\bar{N}})$ X

'X' in these rules ranges over the major lexical categories N, V and P: it does not include S. In their extreme compactness the rules probably seem rather cryptic at first glance. They will be explained one by one.

2.2.1 PS 1

PS1: $\overline{S}$ $\longrightarrow$ $(\overline{S})$ S (Comp)

This rule gives the expansion of the initial symbol, '$\overline{S}$'.

The $\overline{S}$ in the output of this rule provides the slot for relative

clauses and quotative sentences marked with <u>iti</u>. Andrews 1975 argues that

relative clauses in Sanskrit cannot be generated with their head N as part

of a single constituent. His grounds are that a single relative clause may

contain relative pronouns referring to more than one N in the main clause:

i.e. a single clause may have more than one antecedent N. We shall gener-

ate them under the subordinate $\overline{S}$ node made available by PS1. Moreover,

since the clauses typically appear prefixed to the sentence as a whole,

the rule also has the effect of generating the unmarked word order.

The choice of $\overline{S}$, rather than S, as the dominating node follows

Andrews. Although relative clauses have no overt complementizer, the

traditional distinguisher of $\overline{S}$ from S, PS1 is written so as to make the

Comp optional. This is required anyway, since if we follow $\overline{X}$ tradition

in taking $\overline{S}$ as the initial symbol, we need some way of allowing main

clauses too to be free of Comp. We shall suppose that PS, and syntax

generally, leaves open the choice whether to insert a Comp or not; a sub-

ordinate $\overline{S}$ will, however, have to contain a relative word or the Comp <u>iti</u>

in order to be integrated into one functional structure with the main S.

We use the same category, $\overline{S}$, to generate the quotative clauses

which so often accompany Sanskrit sentences and are marked with the Comp

<u>iti</u>. It might be suggested that this Comp position could also be used to

hold such words as y̅a̅t̲, yath̅a̅ and yad̅a̲, which often have the function of marking subordinate clauses in Sanskrit. Since most of these particles, however, have the form of relative correlates to demonstrative pronouns or adverbs of various sorts (cf. t̲a̲t̲ '(in respect of) that', tath̅a̅ 'thus', tad̅a̲ 'then') it may be better to view them as syntactically just that -- exponents of P̅. Clauses containing them will be just that species of relative clause in which the relative word is "adverbial" rather than simply nominal. This decision is reinforced by the fact that i̲t̲i̲ can co-occur with these and other relatives, in the context of "indirect questions". (Cf. S382-3 for some examples.) It also has the advantage of coinciding with the traditional treatment of Speijer 1886, who says that "subordinate clauses are characterized by relatives" (S348).[4]

It is convenient to be able to dispose so summarily of Sanskrit's resources for sentence subordination. Much of this chapter will be devoted to exploring the variety of semantic content which can be conveyed by the very impoverished syntactic structures for simple sentences that our rules generate.

---

[4] Consideration of how relatives are used in sentence interpretation is irrelevant to this section and beyond the scope of this work as a whole. Some device for specifying coreference between relative and antecedent seems to be all that is required.

2.2.2 PS2: IMPERSONALS IN SANSKRIT; FINITE VERB MORPHOLOGY

PS2: S $\longrightarrow$ $\overline{\overline{N}}$ $(\overline{P})*$ $\overline{\overline{V}}$

This rule specifies the basic structure of the simple sentence in
Sanskrit. As formulated, it embodies the claim that the $\overline{\overline{N}}$ and $\overline{\overline{V}}$ constitu-
ents are essential in a way that $\overline{P}$ is not (although it allows an indefinite
number of $\overline{P}$s if present at all). This should not be taken to mean that
they are obligatory elements of the surface string. Zero anaphora will
allow either $\overline{\overline{N}}$ or $\overline{\overline{V}}$ to be lexically null, if the context permits them to
be adequately reconstructed in functional representation.

There is a point, though, in making $\overline{\overline{N}}$ and $\overline{\overline{V}}$ in some sense obliga-
tory constituents of S. We want to claim that every well-formed sentence
structure contains a $\overline{\overline{V}}$, though our reasons here mainly concern the need to
identify the sentence predicate-expression. We also want to claim that
every sentence structure contains a principal $\overline{\overline{N}}$ position — one which will
be associated with the nominative case by CR1 (2.6.1). The apparent excep-
tions to the $\overline{\overline{V}}$ claim we shall consider below (2.2.3). But we are already
in a position to marshal the relevant facts about $\overline{\overline{N}}$.

If our claim were false, we should expect to find Sanskrit sentences
with no place for a nominative NP: where a nominative NP is not only omit-
ted, but further could not be supplied without making the sentence ungram-
matical. Such sentences are found in some languages, even related ones like
Latin: an example there would be sentence (2.7).

(2.7) paenitet me peccatorum   'I am sorry for my sins.'

　　　　it-repents sinsG
　　　　　　meA

But if we look for such sentences in Sanskrit, the crop is very disappointing. Delbruck 1900 considers the question under the heading Die subjektlosen Sätze. The weather verbs (varsati 'rain', stanayati 'thunder', vidyotate 'lighten', tapati 'be hot', vāti 'blow' etc.) all turn out to be used with or without subjects; and the same turns out to be true of the more abstract verbs meaning 'take place', 'succeed' etc. Delbruck concludes: es ist klar, dass die genannten 3. pers. zunächst ein Subjekt neben sich hatten, welches aber wegen seiner Selbstverständlichkeit leicht wegbleiben konnte...": essentially a case of zero anaphora.

Delbruck does mention three isolated instances in the Ṛg Veda, where a structure similar to (2.7)'s seems likely: (2.8) is typical of these examples, in that the verb (tapati 'be hot') is otherwise only found as an intransitive with a nominative subject.

(2.8)   striyam dṛṣṭvāya, kitavam tatāpa   RV. 10.34.11

        womanA   seeing   gamblerA was hot
               (ger.)   (3 sg.)

                              'Seeing the woman, it pained the
                              gambler.'

It is possible, then, that $\overline{\overline{N}}$ under S was optional in Vedic: but for classical Sanskrit, our main interest here, this possibility seems to have been excluded. Speijer 1886 (S4) quotes some examples from the Vedas but admits: "in classic Sanskrit, they (sc. impersonals) are scarcely used, being but remnants of a more widely employed idiom of the older language." He adduces as examples for classical Sanskrit, however, (2.9) and (2.10).

(2.9)   yatne kṛte yadi na sidhyati...   'if it does not succeed
                                          when one tries hard...'
        effortL doneL if not it-succeeds

                                      Panc.1   (S4)

(2.10)   varṣati   'It rains.'

it-rains

But <u>sidhyati</u> is clearly used with an explicit subject in a sense almost identical to that in (2.9). E.g.:

(2.11)   udyamena hi sidhyanti kāryāṇi na manorathaiḥ   H.Pr. 36

diligenceI for succeed affairsN not wishesI   (AD S.V. <u>Sidh</u>.)
(3 pl.)

'For affairs succeed through diligence
not wishful thinking.'

And Speijer himself alludes to an instance where <u>varṣati</u> is used with a subject, <u>deva</u> 'god'.

(2.12)   ā pāṭaliputrād vṛṣṭo devaḥ   Kāś. 1.4.89

up-to PataliputraB rainedN godN
(partcp)

'It rained as far as P.'

Although classical Sanskrit seems to be a language without impersonal verbs as such, there are much more plausible candidates for "subjectless" sentences: these are the sentences that contain an intransitive verb in the so-called impersonal passive. Here, <u>prima facie</u> at least, no nominative NP seems to be insertable. The problems which these sentences pose for our analysis of phrase structure and the passive in Sanskrit are discussed in some detail below (5.5.3). For the moment we shall just say that a solution is proposed there which enables us to maintain PS2 as it stands.

The status of the sentence-level $\overline{P}$ in PS2 is not altegether clear. Presumably, absolute participial constructions (as the locatives in (2.9)) will be inserted here. It is perhaps convenient for the interpretive rules to distinguish different levels of $\overline{P}$ (cf. the elegant system for English developed in Williams 1975). But I know of no arguments which demand that

we distinguish $\overline{P}$ at this level from $\overline{P}$ within $\overline{\overline{V}}$. It is possible to reformu-
late the rules to include $\overline{P}$ at almost any level: but the more peripheral
$\overline{P}$s postulated will have little to do with the central questions of this
chapter, which concerns the relations between nouns and verbs on the one
hand and their case-marked dependents on the other.

A question which we shall mention only to leave it unresolved, is
that of how to place the finite inflexions on the verb, the head of $\overline{\overline{V}}$.
Though strictly speaking finiteness is a property of the verb rather than
the verb-phrase, we discuss it now rather than later. This is because it
seems likely that the dominating S is an important conditioning factor --
if not the only one.

There seem to be three options:

A. Include an AUX node in the output of PS2. This would mean re-
placing PS2 as it stands with PS2':

PS2':   S $\longrightarrow$ $\overline{\overline{N}}$ $(\overline{P})*$ Aux $\overline{\overline{V}}$

This Aux element or later, morphosyntactic rule would incorporate the verb
itself. The Aux would effectively act as the marker of a packet of infor-
mation about person, number, tense and mood.

This would be the preferred solution, if the idea of a universal
Aux category is taken seriously (see, e.g., Akmajian, Steele & Wasow 1979):
finite clauses would differ from non-finite phrases in containing a packet
of information about number, person, mood and (in some languages only)
tense. (Cf. classical Greek and Latin, where systematic tense distinctions
are found even in the non-finite categories of the verb.) The identifica-
tion of the presence of an 'Aux' packet with finiteness in this way would
pose problems for an analysis like Chomsky & Lasnik 1977, where Tense, the
finite-marking constituent, is only one constituent of the Aux node. But

this general approach to syntactically conditioned morphology is the one that seems to be proposed in Chomsky 1975; (see, for example, the discussion of $\overline{M}$ in section 47, pp. 167-9.)

B. Add a morphosyntactic rule which would act directly on an eligible verb, presumably one whose maximal dominating verb-phrase is immediately dominated by S. The differences between this proposal and the one in A. seems to be theoretical rather than empirical. Is it preferable to insert an abstract constituent under S in phrase structure, thereby making phrase structure more distant from the surface form of the sentence? And then to allow a special type of rule compounding separate PS constituents (Aux and V) which are not even sisters? Or is it perferable to act on the verbal word directly, under conditions which will make reference to PS? Our generated PS will then be free of an abstract element; but we are left with no obvious constraint to impose on the complexity of syntactic conditioning that is possible for morphosyntactic rules.

Under B., we may still be able to validate the Universal Aux hypothesis: but it will need to be formulated more abstractly. Not in terms of a universal PS constituent -- but rather of a packet of information, which every language makes available somehow in the syntactic form of its main sentences, whether in PS or in some rule applied to it.

C. Allow insertion of arbitrary verbal forms in the V slot, but provide an output constraint which would eliminate inappropriate ones, presumably on grounds having to do with PS, but perhaps also with surface collocations. (The latter option seems an improbable one for Sanskrit.) The constraints which would be required are currently the subject of research (see Lapointe, forthcoming). Again, it is not clear to what extent this approach differs empirically from B.; output constraints will presumably

reflect exactly the environment in which a morphosyntactic operation would apply. The theoretical charm of this option flows from the claim that word-internal processes cannot be conditioned by syntax — Lapointe's "Extreme Lexicalist Hypothesis". It would undoubtedly be a step forward in linguistics if this formal break between syntax and morphology could be sustained: syntax and morphology would both have clearer definitions as a result. But to sustain it, it is necessary to show that whatever it is that <u>does</u> determine the occurrence of particular forms in particular sentence structures is not part of syntax: what is the status, then, of the output constraints here?

In our analysis of the incidence of grammatical case-marking (1.2 above, especially 1.2.2), we chose essentially option <u>B</u>. The PS solution, <u>A</u>., was rejected on the grounds that there are instances where a node above the immediately dominating one is decisive in the choice of case (e.g. Japanese genitives within adnominal S). A feature-addition rule seemed the natural way to represent the structurally determined incidence of case. In the present problem we have less to go on: but the solution does not directly affect anything else in our analysis. It will simply be ignored, therefore: in the analysis to follow, we shall disregard the finite markings on verbs. (But see below 2.4 , for further discussion of non-finite morphology.)

2.2.3 PS3

$$\text{PS3: } \overline{\overline{X}} \longrightarrow (\overline{P})^* \overline{X}$$

This rule has two main subcases,[5] which are made explicit in PS3i and ii.

$$\text{PS3i: } \overline{V} \longrightarrow (\overline{P})^* \overline{V}$$

$$\text{PS3ii: } \overline{\overline{N}} \longrightarrow (\overline{P})^* \overline{N}$$

These rules introduce the $\overline{P}$ which we shall be especially interested in: specifically, the oblique cases which are interpreted closely with the verbs or head nouns own functional representation; and the predicate nominals which complement either V or N. These latter are traditionally called attributive and predicative nominals respectively. Examples of these have already been given in our short discussion of $\overline{P}$ (examples (2.3-6)): representatives are repeated here for convenience.

	Oblique $\overline{\overline{N}}$	Predicate $\overline{\overline{N}}$
(2.13)		
In $\overline{\overline{V}}$	sthālyām pacati	vṛddhaḥ sampadyate
	'cooks in a pot'	'grows old'
In $\overline{\overline{N}}$	yūpāya dāruḥ	bhadro naraḥ
	'wood for a stake'	'good man'

The interpretation of these nominals will be discussed in 3.1 and 3.3.2. We shall not discuss the interpretation of more strictly "adverbial"

---

[5]But see footnote 9 to this chapter for a slight revision of this rule, and a third subcase.

(i.e. non-nominal) exponents of $\overline{P}$.

If the $\overline{V}$ node in $\overline{\overline{V}}$ ends up, after lexical insertion, clear of any lexical items, so that only the $\overline{P}$ of PS3i is represented in the surface sentence, we generate what are known as the nominal sentences of Sanskrit.

We do not need to postulate a deletion here: lexical insertion under any category is optional in Sanskrit. For purposes of interpretation (i.e. association of a phrase-maker with an FS) the empty category nodes will be sufficient to establish the necessary linking (cf. 3.3.4), as long as the textual context makes the reference or content of the omitted items clear.

In nominal sentences the predicate is represented solely by a surface $\overline{\overline{N}}$, perhaps agreeing with the subject, perhaps in an oblique case. Examples are given in (2.14 and 15). (And cf. (2.4) above.)

(2.14)   kundalāya hiranyaṃ   M   (A44)

ornamentD   goldN

'Gold is used for kundalas.'

(2.15)   sa mahātmā vayam kṛpaṇāḥ   Panc.   (S1)

heN   lordN   weN   vileN,pl

'He is a lord; we are mean people.'

There seems to be no reason to take these as representative of another PS predicate type, and so undermine the obligatory $\overline{\overline{V}}$ in PS2. (Yet cf. Speijer's account (S1).) Although these sentences are without an overt V on the surface as head of $\overline{\overline{V}}$, there is no question of the V's being obligatorily absent, as the synonomous (2.16 and 17) show.

(2.16)   kundalāya hiranyaṃ   prayujyate/kalpate

is used/is fitting

(2.17)   as mahātmāsti vayam smah kṛpaṇāḥ

is   are

And the absence of any Aux-like element in (2.14 + 15) which would correspond to the finite endings underlined in (2.16 + 17) follows naturally from the fact that there is no V to bear the morpheme.

2.2.4 PS4

PS4: $\overline{X} \longrightarrow (\overline{\overline{N}})\ X$

This rule has three subcases, given in PS4i, ii and iii.

PS4i $\overline{V} \longrightarrow (\overline{\overline{N}})\ V$

PS4ii $\overline{N} \longrightarrow (\overline{\overline{N}})\ N$

PS4iii $\overline{P} \longrightarrow (\overline{\overline{N}})\ P$

PS4i is the rule that generates a position for the direct object of verbs, which CR2 will mark accusative. PS4ii places the nominal dependent on another noun: CR3 marks this dependent with the genitive. PS4iii expands the $\overline{P}$ category: its various outputs will be discussed in the next section. (The case-rules occur below in 2.7.)

2.3 THE EXPANSION OF $\bar{P}$

2.3.1 OBLIQUE CASE MARKING

This uses the full expansion of $\bar{P}$ as $\bar{N}$ P, inserting under P a label

for one of the oblique cases, Accusative (A), Instrumental (I), Dative (D),

Genitive (G), Ablative (B) or Locative (L). These labels can be thought

of as abbreviations for feature complexes, if that is thought to be

illuminating. Syntactically speaking, the choice of case made here is

arbitrary: the only constraints will have to do with compatibility with

the functional representation of the relevant N or V.

The labels are of course abstract, and never show up except as

allomorphs on the end of the various Ns. If the N slot is empty for

anaphoric reasons, the case-marker will not be realized. A morphological

rule will have the desired properties, marking case on the N (if present)

in conformity with the c-commanding P.[6] (See 2.7 below for more formal

details.)

---

[6] X **c-commands** Y the first branching node dominating X also dominates
Y (cf. T. Reinhart 1976).

This morphological rule will, in fact, pose a slight theoretical
problem — at least if we suppose that every morphological rule picks out
the **head** of the constituent which it marks. The relevant domain here is
$\bar{P}$ — so that the case-marker P, is itself the head of the constituent: N is
only the head of the commanded N. It would be possible to say that it is
the N, rather, that marks the case-slot P, by acquiring its case-endings:
but this seems unnatural. Otherwise we might claim only that morphological
rules mark the head of the constituent that the conditioning factor
c-commands. But morphological theory is not a central concern here: so
we shall leave this question unresolved.

2.3.2 ADVERBS

Most adverbs in Sanskrit will be analyzed simply as intransitive

Ps (cf. Emonds 1972). This will cover the simple unanalyzable words like

muhus 'often', drāk 'at once', mṛṣā 'in vain, falsely', alam 'enough', as

well as most of the variety of derived denominal adverbs, e.g. tri-dhā

'threefold'. akṣara-śas 'syllable by syllable': in some cases we may

hesitate between this simple analysis, and one more similar to the one

assigned to oblique case-marked expressions, where underlyingly the

derivative ending only would be dominated by P: e.g. dakṣina-tas

'from the right'. pūrva-tra 'before' (cf. dakṣina- 'right', pūrva- 'prior':

the -tas and -tra suffixes can in fact show agreement with the orthodox

ablative and locative respectively (cf. Whitney, secns. 1098d and 1099b).

But this is just one more example of the looseness which makes it unlikely

that agreement should be analyzed as any sort of syntactic copying rule:

cf. 3.3.3 below.) However, there seems to be nothing more than the

semantic transparency of these words' structure at the root of our hesita-

tion: there is no independent reason to set up independent -tra and -tas

case labels. We therefore retain the simple P analysis, and consign the

further analysis of these words to word-formation.

However, we shall spend a little more time on adverbs derived

productively from adjectives, which in Sanskrit are marked with the neuter

singular ending. Here we have in fact four possible analyses: (i) make

them lexical Ps like the simple adverbs; (ii) make them oblique accusatives

inside S or $\overline{\overline{V}}$. We shall call this rule AR — the adverb rule.[7]

This would account for these adverbs' failure to appear as qualifiers of $\overline{\overline{N}}$.

---

[7]It appears that AR, which is optional in Sanskrit, applies obliga-torily in some other languages. In Japanese, for instance, the -ku ending characterizes all adjectives used adverbially or predicatively (i.e. all adjectives in $\overline{\overline{V}}$), as well as adsententially (i.e. in S), as in this three-way ambiguous example (from Martin 1975, p. 467):

watasi ga benkyoo o hayaku suru
{ 'I make the study quick, speed it up.'
'I study quickly.'
'I shall quickly be studying.'

There is no agreement between N and qualifier in Japanese.

2.3.3 ADPOSITIONS

Within the Western tradition, this part of speech (comprising pre-
positions and postpositions) is conventionally thought to govern the case
of its NP. A natural expression of this would be to take them as **lexical**
fillers for P: i.e. just like the case-labels of 2.3.1, except that they
would be realized as surface words. This would require us to allow Ps
to subcategorize for the case-marking of their object.

Alternatively, following one branch of the Indian tradition,[8] we
may take these words as independent adverbs which simply give more speci-
ficity to the accompanying case-marked NP. In this case no subcategorization
will be required; but the claim is made that the co-occurring case can
always be interpreted in accordance with one of the semantic linking rules
(3.1) with the adposition serving only to narrow down the available choices.

Formally, the two hypothesis are represented in (2.20):

(2.20) i.   ii.
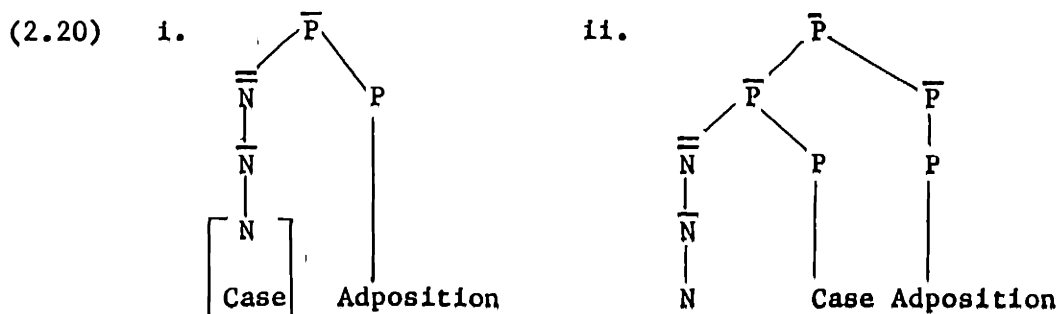
[8]This view is shared by Speijer (§ 114, n.1).
    The Indian position was strictly speaking formulated with respect
to the meaning relation between the adposition and its NP: was the adposi-
tion (upasarga) directly expressive (vācaka) of its sense? or was it merely
indicative (dyotaka) of a sense which truly inhered in the accompanying
words? In the absence of a worked out semantic theory it is difficult to
find an empirical issue at the bottom of this: the interested reader is re-
ferred to Abhyankar 1961, s.vv. upasarga and nipāta.

Strictly speaking, the unification of the two subordinate Ps into one higher $\bar{P}$ in (2.201) is not necessary. But it will be possible, due to PS6 below.[9]

It is likely that both analyses are instantiated. <u>Saha</u> 'with', which always co-occurs with an instrumental, seems a clear example of the type in (2.201) – since accompaniment is a regular meaning of the instrumental occurring alone (cf. 3.1.3). Furthermore, <u>saha</u> also appears independently as an adverb meaning 'together' (cf. S 132-3).

$\bar{A}$, 'as far as', on the other hand, always occurs with the ablative, although it designates the terminus ad quem as well as the terminus a quo. In a sentence like (2.21) it is difficult to reconcile with the standard meaning of the ablative, which is Source (cf. 3.1.5).

(2.21)   atra bhavatī tāvad ā prasavād asmagṛhe tiṣṭhatu

here   ladyN   to   up   birthB   our-   let-her-
                that to   houseL   stay
              extent

'Let the lady here stay in our house until the birth.' Śāk. 5.30

It therefore seems natural to analyze its construction as in (2.201). $\bar{A}$'s ablative presumably expressed originally only the <u>terminus a quo</u>. Speijer remarks (S 123): "In the vaidik mantras, $\bar{a}$ is of the utmost frequency, and is put in different cases, sometimes before, sometimes behind.

---

[9]Jackendoff 1977 postulates an expansion for $\bar{P}$ in English as: P (NP) (PP) (where 'NP' and 'PP' designate the highest-level supercategories for N and P). We disregard this proposal here, since we have no evidence for this degree of complexity in $\bar{P}$ in Sanskrit, and since it would require complication of PS4. Qualifiers of P will appear at the $\bar{P}$ level. For example, in the passage of Utpala, quoted by Kern in his translation of Varaham. Brhats. I, p.7 (S54).

In most instances it is rather a mere adverb." Only if the language has

the potential to subcategorize for case is it possible to represent the

change in situation between Vedic and classical Sanskrit here: a move from

(2.20ii) to (2.20i).

We should also expect some fluctuation in a situation like this.

Anu, in its meaning 'after', provides a case in point. In general, it

subcategorizes for the accusative (e.g. 2.22).

<div style="margin-left:3em">

(2.22)   jagāma anu purohitam   R. 2.90.2

            he-went after   family-priestA

                          'He followed after the priest.'

</div>

But in epic poetry we also find it with an ablative.

<div style="margin-left:3em">

(2.23)   anu saṃvatsarāt sarve śapamokṣam avāpsyatha

            after   a-yearB   allN   curse-   you(pl.)-
                                 releaseA   will-obtain

                       'After a year you will all be freed from

                       the curse."   M. 1.93.36 (S120)

</div>

---

9   amuko graha etāvadbhir yojanair bhūgōlād upari bhramati

     suchN plantN so-manyI yojanasI earth-globe above moves
                                 B
     'Such a planet moves so many yojanas above the terrestrial
                                  globe.'

Here we should postulate a structure as below:

(2.24)   dhṛtarāṣṭrād anu ca te gāndhārīṃ ... pūjayitvā...

Dhṛtarāṣtraß after   they   doing
                    and   GandhariA   homage (ger.)

'And after D., they did homage to G. ..., and ...'

M. 14.70.6(S120)

And 'after' is a sense that we should want to ascribe to the ablative itself
(cf. the external source meaning 'since' in 1.3.7 above). Many of the
other adpositions meaning after or since co-occur with it (i.e. ārabhya,
prabhṛti, puram and other derivatives of para, ūrdhvam, anantaram, though
not paścāt - see S 127); and Panini's 1.1.67 (tasmād ity uttarasya) gives
the technical sense of 'after' to the ablative case when used in a rule
of grammar. This latter is some evidence for the "semantic feel" of the
ablative in Sanskrit, since Panini's technical devices are often founded
on popular usage (cf. Kiparsky in press).

The role of adpositions in verb compounding is discussed in 4.4.1.

---

[9] To relieve excessive complexity in our structural diagrams, the
$\overline{\overline{P}}$ node has been systematically omitted where it is unnecessary. But PS3
should more accurately have read:

$$\overline{\overline{X}} \longrightarrow (\overline{\overline{P}}) \; \overline{X}$$

So that it contains an extra (directly recursive) subcase:

$$\overline{\overline{P}} \longrightarrow (\overline{\overline{P}}) \; \overline{P}$$

2.3.4 PREDICATE $\overline{\overline{N}}$

The predicate $\overline{\overline{N}}$ realization of $\overline{P}$ makes use of a label <u>Pred</u>, which we

shall suppose can be inserted under P in much the same way as the case labels

in 2.3.1. The category will always be realized on the surface as ∅, but in

this context arbitrary case-marking may be applied to the c-commanded $\overline{\overline{N}}$.

It will be natural to represent this by allowing any arbitrary case label to

be inserted under Pred, and then allow the morphological rule to apply

as per usual. Although arbitrary case-marking is good enough for the

syntax, it will not be for the linking rules: in order to assign a sentence

to a functional structure, it will be necessary for the case-marking picked

to agree with something plausible in the sentence as a whole. See

3.3.2-4 for details.

Hence the analyses assigned, e.g., to the sentences in (2.6)

would be as in (2.24). We have not yet given the rules which assign case

to the $\overline{\overline{N}}$s unmarked here. (see 2.6 + 2.7).

(2.24) i.   ii.

∅ acarya-   A   ta-   pracakṣate pitar-vṛddha N sampadyate
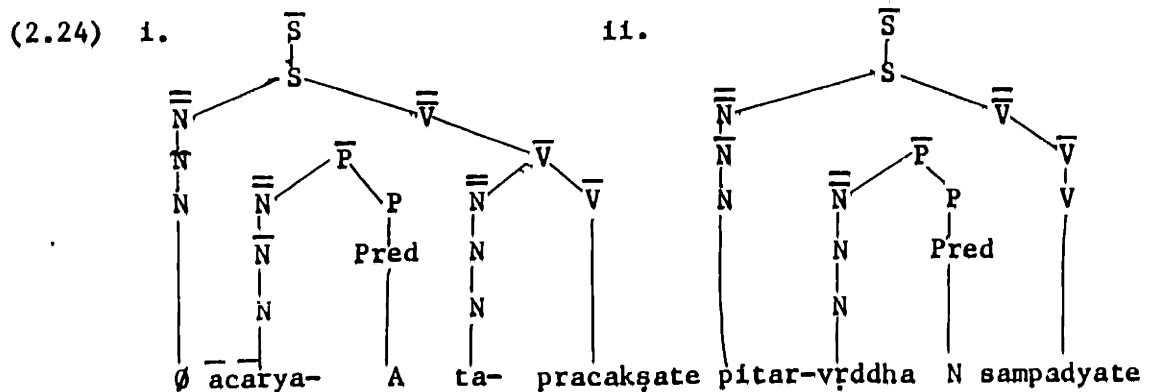
2.3.5 ATTRIBUTIVE AND PREDICATIVE POSITION

This seems a good point at which to give some justification for

this approach to $\bar{P}$ expressions, viz. for the decision to give them determi-

nate positions in PS.

The opposition against which I aim these remarks is one which I

shall name the 'Interpretive Construct' (IC) view. This view represents

an even stronger line on the autonomy of syntax than the present work.

On this view, a language with extremely free word-order may present no

grounds whatever for modifiers to be thought of as forming a single

structural constituent with their head. Now Sanskrit is a language with

free word-order to a very great extent (cf. 2.8). We shall suppose that the

holders of the IC view take the generalizations caught by our case-rules

(2.6) as important enough to justify the minimal structure imposed by

PS2 and PS4 (excluding the incidence of $\bar{P}$ in PS2). But to cover the

modifiers grouped under '$\bar{P}$' they suppose it is enough to generate arbitrary

numbers of nominals etc. in the relevant cases: out of this syntactic

maelstrom interpretive rules will be able to match agreeing items and

group them together into coherent sets, where one item will refer and

the others qualify it in various ways. The idea is to posit no more syn-

tactic order than is apparent in the surface strings of the language;

and to explain that these strings make sense in terms of well-behaved

functional representations without any reference to an unseen syntactic

structuring.

Although I have stated the position thus in the abstract, I believe that something like it is proposed by concrete linguists for actual languages that they know well, e.g. Kenneth Hale for Warlpiri, a language of central Australia.

On the phenomenal level the difference between IC and our theory is not great, since an assessment of PS1 through 4 shows that there is no major constituent of which $\overline{P}$ may not be a part, and there is no restriction on the number of $\overline{P}$s that can occur together.

It seems then that the IC position is not significantly inferior to our theory in this respect. Why then prefer ours? The answer is: concrete-ness. Certain semantic contrasts will be attributable to the position of $\overline{P}$ in PS: most notably the attributive/predicative distinction seen, e.g., in the English three-way contrast in (2.25).

    (2.25)   i.   The rat lay dead in the water.

                ii.   The dead rat lay in the water.

                iii.   The rat in the water lay dead.

                iv.   The dead rat in the water lay.

Either $\overline{P}$ here, the adjectival dead and the prepositional in the water can occur either attributively or predicatively. (since the copula lay requires at least one predicative expression for its complement, the fourth combinatorial possibility fails.)

A similar distinction holds in Sanskrit, though without being cued by the word-order to the extent that it is in English. A sentence such as (2.26) is multiply ambiguous.

    (2.26)   sa brahmaṇo vane   'jāyata tadā

                thatN   forestL   was-born then

                    BrahminN

But its readings can be represented by placing the $\overline{P}$s in particular struc-
tural configurations: in general, $\overline{P}$s are attributive under $\overline{\overline{N}}$, predicative
under $\overline{\overline{V}}$; when they qualify the action as a whole they are under S.

(2.27) i.

```
                        S̄
                        |
                        S
        N̄̄ ────────────/ \──── V̄̄ ──────── P̄
       / \                   / \           |
      N̄   P̄                 P̄   V̄          |
      |   |                 |   |          |
      sa  brahmano         vane 'jāyata   tadā
```
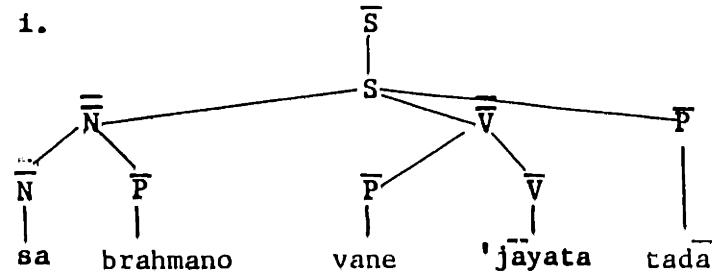
'The Brahmin was born in the forest, at that time.'

ii.

```
                        S̄
                        |
                        S
        N̄̄ ──────────/        \────── V̄̄
       /  |  \                       /  \
      N̄   P̄   P̄                    V̄    P̄
      |   |   |                     |    |
      sa brahmano vane            'jāyata tada
```
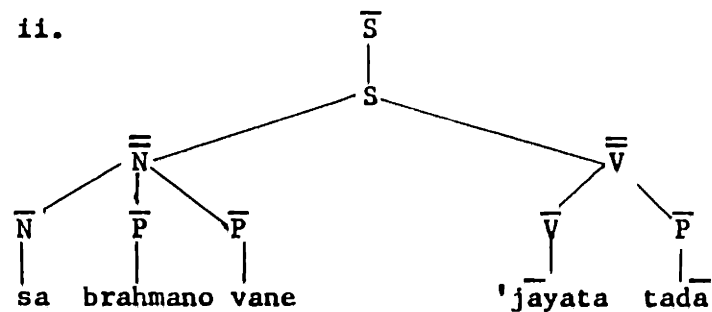
'The Brahmin in the forest was born at that time.'

iii.

```
                        S̄
                        |
                        S
        N̄̄ ──────/    V̄̄    \────────── P̄
       |          / | \                   |
       N̄        P̄   P̄  V̄                  |
       |        |   |   |                  |
       sa   brahmano vane 'jāyata         tada
```
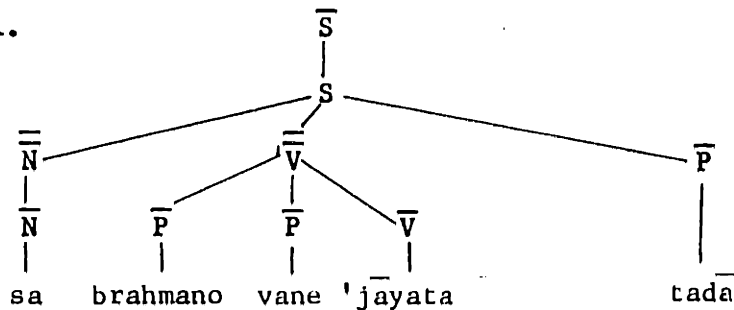
'He was born a Brahmin in the forest, at that time.'

This is not intended as an exhaustive semantic analysis of (2.26)
as can be seen, other structural analyses are possible in principle within
this framework. And other factors which we shall not discuss here (e.g.
surface word-order; the type of predicate signified by $\overline{P}$ - permanent
property as against temporary attribute) must play a role in making certain
configurations more likely than others. We simply point out that by
assigning P a determinate structural position, the attributive/predicative

distinction is given a preliminary basis on which interpretive principles can act. Within the IC view, this distinction must be built up _de novo_ within the semantic representation.

Note that ambiguity of position in functional structure is _not_ what is at issue here: in all of (2.25) and (2.27), the relevant $\bar{P}$ expressions are applied to the subject $\bar{\bar{N}}$. In Sanskrit, _this_ sort of attachment is shown, at least for predicate $\bar{\bar{N}}$, by agreement, hence the nominative on brahmano. But this cuts right across the attributive/predicative distinction. So IC theories will have to add a component to the grammar in order to re-present which predicates are attributive and which predicative.

2.4 DEVERBAL EXPRESSIONS

2.4.1 GENERAL

Sanskrit makes wide use of various phrase structures with the internal syntax of $\bar{\bar{V}}$ (essentially, dependent $\bar{\bar{N}}$s marked with the accusative) but the external attributes of $\bar{\bar{N}}$ or $\bar{P}$: such phrases usually have their head marked with some sort of nominal morphology. The principal categories to be covered here include participles, gerundives, agentives, infinitives and gerunds. All of these will be analyzed through the use of PS5.

PS5: $\bar{\bar{N}}$ —→ $\bar{\bar{V}}$ Affix

A rule of the form of PS5 is explicitly allowed as one of a systematic class fo exceptions to the $\bar{X}$ rule schema, in Jackendoff 1977, pp. 52-3.[10] This particular way of extending the theory to accommodate deverbals has been criticized by Hale & Platero (1978), who offer an alternative based on a re-working of the $\bar{X}$ feature system. This system provides a separate category, $[\overline{+N, +V}]$, for what we are representing as $\bar{\bar{V}}$ dominated by $\bar{\bar{N}}$. Since we make no claims about the feature basis of the category system, we can remain neutral on the correct fundamental analysis of "$\bar{\bar{N}}$ over $\bar{\bar{V}}$": it is enough for us that the structure in question has nominal properties

---

10
      Jackendoff's rule is stated in terms of the same bar-level $(\bar{\bar{N}}$ —→ $\bar{V}$ Affix). But this is within his 'uniform three-level theory' for English (under which X^3 exists for all categories). We have seen no need to postulate any categories in Sanskrit at the three-bar level (unless S = V^3). The choice between $(\bar{N}$ —→ $\bar{V}$ Affix) and $(\bar{N}$ —→ $\bar{V}$ Affix) will depend on whether de-adjectival adverbs (constructed by AR under $\bar{V}$ - cf. above, 2.1.3.2) can co-occur with deverbals. I have no evidence on this point, but it seems likely that they can. So I have chosen the formulation at the two-bar level.

externally and verbal properties internally. And on this there is no dis-
agreement with Hale & Platero. Our major aim here is not to develop $\overline{X}$
syntax: but rather to give an adequate formal analysis of Sanskrit on
the basis of which we can see how case-linking applies.[11]

---

[11]
    For a suggestion of the problems that deverbals may cause, both
for X bar theory and for the very conception of PS rules as rewriting rules,
see Ostler (to appear).

2.4.2 DEVERBAL NOMINALS

Under this heading we include a variety of derived forms of the verb with nominal inflexion, all of which, if transitive, can take an $\overline{\overline{N}}$ complement in the accusative. A representative selection, with examples, is given below. (The reader is warned that allomorphy in Sanskrit tends to made for opaque surface forms.)

Participles: in -ant-, -ta/na-, -tavant-/-navant-, -(am)ana-

odanaṃ pacan   'cooking rice'   Kāś.2.3.69

riceA cooking(active)N

odanaṃ pacamānaḥ   'cooking rice (for oneself)'   do.

       cooking (middle)N

grāmaṃ gataḥ   'gone to the village'   do.

villageA goneN

odanaṃ bhuktavān   'having eaten rice'   do.

riceA having-eatenN

Gerundives: in -tavya-, -ya-, -anīya-

(all intransitive)

Desideratives: Reduplication + -su-

kataṃ cikīrṣuḥ   'wanting to make a mat'   do.

matA desirous-
      of-makingN

odanaṃ bubhukṣuḥ   'wanting to eat rice'   do.

riceA desirous-
       of-eatingN

Agentives in -tar-, -aka-, -in-

kartā kaṭān	'maker of mats'	Kaś.2.3.69
makerN matsA		
pitaram āradhayitā bhava	'always keep they father pleased'	
fatherA pleaserN beIMPV		V.5 (A 74)
	(Cf. S 40 for the restricted currency of this in classical Skt.)	
kaṭam kārako vrajati	'he goes to make a mat'	Kaś.2.3.70
matA makerN he-goes		
grāmam gamī/gāmī	'he has to go to the village'	do.
villageA goerN		
śatam dāyī	'he owes a C'	do.
hundredA owerN		

Verbal Abstracts in -ana-

aśaktā dhāraṇe, deva, tejas...		R.1.37.15
unableN holdingL godV semenA	'I am unable, O god, to hold the semen'	

In each instance, we shall suppose that a symbol characterizing the suffix is introduced under **Affix**, and that a morphosyntactic rule transcribes this onto the lexical node dominating the V head. (For technical details, see the end of 2.7 below.)

For example, the PS of pitaram āradhayitā bhava above will be as in (2.28). (Henceforth, inessential nodes are omitted.)

(2.28)

The analysis given here has the consequence that the nominal complements of these words, when transitive, should be in the accusative case, by CR2 (see 2.6.2). But dependent genitives are also found, in varying circumstances. For example:

(a) Participles in -ta/na- are used with the genitive when they are used in the sense of the present tense. E.g.

    (2.29) aham eva mato mahīpateḥ   Ragh. 8.8. (A 73)

      I alone   kingG   'I alone am regarded by the king'
              regardedN

(b) The object of the agentive in -tar-,,when this does not designate a habitual agent.[12] E.g.

    (2.30) āhartā rtuṇām   K.5 (A 71)

      performerN sacrificesG 'performer of the sacrifices'

(c) The agent of gerundives, optionally.

This simply shows that the suffixes in question occur not only in response to syntactic conditioning: they also serve to construct lexical nominals from verbal roots, nominals which have the usual syntactic construction of N̄. The conditions mentioned in (a) and (b), which are due to the Indian grammatical tradition (Panini 2.3.67, 3.1.133 & 3.2.135), reflect the differences in meaning which characteristically exist between the outputs of rules which are split in this way.[13]

12
    This also corresponds to an accentual distinction, according to Panini (2.3.69, 3.2.135, 6.1.197).

13
    Cf. Wasow 1977, where a similar bifurcation of the English passive is considered. The difference is there ascribed to the lexical/transformational distinction. But in Wasow 1978 he replaces this with a distinction between two kinds of lexical rules. Jackendoff 1977, pp. 235ff., offers an interesting interrelation of these types of rule within his typology of 'deverbalizing' PS rules. He also includes some historical speculations.

Consider for example the two gerundives in 2.31).

(2.31)   rākṣasendrasya saṃrakṣyaṃ mayā lavyam idaṃ vanam

demon-lordG   to-be-pre- meI   to-be- thisN forestN
               servedN   destroyed

'This forest, fit to be preserved by the lord of the demons,

must be cut down by me.'

(Translation Apte's) Bk. 8.129 (A70)

Here <u>lavyam</u>, the gerundive with an instrumental agent (<u>mayā</u>), con-

veys a pressing obligation; <u>saṃrakṣyam</u>, with a dependent genitive <u>rākṣasen-</u>

<u>drasya</u>, expresses only a general expectation. (Cf. Speijer's comments and

further examples, S 50.)

2.4.3 INFINITIVES AND GERUNDS

Besides these structures marked with a head that inflects in full according to the nominal paradigm, there are two main categories of de-verbal forms which, although historically derived from case-forms of a verbal noun, are invariant in classical Sanskrit. These are the infinitive in -tum, and the various gerunds.

The infinitive, as well as serving as the lynch-pin of complements for verbs like śaknoti 'be able', icchati 'want' etc., may also be added to any sentence to express purpose. The gerunds express action related to that of the main clause: the only fully productive one (in -tvā alternating with -ya) is used if the action is prior to the main clause.

Examples:

(2.32)   gantum ... na śaknumaḥ   M. 1.150.20 (S301)

       goINF   not we-can   'We cannot go.'

       tāṃ vai dhārayitum, rājan, na anyaṃ paśyāmi śūlinaḥ

       herA Prt holdINF   kingV not otherA I-see SpearmanB

       'I see none other than Siva, O king, (sc. able) to hold her.'

                                     R. 1.42.24

(2.34)   pratīharī samupasṛtya savinayam abravīt   K.8 (A 106)

       door-keeperN   modestly said
       approachGER

'The door-keeper approached and said modestly:'

Although these forms no longer form part of a productive nominal paradigm, there is some evidence of continuing nominal status in classical Sanskrit. The forms can still enter into N+N compounds with other nominals:

e.g. svaptu-kāma 'having the wish to sleep', yaṣṭu-kāma 'desirous of sacri-
ficing' vaktu-kāma 'desirous of speaking' (attested in Sak.1.27), vaktu-manas
'minded to speak' (cf. Whitney 968g); prasahya-haraṇa 'taking with violence',
pretya-bhāva 'existence after death (lit. after going forward)', vibhajya-
paṭha 'separate enunciation', sambhūya-gamana 'going together' (cf. Whitney
994h, where it is implied that this compounding of gerunds is an innovation,
not known in the Vedas).

Furthermore, infinitival phrases seem close in distribution to da-
tive P̄s, and gerunds to instrumentals. For instance, Kāś. 2.3.14 gives
(2.35) implicitly as the form intended by Panini to underlie (2.36).

(2.35)   edhān āhartuṃ vrajati

       woodA fetchINF he-goes   'He goes to fetch firewood.'

(2.36)   edhebhyo vrajati

       woodD   he-goes   'He goes for firewood.'

And Speijer (S 64) quotes an example of direct parallelism within
a single sentence:

(2.37)   ārtatrāṇāya vah śāstraṃ na prahartum anāgasi   Śāk.1.11

      distressed- youG   not   innocentL
      reliefD   weaponN   destroyINF

      'Your weapon is for the relief of the distressed, not to de-
      stroy the innocent.'

As for the gerund, the P alam 'enough, no more' appears in exclama-
tions with either instrumentals or gerunds, expressing what there is to be
no more of. In fact, the meaning of the whole approximates to a simple
prohibition. (Cf. P 3.4.18.)

(2.38)   alam ativistareṇa   'Enough of prolixity!'

      enough prolixityI   Ve. 1   (A 37)

(2.39)   alam anyathā gṛhītvā   'Do not misunderstand.'

      enough otherwise graspGER   Malav. 1 (A 38)

(and see further examples at S 274, 296).[14]

Now, strictly speaking, these facts are more relevant to the interpretation of infinitives and gerunds in functional structure than as evidence for syntactic structure, since it is in functional structure that the incidence of the dative and instrumental are primarily determined (see 3.1). Nevertheless, they suggest that it will not be alien to the spirit of the language to include these phrase-types under $\overline{P}$, rather than subordinate $\overline{S}$ for instance. It appears also that both phrase-types can occur as complements inside $\overline{\overline{N}}$. For infinitives, we have examples like (2.40 & 41).

(2.40)   avasaro 'yam ātmānam prakāśayitum   Śāk. 1.25

opportunityN thisN selfA showINF

'This is the opportunity to reveal myself.'   H.1 (A 116)

(2.41)   likhitam api lalāṭe projjhitum kaḥ samarthaḥ

writtenA too foreheadL   whoN capableN
                         avoidINF

'Who is capable of avoiding what is written on his forehead?'

((2.33) might also be taken as an example.) For gerunds, although I know of no examples from texts, the power of compounding with nouns mentioned above seems to presuppose that gerunds can occur as simple modifiers

---

14
    This correlation is not quite so good as it looks, since other particles of similar meaning seem to be found differentially with the instrumental (e.g. kṛtam - S 274) or the gerund (e.g. kim - S 296); and the particle alam is also found in similar meaning with an infinitival complement: e.g.

alam suptajanam prabodhayitum   Mṛcch. 3. (S 274)

enough   wake-upINF   'Do not waken the sleeping people.'
    sleeping-peopleA

But these apparent ragged edges may simply be due to gaps in the corpus recorded, and a general extension of the rule interpreting the infinitive.

A natural analysis, then, would be to make use of PS4iii and PS5, giving as the core of their structure the trees in (2.42)
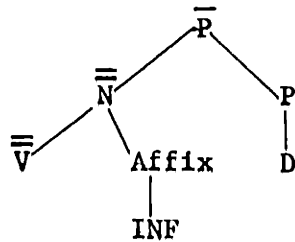
(2.42)   Infinitive   Gerund
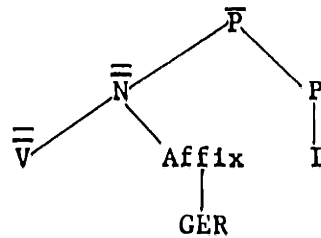
The case ascriptions under P should not be taken too seriously, especially given the very wide usage of the infinitive. (Cf., e.g., note 11 to this chapter, and Speijer's list of the possible predicates which it can complement, ascribed to Panini (S 301).) In any case, the case-marking will never affect the actual form of the infinitive or gerund, as it used to do in Vedic (cf. Whitney 980ff., S 309f., and Sgall 1958). A morphosyntactic rule will insert the correct information on the head V node in response to the C-commanding affix (see greater detail in 2.7). The compounding facts noted above will, then, be due to a reanalysis, whereby the V head of $\overline{V}$ dominated by $\overline{\overline{N}}$ is taken as a N.

15
     This inference would fail if all these compounds are constructed with deverbal nouns. For then it might be claimed that the compound nouns are formed by nominalization of a phrase consisting of gerund + verb.

2.5 TWO MINOR PHRASE STRUCTURE RULES; THE VOCATIVE

For the sake of a further approach to completeness, we add here two further PS rules, or rather rule-schemata.

PS6 $X^n \longrightarrow (X^n)*$

This rule is needed first of all to cover category conjunction of all types at all levels (hence the superscript $\underline{n}$). As it stands, the conjunction will be asyndetic; but the various connecting particles, ca, atha 'and', vā 'or' etc., can be inserted into the Prt slot made available by PS7 below.

Another use to which the rule can be put is the generation of doubled words, which occur for various purposes in Sanskrit (cf. S 190ff.; Panini 8.1.1-16).

(2.43) puruṣaḥ puruṣo nidhanam upaiti   Kāś. 8.1.4

      manN   manN   destricutionA   'Every man is mortal.'
                         comes

We have already remarked on the role of this rule in the generation of complex P phrases (2.1.3.3 above).

It is interesting that in each of these uses, the rule seems to have a precise analogue at the word-internal level (i.e. dvandva compounds; stem-doubling in Panini 8.1.7-15; avyayībhava adpositional compounds).

PS7 $X^n \longrightarrow$ Prt X^n

This rule will provide the slot for such particles as ca 'and', vā 'or', na 'not', api 'too', hi 'for', atha 'and, but' etc. Many of these are enclitic. We shall suppose that a special rule of clitic placement (clearly a universal) is responsible for their positioning in second place

in the surface string.

Other, originally adverbial, particles should probably also be analyzed as Prt: e.g. anyat 'for the rest', param 'id', tathā 'and so'. Iterated application of PS7 will generate such strings of particles as api ca, cāpi 'also', atha vā 'or rather', parantu 'but' etc.

Some of these particles are restricted to use as sentence connectives. I assume here that this is because their meanings are not combinable with other constituents (contrast ca, atha, vā which can link constituents at any level - S 330ff.) Otherwise we should need to posit a variety of PS rules assigning different types of particle to different categories of constituent. We shall not pursue this here.

PS7 has the effect of "Chomsky-adjunction": the input node is no different from one of the output nodes. It does not make a significant contribution to structure. It is possible, therefore, that the particles it serves to introduce have no place in phrase structure as such.

This observation might tempt us to include under Prt the category of nominal phrase ($\overline{\overline{N}}$) when this is marked with the vocative case. For this is traditionally regarded as being apart from the structure of the sentence proper.

But there is evidence that the sort of syntactic independence which characterizes vocative $\overline{\overline{N}}$s is very different from that of particles. In particular, their interaction with Clitic Placement is radically different. A sentence-initial particle (such as atha) can act as first constituent for the purposes of this rule: hence atha vā ... is well formed as a sentence-initial string. Vocatives, on the other hand, are disregarded by this rule, as by all others of sentence grammar. (Cf. Taraporewala 1967, pp. 30-1).

Vedic evidence confirms the special status of the vocative as not really a constituent of its sentence. The position after a vocative is

like sentence-initial position, in that verbs there retain their inherent accent: elsewhere Vedic verbs are enclitic and without independent accent (Jochen Schindler, p.c.).

We shall not explore the syntactic status of vocatives further. They play no role in the mechanisms of sentence interpretation with which we shall be concerned.

2.6 STRUCTURALLY DETERMINED CASE

We are now in a position to appreciate the correlation of certain cases' incidence with NP position in phrase structure. The cases in question are the nominative, accusative and genitive, and the correlation is specified in Case Rules CR1 - 3. Technical details are given in the next section.

CR1	Nom:	$[\ \_\ ,\ S\ ]$	The $\bar{\bar{N}}$ immediately dominated by
CR2	Acc:	$[\ \_\ ,\ \bar{V}\ ]$	$S/\bar{V}/\bar{N}$ is assigned nominative/
CR3	Gen:	$[\ \_\ ,\ \bar{N}\ ]$	accusative/genitive case respectively.

2.6.1 CR1: INCIDENCE OF NOMINATIVE UNDER S

This rule is no surprise. It correlates closely with the traditional rule that the subject of the sentence, main or subordinate, is marked nominative. But it replaces the vague concept 'subject' with a specifically syntactic.one, that of the $\overline{\overline{N}}$ introduced by PS2. Since the $\overline{\overline{N}}$ so introduced is an obligatory constituent of S, we predict that every sentence will contain a place for a nominative. This we have seen to be true for sentences with simple verbs 2.2.2; we have yet to see how it can be reconciled with impersonal passives (5.5.3).

CR1 also co-operates with our decision to introduce _iti_ as a under PS1 (see 2.2.1) to produce a correct prediction. Since _iti_ is a Comp, a lone $\overline{\overline{N}}$ occurring within its scope must be dominated by S. This does not mean, of course, that it must be _immediately_ dominated by S. But since the omitted V is likely to be some part of _asti_ 'be', the $\overline{N}$, even if it is really in predicate position within the suppressed S, will have to be nominative. The truth of this is borne out in (2.44 & 45) (and cf. further examples at S 387).

(2.44)   tām ... tarkayām āsa bhaimī   iti   Nala 16.8 (S 387)

herA   she-guessed daughter- Comp
                    of-Bh.N

'She guessed her to be the daughter of Bhima.'

(2.45)   avaimi ca enām   anaghā   iti   Ragh. 14.40 (A 159)

I-know & her   innocentN Comp

"And I know her to be innocent.'

2.6.2. CR2: INCIDENCE OF ACCUSATIVE UNDER $\overline{\overline{V}}$

This rule marks $\overline{\overline{N}}$-sisters of V accusative: hence this is the charac-teristic case of that $\overline{\overline{N}}$ for which transitive verbs subcategorize. The incidence of this case within subcategorization is discussed in 4.1; in 5.5.1 we discuss its surface alternation with nominatives of ¡assive sentences; and in 4.4.1 the surface alternation of various oblique cases with it when adpositions are incorporated with the verb. None of this will cause us to modify our general claim about the structurally determined incidence of the accusative.

The rule applies regardless of what may depend on the $\overline{\overline{N}}$ concerned, and regardless of the position in functional structure to which the $\overline{\overline{N}}$ is assigned by the linking rules. Hence in (2.46) the subordinate subject, $\overline{\text{mām}}$, is accusative, despite the fact that in the corresponding simple sentence, given in (2.47), its equivalent, aham, is nominative. Struc-turally, $\overline{\text{mam}}$ in (2.46) is the $\overline{\overline{N}}$-sister of V (as shown in 2.48) — and so it is marked accusative. The cases assigned by CR are only one input into the rules which assign $\overline{\overline{N}}$s to argument positions in functional structure: they are by no means in one-one correspondence with types of argument positions.

(2.46) na mām durībhavantam icchati kumāraḥ   Mudr. (S 292)

      not meA far-being   wants   princeN
            (ptcpl)A

    'The prince does not wish me to absent myself.'

(2.47) aham durībhavāmi

I   am-far   'I absent myself.'

(2.48)


```
                              ___ S ___
                         ___/           \___
                     Prt                     S ___
                                          /        \
                                        V̿          N̄
                                       / \
                                      V    \
                                    / \      \
                                  N̿    \      V
                                 / \    \     |
                               N̄    P̄    \
                              /    / \    \
                            N̿    / N̿   P    \
                           / \  /  / \  |     |
                         V̿  Affix  Pred       |
                         |    |      |         |
                         |  (ptcpl)  A         |

           na      mam  durībhu       icchati      kumārah.
```

In many cases it will not be clear _prima_ _facie_ whether an accusative accompanying a verb is assigned its case by CR2, or by the rule inserting accusative case under P̄: e.g. _grāmam_ _gacchati_ (villageA he-goes) 'he goes to the village'. No doubt, there would be scope for difference as etween speakers on issues like this: but the difference does have empirical implications. In general, a structurally induced accusative will alternate with a nominative when the simple verb is replaced by its passive (_grāmo_ _gamyate_ vs. _grāmam_ _gamyate_); and with a genitive, when the verb is replaced with a corresponding nominalization (_grāmasya_ _gamanam_ as against _grāmam_ _gamanam_).

2.6.3 CR3:   INCIDENCE OF GENITIVE UNDER N̄

The connexion between the genitive case and nominal phrases has long

been recognized.   To quote but two traditional scholars: (Whitney 294)

"(the genitive) belongs to and qualifies a noun, designating something

relating to the latter in a manner which the nature of the case, or the

connexion, defines more nearly" and (Taraporewala 1967, p.50) "the essential

feature of this type (sc. of genitive) is that it is attached to a sub-anta "

(i.e. a morphological nominal) .   But the tradition in the literature on

Sanskrit has been to seek a common root meaning, and if possible to

use this to cover both the adnominal and adverbial usages.   This has led to

a persistent failure to account for the 'subjective' and 'objective'

genitive, since here the case seems to have meanings which are traditionally

associated with the nominative and accusative.   Even Panini, who covers

most of the uses of the genitive with his rule (2.3.50) ṣaṣṭhī śeṣe (i.e.

"use the genitive when no kāraka relation applies"), is forced to add an

extra rule (2.3.65) kartṛkarmaṇoḥ kṛti ("use it also to express 'subject'

and 'object' in connexion with a deverbal nominal").   Hence he misses the

generalization that most of the uses falling under rule 2.3.50 as well as

all those under 2.3.65 occur when the NP in question is dependent on a

nominal.

In our system, the meanings of the cases are handled by the linking

rules, whether semantic or grammatical.   We are therefore free to use the

syntax to capture this regularity in the use of the genitive (which seems,

indeed, to be a universal - cf. 1.2.2).

In 3.3.1 the details of subcategorization for this genitive, and its linking to various argument positions, are discussed. At this point it will be enough to show the range of phenomena generated by this one rule, and the apparent hopelessness of the task trying to assign a common meaning to them all.

Possessive: rajñaḫ puruṣaḫ   'king's man'   Kāś. 2.3.50

            pituḫ putraḫ   'father's son'   do.

Material: asya sutrasya satakaṃ vaya   Pat. 1.112

      thisG threadG clothA weaveIMPV   (S 84)

          'Weave a cloth of this thread.'

Origin: kanya dasanam   M.

       daughterN fishermanG   (S 84)

          'a girl from a fisherman's family.'

Subjective: bhavataḫ sayika

       youG   lyingN   Kāś. 2.3.65

          'your turn to lie down'

Objective: apam sraṣṭa   'creator of the waters'   do.

       sankaya tasyaḫ 'under the supposition that it was her'

                          Mṛcch. 1 (S 85)

Partitive: dhuryo dhanavatam

       foremostN wealthyG,pl   Kathās. 29.69 (S 86)

          'foremost of the wealthy'

Complements of "adjectival" nominals: ucito...klesanam

       usedN   troublesG   R. 2.51.3

       'used to trouble'

       tava ayattaḫ   Panc. (S 92)

       'dependent on you'

Again, there will be cases where the scope of this genitive over-laps one of the case's distinctive meanings (e.g. sthālī pūrṇā jalasya 'a pot full of water': jalasya is a genitive here, dependent on the N pūrṇā 'full'; but the genitive is characteristically used for the content with predications of completion and repletion -- cf. S 91).

It is also possible that some instances of the genitive with apparent adpositions should be analyzed under CR3. Many of these are by origin oblique case-forms of nouns: e.g. tasyā agre 'in front of her' (a literal translation, since agre is formally locative, and other case-forms are found); pareṇa daśāhasya 'after ten days' (M. 8. (S 126)) - where the P is formally an instrumental; and cf. (2.19) above. But since some adpositions of Indo-European age also govern the genitive (e.g. upari - cf. Gk. hyper, Eng. over) it seems likely that the status of these genitives was not adnominal in classical Sanskrit, but rather adpositionally governed. (Cf. for 1 to chapter 4.)

2.7. CASE-MARKING RULES; THE CONCEPT OF 'HEAD'

It remains to give an explicit account of the rules which construct the representations to which the pure morphological rules of nominal inflexion apply. Our unitary account of these rules will simultaneously realize structurally determined case (2.6), oblique cases under $\bar{P}$ (2.3.1), and the case of predicate nominals (2.3.4).

We shall not attempt an artificial reduction of the seven cases (N, A, I, D, G, B, L) to complexes of binary features. The case features will simply be represented by the case name, without + or -.

All we need is some mechanism which converts case-labels under P or Pred, and the structural contexts of $\bar{\bar{N}}$ and its dominating category in CR1, CR2, and CR3, into feature specifications on individual Ns. When this is achieved, the complex system of Sanskrit nominal morphology will take over, working now independently of syntactic information.

One mechanism that will work makes use of the notion of c-command (cf. note 6 to this chapter). We postulate a set of principles as in (2.49).

(2.49) Case Incidence

CI1. If $\bar{\bar{V}}$ c-commands $\bar{\bar{N}}$, mark $\bar{\bar{N}}$'s head Nominative.

CI2. "   V   "   Accusative.

CI3. "   N   "   Genitive.

CI4. "   case-label(i)   "   case(i).

CI5. "   Pred   "   arbitrary case.

Here the first three rules recapitulate structurally induced case-marking (CR1-3), making use of the fact that S, $\overline{V}$ and $\overline{N}$ contain, as obligatory constituents by the PS rules, $\overline{\overline{V}}$, V and N respectively. CI4 accounts for the incidence of oblique case under $\overline{P}$, and CI5 for the arbitrary incidence of case in predicate nominals. (Strictly speaking, CI5 is unnecessary, since in 2.3.4 we allowed Pred to dominate an arbitrary case-label: this case-.label will c-command $\overline{\overline{N}}$, so that CI4 will apply here too.)

We make use of the notion of c-command, rather than of the simpler one 'immediately dominates', since this allows us to unify all the rules under a single format. Although CI1-3 could be formulated (as in CR1-3) to make reference to the immediately dominating node (S, $\overline{V}$ or $\overline{N}$), we should have difficulties in adapting CI4-5 to suit. The relevant node there would be the undifferentiated $\overline{P}$. This might be fine for CI5, since any case can occur here. But the incidence governed by CI4 would be a problem. There are no syntactic grounds in PS to split $\overline{P}$ up into a number of different categories: all its expansions seem to occur in the same structural positions. So case would have to be assigned randomly here too. But if so, we have no reason why nominative is not a possible option. More importantly, the case-labels introduced in 2.3.1 cease to play any role at all: their only manifestation was as endings on the head noun, and these endings are now assigned randomly. (All the semantic content of the cases will be handled by the semantic linking rules (3.1), which must work directly off the case-features assigned to N: so the labels play no role here either). They contribute nothing, so they are eliminated. But if that is done, these oblique $\overline{P}$s will have no P for head, a clear violation of X bar theory. We should need a new PS rule $\overline{P} \longrightarrow \overline{\overline{N}}$, which is illegitimate.

We return, then, chastened, to the expression of the rules in terms of c-command. 'A-over-' (cf. Bresnan 1976) will ensure that the $\overline{\overline{N}}$ referred to is a maximal phrase of that designation. Hence $\overline{\overline{N}}$s occurring within the maximal $\overline{\overline{N}}$ will not be affected, but will have their case assigned by some closer c-commander.

Something might be said about the notion of 'head'. In general, the head of $\overline{\overline{N}}$ will be the N nodes down. But since we have accepted some deviations from the X bar formalism (PS5-7) the head in these instances needs to be defined explicitly.

As for PS7 ($X^n \rightarrow$ Prt $\overline{X}^n$) little needs to be said: the head will simply occur one node further down.

But in PS5 ($\overline{\overline{N}} \rightarrow \overline{\overline{V}}$ Affix) the head will be of different category from the $\overline{\overline{N}}$. We shall assume that in cases like this, the V head of $\overline{\overline{V}}$ is the head of $\overline{\overline{N}}$ too, so that the case feature is applied to V. A similar morphosyntactic rule will have transcribed the participial/infinitival/ gerundial specification under Affix to this same V, and the two specifications together will determine the surface inflexion. Hence in (2.48) above, durībhavantam results from the simultaneous application of Pres.Act.Ptcpl. (represented in the diagram by (ptcpl)) and Accusative to durī-bhū. Whether there is any connexion between the order of the morphemes in the word and the positions of their conditioning labels in the tree is a matter beyond the scope of this work.

In PS6 ($X^n \rightarrow (X^n)*$), it seems reasonable to view the dominating X^n as having as many heads as it contains constituents X^ns. Hence conjunct Ns, $\overline{N}$s and $\overline{\overline{N}}$s will all have their head N marked for the same case.

This latest application of Case-Incidence makes it clear that it is the notion 'head' that is needed here: no constituent defined by concatena-

tion in linear order will do. (This contrasts, e.g., with the account given

of a very comparable morphosyntactic process, Affix Hopping', in Chomsky 1957,

p.39: 29(ii).) On the one hand it is not clear that the linear ordering

defined by the PS rules has any status (cf. 2.8). Even if it has, and

the item affected is always (at least underlyingly) the final constituent

in the phrase to be marked, a definition of the marked item in terms of its

position will falsely predict that, in these conjunct instances, only the

head of the final constituent will be marked.[16]

---

[16]It is clear that the same objection can be made against Chomsky's
account of Affix Hopping: *John has caught and eat a fish.
　　　　It is interesting that phenomena of the type predicted by the
concatenation account rejected here do occur with some bound morpheme:
e.g. English genitive 's (John and Mary's idea); and it appears that in the
oldest Indo-European, only the first of a number of conjunct vocative NPs
would be marked with the vocative case, the rest standing in the nominative
(cf. Hirt 1937, pp. 5-7).

2.8   WORD ORDER

This fairly exhausts the syntactic resources needed for a description
of classical Sanskrit — except, perhaps for questions of word order.

We have hitherto said next to nothing about the ordering of elements
imposed by our PS rules. The question has been discussed at length in Staal
1967. That work contains a comparison of the received view within the
Indian tradition, viz. that the order of words is irrelevant to grammar,
with various attempts by Western Sanskritists in the 19th and 20th centuries
to infer an unmarked word order from the practice of various authors. Staal
himself himself comes down in favor of a system generating 'wild trees',
where PS defines the constituent structure of a sentence, but not a total
order on its words. But he admits that even this relaxation of the import
of PS rules is insufficient to characterize the precise bounds of freedom
in Sanskrit: it is not possible even to claim that re-ordering respects
constituent boundaries. In a sentence as normal as apaśyad rāmo govindam
'Rama saw Govinda', rāmo intervenes between the two elements that constitute
the VP.

Staal needs the constituent structure to ground his rules for con-
cord and government: we shall be needing it too, for government at least,
despite the different way in which our system treats these phenomena.

Now the researches of the Western Sanskritists did succeed in
determining some principles of unmarked word-order, which are endorsed in
the practical guide to composition by a Sanskrit speaker (Apte 1917 - cf.
Staal 1967, p. 62). By and large, modifiers precede what they modify. This

coincides broadly with the order imposed by our PS rules PS1-7. Therefore, it seems it would only be a loss to remove all the ordering implications of these rules. Even this very vague generalization about the relative order of modifier and modified is a fact about Sanskrit, not shared by all languages, even those which claim 'free' word order (cf. references to Warlpiri below). But even if we accept this, it is clear that stylistic inversion must be very free indeed in Sanskrit.

It is possible that word order is more closely determined by functional than syntactic structure. This would account, for instance, for the tendency of the instrumental 'agent' to precede the nominative NP in passive sentences, just as nominative tends to precede accusative in the corresponding actives (cf. Staal 1967, p. 56; Canedo 1937, p. 59).

But this aspect of Sanskrit sentence structure, if it can be called that, is beyond the scope of this work. We content ourselves with such unambitious observations as the need for a clitic placement rule (2.15 above). Something, too, is needed to ensure the interrogative words occur at the beginning of their sentence (S 320). Such requirements can probably be met with some mechanism very much less powerful than structure-dependent operations on concatenated constituents -- i.e. transformations in the classic sense.

It has been suggested (Hale, Jeanne & Platero 1977) that the appearance of 'free' surface word order may cloak important underlying differences. Languages where the order of words is subject to a great deal of variation may nevertheless show, e.g. through co-varying intonation phenomena, that some of these are derived from others. Papago (a language of southern Arizona) is given as an example, and contrasted with Warlpiri (a central Australian language), where it seems that no claims about under-

lying order can be upheld. Given the persistent oral tradition among Sanskrit scholars in India, it is possible that such questions might be answered for Sanskrit too. But the work remains to be done.

CHAPTER 3

CASE LINKING IN SANSKRIT

3.1 SEMANTIC LINKING

3.1.1 INTRODUCTORY

The next requirement is to give an account of how the case-marked

phrase structures generated in Chapter 2 are to be assigned meaning. We

make use of the system of semantic roles and functional structure

developed in 1.3.

In this section, 3.1, we are concerned only with the semantic

linking of cases: viz., the intrinsic relations that exist betwen certain

syntactic cases and certain participant roles, independently of their

positions in the hierarchies. Hierarchically based linking will be the

subject of 3.2, on the grammatical linking rules. The interaction of

the two types of linking, too, is a subject for the next section. So

at this point, we need only specify the intrinsic relations, disregarding

the precise incidence of the cases in PS and of the roles in FS.

In fact, all the cases which are semantically linked can occur

under $\overline{P}$ (cf. 1.4.9 above). They are: A, I, D, B, L & G. We proceed by

giving each one a role-feature specification. This will determine a

set of participant-roles in functional structure with which that case

may be linked. Under each case, examples of these various uses are given.

Then, having seen the broad adequacy of the roles generated to charac-

terize the use of these cases, we turn in 3.1.8 to some of the general

questions raised by this approach.[1]

---

[1]The semantic linking of adpositions is not treated here. They would seem to be less homogeneous than the semantic cases, in the kinds of representation needed to interpret them. Some might be assigned a role-feature specification, like the semantically-linked cases: e.g., prati, which governing the accusative might be given the same specification as the locative [-So, +Go] (cf. S 129-30). Others might be more like verbs and predicate nominals, requiring an individual representation in FS into which one of the participant roles would fit. The same goes for the periphrases of cases in terms of an oblique-cased noun with a dependent genitive: e.g. visaye + Gen seems to have a sense very close to that of the metaphorical locative (cf. S137). In all these types of instances, the structure (of N+P, or N+N) can be replaced with a compound, apparently without change in the semantic representation.

3.1.2 THE ACCUSATIVE

Consideration of the linking of the Accusative in Sanskrit imme-
diately brings us to grips with the problem of how to distinguish semantic
from grammatical linking. Our hypothesis is that, within any language, two
coherent groups of uses will emerge for some cases, one of which can be
captured with a semantic feature specification, the other with a position
on the Normal Hierarchy.

Most linking of the accusative will be analyzed as grammatical.
The major sub-usages here which have been distinguished traditionally are
the accusative marking the direct object of a transitive verb, the
accusative marking the second object of a ditransitive (dvikarmaka) verb
(see 4.3 below), and the 'accusative of content', which marks the Internal
Object, usually a designation of the verb's own meaning (see 4.4.2 below).
All of these make use of the accusative's position on the Normal Hierarchy
(see 3.2.1 below) to establish their link with the right role in a predi-
cate's RF.

There is little semantic coherence in the various roles with which
these accusatives link (witness the varied examples in 3.2.2). This is
one piece of evidence that they should be considered apart from the
semantically linked accusatives. Another piece of evidence is found in
the alternations that they undergo. Nominalizations of transitive and
ditransitive verbs typically replace these attendant accusative with
genitives: e.g., gā dugdhaṃ dogdhi 'he milks milk (from) the cow ' vs.
gavām dugdhasya dohanam 'the milking of milk of the cows)' (A71 — cf. 3.3.1).

This suggests that there is a structurally induced basis to the incidence

of these cases. (Cf. 2.6.2-3.)[2] And by the principle (1.95) in 1.4.9

above, structurally induced cases cannot be grammatically linked. Further-

more, direct object accusatives, along with accusatives of content, alter-

nate with nominatives in the passive (cf. 5.5.1-3). The Passive label

which is responsible for this within our system acts on the basis of

Linking Specifications (LS), which again presuppose that the linking in-

volved here is not semantic. Finally, by the analysis offered for accusa-

tives of content in 4.4.2, those co-occurring with actional predicates

are analyzed as actional themes: and as stated in 1.4.4, themes are not

eligible for semantic linking.

However, having excluded these three groups of accusatives, the

remaining uses do form a semantically coherent group, which can be captured

by the feature specification [+Go, +Dy, -Se, -Ac]. The accusative can there-

fore be linked with dynamic goals and paths in the positional and identifi-

cational fields. The various roles are instantiated below. There seems

to be a gap where the [+Abs, -So] roles should be.

Accusative $\begin{bmatrix} +Go, +Dy, -Se, -Ac \end{bmatrix}$

Goal $\begin{bmatrix} -Abs, -So \quad (- Ext) \end{bmatrix}$

   (3.1) yamunākaccham avatīrnaḥ   Panc. (A 16)

        Jumna-bankA   gone-downN

        'went down to the bank of Jumna'

_____

[2] This alternation is not ruled out for the accusatives of content.
But I have no examples. According to the analysis offered for ditransitives
in 4.3 below, the second object will not be structurally induced. But its
linking depends crucially on the co-occurrence of a structurally induced
accusative.

(3.2) grāmam ajām nayati   S.K. (A24)

       villageA goatA leads

                        'He leads a goat to the village.'

Limit? [+Ext, -Abs, -So]

(3.3) tasya jñātayaḥ saṃgamya ... ekaviṃśati divasāni   Div. 26.6
                                                              (R289)
       hisG parents meeting   21   daysA

                        'his parents, meeting at the end of 21 days...

Tendency, 'Until' [+Abs, -So]

         ?

Path [-Ext, -Abs, +So]

   (3.4) adhvanaṃ gacchati   Kas. 2.3.12

          roadA   goes

                        'he goes along the road.'

          Extent [+Ext, -Abs, +So]

   (3.5) tasyordhvaṃ yojanaṃ yaksāḥ śṛnvanti   Div. 373.8 (R290)

          above-it   yojanaA yaksha'sN hear

                        'The yakshas hear it a yojana (approx. 4 mi.)
                                            above.'
          Respect [-Ext, +Abs, +So]

   (3.6) etad evātra manaḥ kṣiṇoti mām   Jtkm. 24, 32 (Speyer 1896,
                                                                   p.8)
          this indeed spiritA hurts meA

                        'This hurts me in my spirit.'

          Duration [+Ext, +Abs, +So]

   (3.7) samvatsaram adhīto 'ṣṭakaḥ   do. 2.3.5

          yearA   studiedN AshtadhyayiN

                        'The A. was studied for a year.'

There is a limited possibility also for the accusative to be linked

with external static ([-Dy]) goals: e.g. tām rātrim 'on that night'

(cf. R290). See 4.4.2 below for the potential of some of these semantically linked accusatives to alternate with grammatically linked ones due to the lexical rule of Transitivization.

3.1.3 INSTRUMENTAL

The Instrumental, like the Accusative, (and the Genitive), has grammatical as well as semantically-linked uses. The central grammatical uses are discussed in 3.2.4 below, and the use in connexion with passive predicates, which crucially involes LS, is analyzed in 5.5.

The semantic specification of the Instrumental is $[+So]$; and that is all. Examples follow. Detailed feature specifications for the various roles can be derived from (1.49) and (1.54-5) in section 1.3 above.

A. __Instrumental   Paths__ $\left[+So, +Go\right]$

__Path__

> (3.8) katamena mārgena pranaṣṭāḥ kākah   Panc. (S 52)
>
>   whichI   roadI   disappearedN crowsN
>
>   'Which way have the crows disappeared?'

__Respect__

> (3.9) akṣṇā kāṇaḥ   Kāś. 2.3.20
>
>   eyeI   one-eyed
>
>   'blind in one eye'

__Medium of Exchange__

> (3.10) sahasrena paśun krīṇāti   Kāś. 2.3.18
>
>   thousandI cattleA buys
>
>   'He buys the cattle for a grand.'

Faculty

    (3.11)   tad eva dhatte hṛdayena sajjanaḥ   Kād. 2.7 (R291)

         that in- holds heartI   good-man
             deed

                 'That the good man holds in his heart.'

Strategem ?

Circumstance

    (3.12)   jahasā tena sa nṛpaḥ   Kathās. 20.43 (S 55)

         laughed   theN
             thatI kingN

               'The king laughed at that.'

Means

    (3.13)   anena pravārakena chādaya enam   Mṛcch. 1 (S 49).

         thisI clothI   coverIMPV him

            'Cover him with this cloth.'

Reciprocal

    (3.14)   śakrena samaḥ   R.2.118.35

         IndraI equal   'equal to Indra'

    (3.15)   mṛgā mṛgaiḥ saṅgam anuvrajanti...   Panc. (S 42)

        deerN deerI concourseA
                  seek

         'Deer try to herd together with other deer...'

Extent (including instrumental of measure)

    (3.16)   apūrṇam ekena   Ragh. 3.38 (R 292)

        not-full oneI

         'one short of complete'

Duration

(3.17) māsena anuvako 'dhītaḥ   Kāś. 2.3.6

monthI AnuvakaN learntN

'The Anuvaka was learnt in a month.'

(3.18) katipayadivasaiḥ tatra sthitvā ...   Vet. 3

a-few-daysI   there staying   (Lassen Anthologia[2],
                 GER   17.13)

'staying there for a few days'

Criterion

(3.19) putrair api śapāmahe   R.2.48.23

sonsI   too we-swear

'We swear even by our sons.'

Manner

(3.20) hetuḥ...lingatvena nibadhyate Alaṃkarasarvasva, quoted
                               in Jacobi 1903, p.239
reasonN symptomhoodI is-repre-
                sented

'The cause is represented as a symptom.'

(3.21) vidhinā upayeme   Ku. 1.18 (A35)

riteI   he-married

'He married her according to the rite.'

(3.22) dvidronena dhanyam krīṇāti   (A35)

2-dronaI   grain   buys

'He buys grain by the double-bucket.'

Accompaniment

(3.23) sāham tvayā gamiṣyāmi vanam   R.2.27.15

I   youI I-will-go forestA

'I will go with you to the forest.'

It is probable that the distinction between Space and Time ('extent' vs, 'duration') is a misuse of the feature <u>Abs</u> (cf. 1.3.7 above). If so, extent and duration could both be lumped under Extent ([+Ext, -Abs]). And the position of [+Ext, +Abs, -Se, +So, +Go] would be left free to represent the instrumental of <u>Accompanying Circumstances or Condition</u>ₐ, which is needed in order to interpret the instrumental assigned to the Gerund in 2.4.3 above, as well as such examples as (3.24-5).

(3.24)   na devi tava duḥkhena svargam apy abhirocaye   R. 2.30.27

      not queenV   unhappinessI   even   I-like
          youG   heavenA

                'I have no taste even for heaven, my queen, if
                it means your unhappiness.'

(3.25)   varo mahatā vādyaśabdena āgacchati   Panc. (S 50)

    groomN greatI music-noiseI comes

                'The bridegroom approaches with great noise
                of music.'

It is not possible to use the role of Circumstance (3.12) to represent these uses, since that role is internal ([-Ext]), hence would be restricted to occurrence with actional predicates -- effectively ruling (3.24) un-grammatical.

It is notable that the accusative and instrumental show considerable overlap in the field of relational paths: Path, Extent, Respect and Duration (cf. (3.4-7) above.) Kaśika 2.3.6 notes an aspectual distinction between (3.17) and the same sentence with an accusative instead of an instrumental: achievement within a period as against activity for a period. But (3.18) seems to be without this connitation. The overlap is evidence in favor of the identification of these roles as kinds of Path (cf. 1.3.7), since this is the only common ground between an inherently [+So] case, the Instrumental, and a [+Go] one, the Accusative.

B. Instrumental Sources   ($\left[+\text{So, } +\text{Go} \right]$)

Source

(3.26)   kaluṣena adya mahatā medinī parimucyatām   R.2.96.27

staini   greatI   earthN let-it-be-freed
      today

'Let the earth today be freed from a great stain.'

Pt. of Reference

(3.27)   na tvayā balavattaraḥ viśvamitraḥ   R.1.54.15

not youI   mightierN   VishwamitraN

'V. is no mightier than you.'

Lost Object

(3.28)   prāṇair na viyuktaḥ   Panc.   (S46)

lifeI   not separated

'not robbed of life'

Source of Info.

(3.29)   anvamīyata śuddhā iti śāntena vapuṣā iva sā   Ragh. 15.77

was-inferred pureN   purifiedI bodyI like sheN   (S51)
      Comp

'She was judged chaste on the basis of her inviolate
                              body.'

It is difficult to find examples of external relational, or internal actional sources marked with the instrumental. For external actional sources, however, we can offer the following examples:

Cause

(3.30)   atidavīyastayā ca tasya pradeśasya, na kiñcid dadārsa   K.126
                                                                    (A37)
      extreme-distanceI thatG placeG   not anythingS
            and   he-saw

'Because of the extreme distance of the place,
                        he saw nothing.'

Instigator:

(3.31) viprakāram... bhavatām rākṣasair imām   R.3.6.23

damageA   youG   demonsI   thisA

'this damage done you by demons'

3.1.4   THE DATIVE

This case has semantically linked uses only.   In this it is like the

Ablative and Locative.   As a result, in these three sentences it is possible

to give a fairly truncated treatement, simply stating the minimal feature

specification of the case in question, and quoting examples of the various

rules covered.   Comments are appended where especially desirable; but again

the reader is referred to 1.3 for closer elucidation of the meanings of

the various roles.

__Dative__ $[+Go, -So, +Dy]$

__Goal__[3]

<blockquote>

(3.32)   vanāya gaccha   Ragh. 12.7
                                                                  (S58)

forestD goIMPV

'Go to the forest.'

</blockquote>

__Tendency__

<blockquote>

(3.33)   narakāya radhyati   Apast. 1.12.13
                                                                  (S63)

hellD   is-ready

'he becomes fit for hell.'

</blockquote>

__Recipient__

<blockquote>

(3.34)   upadhyayaya gaṃ dadati   Kas. 1.4.32

teacherD   cowA gives

'He gives the teacher a cow.'

</blockquote>

---

[3]Vārttika 4 on Panini 2.3.12, discussed in Patanjali's Mahābhāṣya,
implies that the dative cannot be used if the goal is stated to be reached:
it is for use __asamprapte__.

devadattaya satam dharayati   Kas. 1.4.35

DevadattaD hundredA owes

'He owes a hundred to Devadatta.'

Acquisition   ?

Experiencer

(3.35) yatha gurubhyo rocate   Sak. 5.30

as   preceptorD pleases

'As it pleases my worth teacher.'

(3.36) nrpatis taksakaya cukopa ha   M. 1.3.192 (S 61)

kingN   TaksakaD   grew- Prt
                   angry

'The king was angry with T.' (B.O.R.I. edition
                                has taksakasya)

Aim

(3.37) prasan sulan parasvadhan ciksipuh ... ramaya

dartsA pikesA acesA   they-threw RamaD

'They thre darts, pikes and axes at Rama'

(but did not him)   R. 3.25.27

Victim

(3.38) tasmai pratikurusva   'requite him (this)'

himD   requite IMPV   M. 1.3.185 (S 60)

Beneficiary

(3.39) ko hi nama sariraya dharmapetam samacaret   Kam. 3.9 (S 62)

whoN   indeed bodyD trasgressionA
       for   would-commit

'For who would commit sin for the sake of his
                body?'

Affectee

    (3.40) paraśum asmai tapata   Ch. Up. 6.16.1
                                               (S 62)

          axeA   himD heatIMPV

                 'Heat the hatchet for him (i.e. to use on him).'

Purpose

    (3.41) grbhnāmi te saubhāgyāya hastam   Aśv. Grh. 1.7.3 (S 65)

          I-take youG happinessD handA

                 'I take your hand for happiness' sake.'

This last will also be used to interpret the Dative assigned to the infinitive inflexion of the verb in 2.3.4 above.

There is no clear use of the dative corresponding to the senses limit or 'until': this fact suggests that these roles are not correctly assigned to the feature combinations in question.

3.1.5 ABLATIVE [+So, -Go]

Source

(3.42) vrksāt patram patati   'The leaf falls from the tree.'

treeB leafN falls

(3.43) brahmaṇah śaktidevākhyo vārdhamānad aham   Kathās. 25.35
                                                      (S 74)

BrahminN Śaktideva- VardhamanaB I
         calledN

'I am the Brahmin called Ś. from Vardhamana.'

(cf. Chapter 1, fn. 4)

Pt. of Reference

(3.44) satyād apy anṛtam śreyah   Ve.3 (A 52)

truthB too false- betterN
            hoodN

'Falsehood is better than truth.'

(3.45) grāmāt pūrva uttaro vā   (A 55)

villageB east north or

'east or north from the village'

Ex-owner

(3.46) ...dhanikāt kiñcid dravyam ādāya   Panc. (S 69)

money-lenderB someA substanceA
                               gettingGer

'raising some money from a money-lender'

Lost Object

(3.47) svargāt bhraśyate   Panc. (S 70)

heavenB departs

'He loses (his chance of) heaven.' (cf. 3.2.5 below)

Source of Info.

    (3.48) svajanebhyaḥ sutavinaśam śrutva   Panc. (S 69)

           own-peopleB son-deathA hearingGER

                'hearing of his son's death from his own people'

    (3.49) upadhyāyād adhīte   'learns from the teacher' Kāś. 1.4.29

           teacherB   learns

Object Unknown

    (3.50) dharmāt pramadyati   Pat. 1 (S 70)

           virtueB neglects

                'He neglects his duty.'

Aversion

    (3.51) na bhīto maraṇād asmi   Mṛcch. 10 (A 53)

           no afraidN death am

                'I am not afraid of death.'

    (3.52) caurebhyo rakṣati   'protects against theives'

           thievesB protects   Kāś. 1.4.25

Cause (internal)

    (3.52a) gomayād vrściko jāyate   M. (A 53)

            cow-dungB scorpionN is-born

                'The scorpion is born from cow-dung.'

Agent

    (3.53) tvattaḥ saṃmānam arhati   R.2.26.31

           youB   respectA deserves

                'She deserves respect from you.'

Point of Origin

    (3.54) gavidhūmatah sankāśyam catvāri yojanāni   (S 72)

           GavidhumaB   SankasyaA   four   yojanas

                '4 yojanas from G. to S.'

(3.55)   eti jīvantam ānando naraṃ varṣaśatād api   Kāś. 2.3.54
                                                             (quoted)

         goes living blissN manA hundred-   even
             PTCP.A   yearsB

                    'A man may enjoy happiness even after 100 years.'

'Thanks to'

             ?

Subject-matter

             ?

Cause (External)

    (3.56)   bhayād idam āha   ll. 96 (S 76)

             fearB this he-said

                     'lle said this out of fear.'

    (3.57)   divyaḥ patanty eva śapād manuṣayoniṣu   Kathās.27.76 (S 76)

             divinesN fall in- curseB human-wombsL
                            fact

                     'By consequence of a curse, celestial beings are
                     born among men.'

Instigator

             ?

Fear

         ? (but cf. Aversion above).

         The ablative clearly overlaps substantially with the semantic uses

of the instrumental, since both can designate actional sources. Presumably,

the choice between them in individual contexts would not have been arbitrary.

But no clear principles emerge from the usage of texts, except perhaps that

concrete animate actional sources (agents of non-mental acts) are distinc-

tively instrumental, when semantically linked. The overlap of semantic

fields for cases, and its resolution, brings in functional considerations

for which this formal system can only provide a background: it defines the

territory for which the individual cases compete. See 3.1.8 for discussion

of this matter.

3.1.6 LOCATIVE $\left[-\text{So}, + \text{Go} \right]$

By its specification, the locative is the general case of the Goal, actional or relational, static or dynamic.

Locus (-Ext)

(3.58) tvayi vastum icchāmi   Prabodh. 6 (S 106)

youL stayINF I-want

'I want to stay with you.'

Goal

(3.59) sobhanasthāne tvayā ahaṃ nītaḥ   Panc. (S 103)

fine-spotL   youI   I.N   ledN

'I have been led by you to a fine spot.'

Attribute

(3.60) tam yauvarājye 'bhiṣiktavān   Panc. (S 111)

himA status-of- annointed
     heir-apparentL

'He annointed him heir apparent.'

Tendency

(3.61) vyasaneṣv asaktaṃ sūram   Panc. (S 107)

vicesL indifferentA heroA

'a hero not addicted to vices'

Owner

?

Possession

?

Recipient

    (3.62)   sariram vikriya dhanavati   Mudr. 5 (S 110)

            bodyA sellingGER richL

                'selling her body to a rich man'

Acquisition

    ?

Experiencer

    (3.63)   na deveṣu na yakṣeṣu tādṛg rūpavatī...śrutā Nala   1.13

            not godsL not yaksasL such shapelyN   heardN

                'Not among gods or yakshas was such a
                beautiful woman heard of.'

Experience

    (3.64)   na tāpasakanyāyaṃ śakuntalāyaṃ mama abhilāṣah   Śak.2.18

            not ascetic-daughterL SakuntalaL meG affectionN

                'I do not feel affection for S., the
                ascetic's daughter.'

Aim

    (3.65)   mṛgeṣu śarān mumukṣoḥ   Ragh. 9.58 (A 63)

            deerL arrowsA desiring-to-dischargeG

            'of him who wished to shoot arrows at the deer'

    (3.66)   vegaṃ pracakratur vīrau vadhe durātmanaḥ   R.3.4.4

            energyA they-2-did 2-heroesN evil-soulG
                        killingL

                'The two heroes endeavoured to dispatch
                the foul creature.'

Patient/Victim

    (3.67)   etat kṛtaṃ tvayi   Kathās. 28.34 (S 110)

            thisN doneN youL

                'This was done to you.'

(3.68) tasmin khaḍgena praharan munau   Kathās. 28.31 (S 104)

thatL swordI he-struck sageL

'He struck the sage with his sword.'

Place ([+ Ext])

(3.69) phalaṃ dṛṣṭam drumesu   Ku. 5.60 (S 103)

fruitN seenN treesL

'fruit was seen on the trees.'

Time

(3.70) etasmin viyasi   Ch. Up. 3.16.2   (S 109)

thisL   ageL

'in this age'

Limit/'Until'

?

Beneficiary

?

Affectee

(3.41) yuktam idam svāmino nijabhṛteṣu   Panc. (S 111)

con-   this lordG   attendantsL
venient

'This is convenient for a lord with
respect to his attendence.'

Purpose (nimittasaptamī)

(3.72) carmani dvipinam hanti ...   Kas. 2.3.36

skinL   pantherA kills

'One kills the panther for its skin.'

3.1.7 GENITIVE

The Genitive is like the Accusative in being predominantly inter-
preted through grammatical linking. Not only is it grammatically linked
when it occurs adnominally, but it is also the standard marker for the 'in-
direct object' in Classical Sanskrit. This usage is extremely common, even
though it is unknown to Panini,[4] serving as one piece of evidence that
Classical Sanskrit, despite being an artifically preserved language, is
nevertheless not exhausted by Panini's elaborate codification. It can
teach us something about the properties of Natural Language in its own
right.

These grammatically linked uses will be treated in 3.2 and 3.3 when
they are eliminated, there still remains a very small domain of semantically-
linked genitives. They include objects owned or ruled (as in 3.73):

(3.73)   katham mrtyuh prabhavati vedasastravidam   M. (S 88)

　　　　how   deathN is-master   knowers-of-veda-and-
　　　　　　　　　　　　　　　　　　　shastraG

　　　　　　　　　'How can death prevail over those
　　　　　　　　　knowledgeable in the V. and S.?'

and also the objects of various mental acts (as smarati 'remember', anuka-
roti 'imitate', dayati 'pity') with a special emphasis on objects longed
for. Comparison with equivalent (not necessarily cognate) items in related
languages (e.g. Gk. arkhein 'rule', memnesthai 'remember'), which also select

---

4
　　But cf. Panini 2.3.62, and Speijer's remarks on it (1886, p. 101,
fn. 1, where he tries to eliminate the restriction of this sutra to Vedic.)

a genitive object, suggests that, even if in classical Sanskrit these are to be analyzed along with the run of indirect objects,[5] there was at some stage a general semantic linking rule operative here. A successful analysis is likely to have implications for the semantic properties of the genitive in Proto Indo-European itself.

The FS feature system is in a position to provide such an analysis. Suppose we assign the genitive the minimal feature specification $\begin{bmatrix} +Co, & -So, \\ +Inv, & -Ext \end{bmatrix}$ (cf. that for Turkish için in 1.4.5.3). This comprehends the class of roles: acquisition, experience and aim. We must allow domination to be a natural extension of the concept of ownership; so Acquisition can represent an object controlled as well as acquired. (There will remain a problem, arising from the fact that the genitive can represent the object of predicates of _static_ ownership and governance too: inverse values were only envisaged for _dynamic_ predicates in 1.3.5.) And the remaining genitive-marked roles are all mental objects of one sort or another, with a predilection for objects to which the subject is attracted (cf. Aim, the goal of volitional predicates.)

Clearly, there are some problems to be resolved here. But the feature _Inv_ has effectively singled out something very close to the required class of roles. This is quite a significant triumph for the system, since the _Inv_ feature was motivated quite independently for the sentient fields of possession and cognition (cf. 1.4.8, 3.2.5). It just 'happens' also to pick out just those goals which can be semantically linked

_____

5

Indications of this come from various sources. Speijer claims (S 88) that the sort of genitive construction seen in (2.100) is rare in classical Sanskrit; (though this may simply reflect the scarcity of the relevant verbs.) And the verbs which take a genitive mental object all allow an accusative object instead (S 88) (on the other hand, Apte (A 73) claims that there is a semantic difference here, for smarati at least).

with the genitive.

The genitive has one or two other distinctive uses, most notably that of the Genitive Absolute constructions, which Panini attributes the meaning 'in spite of' (2.3.38). As yet, we have no particular contribution to make to their analysis.

3.1.8 THEORETICAL IMPLICATIONS

Now that we have seen the capacity of the role-feature system to represent the meanings of the various cases in the context of semantic linking, we are in a position to consider some more general points: the merits of the approach on balance, and some of the further questions it raises.

In the first place, the role-features provide a <u>system of concepts</u> with clear definitions in terms of which talk of case meaning can be phrased. A traditional difficulty in this area is the fuzzy edges of many of the general terms that have been used. This was because they were not given their places within an explicit system which defined their relations with each other and the boundaries between them. As long as this is the case, and any intuitively appropriate terms may be used, no progress can be made towards a precise understanding of the relation between a formal case and its uses. Hence, for example, Speijer's despairing remarks:

> It should be kept in mind, however, that these and similar distinctions are but made for argument's sake and do not answer to sharply separated real divisions. Properly speaking, there is but <u>one</u> instrumental in all of them, just as in English it is the same word <u>with</u>, which is used in the phrases as distant from one another as <u>I go with you</u>, <u>I cut with a knife</u>, <u>he with his black hat</u>, <u>he is content with me</u>. For this reason on the one hand nothing impedes increasing the number of divisions and subdivisions according to the manifold logical variety of its employment, but on the other hand no system of division will exhaust it, and more than once we may be at a loss under which head to enregister a given instrumental.   (S 48-9)

The imposition of a systematic grid of cross-cutting categories allows the analyst to get a precise idea of the breadth of a case's usage, to register changes in that usage, and to survey the relations between the usages of different cases.

However, it does not in itself guarantee that we shall not find border-line uses of a case in actual language: nor even that we shall immediately see the implications of a distinction that our system forces upon us. But it does predict that there will be multiplicity of a certain sort in the data, allowing us to examine the data with something specific in mind.

So much for the advantages of a clear-cut theory as such. It is already clear from the data marshalled above that the boundaries of the roles defined by the feature system are very close to those drawn intuitively for the clear instances of case-usage. But besides delineating the boundaries of case-usage, the system also claims that within the semantically characterized group of roles represented by a single case, there will be significant divisions.

This is shown, for instance, in the case of the Sanskrit genitive. This case is linked grammatically, and hence (cf. 1.5.2) can only be linked to inherent roles, ones mentioned within the FR of the predicate-word. In the reference grammars, the spread of the genitive to the marking of a number of roles which, according to Panini, should take the dative or ablative, is viewed as a phenomenon of partial syncretism. But Linking Theory explains a certain limit on this spread within classical Sanskrit: "the dative of purpose is not interchangeable with the genitive" in this way (quoted from S101). The reason is that this role has the feature [+Ext], which, with certain exceptions (1.5.2), does not occur in inherent roles. Hence the grammatically linked genitive cannot get at it.

The points made so far tell in favour of any system which successfully divides the space of possible roles into a set of discrete items. The feature system in use here does more than this: it makes an implicit claim about which classes of roles are natural. We have already seen

partial justification for this. None of the case specifications given are maximal: they each specify a class of roles, all of which can be realized by that same case. Hence the classes so specified have some empirical support as linguistically natural. It might be claimed that there is only one role for each case. But we have already seen evidence against that; there are significant distinctions within the semantic domain of a particular case.

A different point of view might accept the roles as separate entities in the sort of quantity postulated here, but doubt whether there was justification for their definition in terms of binary features: why should paths and sources share the feature[+So], or paths and goals the feature [+Go]? Answers are provided in the usage of the instrumental and accusative cases respectively -- cases which can only be assigned a unitary specification because of the way that source, path and goal are specified.

Furthermore, our feature system allows a means of representing why coalescences of the path-source or path-goal type are less common than those of the types mentioned in the last paragraph. It seems that it is marked for the features $[+/-Go]$ and $[+/-So]$ to be missing from a case's specification. Witness the simple case- specifications for a variety of languages suggested in 1.4.4.

However, having said so much in favor of the system being outlined here, we should turn to considering some of its limitations.

An area in semantic linking where our system is incomplete as it stands is that of making predictions about the relations between cases, in particular their competition for roles which fall within more than one case-domain.

For instance, given the feature specifications assigned above, A, L and D all link with Dynamic Goal ($[-So, +Go, -Abs, -Se, -Ac]$); and I and

B with Cause ([+Ac, +So, -Go]). As it turns out, there is no clear verdict

in the philological literature on what the outcome of these conflicts is:

all the predicted linkings seem to be attested.

On the causal clash, Speijer (S 74-5) writes:

> hence, the <u>cause, reason, motive by which</u>, is likewise expressed by
> the ablative namely as far as it is conceived as the origin or
> starting-point, from whence some consequence has resulted. The
> instrumental...may likewise serve that purpose, and in the case of
> feminine nouns of quality it is even obligatory. For the rest,
> ablative and instr. of causality are generally interchangeable,
> and not seldom they are used side by side.

And Taraporewala 1967 (p. 40) has this to say about the conflict of

the motional cases:

> This dative (sc. of motion) is to be sharply distinguished from the
> "accusative of motion", for the latter indicates that <u>the end or</u>
> <u>goal of motion has been reached</u>, whereas the dative merely tells
> us of the motion directed towards it. The loc. is also used with
> <u>motion</u> in a direction, the dative gives the goal or the <u>direction</u>
> (a sort of reason) for the motion, the locative concentrates on
> the idea of <u>reaching</u> the goal and <u>resting there</u>.
> <div align="right">(Emphases all original.)</div>

It is not clear how much of what Taraporewala is claiming here is

purely a priori: it does not square too well with what we have already

seen. But it is possible that the more easy-going verdict of the former

passage reflects the special status of classical Sanskrit, where our re-

corded sources mostly represent writers who knew it as a second language.

<u>Panini</u>, of whom this is not true, gives no account of the relation between

locative, dative and accusative in the context of motion. For the opposi-

tion of instrumental and ablative, he is more helpful (2.3.23-27). The

instrumental is said to be the principal option: but the ablative is obliga-

tory when debts are involved (and the cause is not simultaneously an

agent - a provision which has to do with Panini's analysis of causatives);

and marginally possible (<u>vibhāṣā</u>), when expressing an attribute in nouns

3.2 GRAMMATICAL LINKING: THE NORMAL RULE

3.2.1 INTRODUCTORY

The intrinsic connexions between cases and participant-roles specified in 3.1 are one component of the case-linking mechanism. In the rest of chapter 3 we shall complete our account of that mechanism.

Lexical entries for predicate words (discussed in 1.4.1.1, 1.5, & 4.1 below) suggest possible pairings of lexically specified syntactic structrue with functional structures. Given such possible pairings, semantic linking rules legitimize certain assignments of case-marked nouns to argument positions in the functional structure (FS). These rules are just another way of looking at the role-feature specifications of cases given in 3.1.

We now turn to the rules which legitimize (or constrain) the assignment of other Ns to argument positions. These are the rules of grammatical linking and predication, which make no reference to specific roles or features of roles.

For grammatical linking, the essential problem is to assign an ordering to the formal cases, which can be used when matching them with participant roles: participant roles are already ordered according to the hierarchy of positions in functional structure. (See 1.4.6.1 above.)

To clarify the examples of linking that follow, we here recapitulate briefly the essentials of our theory of functional representations (cf. 1.3 & 1.4.6).

Functional structures assigned to lexical items can have a simple or a complex form.

The _simple structures_ will provide slots for four inherent arguments, representing one of each of the four fundamental participant roles, Theme, Source, Path and Goal. These simple structures may be of two different types, Actional and Relational, and this type determines the hierarchical ordering of the roles within the structure. The orders are as follow, listed here from highest to lowest.

(3.74) i. Actional: S P T G

　　　　 ii. Relational: T G S P

Actional predicates express how the Source does something (the Theme) to the Goal in some way (the Path). Relational predicates express how the Theme passes from the Source to the Goal via the Path; though if static (i.e. $[-Dy]$), they describe the Theme's relation to the Goal. We take positional, possessional and cognitive predicates, for example, to be special kinds of relational predicate: so a theme moves from source to goal via a path, a possession may be lost to its source and gained by a goal, and an item may be related to its perceiver as theme to goal, related perhaps along the path of vision. The finer ramifications of this are discussed at greater length in 1.3.

The _complex forms_ come about through recursion under the theme slot of a predicate. To take an example where the higher predicate is Actional, the higher source would express the causer of the embedded action, the path his means, the goal the person affected. It is also possible for these higher arguments to bind one of the lower arguments.

In general, we represent embedded predicates in the Theme slot as an expression in parentheses on the right of the expression as a whole.

This is just a notational equivalent of "Heavy NP Shift", for writing and reading convenience. Bound arguments are represented by co-indexing: the controller of the binding relation is always the co-indexed role to the left.

So for instance, among English possessional predicates, we should give the following representations.

(3.75) Max gave John the job. DO: S (GO_{POSS}: T G).

T = the job, <u>throughout</u>.

S = Max

G = John

John received the job. DO: G_i(GO_{POSS}: T G_i).

G_i = John

Ernie lost the job to John. DO

DO: G_j(GO_{POSS}: T G S_j).

G = John

G_j = S_j = Ernie

The mistake lost Ernie the job to John.

DO: P (GO_{POSS}: T G S).

P = mistake

G = John

S = Ernie

The equational statements on the right in are essentially what we want our linking rules to generate. 'DO' here represents an actional predicate, and 'GO_{POSS}' the dynamic relation of possession, reflecting a transfer of ownership.

We therefore have two factors contributing to an ordering of roles

in functional structure: the position of the argument's predicate with respect to the embeddings of functional structure, and the roles own identity (as shown in 1.4.6.1). An actional source outranks a goal of the same predicate; but the goal of a higher predicate will outrank it.

As for the relation of the positions so defined to the features used in 3.1, the features So and Go together determine whether an argument is source, path, theme or goal; and arguments of actional predicates are assigned [+Ac] , others [-Ac]. Further discussion will be found in 1.3.

Returning to the formulation of grammatical linking for Sanskrit, we assign to formal cases the following order, which represents the substantive content of the Normal Rule of grammatical linking:

(3.76)   Normal Hierarchy (first formulation)

1. Nominative

2. Accusative

3. Genitive

The Instrumental will need to be included in this hierarchy later on (3.2.4). And the precise status of the Nominative in this rule will have to be revised when consider their interaction with predication. But for our preliminary discussion, (3.76) will serve.

The genitive is included in (3.76) since it seems in classical Sanskrit to have assumed the functions of a grammatically linked case, even in conjunction with verbs. (Its grammatical linking in conjunction with nouns will be discussed later-3.3.1.) With verbs, it plays the role of would traditionally have been called the Indirect Object, marking the source or goal of various predicates.

Nouns which are absent from the surface sentence for anaphoric reasons will be treated by the rules as if they were present. Technically this can be handled by postulating some sort of dummy symbol under the

dominating N, which will be assigned case like any other N. Case-assignment
(by the rule in Section 2.7) will, of course, in these instances have no
morphological consequences.

3.2.2 EXAMPLES

The examples that follow serve three purposes. They illustrate the
working of the linking rules, which hitherto have only been given in a
rather austere form. And by their variety, they provide confirmation for
the two aspects of the theory that they illustrate: the Normal hierarchy
of cases, and the hierarchy of participant roles, provided by the theory
of FS. In each instance, we provide a Sanskrit sentence, the presumed
functional structure of its main verb, and the equations or role and N
which are generated by the theory. These concrete items are followed by
such comments as seem helpful.

3.2.2.1 POSITION

All the examples in this section contain main predicates which are
positional.

(3.77) rāmaḥ parvatam adhyāste 'Rama is settled on the mountain.'

RamaN mountainA on-sits (cf. Kāś. 1.4.46)

BE: T G

T = rāmah N

G = parvatam A

Here the accusative cannot be interpreted semantically, since only
[+Dy] goals fall under its specification: the corresponding semantic case
would in fact be locative: cf. parvata āste 'sits on the mountain.' How-
ever, grammatical linking works quite uneventfully: nominative > accusa-
tive, T > G, hence the linking given. 'BE' here represents a [-Dy] posi-

tional predicate. We shall often omit information from the FS if it is not relevant to linking: here the verb adhi+as may specify some addition information in the Path slot -- giving details on the mode of being: e.g. as a permanent resident. The reason why semantic linking is impossible when the verb carries a prefix (*parvata adhyāste) is discussed in 4.4.1 below.

(3.78) senā grāmam upavasati   Kaś. 1.4.48

armyN villageA near-dwells

'The army is stationed near the village.'

BE: T G(NEAR_)

T = senā N

G = grāmam A

This example is essentially the same as the last. It illustrates, though, a further possibility with FS: viz. to have a PSR (prepositional semantic representation - cf. Carter 1976, 1978a) inside an argument position, in this instance inside the Goal. We shall not explore the representation of prepositional meaning systematically in this work (cf. note 1 to this chapter). But it is clear that some allowance must be made for their contribution to verb-noun (and noun-noun) semantic relations.

(3.79) devadatto gām avaruṇaddhi vrajam   Kaś. 1.4.51

DevadattaN cowA shuts-up enclosureA

'Devadatta shuts the cow up in the enclosure.'

DO: S (BE: T G)

S = Devaddatta N

T = gām A

G = vrajam A

Here the two accusatives are assigned the lower roles, theme and goal embedded inside the theme of DO, while the nominative is assigned to

the higher source position. Only commonsense decides which of the two

accusatives is assigned to which role (though there are syntactic differ-

ences between them: cf. discussion in 4.1 below, when the power of sub-

categorization is considered.) The commentaries on Panini 1.4.51 inform

us that a locative is also possible here: <u>vraje</u> instead of <u>vrajam</u>. In this

alternative the locative is semantically linked with the goal, leaving the

accusative $\bar{gam}$ no choice but to be assigned the theme.

(3.80)   na daivasya pramuñcanti sarvabhūtāni dehinas   R.3.66.12

not fateG   release(3pl) all-beingsN soulsA

> 'All beings are unable to release their
> souls from bondage to Fate.'

DO: S (GO: T S)

External S = sarvabhūtāni N

T = dehinas A

Internal S = daivasya G

The FS here glosses <u>pramuc</u> 'to release' as meaning something like

'cause to go from', not inappropriate, since it is used of releasing ar-

rows as well as prisoners. This is the first example of the grammatical

linking of the genitive. Furthermore, the sentence affords a bit of evi-

dence that we were right to order the genitive below the accusative in the

Normal hierarchy. It is possible that the relations expressed by <u>pramuc</u>

here are possessional rather than positional; but this has no relevance to

linking.

(3.81)   ...vara, muñca śayyām   Ragh. 5.66 (AD s.v. <u>muc</u>)

groomV release couchA
          IMPV

> 'Bridegroom, leave thy couch.'

DO: S_i (GO: T_i S)

$S_i = T_i$ = tvam 'thou' N

Internal S = sayyām A

Here the subject of the imperative verb is not expressed: we view this as a kind of anaphoric phenomenon, no different in Sanskrit from other instances of 'pronoun drop'. (The scare-quotes reflect the fact that we doubt whether such pronouns are ever inserted in instances where they 'drop'.)

More importantly, this sentence is typical of one sort of phenomenon that our approach to Case predicts. The verb here, muc, is essentially the same lexical item as that of the last example pra+muc: so we have given it a very similar FS. The only difference is that in this instance the higher source binds the lower theme. Muc, however, remains a transitive verb in both: it must be accompanied by at least one (accusative) N under $\bar{V}$. So this accusative is pressed into service as a source, since that is theonly role left to be filled. (Bound argument positions, as T_i here, count as already filled for linking purposes.)

(3.82) Devadatto grāmam ajām nayati   Kāś. 1.4.51

DevadattaN villageA goatA leads

'D. leads the goat to the village.'

DO: S_i (GO: T (G) (S) P_i)

$S_i = P_i$ = devadatto N

T = ajām A

G = grāmam A

Here we see an example of the interaction of the grammatical and semantic linking of the accusative (cf. 1.4.2, 1.4.7, 3.1.2 and 4.1). Semantic linking first applies, linking one accusative with the dynamic goal: cf. accusative's feature specification as [-An, +Go, -Ac, +Dy]. Grammatical linking will then assign the other accusative to the theme, and the nominative to the higher source. The optional lower source remains unat-

tached, since there was no noun available for it, and a semantic linking of accusative with a [-Go] is impossible. The bound P_i shows that <u>nayati</u> 'lead' implies that the causer is personally involved in transferring the theme from source to goal.

(3.83)   devadatto gṛham atyajat

DevadattaN houseA left

'D. left his house.'

GO: T S

T = Devadatto N

S = grham A

A simple case of grammatical linking. As remarked in connexion with the previous example, accusative cannot be semantically linked with a source. But grammatical linking looks only at the relative positions on the hierarchy, not at the semantic role features themselves.

3.2.2.2 POSSESSION

We now turn to some examples with possessional predicates. In this section we restrict ourselves to examples [-Inv] predicates. Inverse predicates are introduced for Sanskrit in 3.2.5 below.

(3.84)   daśa suvarṇān asya eva prayaccha   Mrcch. 1

ten gold-piecesA himG just giveIMPV

'Give him ten gold pieces.'

DO: S (BE T G)

S = tvam N (suppressed) 'thou'

T = suvarnān A

G = asya G

(3.85)   sa $\left\{\begin{matrix} \text{pauravam} \\ \text{pauravasya} \end{matrix}\right\}$ gām yācate   Comm. on Panini 1.4.51

heN PauravaA/G   cowA requests

                    'He asks a cow of P.'

DO: S_i P(verbally (GO: T G_i S)

$S_i = G_i$ = sa N

T = gām A

internal S = pauravam, pauravasya A or C

Here the FS expresses that the source verbally causes (or tries to cause) the theme to pass from the embedded source to his own ownership.)

(3.86)   lokasya vasu lumpati   (cf. Bhag.P. 414.39 BRD s.v. _lup_)

worldG wealth he-steals

                    'He steals wealth from the world.'

DO: S_i (GO: (T) P (illegally) (S) G_i)

$S_i = G_i$ = sa N (suppressed) 'he'

T = vasu A

S = lokasya G

It is possible that the genitive here is adnominal, dependent on _vasu_. If so it would not be linked with the internal source of _lumpati_, but rather be interpreted as the possessor of _vasu_ under adnominal linking: 3.3.1.

(3.87)   dāsyūn lumpati   (cf. Bhag. P. 7.8.11:BRD s.v. _lup_)

thievesA he-steals

                    'He robs thieves.'

DO: S_i (GO: (T) P (illegally) (S) G_i)

$S_i = G_i$ = sa N (suppressed) 'he'

internal S = dāsyūn A

Another example of the flexibility of grammatical linking. In default of a theme, the accusative is attached to the internal source.

3.2.2.3 COGNITION

Again, inverted predicates are deferred to 3.2.5.

(3.88)   caranām rāvano 'śrnot prāptaṃ rāmam   cf. R.6.31.2 (S 93)

spiesG RavanaN heard arrivedA RamaA

> 'Ravana heard from spies that Rama had arrived.'

DO: G_i (GO: T G_i S)

G_i = G_i = ravano N

T = rāmam A

S = caranām G

Strictly speaking, <u>rāmam prāptam</u> 'that Rama has come' constitutes the theme here. The FS here implies that the external goal of śru 'hear' receives the effect of the theme's passing (cognitively) from the source to him.

(3.89)   adiśayat tasyāh putrikāh   Kathās. 29.18 (S 100)

she-showed herG puppetsA

> 'She showed her the puppets.'

DO: S (BE: T G P(visually))

S = sā N(suppressed) 'she'

T = putrikāh A

G = tasyāh G

(3.90)   mānavakaṃ dharmam anuśāsti   Kāś. 1.4.51

boyA   dutyA   he-teaches

> 'He teaches the boy duty.'

DO: S (BE: T G)

S = sa N (suppressed)

T = dharmam A

G = mānavakam A

3.2.2.4 EVENTS AND ACTIONS

In these predicates the source and path outrank the theme and the goal. They are all [+Ac, +Dy] , which will be abbreviated in the representations to DO. It is not necessary, however, that a source or path be always present, as the first example shows.

(3.91) sarvasya eva skhalitam āpatati   Kad. 291 (AD s.v.)

      allG   even blunderN occurs

                   'Mistakes afflict everyone.'

DO_{EV}: T G

T = skhalitam N

G = sarvasya G

(3.92) kim tava karoty asau   (cf. passive examples quoted in S 98)

      whatA youG does thatN

                'What is that man doing to you?'

DO_{AG} : S (P) T (G)

S = asau N

T = kim A

G = tava G

Karoti 'do' is exceptional for a verb of action, in that its Theme slot is quite open. Compare the lexically determined fillings in the next two examples.

(3.93) duṣyantaḥ śākuntalām cucumbe

DushyantaN ShakuntalaA kissed

'D. kissed S.'

DO: S P(lips) T(touch) C

S = duṣyantaḥ N

C = śākuntalām A

Here 'touch' is inadequate to the full meaning. Perhaps, in fact, the theme here is a semantic primitive, KISS.

(3.94) indro vṛtram hanti   (cf. Ṛgveda, passim)

IndraN VrtraA slays
(name of a demon)

'Indra slays the vṛtra.'

DO: S T(death) C

S = indro N

C = vṛtram A

This particular representation of the FS of <u>han</u> is superior to another plausible alternative, under which it would be a lexical causative of 'die' or 'be dead', viz. <u>DO: S (CO T C(death))</u> or <u>DO: S (BE T C(death))</u>. (We assume that predicative 'be' and 'become' will be represented as identificational forms of BE and CO: cf. 1.3.3-4 and Jackendoff 1976.) This is because <u>han</u> also has the meaning of 'strike' or 'hit', which cannot be represented as a lexical causative (cf. above 1.3.6.) Precisely this ambiguity (of 'hit' vs. 'kill') is also found in other quite unrelated languages.[7] So we should not want to adopt a semantic representation which

---

7
    I am indebted to David Nash for informing me of the ambiguity of 'kill' in Australian Aboriginal English, a usage which corresponds to the situation in many Australian languages: e.g. Warlmanpa, Warlpiri <u>pu-</u> 'strike, kill'; Dyirbal <u>balga-l</u> 'hit (with long rigid implement held in hand), kill' (Dixon 1972, Vocab., s.v.); Yidiny <u>bunda-n</u> 'strike, beat, hit, kill' (Dixon 1977, Vocab., s.v.).

made the similarity difficult to capture. As it is, 'hit' will be repre-
sented as <u>DO: S T(impact) G</u>. (It is not ruled out, however, that other word
words, in Sanskrit or elsewhere, might be assigned one of the FS's rejected
for <u>han</u>.)

(3.95) sa vadhūm pāṇim agṛhṇāt   (cf. Monler Williams Dict.,
                                                          s.v. <u>grah</u>)
        heN brideA handA took

                        'He took the bride by the hand.'
                        (i.e. married her)

        DO: S P T(grasping) G

        S = sa N

        P = pāṇim A

        G = vadhūm A

Here we see a grammatically linked path.

3.2.3 "VIVAKṢĀ": PATHS AS SUBJECTS

In the Indian grammatical tradition, certain alternations are
attributed to <u>vivakṣā</u>, literally 'desire to speak', i.e. speaker's choice.
For instance, to describe identical states of affairs one may use either
the oblique case-forms in (3.96), or nominatives, with the usual verb-
agreement signalling predication (3.3.2), as examples in (3.97). (For
further details, and authentication of the examples, see Cardona 1974,
pp. 235-8 with notes.)

(3.96) i.[8] akṣair dīvyati devadattaḥ

diceI plays DevadattaN 'D. plays dice.'

ii. asinā chinatti devadatta edhān

swordI cleaves Devadattaḥ faggotsA

'D. splits the faggots with a
sword.'

iii. edhaiḥ pacati devadatta odanam

faggotsI cooks DevadattaN riceA

'Devadatta cooks the rice with
faggots.'

iv. sthālyām pacati devadatta odanam

potL cooks DevadattaN riceA

'Devadatta cooks rice in a pot.'

---

[8]Two other forms of this sentence are possible, with <u>akṣa</u>-'dice' in
the accusative or locative: <u>akṣan dīvyati</u>, <u>akṣeṣu dīvyati</u>. These alterna-
tives follow from the subcategorization of the verb <u>div</u>, and do not concern
the point at issue. Cf. 4.1 below.

i. akṣā dīvyanti

    diceN play   'The dice play.'

ii. asíś chinatty edhān

    swordN splits faggotsA   'The sword splits the faggots.'

iii. edhāh pacanty odanam

    faggotsN cook   riceA   'The faggots cook the rice.'

iv. sthālī pacaty odanam

    potN   cooks   riceA   'The pot cooks the rice.'

The force of the Indian appeal to <u>vivakṣā</u> is that the speaker is
free to make the active verb express a <u>kāraka</u> (participant role) other than
the agent (<u>kartṛ</u>). In (3.97) i, ii and iii, it expresses the instrument
(<u>karaṇa</u>); in (3.97) iv, the locus (<u>adhikaraṇa</u>). If the verb does not
express them, then the relevant nominals will appear in the appropriate
oblique cases, as shown in (3.96).

Regardless of the merits of the technical apparatus used in the
Indian tradition the explanation suffers from the fact that it is too
general. For as (3.98) and (3.99) show, not all elements that the
Panineans call instruments or loci can be represented by nominatives in
this way.

(3.98) i. narakapāle pibati   cf. Panc. 1   (S 105)

    human-skullL drinks   'He drinks from a human skull.'

But: * narakapālaḥ pibati

    skullN

ii. gṛhe pacati

    houseL cooks   'He cooks in the house.'

But: * gṛham pacati

    houseN

(3.99) i. jagmur vihayasā   ii. (from Whitney 281c).

    they-went airI

 But: * vihayo jagāmo

    airN went (3 sg.)

  ii. angulibhir odanam bhuṅkte

    fingersI riceA eats   'He eats rice with his
                    fingers.'

 But: * angulaya odanam bhuñjate

    fingersN riceA eat (3 pl.)

And furthermore, the explanation in terms of <u>vivakṣā</u> does not give

any account of why <u>only</u> instruments and loci can be 'expressed by the

verb' in this way: why do we not find such conversions as those shown in

(3.100)?

 (3.100) i. <u>apādāna</u> 'origin'

    parvatad avarohati 'He comes down from the mountain.'

    mountainB

    * parvata avarohati

    mountainN

  ii. <u>sampradāna</u> 'aim'

    upadhyāyāya gām dadāti 'He gives a cow to the teacher.'

    teacherD

    * upadhyāyo gām dadāti (in the sense, 'teacher gets cow')

    teacherN

  iii. <u>karma</u> 'object'

    odanam pacati   'He cooks rice.'

    riceA

    * odanaḥ pacati

    riceN

To bring the problem somewhat closer to home, it might be pointed out that very similar facts seem to be true of English. Only certain instruments and loci can double as surface subjects. Cf. (3.101) with (3.102).

(3.101) i. He opened the door with a key.

A key opened the door.

ii. She discovered the planet with her uncanny intuition.

Her uncanny intuition discovered the planet.

iii. They propitiated the god with a sacrifice.

A sacrifice propitiated the god.

iv. He devoured her with his hungry gaze.

His hungry gaze devoured her.

v. The elephant sniffed at me with its trunk.

The elephant's trunk sniffed at me.

vi. He steamed the rice in the pot.

The pot steamed the rice.

(3.102) i. She viewed the planet with a telescope.

*A telescope viewed the planet.

ii. He eats meat with a knife and fork.

*A knife and fork eat meat.

iii. They got there by the urban throughway.

*The urban throughway got there.
(Contrast: The urban throughway got them there.)

iv. He cooked it in the kitchen.

*The kitchen cooked it.

Similarly, there is no general provision in English for other roles to double as PP complements or surface subjects.

Readers can construct their own examples.

Another fact about these instrument and locus subjects is that they eclipse normal agents. It is not possible to express the agent (animate source of action) if the instrument or locus is expressed in the nominative.

(3.103)   i.   * sthālī pacaty odanam devadattena

potN   cooks   riceA   DevadattaI

ii.   * asis chinatty edhān devadattena

swordN   splits   faggotsA DevadattaI

All these facts are predicted by our analysis of action predicates. We suppose that the verbs of (3.96) have the lexical FS's shown in (3.104):

(3.104)   i.   div   :   DO:[+So] T(game)

ii.   chid   :   DO:[+So] (GO$_{\text{Ident}}$: T G(split))

iii.   pac   :   DO:[+So] (GO$_{\text{Ident}}$: T G(soft)).

(3.104) iii is in fact very close to the traditional Indian analysis of pac, viz. as vikledana 'softening', an activity (vyāpāra) which cause the result (phala) of viklitti 'softness'. (Cf. Kaiyyata's comments on Panini 1.4.49, dicussed in Joshi and Roodbergen 1975, pp. 154-5; and Rocher 1969.) It also allows ready assimilation of the sense 'ripen', which also attaches to pac.[9]

These characterizations require at least one [+So] element to be present as the highest role in the sentence. But they leave it open whether this role will be a source or a path. Whichever is chosen, it will be the

---

[9]This ambiguity is also found in many Australian languages (p.c. Kenneth Hale, David Nash: e.g. Warlmanpa tarri 'raw, unripe', murntu 'cooked, ripe').

highest role, and hence be assigned a nominative N by the Normal rule. In sentences like (3.96), the source was chosen, in (3.97) the path.

Hence for example, (3.96) i and (3.96) ii will be analyzed as in (3.105) and (3.106) respectively.

(3.105)   akṣair dīvyati devadattaḥ

DO: S P T(game)

S = devadatta N

P = aksair I

(3.106)   aksā dīvyanti

DO: P T(game)

P = aksā N

In the former, aksair, the instrumental, is linked semantically; in the latter, aksa, nominative, is linked by the Normal rule.

There is a slight problem in the fact that certain locatives (as in 3.96) iv: sthālyām pacati devadatta odanam) alternate in this way too. But it is natural to suppose that beside (3.96) iv, (3.107) was also grammatical in Sanskrit.[10]

(3.107)   devadattaḥ sthālyā pacaty odanam

DevadattaN   potI   cooks   riceA

'Devadatta cooks rice with a pot.'

Here the pot is indicated with an instrumental noun. The pot may be viewed as the instrument, hence the path, of pac as well as its locus. If so, the analysis of (3.107) and (3.97) iv (sthālī pacaty odanam) will be precisely analogous to that shown in (3.105) and (3.106). And (3.96)

---

[10]This use of the instrumental was in fact normal in Vedic; see Renou 1961, p. 219.

iv, with its surface locative, will be something of an irrelevance, due simply to the real-world fact that when a pot serves as an instrument for cooking, it also acts as an internal static goal, the locus for the food cooked.

If both source and path are present, as in (3.96), it is clear that the source will outrank the path. Hence if the path is to be linked with a nominative, there must be no source in the sentence. This accounts for the deviance of (3.103).

Turning now to the instrumentals and locatives which cannot be 'promoted to subject' in this way: we have already dismissed implicitly the claims of such locatives as grhe in pacati grhe 'cooks in the house' (3.98). Only paths can appear as nominatives in this way, and grhe is a mere locus (i.e. static goal) as is shown by the presumable infelicity of #grhena pacati 'cooks with a house.' As for instrumental such as that in (3.99) jagmur vihayasā 'went through the air', vihayas here is a positional path. And a look at the FS for gam 'go' in (3.108) makes it clear that the theme will always outrank it.

(3.108) gam: GO: T G. (P) (S)

Only actional paths, which outrank actional themes, will appear as nominatives.

The cases of (3.98)i narakapāle pibati 'drinks from a human skull', and (3.99)ii angulibhir bhunkte 'eats with the fingers', seem a little more tricky. For if (3.109) is good, as seems likely, we shall have to allow that a drinking-vessel can be viewed as an instrument of drinking;[11]

_____

[11]There is a highly relevant example at Ṛg Veda 10,136,7: keśī viṣasya patrena yad rudrenapibat saha 'when the long-hair drank of the poison with a goblet (instr.) together with Rudra'.

(3.109) narakapālena pibati

      hum. skullI drinks 'drinks with a human skull'

and similarly, __angulibhir__ 'fingers' in (3.99) is an instrument of eating.

Both seem __prima facie__ plausible as actional paths. Why then the asterisks

beside the sentences in which they appear as nominatives?

      The reason seems to be that __pibati__ 'drink' and __bhunkte__ 'eat' entail

that the goal of the act ends up inside the actional [+So]. We conjecture,

therefore, a FS something like (3.110), which will form part of all verbs

of ingestion.

      (3.110) DO: $[+So]_i$ (GO: T G(IN i))

If so, then only such instruments as have the effect of ingesting into

themselves will be able to appear as nominative Ns in connexion with these

verbs. We predict for instance, that whereas __angulayas__ 'fingers' do not

constitute such an instrument, orifices such as __mukham__ 'mouth' would. So

we predict the sentences in (3.111) to be good.

      (3.111) i. devadatto mukhena bhuṅkta odanam

               DevadattaN mouthI eats   riceA

                          'D. eats rice with his mouth.'

       ii. mukham odanaṃ bhuṅkte

           mouthN riceA eats

                   'The mouth eats rice.'

      Our theory seems to have thrown some light on this traditional

problem area in Sanskrit grammar. It is a pity that I have not found data

in Sanskrit relating to the apparent instruments of __cognitive__ predicates.

(But cf. the English examples (3.101)ii, (3.102)i and perhaps (3.101)v.)

If found, these would be significant for the problems of analyzing the FS

of these predicates within our framework (cf. 3.5). We predict that only

<u>actional</u> paths, and hence only instruments of <u>actional</u> cognitive predicates, will be able to appear as nominatives in the way: other paths will always be outranked by the Theme. Some relevant examples in English appear in (3.112).

(3.112) i. Cicero memorized the speech with his old mnemonic system.

ii. His old mnemonic system memorized the speech.

iii. Cicero absorbed the speech with his old mnemonic system.

iv. * His old mnemonic system absorbed the speech.

3.2.4 GRAMMATICAL LINKING OF THE INSTRUMENTAL

So far, we have seem grammatical linking only in regard to the nomina-
tive, accusative and genitive cases. In this section, we present some evi-
dence which motivates extending it to the instrumental case.

Although, as we have seen (3.1.3), the instrumental is semantically
linked only with sources and paths ([+So]), there are a restricted number
of instances, apparently lexically dependent, where it represents a theme
or goal. These are illustrated in (3.113ff.), followed in each case by an
example of a near-synonomous construction with the same verb, which does
not, however, involved an instrumental. The presumed FS is also appended,
with the required linkings for each of the examples.

(3.113) i.   vibhajet ... jyeṣṭham ... śreṣṭhabhāgena   Yajn. 2.114

        let-him-   eldestA   best-partI   (S 33)
        apportion

          'Let him apportion the best part to the eldest...'

ii.   dharmas tu vibhajaty artham ubhayoḥ punyapāpayoḥ   M.3.17242
                                                   (Calcutta
      DharmaN but apportions   bothD virtuous-   edn.)
                    wealth   wickedD   (S 33)

        'But Dharma bestows wealth on both virtuous and
         wicked people.'

DO: S (GO$_{Poss}$: T G)

S = (sa) N dharmas N

T = stesth.I artham A

G = jyesthamA punyapāpayoh D

(3.114) i. ekajātir dvijātīns tu vācā dāruṇayā kṣipan ... R. (S 33)

     once-bornN   but speechI   assail-
      twice-bornA   harshI   ing(ptcp.)N

       'A once-born (i.e. of low caste), assailing a twice-
       born with harsh speech...'

   ii. prasān ... cikṣipuh rāmāya   R. 3.25.27

     darts   they-threw RamaD

       'They threw darts ... at Rama ...'

   DO: S (GO$_{Posit}$ T G)

     S = ekajātir N   (te)N

     T = vācā I   prasān A

     G = dvijātīns A   rāmāya D

(3.115) i. devadatto jalena puspāni siñcati (cf. Cardona 1976, p. 26)

     DevadattaN waterI flowersA wets

       'Devadatta is pouring water on the flowers.'

   ii. ambhānsi rukmakumbhena siñcan mūrdhni   Bk. 19.23

     watersA   golden-potI   sprink- headL
              ling(Ptcp.)N

       'sprinkling water on the head with a golden pot'

   DO: S (P) (G)$_{Posit}$ T G)

     S = devadatto N   (sa) N

     P =   -   rukmakumbhena I

     T = jalena I   ambhānsi A

     G - puspāni A   mūrdhni L

(3.116) i. kṣipram angāni limpasva pāyasena   M. 13.144.21

     quickly limbsA smearIMPV milkI

       'Quickly smear they limbs with milk.'

   ii. kapāle rasaṃ limpate (cf. passive ptcp. equiv.
            Śat. Br. 6.1ı1.12 (BRD s.v. lip)
    foreheadL juiceA smears

'He smears juice on the forehead.'

DO: S (BE$_{\text{Posit}}$ T G)

    S = (tvam)N   (sa)N

    T = payasenaI   rasam A

    G = aṅgāni A   kapāleL

This will generate the correct results for the sentences in (3.113ff), as a glance at the linkings specified makes clear.[13]

Linking theory does, therefore, have an account of these facts which otherwise might be taken as evidence for an opposing theory of the relation of Case to participants Role. For an account does seem to be forthcoming from the theory of Relational Grammar (RG). (See 1.4.1.3 for references and general criticism.) This is a theory which postulates intermediate levels of grammatical relations between our functional roles and surface cases. If this theory is able to use its intermediate relations to throw light on these alternations, this is a blow against a theory such as ours, which allows no correlation more indirect than Linking hierarchies to mediate role with case.

The RG proposal would be to assign the grammatical relation called '2' to what we have been calling goals and themes. (Although RG relations are often claimed to have their basis at the deepest level in semantic relations, it is an acknowledged lack in the theory that this presumed basis has never been laid out systematically.) In the normal course of events, this 2 will be manifested as either a nominative or an accusative, by processes that we shall not go into here. This is what would be presumed to happen in the derivation of the second sentence in each of the pairs of examples given above.

---

[13]A problem arises if we take examples like

dhārābhih ... meghāḥ sravanti (Mrcch. 5.45)
      'the clouds flow with showers'

as parallel; for here the theme appears in the instrumental, while the apparent source, 'clouds', is linked with a nominative - despite the fact that the theme should outrank the source. It may be, however, that sravati 'flows' should in sentences like this be assigned the FS

But alternatively, an <u>advancement rule</u> can promote one of the NPs with a lower grammatical relation: (these NPs with lower relations correspond roughly to the semantically-linked cases of our system.) If one of these NPs is 'advanced to 2' the existing 2 will be knocked out and made a chômeur. If we suppose instrumental is the typical chômeur marking, we have an explanation for why the theme turns up marked with instrumental just in case the other role is marked with an accusative: for the new 2 will naturally be marked accusative just as the old one would have been. It will be relevant to the RG account that the instrumental is also used in Sanskrit to mark the demoted subject in passive sentences (cf. 5.2.2 below), since this is taken, within RG, as a classic example of a chomeur.

If it is felt that the RG account of these alternations prevails over the straight Linking account, the theory of the connexions between participant role and case will have to have more content than the simple hierarchy-matching proposed in this work. This is the area where the laws of RG must make their contribution to linguistic theory, if anywhere: for RG has no associated theory of semantic structure which could replace our functional representations, nor of surface case-incidence.

---

[13] DO: G_i (GO: T S_i) (i.e. goal of higher event has theme move away from it)

in which case there will be no violation of the hierarchy in (3.117). An alternative, and more powerful, analysis involving Linking Specifications (LS) is offered in 5.5.1 below. If neither of these is acceptable, the phenomenon can be incorporated as more evidence for the RG solution (see below).

3.2.5 INVERSE PREDICATES IN SENTIENT FIELDS

In the analysis of possessional, cognitive and emotional predicates,
FS are assigned according to a certain analogy with positional predicates.
By this analogy, the object owned, or the item which is the content of a
mental act, is represented with the same role as the object which moves or
stays in a certain position. The role is in each case the theme. For
instance, the following four sentences all have isomorphic FS's.

(3.118)   i.   devadatto yajñadattāya kiṃcit preṣyati 'sends'

ii.   "   yacchati 'gives'

iii.   "   diśati   'shows'

iv.   "   kathayati 'relates'

Dev. N   Yaj. D   somethingA

DO: S(GO: T G)

S = Nom.

T = Acc.

G = Dat.

The differences in meaning between the verbs will be captured by
assigning different parameters (Posit, Poss., Cognit., Info.) to the GO
operator. (It is also notable that the verb diśati of (3.118)iii is also
used as a synonym of yacchati 'gives', the verb of sentence ii; and its
compound apadiśati can mean the same as kathayati in sentence iv.)

However, there is a great deal of evidence that this analogy is not
consistently followed in the semantics of Sanskrit. The evidence comes
largely from the area of 'cross-field generalization' (-cf. Jackendoff 1978,

p. 218ff.). One lexical item is used to express relations in a number of different semantic fields, thus throwing light on the analogies between argument structures of prima facie quite different types. Consider, for instance, the following examples.

(3.119)   gam 'go'

    i. Positional

        Devadatto grāmam gacchati

               N   A   goes   'Devadatta goes to the village.'

    ii. Cognitional

        tām asvasthām ...   sakhyās tā jagmur iṅgitaiḥ

        herA unwellA   friendsN   went(3pl) signsI
                                 thoseN

        'The friends realized from the symptoms that she was unwell.'

                                       M. 3.51.4 (BRD s.v. gam)

(There is a variant reading adopted by the B.O.R.I.edition, jajñur 'they knew' instead of jagmur 'they went'. But it is a sound principle of textual criticism to prefer the more difficult reading when in doubt. Scribes would be likely to substitute the more usual jajñur. The B.O.R.I edition records another variant yayur (also = 'they went'), but does not record BRD's reading jagmur.)

    iii. Emotional

        kopaṃ na gacchati   AD, s.b. gam 5.

        angerA not goes

                'He does not get angry.'

(3.120)   bhraṃs 'fall from'

    i. Positional

        saṅgrāmād babhraṃśuh kecit   Bk. 14.105 (AD s.v.)

        battleB   fell(3pl)   someN

                'Some escaped from the battle.'

ii. Possessional

so 'círād bhraśyate rājyaj jīvitāc ca   M.7. 3fin.(BRD s.v.)

heN briefB falls   kingdom lifeB and

'He loses his short-lasting kingship and life.'

(3.121)   adhi-gam 'go to, reach'

i. Positional?/Cognitional?

śokasya tasya antaṃ na adhigacchati   R. 5.25.7 (BRD s.v.)

griefG thatG endA not reaches

'He does not come to the end of that grief.'

ii. Possessional

śreyāṅsi sarvāny adhijagmuṣas te   Ragh. 5.34

better   allA   having-reached
  thingsA   (ptcp)N   thoseN

'Those who have gained all the better things...'

iii. Cognitional

śrutam apy adhigamya   Ki. 2.41 (AD,s.v.)

heard   even   IMPV
(ptcp)A

'Study what you have heard.'

Boehtlingk and Roth (s.v.) draw attention to an example which sug-

gests deliberate consciousness of this semantic generalization:

(3.122)   adhijagmur yathā vedāṅs tapasā brahmacāriṇaḥ

they-have   as   vedasA effortI studentsN
studied

tathā sa tapasā upetaḥ sarvāny avāpa ha   M. 1.120.4

so   heN   meritI possessedN   has- Prt
          (obtained by   allA   gained
          austerities)

'Just as students have studied the vedas with assiduity, so he who is
 is possessed of merit (the fruit of this assiduity) has gained every-
 thing.'

Note also that in the same sentence <u>tapasā upetaḥ</u>, literally one who is 'approached by merit', reflects precisely the converse analogy; here it is the merit which goes to the student, rather than the student who reaches the merit.

In all these instances, it is the possessor, not the possessed, that is viewed as the theme,; similarly, the experiencer, not the object of experience.

On the other hand, there are other metaphorical uses of positional verbs (often even the same ones) which reimforce the analogies with which we started out this section.

(3.123) ā+pat   '<u>fall upon</u>'

According to AD, this verb can mean to approach or fall upon literally. But we also find cognitive uses. E.g.

      iti tasya hṛdaye na āpatitam   Kād. 288.

      so   his   heartL not   fell(ptcp)

      'This had not occurred to him.'

(3.124)   na asmād rāṣṭram bhraṅśet   Taitt. Samh.   5.7.4.4

      not   UsB   kingdom$_N$ fall(3sg, pot. active)

      'May the kingdom not be lost to us.'

This last example is a precise converse to (3.120)ii.

But these 'pro-example' seem in general to be far less common than the examples that run counter to what our theory has been hitherto.

There is, however, a more telling argument that the structures we had been assuming do in fact underlie some Sanskrit predicates of cognition and possession. If the possessor or experiencer is the theme, the goal must represent the object perceived, conceived or owned. The source is an entity correlate to the goal: (cf. discussion in 1.3.4 above) therefore

in such predicates, if there is a source it must represent the object of which consciousness or possession is lost by the theme. (Instance example (3.120) ii above.) But this leaves no way of representing the participant from whom the object comes -- the giver or informer. Yet Sanskrit has verbs where this participant is expressed, and is expressed moreover as a canonical source, with a semantically linked ablative.

(3.125) = (3.49)

upadhyāyād adhīte   'he learns from the teacher.'

(3.126) = (3.46)

dhānikāt kimcid dravyam ādāya   'getting some money from a
                                      money-lender'

(3.27) = (3.48)

svajanebhyaḥ sutavināśam śrutā 'hearing of his son's death from
                                his own people'

In (3.125) the verb's etymology belies its synchronic PS. For adhi+i originally meant 'go to' (cf. 3.121) above -- it would be interesting to know whether adhi+gam, whose original meaning is still felt, is ever found with an accompanying ablative designating the source of information.)

What, then, should we conclude about the FS of these predicates? One lesson is that we should be wary of directly assuming that homonyms have like functional structures. Homonyms reflect etymological connexion of greater or lesser antiquity; and it is a commonplace of historical linguistics that within this field surface analogies seem to play a much greater role than similarities of underlying structure. Now verbs of motion typically have the property that their theme is animate but their goal or source inanimate; for verbs of possession and cognition, the reverse holds. Yet in both cases, the majority option is for the surface nominative to represent one of the animate participants. For verbs of motion this

follows naturally, since the theme is the highest role in the structure. For verbs of cognition and possession, it is achieved by embedding the relational predicate inside an actional predicate: the goal or source will then be bound by a higher role, outranking the lower theme. Provided, then, that there is initial motivation for the change, nothing on the surface will prevent the reanalysis of a functional structure from (3.128) to (3.129).

(3.128) <u>adhi+gam</u> GO_{Posit}: T G   T = Nom.;   G = Acc.

(3.129) <u>adhi+gam</u>   DO: S_i (GO_{Cognit}: T G_i)

$$S_i = G_i = Nom.$$

$$T = Acc.$$

But what constitutes the initial motivation for the change? If 'cross-field generalization' has any reality, there must be some conceptual similarity between the positional and the abstract predicates. In order for the transference of meaning to get started, there must be a sense in which people find it natural to think of 'going to' or 'being at' information or possessions. In our terms, this means that we shall have to allow functional structures where the theme represents the perceiver or recipient, and the goal the object perceived or possessed.

This suggestion is not unparalleled in the existing literature on thematic relations. Jackendoff 1977 (pp. 134-5), following a hint of Gruber 1976 (pp. 56-7), suggests a converse to normal possessional predicates to explain why the possessor figures as the subject in such sentences as (3.130) (=(1.40) above).

(3.130) i. Nelson ran out of money.

        ii. Ari is in the money.

iii. Fred came into a lot of money.[14]

Following Jackendoff's notation, we might represent the functional

structures of (2.159) and (2.162) as in (2.170f.). The subscript apostrophe

indicates the crucial reversal.

(3.131) <u>bhrans</u> $GO_{Poss'}$: T S   T = so N; S = rajyat...B

       <u>adhigam</u> $GO_{Cognit'}$: T G

                      T = brahmacāriṇah N

                      G = vedāns A

This rescues us semantically, at the same time preserving the

Normal linking hierarchy. It does this, however, only at the expense of

raising doubts about the empirical content of the general claim underlying

linking theory -- viz. that the hierarchy of cases corresponds in a fixed

way to such basic semantic differences as possessed and possessor,

perceived and perceiver, object and location.

To put this point more optimistically: a theory such as ours,

which allows the three possible functional structures in (3.133) to

account for situations where the apparent recipient of an item is marked

nominative, has a duty to be very explicit about the accompanying semantic

differences. And it must be careful to distinguish all of them from the

functional structures of (3.134), which it puts forward as more typical:

in these, the recipient is marked on the surface with an oblique case.

(The remarks in parentheses on the right are included simply in order to

clarify the meaning of the participant roles in the functional structures.

---

[14]Jackendoff also postulates a converse for another mode of predicate,
the 'Circumstantial', which corresponds to our actional predciates. Con-
sideration of the arguments for and against this suggestion would take us
too far afield here.

Strictly speaking, they are unnecessary because predictable from the FS's themselves.)

  (3.133) i. <u>adhi-gam</u> 'acquire' GO_{Poss}: T G

                 (T = recipient; G = object)

      ii. <u>āp</u> 'obtain' DO: S_1 (GO_{Poss}: T G_1)

                ($S_1 = G_1$ = recipient; T = object)

     iii. $\begin{cases} \underline{\bar{a}\text{-}da?} \text{ 'receive'} \\ \underline{upa\text{-}lath?} \end{cases}$ DO: G_1 (GO: T G_1)

                ($G_1 = G_1$ – recipient; T – object)

  (3.134) i. <u>bhaj</u> 'accrue': as in <u>etan mām bhajati</u> 'this (Nom)

          falls to me(acc)' cf. S 31.

       GO_{Poss}: T G (T = object; G = recipient).

     ii. <u>da</u> 'give' DO: S (GO_{Poss}: T G)

             (S = giver; T = object;
              G = recipient.)

  It is to be hoped that future research will allow some further claims to be made in this area. Such research will be easier to conduct in a language where speaker's intuitions on verb meaning are more open to investigation than in Sanskrit. (Cf. 1.4.8 & 3.1.7 above.)

We omit here any account of the distinctively adnominal meanings of the genitive -- viz. possessive, partitive, etc. "Subjective' and 'objective' genitive, in the traditional sense, however, fall squarely within the sphere of our functional representations. Panini notes explicitly that in construction with a deverbal nominal the genitive can have the sense of deep subject or object.[15] And it is notable that genitives here provide systematic alternations with the grammatically linked accusative and nominatives of finite verbal sentences. Witness (3.135) and (3.136).

(3.135) i.   bhavān āste   'Your honour is seated.'

             your sits
             honorN

        ii.   ācāryaḥ śabdān anuśasti 'The teacher teaches the words.'

             teacherN wordsA teaches

        iii. harir jagac cakāra   'Hari created the world.'

             HariN world made

        iv.   rāmo ṛtūn āharati   'Rama performs the rites.'

             RamaN ritesA
                        performs

        v.   sāgaram amṛtam manthati 'He churns ambrosia from the
                                                            ocean.'

             oceanA ambrosiaA churns

        vi.   caitro'śvam srughnam nayati 'Chaitra takes the horse
                                                      to Srughnam'

             ChaitraN   SrughnaA leads
                        horseA

---

[15] 2.3.65: kartṛkarmaṇoh kṛti. kṛts in fact include all non-finite forms of the verb (3.1.69: kṛdatiṅ): but most of the non-finite forms in the verbal paradigm are excepted from 2.3.65 by one of the rules that follow it. (There is reason not to except some use of the participles etc: cf. examples in 2.4.2.) Subject and object are of course not exact equivalents of kartṛ and karman; but they seem adequate for the present purpose.

(3.136)　i.　bhavatā āsikā　　　　　　　Kāś. 2.3.65

　　　　　your-　sittingN　'Your Honor's turn to sit down.'
　　　　　honorG

　　　ii.　śabdānām anuśāsanam ācāryasya　　Kāś. 2.3.66

　　　　　wordsG　teachingN　teacherG

　　　　　　　　　　　　　'the teacher's teaching of the
　　　　　　　　　　　　　　　　words'

　　iii.　jagataḥ kṛtir hareḥ

　　　　　worldG　making
　　　　　　　　HariG　　'Hari's creation of the world'

　　　iv.　āhartā ṛtūnām

　　　　　performerN
　　　　　　　ritesG　　　'the performer of the rites'

　　　v.　sāgarasya amṛtasya manthanam

　　　　　oceanG　ambrosiaG churningN

　　　　　　　　　　'the churning of ambrosia from
　　　　　　　　　　　the ocean'

　　　vi.　netā 'śvasya srughnasya　　Comm. on Panini 1.4.51

　　　　　leaderN　　　sruhgnaG
　　　　　　　horseG

This alternation is precisely what our system, as already given, predicts. Presumably both verb and corresponding nominal share the same transitivity subcategorization: for example, if _manth_ 'churn' can be inserted into the syntactic context $\left[\overline{\overline{N}}\ \overline{\overline{N}}\ \underline{\quad}\right]_{\overline{V}}$, its corresponding noun _manthanam_ can be inserted into the corresponding nominal context $\left[\overline{\overline{N}}\ \overline{\overline{N}}\ \underline{\quad}\right]_{\overline{N}}$. The case-incidence rules will apply as ever, CI3 assigning genitive to nominal sisters of N, just as CI1 & 2 assign nominative and accusative in their syntactic contexts. And the case-linking hierarchy will assign the genitives to the corresponding slots in the FS, just as it would nominatives and accusatives. Corresponding to (3.135) and (3.136) then, we have the pair of linked FS's in (3.137).

```
(3.137)   i.  BE:  T P(seated)        T = bhavān N  bhavataḥ G

         ii.  DO:  S (GO_Cogn : T G )  S = ācāryaḥ N  ācāryasya G
                                       T = śabdan A  śabdanam G
                                       G    -          -

        iii.  DO:  S (BE: T)           S = harir N  hareḥ G
                                       T = jagac N  jagataḥ G

         iv.  DO:  S T                 S = rāma N   Ref.
                                       T = r̥tūn A  r̥tūṇām G

          v.  DO:  S(GO: T S P(churn-  S    -         -
                            ing))T = amr̥tam A  amr̥tasya G
                                  S = sāgaram A sāgarasya G

         vi.  DO:  (S(GO: T G )        S = caitro N  Ref.
                                       T = aśvam A   aśvasya G
                                       G - srughnam A srughnasya G
```

The question naturally arrises whether any of the other cases can be
grammatically linked within the context of a nominal phrase. Semantic
linking is certainly possible, as illustrated in (3.138).

```
(3.318)   i.  maitrasya vrkebhyo bhayaḥ

              MaitraG    wolvesB   fearN    'Maitra's fear of wolves'

         ii.  taroḥ śāstrena bhettā

              treeG weaponI  cutterN        'the man who cut the tree
                                                 with a weapon'
```

But it is not clear that the instrumental or the accusative can

use its position on the <u>grammatical</u> linking hierarchy to be assigned a

role in relation to a nominal's FS.

As for accusatives, some few are found apparently grammatically

linked as arguments of a nominal. E.g. (3.139); cf.   the examples in

section 2.4.2.

```
(3.139)   i.  māṃ kāmena                      (Speyer 1896, p. 9 -Attrib'd
              meA loveI                            to the Atharva Veda)
                        'from love of me'

         ii.  indratvam arho
              Indra-hoodA          'worthy of Indra's throne M 1.57.4
                        worthyN
```

(Speijer (S 39) suggest that this usage with <u>arha</u> is restricted to Epic. He points out that 'in the classical language, <u>arha</u> complies with genitive' as expected: e.g. Priyad.39: <u>arhā ārdhāsanasya</u> 'worthy of half my seat'.)

But where the nominal is clearly derived productively from a verb is seems preferable to suppose that the nominal element is in some way the head of a verbal phrase (cf. the analysis offered in 2.4.2). And it is notable that even here there is no connexion with a verb (as in (3.139)ii) there seems to be no syntagmatic opposition with a genitive. So no conclusions about the use of the Normal Hierarchy follow.

As for instrumentals, these are often found in syntagmatic opposition with a genitive: for there was a dialect of Sanskrit (codified in Panini's rules[16]), in which only one genitive could occur in a nominal phrase. In this dialect, (3.136) ii and iii must be expressed as in (3.140).[17]

(3.140) ii. śabdānām anuśāsanam ācāryena

wordsG   teachingN   teacherI

iii. jagataḥ kṛtir hariṇā

worldG   makingN HariI

---

[16]2.3.66: <u>ubhayaprāptau karmaṇi</u>, i.e. when both subject and object are to be expressed in connexion with a non-finite form (<u>kṛt</u>), let the genitive express the object. The subject (<u>kartṛ</u>) will then have to be marked with its distinctive case (by 2.3.18) - viz. the instrumental. The varttika commentaries are full of counterexamples, some of which were quoted in (3.136), where more than one genitive accompanies a nominal predicate.

[17]It is not clear what is the status of the counterexample in (2.175) iv and v: <u>sāgarasya amṛtasya manthanam</u>, <u>netā 'śvasya srughnasya</u>. Strictly speaking, they are not counterexamples to Panini's rule, since in either case both genitives express types of <u>karman</u> 'object'. (Cf. preceding note.) We are however independently told that <u>netā 'śvasya srughnam</u> (with accusative, instead of genitive, goal) is good Sanskrit -- cf. Patanjali & the other commentaries: Mahabhashya on Panini 1.4.51.

The problem for us is that these examples (with others proffered in the grammatical literature) do not make it clear whether the instrumental is semantically linked here as an agent [+Ac, +So, -Go] ; or whether, in contrast to this, it is linked grammatically to any role that happens to be higher than that of the genitive. Here, however, is one example of the required type.

(3.141)   caitradṛṣṭasya maitreṇāsmaraṇam iva   Kusumanjali 1.15

       Chaitra-seenG   Maitral non-remem- as
                            bering

'just as Maitra does not remember what is seen by Chaitra'

BE_{Cognit}: T G   T = maitreṇa I

                   G = caitradṛṣṭasya G

As the linked FS shows, the instrumental here does not represent an agent. Hence to be linked at all, it must use the grammatical hierarchy, on which, as will be remembered (2.142), it figures higher up than the genitive.

3.3.2 PREDICATION

We proceed to consider predication relations that may hold between one NP and another. These may be either attributive or predicative, a distinction which was discussed briefly in 2.3.5. A somewhat more wide-ranging survey of the possible variation in the attributive and predicative relations of predicate to subject may be found in Speijer 1886, pp. 20-21. But this distinction does not matter for the purpose of discussing predication itself. We pass it over, as one of the many aspects of semantic interpretation of which we say nothing.

As a concrete introduction, we consider first two expressions where predication is observed. In these simple instances, the 'subject' of the predication is nominative. One is tempted therefore to suppose that the Normal rule applies, just as we have formulated it so far: the nominative is simply linked with the highest argument position. (This argument position is the same one as would have been assigned <u>Ref</u> if the nominals had been used referentially instead of predicatively - cf. examples (3.135-7) above.)

(3.142) jarā vināśiny asya rūpasya   Kathās, 29.55 (S 91)

old- destructive
ageN N. Fem. thisG beautyG
(Fem.)

'Old age, destructive of this beauty...'

```
        DO:  S (GO:  T G(destruction))

             S = jarā  N

             T = rūpasya G
```

(3.143) abhijñah khalv asi lokavyavahāraṇam   Mudr. 1, (S 92)

awareN indeed art world-affairsG
masc.sg.

'Thou art indeed aware of the ways of the world.'

BE_Cognit': T G

T = tvam (thou) N

G - lokavyavahāraṇam G

In these cases, the procedure works. But this should not blind us to the very special status of the nominative in these sentences. The predicate nominal itself is also marked nominative. And this is no coincidence, but the tip of a very general phenomenon of _agreement_. As (3.142) suggests, the nominal will also, if possible, agree in gender and number with its 'subject': e.g., v̄inaśinī is the feminine of v̄inaśin, agreeing with the feminine jarā. And the predicate nominal can in fact bear a precisely similar relation to a noun in any case, provided that it agrees with the noun in gender, number and case. This is illustrated in (3.144).

(3.144) aṅgena aṅgam pratanu tanuṇā ... viśati   Meghaduta 98

bodyI bodyA slenderA thinI   enters

'He enters (your) slender body with his thin body.'

vis: DO: S (GO: T G(in x))

     S = (sa) N

     T = aṅgena I

     G = aṅgam A

pratanu: BE: T G(slender)

     T = aṅgam A

tanu: BE: T G(thin)

T = aṅgena I

What is assigned the highest argument position is not therefore the nominative, but the noun with which the nominal agrees. For nominals, this is the correct account of the situation. But for verbs, on the other hand, we found no reason to be dissatisfied with our treatment of nominative as a grammatical case, assigned by the Normal linking rule. Having recognized this, are we committed to establishing a completely separate system for linking the subjects of predicate nominals as against the subjects of verbs?

The answer is No. Finite verbs also undergo agreement, for number and person. The noun with which they agree is invariably nominative, it is true. But one overt category of agreement, number (i.e. singular/dual/plural),is shared between verbs and nominals. Furthermore, it is possible to construct an argument from examples like (3.145), to the effect that among nominals, relative pronouns at least must also be marked covertly for person, although no formal agreement-marking is visible. (The verb of the lower clause must agree in person with one of the items of the upper clause -- but the relative pronoun is the only item which can mediate this agreement.)

(3.145) dhig asmān sarvān ye ekākiṇā baḍunā saha yudhyāmahe

fie usA   allA whoN aloneI boyI with we-fight
                 pl.   *yudhyante
                                            fight (3pl.)
'Shame upon us all, who fight with a single-
                              handed boy.'   (A 11)

So a generalization, based on these two shared categories of agreement, will be lost if we cannot somehow collapse these two forms of agreement. Moreover, suppose there is at root one type of agreement only, reflected

differently by verbs and nominals just because the categories of inflexion

which they can overtly mark are different; then no special treatment will

be needed to characterize _participles_, which form part of the verbal para-

digm and have certain verbal syntactic properties, yet which for purposes

of inflexion and agreement are indistinguishable from nominals.

We propose, therefore, a new hypothesis.

1. Exclude the nominative from the linking hierarchy, replacing

it with the concept of _Empty Slot_ (henceforth ES). The Normal hierarchy

will then read as follows:

(3.146) _Normal Hierarchy_ (Final Form)

      1. ES

      2. Instrumental

      3. Accusative

      4. Genitive

The nominative will henceforth have no particular role in linking.

Its incidence is of course unchanged -- CI1 will go on assigning it to $\overline{\overline{N}}$s

directly c-commanded by $\overline{\overline{V}}$. But its role in semantic interpretation will

be reminiscent of Panini's treatment[18]; it will simply be the one case-

marking which says nothing about how its noun is to be linked. As a result,

it will always end up being assigned to the ES-linked argument position of

some predicate. This assignment of NPs to ES-linked slots is the essence

of _Predication_, which can be thought of as a rule that applies after

Linking.

---

[18] _pratipadikarthalingavacanaparimanamatre prathama_ (2.3.46). The
nominative conveys the sense of the nominal stem only, designating its
gender and number.' The nominative is generated by Panini for the situation
when the verb has already expressed the _karaka_ (grammatical relation) of
the noun in question. (E.g. in passive sentences, the verb is held to express

2. To make sure of this new concept of the ES, we must introduce

a formal notion of <u>Predication</u>. This will be another means of associating

NPs with argument positions, like Linking. However, the constraints on

Predication are different from those on Linking. Predication allows any NP

to be assigned to the ES-linked position in a predicate's FS, provided that

the NP and predicate <u>agree</u> -- i.e. bear <u>non-distinct</u> markings for any cate-

gories which the two have in common. For nouns and verbs, this will mean,

in practice, person and number; for nouns and predicate nominals, it will

mean gender, number and case. Any case-marking except for nominative) is

held to be distinct for the purposes of the rule from any finite verb-

inflexion.

One way of thinking of this (which would bring us close to the

traditional Indian theory of agreement in terms of s̄amānādhikaraṇa) is

to suppose that the ES-linked position in a functional structure marks the

item to which the whole predicate expression <u>refers</u>. Reference between

noun and predicate is then possible just in case the two agree.[19] For

example, in the sentence devadattah <u>kumbham karoti</u> (3rd sing.) refers to

---

[18] the subject itself, so that the object appears in the meaningless
case, the nominative.)

[19] Although this appeal to the idea of coreference may be heuristi-
cally useful in order to catch the spirit of the analysis, it is of course
impossible to carry it further without getting into logical difficulties.
<u>x is y</u> is used in English indifferently as to whether the two names 'x'
and 'y' are asserted to be coreferent, or whether the attribute y is predi-
cated of x. But we cannot assimilate the latter to the former, saying
perhaps that 'y' in the second case refers to an arbitrary individual which
has the attribute y. For if we did, by the transitivity of identity, any
two individuals assigned the same attribute in this way would thereby be
made identical with each other.

any mat-maker. The relation between the two is precisely parallel to that
between the two instrumental nominals in (3.147).

(3.147)   devadattena kumbhakārena idam krtam

Devadattal   pot-makerI   thisN madeN

'This was made by D. the pot-maker.'

In both instances, a linked FS as in (3.148) is involved.

(3.148)   DO: S(BE: T)

S = ES

T = kumbha 'pot'

And in both cases, Devadatta can be assigned to the position linked
with ES because its surface form agrees with the surface form of the predi-
cate word with which this FS is associated.

3.3.3 AGREEMENT AS A PHENOMENON OF SEMANTIC MATCHING

This account, which establishes predication relations freely on the basis of a restricted type of syntactic information -- viz. formal agreement -- is not empirically different from the schematic proposal in Lieber 1978 (p. 28), there largely attributed to Rivas 1977. But in place of Lieber's filter, which assigns ungrammatically to a sentence unless certain items predicated of one another agree in case, we only allow the predication relations to be established if the agreement is present. This formulation highlights the fact, obvious to those who know the languages in question, that agreement enables one to discern the semantic connexions in a sentence. The other formulation suggests rather that it acts as an arbitrary selector of good and bad sentences conceived just as strings of words with certain properties. On grounds of economy and clarity too, there is something to be said for assigning predication relations on condition that agreement is present: we cut out the double negation implicit in assigning ungrammaticality unless certain conditions are fulfilled.

Both accounts are at one, though, on the claim that the semantic relation between noun and predicate must receive explicit mention in the analysis. In this they contrast with the assumption of Andrews 1971 and Quicoli 1972, namely that agreement is essentially the manifestation of a feature-copying rule which works as part of the formal syntax.

The difficulties into which such an assumption leads are too complex to be discussed here in detail (cf. Lieber 1978 and Ostler 1976). But one fundamental difficulty is worth mentioning. This is the fact of imperfect

agreement, called in the classical tradition <u>constructio ad sensum</u>: in this, the predicate fails to agree precisely with the formal characteristics of its subject. This phenomenon seems to occur in all languages which have agreement, even in the slightest degree. It is noteworthy that wherever imperfect agreement occurs, the deviation from regular agreement is not random. Rather, the offending predicate uses different means to express the <u>semantic</u> properties of the subject. In fact, the subject and the predicate still 'agree' in some sense, but not in terms of matching morphological categories.

So, for instance, in a language with the 'slightest degree' of agreement, English English, we find:

(3.149) i. A large pile of books was/were on the table.

ii. A large pile of sand was/*were on the table.

(3.150) i. The Cabinet, which is/*are unanimous on the matter, has/have decided...

ii. The Cabinet, who *is/are unanimous on the matter, has/have decided...

In Sanskrit, there are similar deviations from strict number agreement, comparable to the English examples.

(3.151) tāv ubhau rāmalakṣmanāu paryanke sītaya sārdham

those both Rama-Lakshmana couchL   SitaI with
<u>N,du.</u> <u>N,du.</u>   <u>N,du.</u>

rudantaḥ samaveśayan   R. 2.34.20

weeping   laid 3<u>pl</u>.

'Both Rama and Lakshmana, together with Sita, all weeping laid him (Dasharatha) on the couch.'

(Note that the dual in Sanskrit is in general used quite consistently to designate quantities of two (cf. S 17).)

Gender can be similarly vague at times.

(3.152)   cintayanto 'dya nūnam tvaṃ nirāhārāḥ kṛtāḥ prajāḥ

          thinkingPTCP today   youA foodless madePTCP subjects
          N.masc.pl.   verily   N. fem.pl. Nfem.pl. Nfem.pl.

                                      R.2.52.42

          'Thinking of you today, your subjects will lose their
          appetites.'

And in the sphere of case agreement, the adverbial endings -tas and -tra (cf. 2.3.2) often appear in agreement with the corresponding case endings - viz. ablative and locative -tas and -tra show themselves different from case-endings proper in that they are invariant as between singular and plural; and at a more formal level, they do not, like all other case-endings, have allomorphs conditioned by different stem-classes (i.e. they are the same in all declensions). In fact they seem to agree invariably with singular ablatives and locatives (though this claim is made on the basis of very little evidence).

(3.153) i. purād itah   ii. tasmāt pretakāyatah

            cityB hence   thatB dead-body-from

            'from this city'   'from that corpse'

      iii. atra marātmake

           here death-selfL

           'in this murderous creature'   Examples all from Whitney
                                      1098-9.

This all makes sense when viewed from the perspective of the 'coreference' idea of agreement mentioned in the last section. On the basis of their inflexional categories, both NP and predicate are assigned certain possible areas of reference: if these are compatible, then coreference (more exactly, the predication of one of the other) is possible. This co-interpretation is subject to the constraint that the inflexions of the two parties must match formally. But this constraint can be relaxed

in the face of an overwhelming compatibility between the areas of reference of the two expressions. Contrast the problems for an account which takes agreement to be an autonomous syntactic copying or matching process: the process fails to copy certain features sometimes, but without reference to the intrinsic meaning of the features, it is impossible to predict just when this failure is possible without causing an ungrammatical output.

3.3.4 A DERIVATION

To conclude the section of Predication we give the syntactic derivation and the interpretation (via Linking and Predication) of a sentence of very moderate complexity, This will, it is hoped, enable the reader to grasp how the FS, in terms of which the interpretation has been given hitherto, is related to other aspects of interpretation which are not discussed in this work. And it should also throw light on the role of the lexicon, to which we turn in the next major section,

The sentence whose well-formedness and interpretation we aim to predict is given in (3.154).

(3.154)   devadatto govindam odanaṃ pacantam dadarśa

DevadattaN GovindaA riceA cookingPTCP saw(3 sg.)

A

$GO_{Cognit'}$: T G P(visually)

T = Devadatta

G = Govinda

DO: S (GO_{Ident}: T G(soft))

S = Govinda

T = rice

First of all, our PS rules generate the structure in (3.155).

(3.155)

$$\overline{\overline{S}} \rightarrow S \quad \overline{\overline{N}} \quad \overline{\overline{\overline{V}}} \rightarrow \overline{V}$$

(tree diagram with nodes: $\overline{\overline{S}}$, S, $\overline{\overline{N}}$, $\overline{\overline{\overline{V}}}$, $\overline{V}$, $\overline{N}$, $\overline{N}$, $\overline{\overline{N}}$, $\overline{P}$, $\overline{\overline{N}}$, $\overline{P}$, Pred, $\overline{\overline{N}}$, $\overline{\overline{V}}$, Affix, $\overline{V}$, $\overline{\overline{N}}$, N, N, $\overline{\overline{N}}$–N, V, Ptcp, V)

The Case-Incidence rules (see 2.7) will then add cases to the terminal N nodes. By CI5 too, any of the cases may be assigned to the V or Ptcp, which ever constitutes the head of the $\overline{\overline{N}}$ c-commanded by Pred. The final V's finite status is also determined at this stage. (Cf. 2.2.2 above).

We arrive then at a terminal string of category nodes with assigned case, as in (3.156). (The major higher-constituent boundaries have also been included.)

(3.156) $\displaystyle N_{nom} \begin{bmatrix} N_{acc} \begin{bmatrix} N_{acc} & \overline{V} \end{bmatrix}_{\overline{V}} \end{bmatrix}$ Ptcp$_{\substack{nom \\ acc \\ instr \\ \cdots}}$ Pred V$_{finite}$ $\end{bmatrix}_{\overline{\overline{V}}}$

Lexical insertion now takes place, subject to subcategorization. Any nouns, provided that they are marked with the right case, can be inserted, since none of the terminal Ns have any dependents. But for the two Vs, only verbs that are transitive (i.e. subcategorize for a single $\overline{\overline{N}}$, can be inserted. We shall choose pac 'cook' and dŕś 'see', part of whose lexical entries look roughly as in (2.196).

(3.157) i. pac: GSC: V trans.

  FR: DO: S (GO$_{Ident}$: T G(soft))

ii. dŕś: FR: V trans.

ii. $\underline{dr\acute{s}}$:   FR: $GO_{Cognit'}$: T G P(visually)

Assuming that the resources of Sanskrit morphology are available in the lexicon, we shall insert straight off strings of the phonological representation output by the morphological rules, as in (3.158).

(3.158)   devadattas govindam odanam pacan   dadarśa
                                                     pacantam   dadarsitha
                                                     pacatā   dadarśima
                                                     ...   ...

Only a selection of the forms insertable are given here. They would, of course, range freely over person, gender, number and case. We rely on the constraints of applying Predication to prune this luxuriance, as will be seen. The tense of the verbs will also have to be chosen: but this is irrelevant to our purposes at hand. This level of representation is then input to the phonology for the application of sandhi etc.

To this same level of representation linking is applied, giving the representation in (3.159). Common sense (which might be formalized in a plethora of semantic co-occurrence restrictions) is all that prevents the reverse linking of the two accusatives $\underline{govindam}$ and $\underline{odanam}$ here.

(3.159)   i. DO: S $(GO_{Ident}$: T G(soft))

                      S = ES

                      T = odanam A

      ii. $GO_{Cognit'}$: T G

                      T = ES

                      G = govindam A

We now apply Predication. In order to fill the ES-linked rule in (3.159) i we have in principle a choice of any of the nouns in the sentence. But if we choose $\underline{odanam}$, which has already been assigned as the theme of the same predicate, it is plausible to suppose that we should have a vio-

lation of whatever principle blocks *'John likes him' where John and him

would refer to the same individual: i.e. except where use of reflexives

makes this explicit, the same item may not figure as two distinct arguments

of one lexicalized predicate.[20]

(Another means to exclude odanam would be to suppose that Predication

and Linking are cyclic rules, applying in that order on each cycle. We

should have to assume that $\overline{\overline{V}}$ was a cyclic node. Then no predication could

occur on the first cycle, since Predication is sensitive to the presence of

ES labels, and these are assigned by Linking, which follows it in the cycle.

Predication, therefore, is only possible on higher cycles; but by the

principle of the Strict Cycle (cf., e.g., Chomsky 1973, p. 243) it is

then impossible to go back and consider constituents available in earlier

cycles. odanam was available on the first cycle, and can therefore never

take part in the predication relations of its own predicate pacant-.)

This limits us to devadattas (nom) or govindam (acc). Either is

possible, but the constraint that the qualifying word must agree applies

here: only an accusative masculine singular pacantam will be able to be

predicated of govindam; only a nominative masculine singular pacan will be

applicable to devadattas. Predicates marked with other case-markings will

---

[20]The topic of coreference and anaphora is vast, and has been extensively studied recently, in particular within the framework of Chomsky's (Revised) Extended Standard Theory'. (E.g. Wasow 1972, Lasnik 1975, Reinhart 1976; cf. also Hale 1978, where the familiar phenomena from English are related to a wider notion of obviation.) I shall not step into these controversies here, except to point out that it is an acknowledged (Lasnik, p.c.) defect of the Disjoint Reference rule in Lasnik 1975 that it does not account for *John$_1$ likes him$_1$. Something like what is suggested here may well be required.

not be interpretable with either noun. Of course, it is not ruled out in principle that an interpretation could be found for them: but none seems available in this sentence.

The ES-linked role in (3.157) ii is predicated similarly; but here the constraints are greater since the verb in finite, and therefore cannot agree with any oblique-cased N. The only candidate is the nominative-marked <u>devadattas</u>.

We therefore end up with a FS for the sentence as in (3.160).

(3.160)   GO$_{Cognit'}$:   T   G
                               | |
                           devadattas   govindam   odanam
                                             | |
                              DO: S (GO$_{Ident}$:   T G(soft))
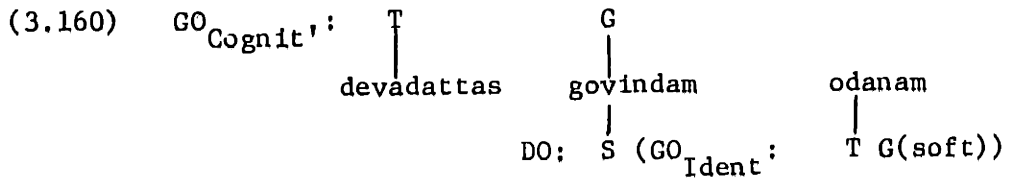
So we have assigned values to each of the argument positions correlated with the predicates of the sentence. And furthermore, we have ruled out all impossible case-marking variants.

What we have not done is to say anything about the logical relations holding between the predicates themselves. For instance, we have not distinguished the two readings corresponding to the two English translations 'D. saw G., when he (G.) was cooking the rice', 'D. saw G. cook the rice'. (In this instance this does no harm, since the Sanskrit sentence can bear both meanings. But such ambiguity is not universal in Sanskrit.) Nor have we considered the different ways in which nominals assigned to these argument positions will interact with the meanings of the predicates -- e.g. the difference between referential NPs and quantifiers, the determinants of quantifier scope, etc.

Our theory, then, does not provide a total semantic representation. But it covers the area where case-marking is of central relevance: the internal structure of the predicate, and its relation to its arguments.

CHAPTER 4:

LEXICAL ENTRIES IN SANSKRIT

4.1 GENERAL REMARKS

In 1.5 above, some general considerations on the form and content of lexical entries were put forward; in particular, an example of an analysis was given, based on the properties of the Sanskrit verb vibhajati 'apportion'. In this section (4.1) we shall not add to this statement of the theoretical issues, but simply try to specify a formalism for Lexical Entries (LEs) in Sanskrit that leaves them purged of any information which would follow from one or more of the principles of Sanskrit Case grammar suggested in chapters 2 and 3. Section 4.2 spells out some of the implications for Sanskrit of the distinction between inherent and non-inherent (adjunct) roles. Section 4.3 gives an analysis of the form of lexical entry for ditransitive verbs. And in section 4.4. we take a look at some phenomena involving transitivity alternations, phenomena which lead us to posit our first diathetical rule, Transitivization. For all of these topics, the form or content of lexical entries is crucial.

We shall be concerned with four components of the LE:

1. its morpho-phonological specification (MPS), which gives the underlying form of the predicate-word's stem, together with annotations about its morphological peculiarities (conjugation, etc.);

2. its general syntactic context (GSC), which gives all necessary information about the word's syntactic incidence;

3. its functional representation (FR), a well-formed fragment of FS which details some aspects of the word's meaning, as well as all its inherent arguments;

4. its <u>linking specification</u> (LS), which established any connexion between formal cases and functional roles which do not follow from semantic linking rules or the Normal Hierarchy.

As to MPS and FR, we take their contents as given. As between CSC and LS, however, it has already been pointed out (in 1.5.1 above) that there is some scope for argument as to their respective domains. We shall follow a particular policy in the detailing of lexical entries that follows; but this should not obscure the fact that other approaches are possible, and may even be preferable, within the general framework of lexical entries laid out. In particular, one would like to impose more constraints on the power of LS.

By the Case-Incidence rules in 2.7 above, any NP occurring as sister of an element X (under a dominating node $\overline{X}$) will have its formal case determined by the identity of X. A special case of this occurs when X is a predicate-word, of category V or N^1. The NP can then be looked on as the transitive direct object of V or N, and will be assigned accusative or genitive case respectively. Such an NP will often be represented below as 'NP_{trans}'.

---

[1] We ignore the case where X is a lexical P, i.e. an adposition. Such P's govern various cases, and it is not clear which one should be taken as representing the case of a plain NP sister within $\overline{P}$, and which as the other cases which may occur as independent $\overline{P}$ within a PP (cf. 2.3.3 and fn9 to chapter 2). Of the 49 adpositions still current in Sanskrit listed in Speijer 1886 (S118ff), 15 are sometimes used with the accusative, 24 with the genitive, 20 with the ablative, 4 with the instrumental and 1 with the locative. (Speijer's data-base here includes classical literature and the epics.) A crudely statistical approach, then, would favor the selection of genitive. (The popularity of the ablative can be explained away as a reflection of its semantic link with the Pt. of Reference role (cf. example (3.45), and the examples of the Turkish ablative in 1.4.5.3 above.) But Panini, legislating for an earlier period, picks accusative (2.3.8 <u>karmapravacaniyayukte dvitiya</u>: 'accusative when joined with an adposition'); and this choice is reinforced by the fact that certain Ps, which by origin were clearly fossilized instrumentals of nominals, have acquired the option of governing an accusative (as well as the genitive which follows from

As is pointed out in 1.5.1 above, it is a matter of lexical arbitrariness whether a given predicate-word can co-occur with such NP, i.e. whether it is transitive or intransitive. For example, of two verbs meaning 'strike' in Sanskrit, tudati is transitive whereas praharati is intransitive, its patient co-occurring in the locative case (e.g. (3.68) above). Of two nominals meaning 'worthy'. anurupa- is transitive with a genitive NP dependent, arha- is intransitive, with an accusative (cf. (3.139)i above). It is therefore necessary to state in the GSC, besides the predicate's syntactic category, its transitivity. But no mention need be made, of course, of the case assigned to the transitive's object: this follows from the case incidence rules.

Another component of the GSC which must be often stipulated is the case-marking of certain NPs under $\overline{\overline{X}}$. To return to the example of praharati 'strike', Locative is not the only case which is semantically linked with the Patient role: there is also the Dative (cf. example (3.41) above). To ensure that this verb co-occurs only with locative NPs therefore, it is not enough to class it as intransitive, and leave it to semantic linking to find an NP of the right case to link with the inherent patient role. In addition, one must specify the case of its accompanying NP. praharati's GSC will therefore be as in (4.1).

(4.1) pra+hr̥: GSC: V Intrans.; Locative.

---

[1]their original nominal status). For example, we find: uttarena pariyatram 'north of Pariyatra(Acc)', and dakṣiṇena gramam as well as dakṣiṇena gramasya 'south of the village(Acc or Gen) -- cf. Panini 2.3.31 and commentaries; Speyer 1896 p. 10, para. 30). This latter phenomenon is just what would be expected if the transition of these words from case-marked nominals to lexicalized adpositions was accompanied by a change in the case induced structurally on their dependent NPs.

This will be the limit of the power of GSC as regards case: a specification of syntactic category, transitivity, and of any particular cases that must co-occur under $\overline{\overline{X}}$.

As for LS, in the sections to come we shall motivate a number of different stipulations that may occur in this component of the LE. We allow it to stipulate whether a predicate allows grammatical linking at all with NP constituents of $\overline{\overline{X}}$, and in this way avoid a certain amount of detail in the corresponding GSCs (cf. the analysis of _vibhajati_ in 1.5.1 above). For the purposes of ditransitives and passivization (4.3 and 5.5.1 below) it is necessary to require that all NP_{trans} in Sanskrit have their choice of a role in FR stipulated in LS: even though (as we have seen in 3.2 above), this linking will largely follow without special stipulation if the Normal Hierarchy is applied. In 5.5.1 we give instances where it is necessary for the linking of ES to be stipulated. And in 4.3 we also posit a feature $\left[+\text{ same case}\right]$, which requires the NP linked with the second object of a ditransitive to bear the same case as that linked with the direct object, NP_{trans}. All these solutions must be accounted, at some level, as problems in their own right: for as the lexical entries are currently formulated, no simple and elegant set of restrictions on the form and power of LS suggests itself.

However, this is not to say that the theory is without its successes. In 4.4.1 our account of transitivity which makes use of stipulated linking throws some light on the hitherto mysterious connexion between transitivity and the affixation of prepositional elements. And the analysis of passive in 5.5 is the most adequate yet in accounting for the various known properties of this diathesis in Sanskrit. But the untidinesses in LS, a crucial part of the theory, show that there is work yet to be done.

4.2 INHERENT AND NON-INHERENT ARGUMENTS

Every theory of semantic representation has at least to take note
of the distinction between participants in a proposition that are inherent to
the sense of the main (lexical) predicate, and others which are not.[2] For
example, Halliday 1970 (p. 150) draws a distinction between inherent and
non-inherent place expressions (he put all his jewels in the wash versus
he lost all his jewels in the wash). And Carter 1976 suggests the following
criteria for distinguishing the inherent arguments of a verb.

1. They can be represented by NPs in a simple sentence containing the verb.

2. Even if these NPs are not present in a simple sentence, they are present
in some sentence entailed by the original sentence.

3. This entailment cannot be predicted by general rules.

By 'general rule' Carter means in particular the sort of metaphysical
principle which would require, e.g., that every event have a cause, a time,
and a place: we cannot deduce that Location is an inherent argument in die
just because if anybody dies they must die somewhere.

This distinction is caught in our framework by supposing that only
inherent arguments are represented in a lexical FR. Other participants will
be represented by $\overline{P}$ expressions outside the phrase of the predicate —
typically under S. They will be incorporated into the FS of the sentence

---

[2] The distinction apparently goes back to the actants and circonstants
of Tesniere 1959. Cf. Vater 1978 for a pessimistic assessment of attempts
to give the distinction an empirical basis in the analysis of German.

For example, consider the pair of sentence in (4.2).

(4.2) i.   caitrah pāṭaliputrād ayodhyām gacchati

ChaitraN PataliputraB AyodhyaA goes

'Chaitra goes from Pataliputra to Ayodhya.'

ii. caitrah ayodhyāyai pāṭaliputram tyajati

ChaitraN AyodhyaD PataliputraA leaves

'Chaitra leaves Pataliputra for Ayodhya.'

Between these sentences, as far as we know, there is no difference in truth-conditions. Both will be adequately represented by the linked FS in (4.3).

(4.3) GO$_{Posit}$:   T   G   S

T = caitra

G = ayodhyā

S = pāṭaliputra

However, they differ in that if the same constituent is dropped from each, one becomes elliptical, the other does not. Dropping ayodhyā leaves (4.2)i elliptical; dropping pātaliputra leaves (4.2)ii elliptical. Our theory accounts for these facts by assigning the two words different FRs, as in (4.4). Dropping the overt expression of a role mentioned in FR results in ellipsis.

(4.4) i.   gam 'go'. FR: GO$_{Posit}$:   T   G

ii. tyaj 'leave'. FR: GO$_{Posit}$:   T   S

In order to generate (4.3) out of (4.4), extra arguments will need to be added. We presume that such additions are quite free, the only constraint being that the FS resulting should be well-formed by the rules given in section 1.3.8. It would not be possible, for instance, to add an extra theme to one of these FRs. But a path could be added to either.

Although only inherent arguments may be grammatically linked, seman-

tic linking is applicable to both inherent and non-inherent arguments: that

is to say, it applies to maximally specified LEs out of LEs (cf. 1.5.2 above);

and also in the interpretation of sentences, to assign the proper place in '

FS to NPs which occur in oblique cases under S (by PS2: $\underline{S \rightarrow \bar{\bar{N}} \; (\bar{P})* \; \bar{\bar{V}}}$).

For example, compare (4.5) with (4.2)i.

(4.5)   vihago nī̄dad bhraśyati

birdN   nestB   fall

'The bird falls from its nest.'

In both sentences the ablative is semantically linked in the most

obvious way to a position source. But in the case of (4.5) this role is

present in the FR of the main predicate, hence the rule must be thought of

as having applied 'in the lexicon.' In the case of (4.2)i, on the other

hand, the rule can be thought of a legitimizing a link between two freely

occurring elements, both of which occur outside of the domain of the main

predicate's lexical entry. (Cf. 1.5.2 above.)

The FS of a sentence, then, is not necessarily restricted to the FR

of its principal predicate. But the FR of the principal predicate puts a

considerable constraints on the addition of extra arguments.

The crucial role of lexical entries in relating the form and meaning

of sentence should now be clear. The well-formedness of sentences is deter-

mined by the rules of form (PS and CI), the well-formedness of functional

structures by another, universal, set of rules. But the pairing of sen-

tences with their interpreting FS is mediated by the correlations contained

in lexical entries (LE). A FS can only interpret a given sentence-structure

if there is a predicate in whose LE:

(a)   there is an FS non-distinct from the FS, and

(b) there is a GSC non-distinct from the set of NPs inside the predi-
cate's double-bar phrase within the sentence.

Given such a possible pair of FS and sentence-structure, semantic
linking rules (and predication) will apply to align the remaining NPs with
the remaining participant roles.

4.3 "DITRANSITIVES"

In the analysis of vi-bhaj-'s lexical entry in 1.5.1 above, one point

was glossed over. We claimed that given the stipulated linking of the

transitive NP (which would be marked accusative) other cases, lower or higher

on the Normal Hierarchy, must be found if other roles in the same FR were

to be grammatically linked. We may, in fact, assume that this is the normal

state of affairs.

But there is nothing in the formulation of the theory so far that

prohibits the presence of two accusatives in attendance on a predicate word.

Indeed we have already seen examples of such sentences (e.g. (3.79),

(3.135v). Traditional Indian grammar provides a versified list, or kārikā,

of such verbs, quoted in (4.6).

(4.6) duh-yāc-pac-daṇḍ-rudhi-pracchi-ci-brū-śāsu-ji-manth-muṣ-ām

karmayuk syād akathitạm; tathā syān nī-hṛ-kṛṣ-vah-ām.

Apte (A 23) glosses this as follows:

> In the case of the roots duh 'to milk', yāc 'to beg', pac 'to cook',
> daṇḍ 'to punish', rudh 'to obstruct', or 'to confirm', pracch 'to
> ask', ci 'to collect', brū 'to tell', śās 'to instruct', ji 'to win'
> (as prize of wager), manth 'to churn', muṣ 'to steal', and also in
> the case of nī, hṛ, kṛṣ and vah, all meaning 'to take' or 'carry',
> and others having the same signification, the noun which besides
> the direct object, is affected by the verb, is put in the accusa-
> tive case.

Apte's claim that the list includes (all?) other verbs having the

same signification seems exaggerated: Speijer (S 35) claims by contrast that

'some verbs as kathayati (to tell), vedayati (to make known), ādiśati (to

enjoin) never comply with the double object.' It seems justifiable to take

(4.8) MPS: n$\overline{\text{i}}$ 1 Parasm., Atm.

GSC: V; transitive

FR: DO: S$_1$ (GO$_{\text{Posit}}$: T G P$_1$)

LS: NP$_{\text{trans}}$ = T

Gram. [+ same case] <u>or</u> Sem.

These two LEs will then put constraints on the insertion and linking

of the two predicates according to the same sort of considerations which were

mentioned in connexion with <u>vi-bhaj-</u>. The only difference will result from

the [+ same case] exception feature which figures as part of LS.

General considerations, together with the stipulated links in LS,

will take us to the point shown in (2.211-2).

(4.9) (<u>muş</u>)   FR: DO: S (GO$_{\text{Poss}}$: T S)

S = ES

T = ?

S = Accusative

(4.10) (<u>n$\overline{\text{i}}$</u>)   FR: DO: S$_1$ (GO$_{\text{Posit}}$: T G P$_1$)

S$_1$ = P$_1$ = ES

T = Accusative   G = ?

We need only now find the right case for the theme slot in <u>muş</u>, the

goal slot in <u>n$\overline{\text{i}}$</u>. Grammatical linking is required for <u>muş</u>, possible for <u>n$\overline{\text{i}}$</u>,

and this brings in the constraints of the Normal Hierarchy. We should ex-

pect, therefore, an instrumental for <u>mus</u>'s theme, and a genitive for <u>n$\overline{\text{i}}$</u>'s

goal.

However, the LS of these verbs also contains the exception feature

[+ same case] . The case chosen to appear under $\overline{\text{P}}$ for grammatical linking

is therefore accusative too. And the queries in (4.9-10) are therefore

replaced by Accusative.

The same LEs (i.e. (4.9-10) will also suffice for nominals formed from verbs of this class. consider, for example, manthana- 'churning' and netar- 'leader' (cf. examples (3.136) v & vi.)

These nominals will have LEs differing from those of the corresponding verbs only in that N, rather than V, is mentioned in GSC. (And of course MPS will be appropriate to nominal, rather than verbal inflexion.) Presumably the LEs are constructed by morphological rules of nominalization out of the corresponding verbal LEs.

(4.11)   MPS: manth + ana   Neuter

   GSC: N ; transitive

   FR: DO: S (GO: T S)

   LS: NP_{trans} = lower S
         Grammatical [+ same case]

(4.12)   MPS: nī + tar   Masculine

   GSC: N ; transitive

   FR: DO: S (GO: T G)

   LS: NP_{trans} = T
         Grammatical [+ same case] or semantic

Since these are nominals they will be inserted into nominal phrases, and the attendant transitive NP will be genitive by CI3. Therefore the NP whose linking is stipulated in the LS will be genitive. And the [+ same case] exception feature will require that only another genitive (under $\bar{P}$) may be grammatically linked with the other role. Hence we get sāgarasya manthanam amrtasya 'the churning of ambrosiaG from the seaG', and netā 'śvasya srughnasya 'the bringer of the horseG to SrughnaG'. The alternative form of this latter netā 'svasya srughnam 'do. to SrughnaA' is justified by soppoding that nī can optionally be semantically linked, with an accusative of goal. (Cf. sections 44ff. of Patanjali, Mahābhāṣya on Panini 1.4.51.)

The reader will have noticed that the role whose linking with the transitive NP is stipulated differs from word to word; sometimes it is the theme, more often a role subordinate to it. Since in each instance, two NPs of the same case will be linked with two role in the FR, it might be wondered whether there were any grounds for claiming that one role in particular is linked to the sister NP under $\overline{X}$, the other to the NP under $\overline{P}$ further out. The grounds will become apparent when we consider passive sentences in 5.2 & 5.5.2, since it is the only rule linked with the sister NP which can be represented by a nominative in the corresponding passive sentence. 5.5.2 also reveals a weakness of our reliance here on the $\left[+ \text{ same case} \right]$ feature.

4.4 TRANSITIVITY

Within this theory, the 'transitivity' of a predicate-word refers
to the presence or absence of a specification for accompanying NP in its
GSC. Transitive Vs, Ns or Ps occur with a sister NP, intransitive ones do
not. Given our analysis of the so-called 'di-transitives' in 4.3, we may
claim that only <u>one</u> NP is ever sister to the predicate in this way: this
fact is effectively asserted in rule PS4: $\overline{X} \rightarrow (\overline{\overline{N}})\ X$. Examples of
transitive and intransitive verbs are obvious. But among transitive
nominals (where the sister NP will occur in the genitive by CI3) we may
note <u>abhijña-</u> 'aware of', <u>ucita-</u> 'used to', <u>āyatta-</u> 'dependent on',
<u>anurūpa-</u> 'worthy of', as well as most nominalizations of transitive verbs.

4.4.1 VARIABLE TRANSITIVITY AND COMPOUNDING

Most verbs are exclusively transitive or intransitive. It is clear, however, that this property, here diagnosed as syntactic, will not follow from any semantic feature of the verbs in question, since some verbs are used both ways without any corresponding difference in meaning discernible. As (4.15) shows, the verb can even be used both ways within one sentence.

(4.13) yudh 'fight':

   i. Intransitive:

      śatrubhiḥ saha yotsyate   M. 5. 164.27

      enemiesI with he-will fight   'He will fight with the
                                                    enemy.'

   ii. Transitive:

      kathaṃ na yudhyeyam ahaṃ kurūn   M. 4.36.23

      how not I-fight I KuruA,pl

                                    'How can I not fight the
                                             Kurus?'

(4.14) śuc 'grieve'

   i. Intransitive:

      na ca śocaty asampattau   Manu 12.36

      not and he- misfortuneL   'And he does not grieve at
         grives   misfortunes.'

      na ca śocet kṛtākṛtaiḥ   M. (Hariv. 4.26)

      not and he- done-not-   (Cf. newer edn., which
         grievePOT. doneI   has kṛtākṛtam, i.e.
                                     Acc.)

                                     'And let him not grieve at
                                     what is done or not done.'

ii. Transitive:

rṣeḥ putram... katham na soceyam aham na rudyām   M. 1.71.37

sage's sonA   how not I-grieve I not I-weep
                        Pot.   Pot.

'How can I not grieve for the sage's
son , and not bewail him?'

(4.15) man 'rejoice':

ardhamātralāghavena putrotsavam manyante vaiyākaranāḥ

half-mora-lighteningI son-birthA rejoice grammariansN

'The grammarians rejoice at the lightening (of a rule) by
half a mora, as at the birth of a son.'

Paribhāṣenduśekhara 122

Another noted phenomenon which concerns transitivity is the tendency

for intransitive verbs, when compounded with adpositions, to become transi-

tive. We have already seen examples of this (e.g. 3.77-8). This particular

transition comes as no surprise within our framework, if we suppose that, by

adding the adposition, another inherent argument is added to the predicate's

FR -- viz. the one corresponding to the object of the added adposition.

The simple verbs affected all have only one inherent argument place;

since this must be linked with ES, there would be no possibility of transi-

tivity here. But the addition of an extra inherent role when the adposi-

tion is prefixed means that there is now something for the stipulated link

in a transitive's LS to refer to. Hence transitivity is now possible. It

is now surprising then, that transitive compounds should be found alongside

intransitive simple verbs; but it would have been imcomprehensible if the

reverse had been true, since there is no discernible reason why the addition

of an adposition should subtract an inherent argument from FR.

(4.16)   indraḥ ṣomena jī̄vati

       IndraN somaI lives

(4.17)   indraḥ somaṃ upajī̄vati

       IndraN somaA lives-on

We suppose jī̄v 'live' to have the DE in (4.18).

(4.18) MPS   jī̄v 1 Parasṃ

       GSC   V; intransitive

       FR BE_{Ident}: T G(life)

       LS   —

We presume that the instrumental in (4.16) represents a non-inherent argument. The FS of the sentence, therefore, differs from the FR in (4.18) as in (4.19).

(4.19) BE_{Ident}: T G(life) P

The instrumental in (4.16) is generated in phrase structure in a $\bar{P}$ directly dominated by S. It is semantically linked to the path slot in (4.19).

As for (4.17), on the other hand, the upa on the front of the verb signals that a specific element has been added to the meaning of jī̄v. upa is not synchronically an independent adposition in Sanskrit (cf. S 117), though Panini (1.4.87) teaches its use in some meanings apparently unrelated to this one: 'above/below (in status)'. However, in the case of upa-jī̄v- it is clear that it contributes little more than the sense of means by which the verb's action takes place: it adds an inherent path to jī̄v, one such as was expressed semantically in (4.16). This means that the verb can now become transitive since there is an extra argument for the sister NP to be linked with. upa-jī̄v- will therefore have an FR identical to the FS in (4.19). Since there are two free argument places here, there is room for a transitive

specification, and so the full DE of <u>upa-jīv-</u> is as in (4.20).

(4.20) MPS upa+jīv 1 Parasm

 GSC: V; transitive

 FR   BE$_{Ident}$: T G(life) P

 LS   NP$_{trans}$ = P

Since there are no other arguments beside those assigned to ES and the transitive NP, no other linking specification (i.e. <u>grammatical</u> as against <u>semantic</u>) is necessary.

Other verbs transitivized in this way have adpositions that make a more obvious contribution to the meaning of the whole: some examples are given in (4.21-3) along with examples of their constituent adpositions used independently.

(4.21) i.   <u>ati</u> + Acc. 'above (in status)'

 aty anyān pārthivapālan pṛthivyām adhirājyabhāk   M. 1.103.1
                                                          (S 115)
 above otherA earth-lordsA erathL   sovereignty-
                                                  entitled

  'entitled to sovereignty over the earth above other kings.'

 ii.   <u>ati</u> + <u>kram</u> 'step' = 'overstep, transgress'

 atikramya sadā ācāram   Kad. 160 (AD, s.v.<u>kram</u>)

 transgress   practiceA
      Ger. always

  'always transgressing against established custom'

(4.22) i.   <u>anu</u> + acc. 'after' (cf. example (2.22).)

 ii.   <u>anu</u> + <u>gam</u> 'go' = 'succeed', follow'

We presume that all compound verbs of this type will have originated

in a fairly transparent unification of adposition and verb of this type.

Once a verb is formed, however, it takes on a life of its own -- most particu-

larly, it becomes independent of the continued existence of the adposition

as an independent element.[5]

This is how we envision the treatment of transitivization within our

theory. The addition of the extra argument to the FR makes transitivity

possible. It does not require it, however. Since the addition of an extra

argument is separate from the marking of the verb as transitive or intransi-

tive, our theory makes two predictions about this process.

One we predict that not all compounds with an added inherent argu-

ment will become transitive. In principle, a verb may add an argument to FR,

but make no reference to this in its LS. This is borne out by the facts.

Examples of such compounds are given in (4.27). In each the added adposition

specified an extra inherent role: but to express it an oblique case under $\overline{P}$

must co-occur in the sentence.

---

[5]The synchronic and diachronic relations of independent and pre-verbal
adpositions is too complex a subject to discuss here, where our main interest
is in the formal syntactic property of transitivity. (But cf. Speijer,
S113-4 note 2, where reference is given to Panini's treatment.) It has been
held that, historically, both preverbs and independent adpositions originated
as specialized usages of independent adverbial particles, which served only
to define further the action of the verb, and its relation to its arguments.
Vedic examples are adduced, where the status of the particle is quite
ambiguous.
     e.g. dāśvāṃsam upa gacchati
          GraciousA to- goes
                    wards   'He betakes homself to the Gracious One.'
In respect to this view, it may be pointed out that our conception of
intransitive adposition is in fact very close to this traditional one of
adverb particle.   (Cf. 2.3.3).

(4.27) Added Path (cf. upa+jīv in 4.17))

  i. sam 'with' + vas 'dwell' = 'live with'

    na ca taiḥ saha saṃvaset   Yajn. 3.15.227

   not and themI he-cohabit
       with   Pot.

          'And let him not live with them...'

  ii. sam 'with' + gam 'go' = 'gather with', 'copulate'

    ratnam ratnena saṃgacchate   Mrcch. 14.5

    jewelN jewelI gathers

         'Jewels cluster together.'

    saṃgamya tayā...   R.1.48.22

    copulating herI
      Ger.
        'having lain with her...'

(4.28) Added Source

  apa 'away' + gam 'go' = leave'

  anulepaṃ ca ... gātrān na apagamiṣyati R. 2.118.18 (v.1.)

  ointmentN and bodyB not will-leave

       'And the ointment will not leave the body.'

With these verbs neither AD nor BRD allows the possibility of a direct object. Yet functionally they are little different from pratyuj 'use', which takes an object of Means, i.e. path, or tyaj 'leave', which takes a Source object.

Secondly the theory predicts that compounds which do transitivize will not all do so necessarily, any more than simple intransitives do. Specification for transitivity is quite separate from the addition of a new argument position or any other semantic property of the verb.

(4.29) ā + vas   'live close to'

   i. Transitive

      grāmam āvasati senā   Kāś. 1.4.48

      villageA dwells- armyN
              near

            'the army is encampled near the village.'

   ii. Intransitive

      āvasan kṛṣṇayā sārdhaṃ kāmyuke   M. 3.49.2   (BORI
                              reads nyavasan)

      they- DraupadiI with KamyukaL
      dwelt

            'They dwelt with Draupadi in the forst of
                        Kamyuka.'

(4.30) anu 'after' + kamp 'bend' = 'take pity on'

   i. Transitive

      katham brahmaṇī mām anukampate   Mṛcch. 3.27

      how   Brahmin- me   pities
            womanN

            'What? My wife takes pity on me?'

   ii. Intransitive

      sauhṛdena tathā premnā sadā mayy anukampase M. (AD s.v.)

      friendshipI and loveI always   you-pity
                  meL

            'You always take pity on me with friendship
                    and love.'

4.4.2 ACCUSATIVE OF EXTENT, DURATION AND CONTENT; TRANSITIVIZATION

It will become clear in chapter 5 of this work that the distinction between transitive object in the accusative and other accusatives (whether grammatically or semantically linked) is crucial to the definition of the rule of Passive. In general, we shall want to claim that it is only the transitive object which can become the subject of a corresponding passive sentence.

Nevertheless, a number of accusatives which we might have wanted to deny the title 'transitive object' are able to become the subjects of passive sentences. In this section, we consider these accusatives, their semantic classification, and their syntactic status. We shall postulate a lexical rule of re-analysis 'Transitivization' and compare it with some other proposals on the same lines in the recent literature. And we also consider the extent to which these accusatives threaten our principle that only inherent arguments can be grammatically linked.

Verbs of all types -- transitive and intransitive -- can co-occur with accusative NPs in certain meanings. Some remarkable examples of this phenomenon can be found in the Indian grammatical tradition. (See especially the Mahabhashya on Panini 1.4.51 and 2.3.5.)

    (4.31) i. godoham aste

        cow-milkingA
          sits   'He sits a cow-milking.'

     ii. godoham svapiti

          sleeps   'He sleeps a cow-milking.'

(4.32) i. māsam āste   'he sits a month.'

            monthA sits

        ii. māsam svapiti   'He sleeps a month.'

            sleeps

(4.33) i. krośam āste   'He sits a koss (i.e. approx. one mile.)'

            kossA sits

        ii. krośam svapiti   'He sleeps a koss.'

        iii. krośam sete   'He lies a koss.'

            lies

Of these, the last two groups are clearly examples, more or less

natural, of the accusatives of duration and extent, which we have already

analyzed as instances of semantic linking (cf. 3.1.2).

As for the first pair, Kaiyyata takes these essentially to be the

same as the first pair -- i.e. rather more idiosyncratic accusatives of

duration. However, they are originally quoted by Patanjali as examples

of the expression of <u>bhāva</u>, a term also used to describe the intrinsic con-

tent of the verb: for example, <u>bhāva</u> is all that the verb expresses in the

impersonal passive. So it is possible that what was originally meant by

(4.31)i. was in fact: 'he sits to milk the cows', i.e. 'he sits the action

of milking the cows'; and similarly (4.31)ii. would have meant 'he sleeps

as he milks the cows.'[6]

---

[6]Compare the very similar morphological, and surface syntactic con-
figuration found in the so-called NAMAL gerund. E.g.

    kathamkaram bhuṅkte   'how does he eat?' (A 108)
    how-doNAMUL he-eats

    padaghātam hanti   'He strikes with the foot.' (A 109)
    foot-strike he-strikes
        NAMUL

    cūrṇapeṣam pinasti   'He grinds to powder.' (A 109)
    powder-grind he-grinds
        NAMUL

Regardless of the merits of this particular suggestion for the interpretation of the Indian grammatical literature, it is clear that such 'accusatives of content' or 'internal accusatives' can accompany most or all verbs, regardless of their transitivity.

    (4.34)   adya tam drasṭum icchāvaḥ putraṃ paścimadarśanam   R.2.64.26

           today thatA seeINF we2-want sonA last-sightA

                              'Today we want to take a last look
                              at that son of ours.'

    (4.35)   yathānyāyaṃ vṛttiṃ vartasva .nātṛsu   R.2.58.21

           as-prescribed conductA conduct- mothersL
                           thyself

                              'Behave towards mothers as is laid down.'

Now these three uses of the accusative are clearly different from regular transitive uses. They co-occur with verb-phrases regardless of the number of other arguments; and the first two at least have the option of staying accusative in the passive. Thus we are informed by the grammatical tradition (<u>ibid.</u>) that (4.36) is good Sanskrit.

    (4.36)   māsam āsyate devadattena

           monthA is-sat DevadattaI
                      PASS

                            'Devadatta sits for a month.'

And this is confirmed by examples like (4.37).

    (4.37)   bhadrakāḥ pratīkṣyatām kaṃcit kālam   Daśakum. 96 (S 41)

           good-sirsV let-it-be- someA timeA
                      waited
                      PASS,IMPV

                            'Good sirs, please wait a moment.'

---

[6]These are conventionally analyzed as a form of the verbal paradigm. But it pears a strong resemblance (i.e. formal identity) with a fossilized accusative taken from the corresponding deverbal noun.

There is little evidence known to me for a similar possibility with the accusative of content. However, an example such as (4.38) might show that faced with a choice between promoting the accusative of content and an inherent argument in the accusative, the latter is chosen. The example involves one of the 'passive' participles in -ta-/-na-.

(4.38)   evam uktā tu kaikeyī ruṣṭayā paruṣam vacaḥ   R.2.7.16

        thus spoken but   enragedI harshA speechA
            PASS.PTCP KaikeyiN
            N FEM

                                        'Kaikeyi, thus harshly addressed
                                        by the enraged woman ...'
                                        (lit.: ...thus spoken a harsh
                                                speech by...)

(The problem is that we cannot be sure that (4.38) does not represent the passive of a 'ditransitive' -- since the verb is one of speaking; brū 'say' (some of whose suppletive forms are taken from the paradigm of the root used here vac: ptcp. ukta-) figures in the kārikā list (4.6).)

We have not as yet said much about the functional representation of internal accusatives. For actional predicates, the natural solution is to assign them to the Theme slot, since this is already set aside for the representation of the action itself (cf. 1.3.6 and 3.2.?.4).[7]

---

[7]In most instances, of course, this argument-place already has a specified content within the LE (denoted in our representations by an expression in parentheses immediately after the relevant role -- cf. 1.3.7 above). Cf. Carter 1977 for some discussion of such 'doubled filled' positions.

The specified content can be looked on less as an actual filler for the position than as representing a fairly restrictive set of selectional features which govern linking to the role in question. In certain instances, where a role is very closely defined by such features, it may eschew linking with a concrete NP altogether. Conventional 'object-deletors' (as eat, cook, study, like their equivalents in Sanskrit bhuj, pac, adhi+i) would be examples of this. It remains possible, however, to link NPs with the position; so for instance, object-deletors can still govern an object (eat rice, odanaṃ bhuṅkte).

(See fn. 11 to Chapter 5 for some evidence that object deletors are not to be identified with ordinary intransitives.)

What about the accusatives of content that occur with apparently relational predicates (as in 4.34)? Here there is no obvious role to take as representing the relation as a whole, since the theme represents the object fo which the relation is predicated.

A natural answer is available, however, within our framework. We shall analyze the internal objects of relational predicates as abstract relational paths, $\left[\text{+So, +Go, +Abs, -Se, -Ext} \right]$, indistinguishable, in fact, from accusatives of respect (e.g. Example (3.6)). Like the accusative neuter adjectival forms which function as adverbs (2.3.2), accusatives of content here can be naturally explained as paths of this sort, character-izing the content of the predicate.

Internal objects of relational predicates, then, are like adjuncts expressing extent and duration in that they will be represented as relation-al paths. This is not unwelcome, in that commentators with no theoretical axe to grind have claimed to notice a similarity of meaning: (e.g. Speyer 1896, p. 8, calls them 'bedeutungsgleiche'). But they will differ in that internal objects inevitably express an inherent argument of the predicate, whereas extent/duration usually occurs as a relational adjunct (cf. 1.3.7-8), outside the domain of the predicate's FR. (Exceptions to this last general-ization exist: e.g. in English, verbs like last, cover, stretch can take an inherent extent/duration argument; and in Sanskrit, this will be true of some verbs which undergo the Transitivization rule to which we shall turn directly.)

Internal objects, as well as accusatives of extent and duration, may be made subject (i.e. appear in the nominative, and act as the focus of verb agreement) in passive sentences. As examples of this passivization of ex-tent and duration expressions, we have:

(4.39) māsa āsyate devadattena

        monthN is-sat DevadattaI   'A month is sat by D.'
               PASS

                                       i.e. D. sits for a month.

(4.40) krośaḥ śayyate devadattena

        kossN is-lain DevadattaI   'A koss is lain by D.'
               PASS

                                       i.e. D., lying, covers the extent
                                         of a koss.

And (4.41) gives an example of an internal object occurring as a subject in a passive sentence.

(4.4.) kumāre bharate vṛttir vartitavyā ca rājavat   R.2.58.20

        princeL BharataL   to-be-behaved kingly(adv.)
                   behaviourN GER'VE.N

                              'And one must behave to Prince Bh.
                              as a king.'

By the theory of passive to be developed in 5.5, this is evidence that the accusatives of extent, duration and content can occur within the GSC. And of course in this event they are, a fortiori, inherent arguments eligible for grammatical linking. However, the passives in (4.41-2) contrast with the impersonal passives of (4.36-8), where the accusative is retained. To get these two different outputs, we could, in principle, allow a variable structural description to the passive rule. But this is something which is not validated by any other consideration. Therefore, we suppose instead that <u>there are two possible analyses for sentences with an intransitive verb and an accusative of extent or duration.</u> On the one hand, the accusative can always occur freely under P̄, and can be linked semantically in the course of sentence derivation. If the verb is intransitive, the corresponding passive will be impersonal, as in (4.36-7).

But in the case of intransitive verbs, there is another possibility. A rule of re-analysis can apply. This means positing a process of the following form, applicable to LEs.

(4.42) <u>Transitivization</u>

GSC: V intransitive $\longrightarrow$ transitive

LS: NP_{trans} = T,<u>else</u> relational P.

This means that any intransitive verb can change its specification

to transitive and thereby stipulate a grammatical link of the sister NP with

the theme or path slot. The theme slot will only be available for this new

link if the verb is actional: otherwise, the intransitive's theme will al-

ready be taken up with ES. So the relational path will be chosen, repre-

senting either the content of a relational predicate, or else an adjunct

expressing extent or duration. Like all lexical rules, Transitivization

is subject in principle to lexical-specific constraints, and we shall sug-

gest something of their nature below. However, for the moment it is enough

to note that given the grammatical linking of the accusative resultant from

its effect on LS, the personal passives in (4.40-1) follow without more ado.

The reanalysis rule proposed here is of a piece with other proposals

made in the recent literature, very largely to give the passive rule, how-

ever it is formulated, a unitary structural description. Bresnan 1978 (p.

19) suggests that <u>arrive at</u> should be given two different lexical represen-

tations to account for the contrast between (4.43) and (4.44).

(4.43) They arrived at the new stadium:

*The new stadium was arrived at.

(4.44) They arrived at the expected result:

The expected result was arrived at.

And Akmajian et al. 1979 postulate a rule of restructuring which

applies in the course of the syntactic derivation. Another such rule plays

a crucial role in their analysis of <u>be</u> and the English auxiliary; but in

justifying such a rule, they also allude to the passive facts just illus-

trated (as well as some idiosyncrasies of movement out of 'make the claim

that' contexts, and surface word-order with respect to Papago reflexives.)
The essence of both these proposals with respect to passive is to destroy
the difference between the transitive objects of verbs and more outlying
constituents, so as to have passive, in some instances, apply equally to
both.

Bresnan's proposal is theoretically distinct from ours only in that
she does not postulate a general process to link the two sorts of represen-
tation which can underlie the surface string '...arrive at...'. Akmajian et
al. give a highly constrained theory of restructuring which they show to be
applicable to four different sets of phenomena. They treat the essential
change as a syntactic one, i.e. a restructuring of the syntactic tree,
rather than an operation on the lexical specification of the central predi-
cate. For us, on the other hand, the syntactic difference (the accusative
NP in question will now occur under $\overline{V}$, rather than in a $\overline{P}$ under S) follows
from a change in the lexical specification.

However, the Sanskrit facts are not compatible with one of Akmajian
et al.'s proposed constraints on restructuring rules, viz. that they "al-
ways apply to specific terminal symbols -- i.e. to specific words, never to
category symbols, either lexical or phrasal" (verbatim, p. 31). The items
whose position in the structure would be changed in a restructuring approach
to these accusatives would be the nouns themselves -- not the verbs. But
only on the verbs is it conceivable that lexical conditioning could hold.
For example, we should not expect (4.39) to become ungrammatical if some
other time expression were substituted for masa 'month', though we might
expect that other intransitive verbs would not in the passive with a dura-
tion expression for subject in this way.

Akmajian et al.'s success with the sort of facts in English illus-
trated in (4.43-4) is only possible because the active sentences can be

distinguished by making a particular word, <u>at</u>, lie in different constituents.

(4.45) i. They $\left[\text{arrived}\right]_V$ $\left[\text{at the new stadium}\right]_{PP}$

　　　　ii. They $\left[\text{arrived at}\right]_V$ $\left[\text{the expected conclusion}\right]_{NP}$

But there are instances, even in English, where precisely analogous facts are found, yet no preposition's position can be appealed to.

(4.46) i. His hand was stayed by her urgent entreaty.

　　　　ii. *Three months were stayed by Aunt Mildred.

(The conditioning on reanalysis must be different in English from that in Sanskrit: presumably, the straight translation of (4.46)ii. would be good in Sanskrit.)

We conclude, then, that our account is the only one of those mentioned to formulate a general principle to account for these interactions with passive that is empirically adequate.

Finally, a word on the compatibility of this analysis with our general claim from 1.5.2 that only inherent arguments can be grammatically linked. The accusatives of content pose less of a problem in this regard. They refer to the semantic content of the verb itself, and hence could hardly be more inherent to its sense, even if they are only optionally present in its complement of NPs on the surface. (Cf. the partial criteria for inherence in 4.2.)

The accusatives of extent and duration are more of a problem. They are addable to virtually any predicate. The weird examples provided by the Indian tradition (Kāś.2.3.5) which appear in (4.33 and ii) make this quite clear. And there are even examples of them qualifying nominals: <u>māsaṃ kal-</u><u>yānī</u> '(a woman) lucky for a month', <u>māsaṃ guḍadhanaḥ</u> 'crude barley-sugar crispies for a month', <u>yojanaṃ parvataḥ</u> 'a mountain (stretching) over (a distance of) one yojana' (Kāś. 2.5.2). (These examples, incidentally, make

it very clear that the accusative of extent/duration must be able to occur

under $\bar{P}$ inside $\bar{\bar{N}}$ -- otherwise, as transitive NPs, they would appear in the

genitive by CI3 *māsasya kalyāni...)

Furthermore, they can co-occur with actional predicates, whereas

our theory makes the general claim that the inherent arguments of   actional

predicates are   actional. From this, the prediction follows that transi-

tivization cannot make an extent/duration expression into the transitive

object of an actional predicate, even if it is intransitive. Unfortunately,

there is no obvious way to test this in Sanskrit: one must simply be on the

look-out for actional verbs in the passive, with an extent/duration expres-

sion as subject, for such sentences would be counter-examples.

The upshot of these considerations is that it becomes clear that

expressions of extent and duration typically do not represent inherent ar-

guments of the predicate qualified. This creates the following dilemma.

Suppose ϕ is an arbitrary relational predicate: then ϕ can co-

occur with an expression of extent or duration (since all predicates can);

therefore, the expression is there by general rule; and therefore it is

not an inherent argument of ϕ. But if transitivization applies freely, the

expression can become the transitive object of ϕ, with stipulated linking;

therefore the expression can be grammatically linked; therefore, by the

principle at issue, it can be an inherent object of ϕ. Impasse.

It seems to be possible to escape from the dilemma by denying one

of the assumptions on which it is based: viz. that transitivization applies

freely. If only specified lexical items can incorporate an extent or dura-

tion expression into their LE in this way, it will be only those items that

can take the expression as an inherent object. Hence we shall have two

sorts of relational predicates: the majority, which co-occur with an ex-

tent or duration expression quite freely, but have no lexical relation with

it; and the few which mention extent or duration in their FR, and hence can undergo transitivization with respect to that expression. The contradiction dissolves. And the general principle, that only inherent arguments can be grammatically linked, as saved.

In fact the available data, although it does not compel it, is quite consistent with the claim that only selected verbs undergo transitivization. The examples in the grammatical literature are almost all of $\bar{a}s$ 'sit' and svap 'sleep', both actions where duration is of importance. (Sitting is the characteristic posture for austerities; and cf. the English expression 'to sit something out', where 'something' must refer to an item viewed simply from the point of view of its duration.) For extent, we are also given examples with śī 'to lie'. Speijer supplements these explicit example-sentences with an instance from the Ramayana:

(4.47)   iha tasya mahātmanaḥ śarvarī śayitā bhūmau   R.2.88.2 (S 41)

        here thatG great-soulG nightN, fem. earthL
                              lain
                              PTCP,N,fem

                                        'here the noble hero has slept the
                                        night on the naked earth.'

And Speijer also seems to follow our hypothesis here since he refers in the note (ad loc.) to a class of kālakarma verbs (i.e. verbs which can take duration expressions as passivizable objects).[9]

---

[8]It is difficult to make such a case for the same verbs with respect to extent: but perhaps we should doubt the naturalness (i.e. grammaticality) of examples such as krośa āsyate, krośa supyate 'a koss is sat, slept', bearing in mind that they are quoted by the commentators in close proximity to duration examples with the same verbs: presumably, they yielded to the temptation to make their examples slickly parallel.

[9]However, in Speyer 1896, p. 9 (para. 28, Anm.) he draws attention to the following example found in Kasika's discussion of Panini 2.4.32:

If this hypothesis is correct, then the claim that only inherent arguments can be grammatically linked can be saved. For the class of verbs in question, the duration or extent expression will be an inherent argument, and so grammatical linking caused by transitivization (4.42) will be harmless.

It should be noted, in passing, that no extra stipulation is needed to make sure that the paths and themes referred to in the transitivization rule are inherent arguments. Since _ex hypothesi_ the rule applies to LEs, only such arguments are under consideration. It would have needed a special dispensation to allow the rule to make reference to adjuncts which are present only in the context of the wider sentence (and even there, only optionally).

Our faith in this solution might be boosted by comparing a similar apparent counterexample in English to the principle that only inherent arguments are grammatically linked. English has the advantage of being a language where lexical restrictions are somewhat clearer to us.

We presume that in English, NPs whose relation to the verb is signified only by their position must be grammatically linked, and hence by our principle inherent. But consider the example in (4.48):

(4.48) Nick lowered Tim a rope.

---

[9]abhyām chatrubhyām rātrir adhītā, atho abhyām ahar apy adhītam

theseI studentsI   nightN studied and   theseI dayN too studied
                Fem PTCP,N,Fem   Neut   PTCP,N,Neut

'These students studied out the night, and studied out the day.

This example seems to be quite genuine, since it is given by the Kasika with reference to quite a different point. If we accept it, we are forced to add adhi+i 'learn, study' to the list of verbs which can incorporate a duration expression as transitive object. At any rate we predict that this is only possible in the absence of its usual object, viz. the object of study. We shall have to postulate two FRs for this verb one men-

The natural FR for <u>lower</u> would be something like <u>DO: S (GO: T P(down))</u>. This makes no reference to <u>Tim</u>'s argument position in (4.48), and with good reason: we do not want to claim that when something is said to be lowered, there is a presumption that someone receives it. (This is what it would mean to make the recipient an inherent argument.) But Tim is asserted to be the recipient of the rope in (4.48) by no other means than the fact that he is mentioned immediately after the main verb. Therefore <u>Tim</u> must be grammatically linked, and hence by our principle, an inherent argument. Paradox, or counterexample.

The solution lies in noting that not all verbs which make sense with a recipient can express this argument by making the relevant NP immediately follow the verb. (For extended discussion of this whole clause of phenomena, see Oehrle 1976.) For example, even the verb 'raise', semantically very close to 'lower', does not duplicate this property.

(4.49) i. Nick raised the ladder to Tim.

ii. *Nick raised Tim the ladder.

Here sentence i demonstrates that there is nothing deviant about the meaning that sentence ii would express if it were possible.

It is an idiosyncratic feature of 'lower' as against 'raise' that is in question here. We can express this by giving the verb 'lower' two FRs to 'raise''s one. One, as suggested above, will contain no goal slot; the other will read as in (4.50).

(4.50) DO: S (GO$_{Poss}$: T G P(down))

The extra goal represents the extra inherent argument. Now any sentence can append an extra 'to NP' to express a noninherent recipient in the

---

[9]tioning an object of study (as in (3.129)), the other mentioning not this but the duration of study.

sentence's FS. If any verb could add an extra G to its LE as 'lower', can (simultaneously changing its parameter of GO from Posit to Poss), there would be no force in claiming that there was a difference between semantically linked "to NP' and the grammatically linked NP after V in 'dative-movement' sentences. The fact that dative-movement is sporadic, i.e. lexically conditioned, saves our principle: for there is nothing to stop individual predicate-words from incorporating all sorts of extra inherent arguments which do not seem to follow from their root meaning. Something is wrong, however, if such additions are found occurring systematically with every predicate eligible for them in principle.

Just so, we can accept the grammatical linking of expressions of extent and duration with a few, appropriate, verbs. To allow it across the board would undermine the claim that the lexicon plays any role at all.

CHAPTER 5:

THE PASSIVE

5.1 IMPRESSIONISTIC DESCRIPTION

The principal (though not the most common) morphological exponent of the passive in Sanskrit is the passive inflexion of the verb. This inflexional paradigm is point-for-point comparable with the active inflexion, occurring in all tenses, moods and participles that have active correspondents. The formal characteristics of passive inflexion are:

1. Insertion, in the class of tenses and moods belonging to the Present system (viz. present, imperfect, imperative, potential), of a -ya- morpheme (Panini's yaK) immediately after the root.

2. Use of the atmanepada endings to designate the various combinations of tense, person and number, rather than the parasmaipada which are used in the active.

A much less flexible, but far more common, exponent of the passive is the use of the so-called 'past participle passive' in -ta-/-na- (Panini's Kta). This form, constructed directly from the verb-root, inflects like an adjective, and has certain syntactic properties reminiscent of nominals (cf. 2.4.2). However, it is enough to note that it is used to form a passive past tense of the verb, agreeing of course, like any other finite verb or main predicate, with the nominative NP. In this use, it has all the co-occurrence properties of the finite passive inflexion: in fact, it differs syntactically from this form class only in that it possesses other properties in addition.

A third, and in practice the least common, exponent of passive is the isolated third person aorist form in -i (Panini's CiN), which also entails phonological strengthening of the root-vowel of the verb. It is regarded by Panini, and may be regarded by us, as a simple alternant of the regular inflected passive's 3rd sg. aorist.

These three morphological options seem to form a single system, even if one with a high degree of redundant overlap. All of the various uses of the passive can be instantiated equally through any one of these forms, in principles, though of course only the first can offer a complete paradigm. This immediately suggests that the grammar of Sanskrit requires a concept of 'passive' distinct from any particular morphological realization.

Further details of the morphology can be found in Whitney, pp. 275ff., 304f., and 340ff.

The fundamental phenomena of the passive in Sanskrit can be readily illustrated by ringing the changes on two sentences, one transitive, the other not. Both contain, in their original <u>active</u> forms, a surface nominative, a surface accusative, and a finite verb, in a non-passive form, agreeing with the nominative NP. In the intransitive sentence, of course, the accusative is quite optional.

A1.   caitraḥ   kusūlam   abhinat

    ChaitraN   grain-   broke 3sg.
             holderA

         'Chaitra broke the grain-holder.'

B1.   aham   (māsam)   āse

    I   monthA   sit 1sg.

         'I sit (for a month).'

The status of the accusative in B1 has already been discussed at some

length (4.6.2). At any rate, it is not just a simple direct object.

Both of these sentences have an alternative form, the **personal**

passive, in which the nominative is replaced by the instrumental, the

accusative by the nominative, and the active verb by one of the passive

substitutes, now agreeing with the new nominative NP.

A2. caitrena   kusulo   'bhidyata   /   bhinnaḥ   /   'bhedi

    Chaitral   grain-   was-broken   ptcp.   Aor.Pass.
            holderN   Inflec.Pass   N. masc.sg.   (3.sg.)
            masc.sg.   3sg.

B2. mayā   māsa   asyate

    meI   monthN   is-sat
               Inflect.Pass.
               3sg.

However, the intransitive (B) alone has an alternative passive

form, the **impersonal passive**, where the accusative adjuct, if there is

one, remains accusative, while the nominative is replaced, as in the

personal passive, with an instrumental. The verb is now invariably 3sg.

neuter in agreement.

A3. *caitrena   kusulam   abhidyata/bhinnam/abhedi

    Chaitral   grain-   was-broken (3sg., neut.)
            holderA

B3. mayā (māsam) asyate   (cf. ... asitam)

    meI   monthA   is-sat   sat
           masc.   3sg.   ptcp., neut.sg.

'I sit (for a month).'   ('...sat for a month.')

Related to A1, on the other hand, but not to B1, we find the

reflexive passive. Here the accusative is replaced by a nominative,

and the verb by a passive form, which as in A2, agrees with the new

nominative. However, there is no possibility of an instrumental replacing

the nominative now: the nearest we find to substitute for such an expression is the indeclinable <u>svayameva</u> 'of itself', which gives a strong hint as to the meaning of this particular turn.

A4. (svayameva) kusūlo   'bhidyata/bhinnaḥ/'bhedi

     of-itself   grain-   was-broken (3sg., masc.)
                holderN
                masc.sg.

'The grain-holder broke (of its own accord).'

B4. * (svayameva) māsa āsyate / āsitam

                  monthN is-sat   sat
                                  ptcp.,neut.sg.

Finally, it seems that from this reflexive passive in turn there can be formed an impersonal passive. Here the nominative is replaced by an instrumental, and the verb by the 3sg neuter form of the passive. (It involves a touch of theorizing to call this the impersonal passive of A4, since we do not find double passive morphology, whatever that would be. We shall return to this topic below.) This format for sentences we call the **impersonal reflexive passive**.

A5. (svayameva) kusūlena   abhidyata/bhinnam/abhedi

     of-itself   grain-   was-broken 3sg. neut.
                holderI

'The grain-holder broke.'

B5. * (svayameva) māsena āsyate / āsitam

                  monthI is-sat   sat
                                ptcp., neut.sg.

For more discussion of these facts, together with an account of Panini's treatment of them, see Cardona 1976.

In the sections that follow, we first point out the problems that these facts pose for one current relational analysis of passive (5.2).

Then we proceed to evaluate a transformational analysis of the Sanskrit passive, before deciding on the best formulation within Case Linking grammar.

5.2   RELATIONAL GRAMMAR AND THE PASSIVE

Before proceeding to the Case Linking account of the passive in
Sanskrit, we first consider a relational analysis of these phenomena. This
will enable us to highlight a certain property of the passive that rela-
tional grammar, at least in its Postal & Perlmutter version (henceforth
RG), handles well: but we shall also show that the incidence of the
impersonal passive in Sanskrit falsifies a certain universal claim made
recently within the framework of that theory (cf. Perlmutter and Postal,
to appear).

At the outset it should be noted that RG makes no contribution to
the analysis of the place of passive morphology within the verbal system
as a whole. Since the rule of Passivization applies to sentences, rather
than to verbs, it is for RG essentially an arbitrary fact that the
morphology which shows that the rule has applied is marked on the verb
and not some other constituent. Nevertheless, RG does hold that such
morphology 'registers' the application of a certain rule: so it is a
legitimate requirement to impose on an RG account that there be a clear
relation between the incidence of such morphology, and some distinguishable
relational process. This will become important later on, when we discuss
the reflexive passives.

In RG, the natural analysis of any phenomenon which looks as much
like conventional passive as the Sanskrit passive does, is to take it as
an instance of the universal passive rule: $2 \longrightarrow 1$. '2' represents
the direct object relation, and '1' the subject relation, occurring at any

stage in the derivation of a sentence (or, to use the current term, in any stratum. So what the rule says is that the direct object of the sentence becomes the subject. If we assume that direct objects are marked accusative, and subjects nominative, the major empirical force of the rule at once becomes clear. Comparing A&B1 with A&B2, we see that the accusative NP has changed its marking to nominative. In order to make both instances fall under the 2 --> 1 rule then, we are committed to calling k͟u͟s͟u͟l͟a͟m in A1 and m͞a͞s͞a͞m in B1 direct objects, 2s (cf. note 2). Verb agreement is presumed to focus on the final subject of the sentence: hence the change as between A&B1 and A&B2.

This is only the beginning. In the theory of RG, a sentence can only have one entity on each stratum to represent a given 'term' relation (viz. 1, 2 or 3 — subject, direct or indirect object). Something therefore must be done to get rid of the old 1, when the old 2 becomes 1 under Passive. By the Relational Annihilation Law (RAL), it becomes a 'chômeur'. It is not clear whether chomeurized versions of 1s, 2s and 3s are distinct in current versions of RG: we shall, however, preserve the distinction, calling this one a '1C'. If we suppose instrumental to be the case of 1Cs in general, we account for the instrumental case characterizing the ex-subjects in A2 and B2.[1]

---

[1]This characterization of the incidence of the instrumental is conveniently similar to its use as a marking for 2Cs, suggested in 3.2.4 above. As we shall soon see, however, it is not possible to claim that all chômeurs are marked with the instrumental. It is a disadvantage of this account of instrumentals in passive sentences that the connexion with other uses of the instrumental is sundered: but this is a criticism which might also be levelled against Case Linking theory, which allows both semantic and grammatical linking of the instrumental.

So much, then, for the personal passives in RG. The impersonal

passives suffer from the problem that there is no overt nominative in the

sentence. Since the 2 is still marked accusative, there seems to be a pro-

blem in appealing once again to the 2 ⟶ 1 rule; but without this, there

is no motivation for the passive morphology on the verb, or the instrumental

on the old 1. The problem is solved by the introduction of the concept of

a dummy. This element is inserted in the direct object position.[2] It is

then advanced to 1, with the same effects on verb morphology and the case-

marking of the old 1, as in the personal passive. The dummy itself never

shows up on the surface, except perhaps indirectly, through the 3sg. neuter

agreement of the verb. (But this might in any case be simple unmarked

verb marking, activated when there is nothing else to agree with.) Sanskrit

will not be the first language, however, where such abstract dummies have

been postulated in RG to account for an impersonal passive.

This will suffice as a sketch of the likely RG analysis of the

Sanskrit passive, quite unexceptional in the light of RG's universal

characterization of Passive (cf. Postal and Perlmutter, 1977). The RG

treatment of the reflexive passive and reflexive impersonal passive is so

---

[2]One might expect this to activate the RAL, demoting the existing
2, masam to the level of 2C. But as we have already seen in 4.6.2, accusa-
tive duration expressions can co-exist quite happily with the direct objects
of transitive verbs. (An example: Śat. Br. 11,5,1,14 saṃvatsaraṃ catuṣprasyam
odanaṃ paca 'cook for a year rice that is food for four', quoted in Gaedicke
p. 175.) So most likely, the accusative māsam will be held a non-term rela-
tion, Duration. In order to allow the personal passive to apply to it, of
course, it will have to have been promoted to 2. So RG will probably have
to postulate a rule equivalent to Transitivization (secn. 4.6), promoting
certain non-term relation holders to 2. This is all irrelevant to the
issue of Dummies and impersonal passives.

doubtful that we will postpone it until our general consideration of problems for this analysis as a whole. However, it must be admitted at this stage that RG provides neatly for the case alternations observed in the central data on personal and impersonal passives. Furthermore, it makes one significant correct prediction that Case Linking will have some difficulty in duplicating.

This concerns the ditransitive verbs, discussed in 4.4. Although these verbs are distinctive in allowing two accusative objects, they all permit an. alternative construction in which one of these occurs in another oblique case. Hence we find:

(5.1) i.   gām payo dogdhi <u>but also</u>   ii.   goḥ payo dogdhi

            cowA   he-milks   cowB milkA he-milks

                  milkA

(5.2) i.   vrajam gām avaruṇaddhi   ii.   vraje gām avaruṇaddhi

            penA   cowA he-shuts-in   penL cowA he-shuts-in

(5.3) i.   mānavakaṃ dharmaṃ brūte   ii.   mānavakam dharmaṃ brūte

            boyA   dutyA   he-tells   boyD   dutyA   he-tells

(5.4) i.   pauravaṃ kambalaṃ yācate   ii.   pauravāt kambalaṃ yācate

            PauravaA blanketA he-asks   PauravaB blaṇket he-asks

      (Data largely from Joshi & Roodbergen 1975, pp. 194ff.
       cf. Speijer 1886, S34-5.)

RG would naturally account for this alternation by taking the ii sentences as underlying, the accusative and other oblique case representing a 2 and a non-term relation respectively. In the case of these verbs, the non-term relation may be advanced to 2. This promotion rule, Non-term → 2, unlike Passive, has no effect on the verb's morphology. When it applies, the old 2s are converted into 2Cs, according to the provisions of the RAL. No overt change in case-marking is observed, so we are forced to allow the

accusative as a 2C marking. (Perhaps not the only one; for another set of instances, it seems that the instrumental is required: cf. our tentative relational analysis of the phenomena which motivated grammatical linking of the instrumental in 3.2.4; see also note 1 to this chapter.)

However, RG makes a prediction which will distinguish the two accusatives. Since one is a 2, the other a 2C, only the former will be amenable to Passive (2 —→ 1). We predict, therefore, that whereas the ii sentences will passivize as in (5.5ff), of the two passivizations conceivable for the i sentences, only those in (5.9ff.) will be possible. Those in (5.13ff) will be ungrammatical. This prediction is correct.

(5.5)   goh   payo   duhyate

cowB milkN is-milked 'milk is milked from the cow.'

(5.6)   vraje gaur avarudhyate   'The cow is shut up in the pen.'

penL   cowN   is-shut-in

(5.7)   mānavakāya dharmo brūyate

boyD   dutyN is-told 'Duty is told to the boy.'

(5.8)   pauravāt   kambalo yācyate

PauravaB blanketN is-asked   'A blanket is requested of P.'

(5.9)   gauḥ payo duhyate

cowN milkA is-milked   'The cow is milked milk.'

(5.10) vrajo gām avarudhyate

penN cowA is-shut-in 'The pen is enclosed the cow'

i.e. has the cow shut up in it.

(5.11) mānavako dharmaṃ brūyate

boyN   dutyA is-told   'The boy is told duty.'

(5.12)   pauravaḥ kambalam yācyate

PauravaN blanketA is-asked 'P. is asked for a blanket.'

—————————————————

(5.13)   * gāṃ payo duhyate

cowA milkN is-milked

(5.14)   * vrajaṃ gaur avarudhyate

penA   cowN is-shut-in

(5.14)   * mānavakaṃ dharmo brūyate

boyA   dutyA is-told

(5.16)   * pauravaṃ kambalo yācyate

PauravaA blanketA is-asked

(cf. Joshi & Roodbergen 1975, ibid,; and S 35.)

So as not to misrepresent the information presented by the gramma-
tical tradition, it should be added that some verbs traditionally included
among the ditransitives (dvikarmaka) are exceptions to this. The principal
such example given (the only concrete one to my knowledge) is the verb
nī 'to lead'. which is said to present patterns of active and passive as
in (5.17).

(5.17) Active: ajaṃ grāmaṃ   nayati

goatA village he-leads   'He leads the goat to the
           A   village.'

Passive: ajā grāmaṃ nīyate/nīta

goatN villageA is-led/led
                    ptcp., fem.sg

(Cf. Joshi & Roodbergen 1975, p. 209.)

This, however, is not so surprising. In any theory, including RG
(though not traditional Paninean grammar, for which these passives are a
problem) it is likely that the accusative will be assigned a function as a

marker of 'motion towards' (a non-term relation) as well as its role as

marker of 2s. (The term relations of RG correspond very roughly to our

grammatically linked cases; so the whole domain of semantic linking remains

to be covered by non-terms.) Hence there is no need to postulate any promo-

tion at all in ajāṃ grāmaṃ nayati: the 2 is ajām, and the non-term adjunct

grāmam. So naturally, passive 2 —> 1 will advance ajām and not grāmam.

If there were other evidence for an advancement of grāmam to 2, we might

expect a passive as ? ajām grāmo nīyate (goatA - villageN ...), but not

otherwise.[3]

Certainly there is no principle which effectively stops any accusa-

tive-marked NP which designates a goal of motion from becoming a nominative-

marked 1 in the passive. On the contrary, grāmo gamyate (villageN - is-

gone) 'the village is gone to' is the classic example of the passive from

grāmam gacchati (villageA - he-goes) 'he goes to the village'. RG will

have to assume that, at least in this instance (and cf. the possibility of

either a personal or an impersonal passive from māsam āste 'he sits (for)

a month') a non-term adjunct can be promoted to 2 without overt effect on

the simple sentence. The promotion only shows up in making a personal

passive possible.

---

[3]The fact that with the nominalized form netar- 'leader' both NPs
can appear in the genitive might constitute such evidence: netā'śvasya
srughnasya beside netā'śvasya srughnam 'the leader of the horseG to
SrughnaG/A (Joshi & Roodbergen 1975, p.232). However, it is not clear
what RG would make of such evidence, since it has not yet developed a
theory of genitive incidence, or of adnominal grammatical relations in
general.

We turn to some counterevidence that the Sanskrit passive provides to
some claims advanced in the recent RG paper <u>The 1-Advancement Exclusiveness
Law</u> (Perlmutter & Postal, to appear).

The evidence is relevant to the interaction of two principles pro-
posed there. One is the <u>Unaccusative Hypothesis</u>. In its weaker version,
this simply claims that, of predicates which do not take both a 1 and 2
in their initial stratum (i.e. at the deepest syntactic level), some will
co-occur with an initial 1, others with an initial 2. This distinction is
neutralized on the surface, since both types will emerge as intransitives
with a surface subject, i.e. 1. In the case of initial-1 predicates
(called 'unergatives') this follows without any relational activity at
all. But in the case of initial-2 predicates, the 'unaccusative' intran-
sitives, this is brought about by the rule of <u>Unaccusative Advancement</u>.
This rule, like Passive, advances a 2 to 1; but it differs from Passive in
that it applies only when there is nothing already in the 1 position:
effectively, this is the same as saying that, unlike Passive, it does not
c reate a 1C.

This is the weaker version of the Unaccusative Hypothesis, which
simply makes available a distinction between two types of intransitive
verbs. The stronger version makes a first step towards saying where
that distinction will cut. It begins to make good one of the long-standing
promissory notes of RG -- viz. that initial term-value (1, 2 and 3) are
semantically determined, and that these determinations do not vary from
language to language. In particular, the claim is made that "those intran-
sitive predicates occurring with so-called Agents, Experiencers or Cognizers
determine initial unergative strata" -- i.e. take an initial 1, whereas
the others take an initial 2. Some partial lists are given, to make this

characterization clearer, and these are repeated here.

Unergative strata-determining Intransitive Predicates:

act, burp, cough, dance, exercise, fight, grin, hiccough, jump, laugh, meditate, peer, quack, run, smile, think, voyage, work, yell

Unaccusative strata-determining Intransitive Predicates:

arrive, burst, collapse, drip, exist, fall, grow, happen, increase, jam, keep up, level off, melt, ooze, perish, quiver, recur, shrink, tear, unite vanish, wane

In particular, we claim that all of the very large class of inchoative verbs, break, crack, melt, widen, etc. are unaccusative determining.

It seems that a distinction similar to the one being made here would have a basis in the theory of FS proposed in this work. In essence, 'unergative intransitives would correspond to FRs whose highest argument was actional and animate, 'unaccusative' ones to other FRs.

The second principle jointly at issue in the discussion to follow is the 1-Advancement Exclusiveness Law (henceforth 1AEX) itself. In the less technical of the two (apparently equivalent) formulations given the paper, it states:

1AEX

The set of advancements to 1 in a single clause contains at most one member.

RG predicts, therefore, that Unaccusative Advancement and Passive will not both take place in the same clause. Unaccusative transitives will not form passives. In the paper, the prediction is stated as "the class of intransitive predicates permitting impersonal passive clauses is a subset of the class of unergative predicates." But this neglects the possibility, instantiated in Sanskrit as we have seen, that intransitive predicates will in some cases have personal passives (cf. B2). As speculated in note 2 to this chapter, this will only happen if some transitivization rule advances a non-term adjunct to 2: but this is irrelevant

to the 1AEX. A personal passive of an unaccusative intransitive, if it exists, must involve two advancements to 1 within a single clause.[4] Therefore RG makes the prediction that unaccusatives will not undergo passive of any type.

To this Sanskrit yields abundant counterexamples.

To start with the least solid, we might already quote sentences like B2 and B3, along with others quoted as examples in the traditional grammatical literature (cf. esp. Mahābhāshya on Panini 1.4.51), where we are confronted with passives of verbs such as ās 'sit, śī 'lie', svap 'sleep'.

(5.18)

devadattena māsa $\begin{cases} \bar{a}syate \\ śayyate \\ supyate \end{cases}$ 'D. $\begin{cases} sits \\ lies \\ sleeps \end{cases}$ for a month.'

Devadattal monthN is-sat/lain/slept
3sg Passive

(5.19)

devadattena māsam $\begin{cases} asyate \\ śayyate \\ supyate \end{cases}$ do.

do. monthA do.

In these examples it would be stretching it to say that the old 1 (devadattena) represents an agent, cognizer or experiencer. The presumption is, therefore, that these verbs are unaccusative intransitives in the

---

[4]To spell out the reasoning here: passive morphology means that the passive rule must apply somewhere in the derivation; the RG analysis of passive is 2 ⟶ 1, where some old 1 is displaced by the RAL; an old 1 can only have arisen in such unaccusative sentences, which by definition have no initial 1, by Unaccusative advancement. Therefore, two advancements to 1, (viz. Unaccusative Advancement and Passive) must have applied.

passive. However, in all the sentences quoted the relevant NP is animate. And so it might be claimed that the verbs have, at least in such contexts as these, a representation in which they select an Agent (or maybe, in the case of svap, an Experiencer) and hence an initial 1. Such a claim is in fact made by Perlmutter and Postal for the German verbs bluten 'bleed' and sterben 'die'. which allow an impersonal passive only if the action takes place voluntarily.

However, Sanskrit examples of impersonal passive extend beyond this. We find examples like (5.20f.), where the verb in the passive not only applies to an inanimate, but also refers to an event which would be quite independent of that inanimate's causal powers.

(5.20)   phalitam vrksaih   RajT. 2.5 (R 498)

         fruited   treesI
         ptcp. neut.   'The trees have borne fruit.'
         sg.N

(5.21)   katham evam pralapatam vah sahasradha na dIrnam

         how   thus prating   youG 1000-fold not shivered
                     ptcp.Gpl   pl   ptcp. neut.sg.N

         anaya jihvaya   Ve.3, p.79 (S4)

         thatI tongueI

         'How can it be that that tongue of you who talk such

         nonsense does not shiver into a thousand pieces?'

And the impersonal passive even extends to the verb 'to be' bhū. In its sense 'exist', it is a classic example of what RG predicts should be unaccusative. But here is an example of an impersonal passive in a sense closely related to this, differing only in the point of being inchoative instead of stative. (Remember that unaccusatives were explicitly claimed to include all inchoatives.)

(5.22)   samabhāvi kopena   Bk. 3.34 (R498)

it-was-   angerI
come-into-
being   'Anger burst forth.'

aor.pass.3sg.

There is no reason why the copulative use should be judged less

unaccusative than the existential use of this verb. And here too we

find impersonal passives.

(5.23)   anaghena bhāvitā ... makhena me   Śiś. 14.8 (R498)

faultlessI will-be   sacrificeI meG
            3sg.

'My sacrifice will be faultless.'

(5.24)   balakena sakalakleśasahena abhāvi   Daśakum. 18 (S 22)

babyI   all-trouble-en- it-was-been
           during I   aor.pass. 3sg.

'The baby endured all this trouble.'

(5.25)   tvadanujīvinā rājaputrena bhavitavyam Daśakum. 164 (S 22)

your-attendantI princeI   to-be-been
                          gerundive, neut.sg.N

'The prince deserves to be your attendant.'

(5.26)   tasya ca śabdānurūpena parākramena bhāvyam Panc. (S22)

himG and voice-suitableI prowessI to-be-been
                                   gerundive, neut.sg.N

'And his strength may be adequate to his voice.'

In every case, there is no way to attribute a voluntary or conscious

status to the NP which appears in the instrumental. The first example

involves a verb-form that is not formally passive, since the periphrastic

future tense neutralizes the active-passive distinction. And the last

two sentences involve verbal adjectives, krtya's, with some model force.

This might be thought to moderate their weight as examples, since they are

not clear, simple, passives. But RG is committed to explaining the instru-

mentals of the type found here as 1Cs: therefore whatever the precise

mechanism that derives these forms, the 1AEX must have been violated.

(Since there is _ex hypothesi_ no initial 1 in these clauses, the existence

of a 1C on the surface requires that two advancements to 1 should have

taken place.)

Impersonal passives are also found with other copulative verbs.

(5.27)   mayā na śayānena sthīyate   Mudr. 1 (S22)

    meI   not lying   it-is-stood
              ptcp.I   pass. 3sg.

'I do not remain lying down.'

In all these impersonal passives of copulative sentences, the

predicative expression agrees in case with the instrumental 'demoted subject';

it is never neuter singular nominative, as might be expected if it agreed

with a surface subject dummy. This is precisely what is predicted by

the theory of predication and agreement given in 3.3.2-3, since the pre-

dicative expression is no less predicated of the instrumental NP in the

passive than it would have been of a corresponding nominative in the

active.

The reflexive passives pose more problems for RG. The theory is

familiar with so-called 'Copy Passives' which combine reflexive morphology

with passive meaning: e.g. German solche Sachen vergessen sich nicht 'such

things are not easily forgotten', literally 'such things don't forget

themselves'. It copes with them by supposing that the 2 advanced to 1

does not cease to hold its position as a 2. The NP therefore ends up

holding two relations, 1 and 2 -- exactly the same as in ordinary reflexives

(cf. German solche Leute waschen sich nicht' 'such people do not wash

themselves').

In the case of the Sanskrit reflexive passives we have essentially the reverse of this, a construction with passive morphology, but something like reflexive meaning. (The actual Sanskrit reflexive uses rather different means of expression.)[5] It is clear that we are dealing with a true case of passive here, not just the fact that certain verbs have an intransitive stem in -ya- with Atmanepada endings:[6] for as A4 shows, all types of passive morphology are found in this usage.[7] Thus in Kāśikā 3.1.87 we find the examples in (5.38-9).

(5.28)   bhidyate/abhedi kaṣṭaṃ svayameva

is/was broken   woodN   of-itself

'The wood just breaks/broke.'

---

[5]Usually an oblique case of the reflexive pronoun ātman is used (cf. S 198ff.) This is omissible if the verb is in the Middle. In exceptional cases, we even find passive morphology with reflexive meaning e.g. parimucyasva raghava 'save yourself, Raghava' R.3.69.39; but this is rare, not a generalized process like the reflexive passive under discussion here.

[6]It is probable that the reflexive passive originated in that fact that certain verbs had intransitive stems in -ya-. For example, in the Vedas, pácyate means 'ripen' while pacyáte means 'be cooked'. In fact, the origin of the -ya- suffix itself is likely to have been in some Indoeuropean intransitivizer (cf. Speijer's remarks at S 240; Renou p.435). But this is irrelevant to the synchronic description of classical Sanskrit, where as the possibility of other types of passive morphology shows, the reflexive passive had become an integral part of the passive system.

[7]The participial form in this use is explicitly validated, at least for the impersonal case (A5) in the Padamanjari commentary on 3.1.67: PM II. 470-1, quoted in Cardona 1974, note 31.

(5.29) kāriṣyate kaṭaḥ svayameva

       will-be-   matN of-itself
       made 3sg.

       'The mat will make itself.'
         i.e. there will be no difficulty in making it.

Here besides an essential repeat of two of the forms in A4, we see

the future of the passive (where no -ya- stem is possible, since the tense

falls outside the Present system).

To account for the passive morphology, RG is committed to an

explanation in terms of the Passive: otherwise a clear generalization is

lost. This means positing an advancement to 1. But as we have seen (A5:

cf. the commentaries on Panini 3.1.67) to each reflexive passive there

corresponds an impersonal reflexive passive -- with a 3rd singular neuter

form of the verb, and the possibility of a 'subject' NP in the instrumental.

The natural RG explanation for this is to posit the advancement of a Dummy

to 1, the manoeuvre that characterizes impersonal passives in general:

this will simultaneously account for the 3rd singular neuter verb and,

by RAL, will bump the 1 which had been created by the Reflexive Passive

down to 1C, so that it will be marked instrumental.

Although Passive, in some form, will then have applied twice in

this derivation, it is no problem for this analysis that we do not have

double passive morphology. There is no such thing. It seems that, in

Sanskrit at least, although the semantic operation corresponding to a

morphological process may be iterated, the morphological process itself

is not. To take an example with the causative diathesis, compare (5.30)

and (5.31).

(5.30) gamayati devadatto   yajñadattam

go-Caus DevadattaN YajnadattaA
pres.3sg

'D. makes Y. go.'

(5.31) gamayati devadattena yajñadattaṃ viṣṇumitraḥ

do.   DevadattaI do.   ViṣnumitraN

'V. makes D. make Y. go.'

(both quoted from Kaś. 1.4.52)

(5.31)'s FS contains one more level of causal embedding than (5.30). But

the form of the verb used, gamayati, contains only one instance of the causal

morpheme -aya- (Panini's NiC).

RG mechanisms provide an enviable account of the phenomena of per-

sonal and impersonal passive in Sanskrit. But any account which employs

these to account for the identical morphology of the reflexive passive,

together with the instrumental that accompanies the impersonal version of

this, will need to posit two advancements to 1 within the same clause,

and hence violate the 1AEX.

We see, then that two features of the passive in Sanskrit militate

against the 1AEX. One, the overblown use of impersonal passives falsifies

the predictions from the interaction of 1AEX with the Unaccusative Hypo-

thesis; and two, the fact that in iterated passive can be formed from the

reflexive passive falsifies the 1AEX's basic claim that there will not be

two advancements to 1 within the same clause, at least provided that one

accepts the obvious analysis of the reflexive passive as a species of

passive 2 → 1.

However, the 1AEX does accomplish a fine body of explanatory work,

as is shown by Perlmutter and Postal (to appear). It would be an advance

if grammatical theory could be made looser enough to incorporate the

Sanskrit passive, but yet allow a natural alternative analysis of passive in others languages, from which the lAEX would follow. This will be our goal in the sections that follow.

5.3 A BASIC TRANSFORMATIONAL ANALYSIS OF THE PASSIVE

In this section we consider the properties of an analysis of the
Passive which acts directly to convert an active sentence into the corre-
sponding passive one. Such a rule we call Structural Passive (SP). The
rule is given in a fully specified, and hence somewhat baroque, form in
(5.32). It is unlikely that any current transformational theory would allow
rules in precisely this form. But this does not affect the point of the
discussion here, which is not to criticize the rule from the viewpoint of
explanatory adequacy: rather, we simply use the rule as a concrete statement
of all the relations between the active and the passive sentence that would
be expected to flow from a purely transformational theory.

(5.32) Structural Passive (SP)

$$ _S\left[(\bar{\bar{N}}_1) - X - _V\left[(\bar{\bar{N}}_2)\ \bar{V} \right]_{\bar{V}} \right]_S \rightarrow \left[_{S\bar{P}}\ \bar{\bar{N}}_1\ Instr \right]_{\bar{P}}\ N_2 - X - V_{Pass} $$

Here 'V_{Pass}' designates a verb-form with any of the types of passive
morphology that we have seen to be possible (5.1 above). We assume the
theory of case-incidence developed in section 2.7. Therefore, in the
structural description, $\bar{\bar{N}}_1$, immediately dominated by S, will be assigned
nominative,[8] $\bar{\bar{N}}_2$, c-commanded by V, will be accusative. In the structural

---

[8]For ease of exposition, the precise content of CI1 has been dis-
torted here. It in fact applies nominative to the heads of N c-commanded
by V, rather than immediately dominated by S. But this difference doesn't
amount to much (cf. 2.7).

change, $\bar{\bar{N}}_2$ is immediately dominated by S and therefore nominative, $\bar{\bar{N}}_1$ is c-com-
manded by the case-symbol 'I' (given as 'Instr' for clairty), and is there-
fore instrumental. The parentheses in the input string are intended to dis-
criminate in favor of the maximal expression: e.g., if there is an object NP
in the input sentence, it must be transformed into an NP under S in the output
of the rule.

The interaction of the rule with lexical insertion and semantic inter-
pretation would of course be controversial matters. It would avois compli-
cating the rules for semantic interpretation if the alignment with Ns with
argument-places in FS took place before applying SP. Therefore lexical in-
sertion of predicates (with their associated FRs) must precede SP. But Agree-
ment of the subject and predicate is determined on the basis of SP's output.
$\bar{\bar{N}}2$ is the focus of agreement on V_{Pass}. If we follow the argument in 3.3.2-3
that Agreement is a constraint on Predication Assignment, then we have a
slight paradox: one constraint on a process of semantic interpretation (viz.
predication) must apply after a rule which follows another process of semantic
intereprotation (viz. alignment of NP and role). Since we have assumed that
Predication Assignment and Linking are separate process (cf. 3.2.3) this is
no great problem. And if for some reason it is desirable to include both in
a coherent block of Processes, called SI (e.g. to make them precede all cyclic
transformations), it is always possible to conceive formal agreement as a
surface filter, assigning ungrammatical status to sentences where items, how-
ever, we should prefer to avoid such an artificial separation of formal marking
from the semantic relations on which it depends.

SP accounts for impersonal passives quite adequately. If $\bar{\bar{N}}_2$ is absent
from the input structure, it produces an output structure with an instrumen-
tal representing $\bar{\bar{N}}_1$, and otherwise no $\bar{\bar{N}}$ immediately dominated by S,

hence no nominative at all, as in B3: $\underline{\text{mayā āsyate}}$. This means that SP can output structures which are not generated by the PS rules given in chapter 2: for as was discussed at length in 2.2 (PS2) subjectless sentences which are not impersonal passives do not seem to exist in Sanskrit. It is a moot point whether this makes SP into a non-structure-preserving rule (cf. Emonds 1976). As we shall see in a moment, when we come to consider SP's generation of reflexive passives, there is some slight evidence for underlying simple sentences that lack a subject: so it may be that PS2 should be revised to make this possible. If the argument for subjectless simple sentences is rejected, then it must be regarded as an advantage of this analysis that it generates sentences beyond the power of the PS rules with no extra machinery and in the right place.

The rule will have to be supplemented with some sort of transitivization process (cf. 4.4.2) to generate such personal passives of intransitive verbs as $\underline{\text{māsa āsyate}}$ (B2). It might have been thought that if we rephrased SP with $'\overline{\overline{\text{N}}}_{\text{Acc}}'$ instead of $'\underline{\underline{\overline{\overline{\text{N}}...}}}_{\text{V}}'$, and adopted a more liberal interpretation of the meaning of parentheses, we might avoid this necessity. Suppose, then that SP were replaced by SP' in (5.33).

(5.33) $\underline{\text{SP'}}$

$$_{S}\left[(\overline{\overline{\text{N}}}_{1}) - X - (\overline{\overline{\text{N}}}_{2\text{-Acc}}) \ V\right]_{S} \longrightarrow \ ...$$

Here the parentheses are interpreted to mean that when applying the structural description to a sentence, items in parentheses need only optionally be taken into account. Hence applied to B1 ($\underline{\text{ahaṃ māsam āse}}$), SP' will output either the personal or the impersonal passive (B2 or B3) depending on whether $\underline{\text{māsam}}$ is taken into account or not. The problem with this approach is, of course, that SP' will likewise output either a personal or impersonal passive to A1 ($\underline{\text{caitraḥ kusūlam abhinat}}$). But this is wrong:

simply to have a lexically null $\overline{\overline{N}}$, we should predict that reflexive passives were possible with all transitive verbs, since all verbs can take a lexically null subject. We shall return to the question of passive and structure-preservation in the discussion of our preferred analysis of passive in 5.5.

The second problem for this analysis concerns restrictions on the incidence of reflexive passive, even among transitive verbs. We have just remarked that if an absent subject NP were taken to refer to no more than zero lexical insertion, we should predict that every transitive verb could appear in reflexive passive form. Even on the assumption that the input requires total absence of the $\overline{N}$ node, we shall be hard put to it, within this purely structural analysis of passive, to account for the restrictions which do in fact constrain the incidence of reflexive passive.

Supplementary varttika 3 on Panini 3.1.87 (<u>karmavat karmanā tulyakriyaḥ</u> — the rule that generates the reflexive passive) runs as follows: <u>tathā karmasthabhāvakānām karmastyakriyānam ca</u>: 'that is to say, of verbs which express either a state or an action that affects the <u>object</u>'. Patanjali immediately explains that according to this varttika the reflexive passive is possible only for such verbs, the point being that reflexive passives are impossible for verbs which express a state or action affecting the <u>subject</u> (<u>kartṛsthabhāvakānām</u>, <u>kartṛsthakriyānam</u>). Hence he says, the verbs in (5.34-5) will have reflexive passives; but those in (5.36-7) will not. For the reader's convenience, the relevant sentences predicted are given after the related active verbs or phrases offered as examples by Patanjali.[9]

---

[9]Kaiyata implies that the <u>kartrsthabhāvaka</u> and <u>-kriya</u> verbs will therefore be usable in the same "reflexive passive" sense, without passive morphology: e.g. paśyati <u>rājā svayameva</u> ('the king sees of himself' i.e.

(5.34) __karmasthabhāvaka__   State affects Object

i.   āsayati   āsayate

ii. śāyayati   devadattam   śāyayate   devadattaḥ
                                                  (svayāmeva)[10]

iii. sthāpayati   sthāpayate

he-causes-to   DevadattaA   is-(caused-to) Dev.N
   sit/lie/stand   do.   (of himself)

(5.35) __karmasthakriya__ Action affects Object

i.   gām avaruṇaddhi   gaur avarudhyate (svay.)

     cowA he-pens-up   cowN is-penned-up (of its.)

ii. karoti kaṭam   kaṭaḥ kriyate (svay.)

     he-makes matA   matA is-made (of itself)

(5.36) __kartṛsthabhāvaka__ State affects Subject

i.   cintayati

     he-thinks

ii. mantrayati

     he-counsels   .

9
     'is in the public eye'?) __ārohati hastī svayameva__ ('the elephant
mounts of itself' i.e. 'is easy to mount"?). But since this is nowhere
claimed in Patanjali, and seems intrinsically implausible, we shall dis-
regard it as a misunderstanding of the varttika.

10
     The forms given here to represent the reflexive passive are in
fact those of the Middle: this is in accordance with the first varttika
on 3.1.69, which excepts all causatives from taking __yaK__ or __CiN__ in the
reflexive passive. (__yakcinoh pratisedhe hetumānni-sri-brun-am upasank-
hyānam__). 3.1.68-9, where supposed exceptions to and restrictions on
the reflexive passive are given, contain a hodge-podge of different verbs
that can be used intransitively in the Middle. Since not all of them
correspond to an active verb used transitively, it is not clear why they
have traditionally been thought relevant to the reflexive passive.

(5.37)   <u>kartṛsthakriya</u> Action affects Subject

     i.   gacchati   *grāmo gamyate (svayameva)

         he-goes   villageN is-gone-to
                                              (of itself)

    ii.   dhāvati

         he-runs

   iii.   hasati   *hasyate kitavaḥ (svayameva)

         he-laughs   is-laughed-
                                    at   gamblerN (of hims.)

Whatever the precise import of the Sanskrit terminology here, it is clear that a distinction based on functional structure is relevant. It is not enough simply to appeal to syntactic transitivity, which might in any case have ruled out personal passives for <u>dhāvati</u> and <u>mantrayati</u>. As (5.38-40) show, the other three verbs quoted by Patanjali all have attested personal passives (in the case of <u>gacchati</u> from the writings of Patanjali himself), and so must be at least optionally transitive.

(5.38)   gaṃsyate so 'rthaḥ   Patanjali 1.464 (S 30)

         will-be-   thatN
         gone-to   meaningN   'That meaning will be understood.'

(5.39)   cintitā mayā gītikā   Śāk. 3.15

         thought-   meI   dittyN
         of N,Fem.   'I have thought of a little song.'

(5.40)   aye kena etad hasitam   Pādatāḍitaka of Syāmilaka 8.1
                                         (ed. G.H.Schokker, D.Reidel 1966)

         ah   whoI thisN laughedN

                              'Ah, who laughed at this?'

However, if the restriction is based on differences of functional structure, it is obviously impossible to incorporate it into a strictly structural rule like SP. And even if it were satisfactory simply to mark the verbs one by one, there is the problem that the difference is to be

analyzed, given SP, as a distinction between verbs that can dispense with

a structural subject underlyingly, and those that cannot. But the principal

constraint that we have on the power of lexical entries for verbs is that

they are limited to referring to constituents of $\overline{\overline{V}}$. The structural subject,

however, is the $\overline{\overline{N}}$ immediately dominated by S, and so its incidence should be

beyond the scope of what can be provided for in a lexical entry.

This problem need not affect a theory which characterizes passive

explicitly in terms of FR, as we shall see.

The predominant surface word order of passive sentences is one

generalization which SP (alone among the analyses to be considered here) is

able to account for readily within the syntax. Speyer (1896, p.76) notes

that "im passivischen Ausdruck nimmt der Agens gemeiniglich die Subjekts-

stelle ein" — meaning by this that it comes first. This is confirmed by

Canedo (1937, p.39): "bei der passiven Konstruktion, 'Instr. – Prädikat –

Subjekt" oder Instr. – Subjekt – Prädikat" scheint habituell zu sein."

The brutely constructed instrumental under S in the output of SP has its

place in the sentence specified by the rule. Other analyses we shall

consider, which assimilate the instrumental here more to other oblique

case adjuncts, will leave its position unspecified, or predict that like

those adjuncts, unmarked position should be at the beginning of the verb

phrase. In conjunction with such word-order here has to do with some

processing strategy with no connexion to formal syntax. This is, after

all, what every analysis will have to claim with respect to many other

tendencies in word-order (cf. 2.8 above).

However, in direct contrast to this greater explicitness about the

predominant word-order position of passive instrumentals, SP is deficient

in that it has no account for why the ex-subject appears in this particular

case, which is a mere artefact if its output. Presumably, it pressed, a

holder of this theory could claim that there is little to be said here:

the passive instrumental's relation to the other uses of the case is at

most a historical one. But then one is tempted to ask what the original

use of the instrumental was from which the use in the passive developed.

Moreover, it is suspicious that the instrumental is used with indistinguish-

able meaning in a variety of constructions which lack the morphological

marks of a passive verb: in construction with deverbal nouns (e.g.

(2.179-80)), and various deverbal adjectives in -ya-, -tavya-etc. (e.g.

(5.25-6)). If SP is pressed into accounting for these too, it will be

necessary to posit a whole slew of clause-reduction morphology-insertion

precesses which are otherwise unmotivated — and are quite uncalled-for in

the purely lexical analysis that we shall suggest in 5.5.

As a final comment on SP, this time as a potential universal theory

of Passive, we mention that it cannot provide any natural account for the

fact that the principle that relational grammarians have uncovered, under

the title of the "1AEX" (cf 5.2.2 above) is to a limited extent true. This

failure is due to the same general property of wholly structural analyses

which was mentioned in connexion with the restrictions on reflexive passive:

SP makes no reference to the functional role of the NPs concerned, and

hence cannot express the generalizations to which they are crucial.

To sum up this section: a strictly structural theory of the Sanskrit

passive, as epitomized in SP, can give an adequate and unitary account of

personal and impersonal passives. It is also the most natural formulation

for passive if this can be shown not to be a structure-preserving rule.

However, there are serious flaws in its analysis of the reflexive passive:

an additional surface output constraint is required; certain constraints on

the rule, connected with functional roles, cannot be stated; and expression

of the restrictions even as a list would force us to relax the most important

constraint on the power of lexical entries. It accounts neatly for a

surface word-order quirk of many passive sentences; but by the same token, it

needs supplementation with a number of clause-reduction and morphosyntactic

process if it is to allow a unitary account of a natural class of uses of

the instrumental.

5.4 A "MOVE NP" ANALYSIS OF THE SANSKRIT PASSIVE

Chomsky (1976) proposes that the Passive rule in English should be analyzed as two special instances of the rule Move NP, one instance removing the subject NP to a position after the preposition by, the other promoting the object NP from its position in VP to the now vacated subject-position. (This is proposed in conjunction with a form of 'Trace Theory', whereby a moved element's old position is represented, other things being equal, by a trace in surface structure. But this will not be relevant to the discussion here.) This theory of passive is usually combined with a particular theory of the phrase-structure rules' contribution to passive sentences, attributed to Fiengo 1974. In this latter theory, the incidence of be, past participle and by-phrase are generated in the base, and are not formally a part of the passive transformation. Passive sentences are therefore distinct from their active correlates even at the PS level. Schematically, the underlying form for passive sentences is as in (5.41); the arrows represent the workings of Move NP applied to this structure.
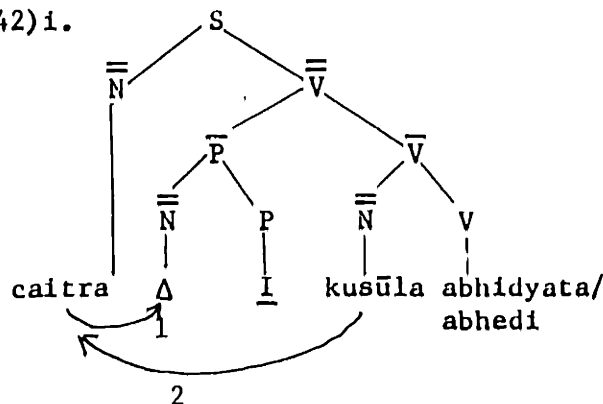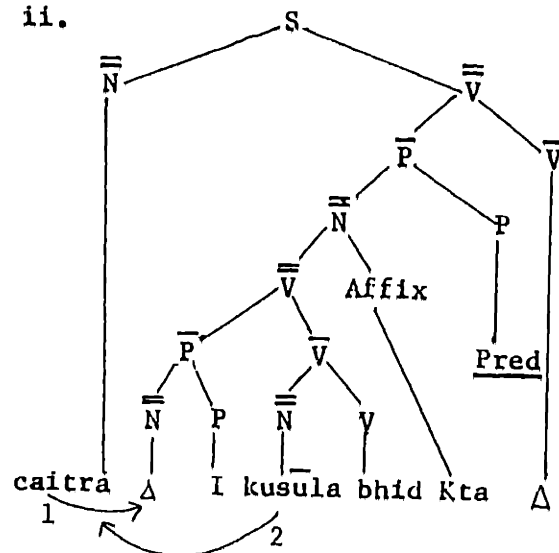
(5.41)
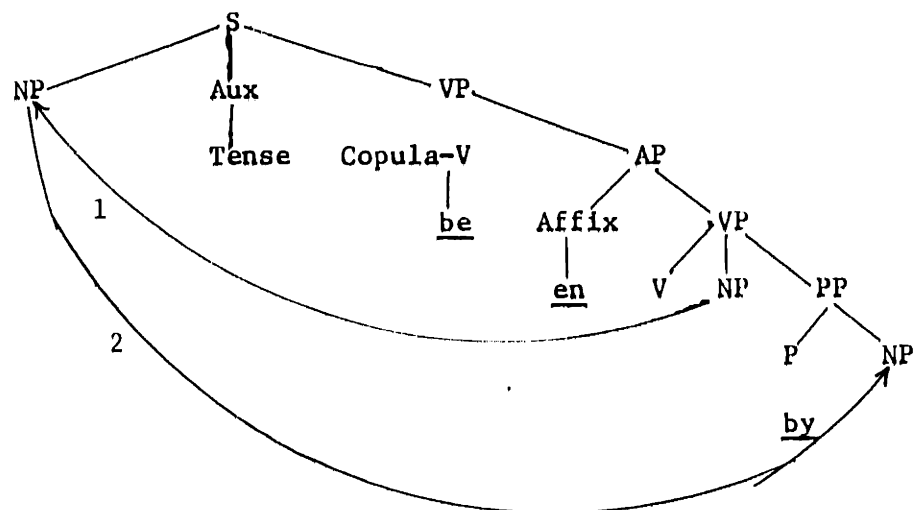
This is not the place to criticize this proposal from the point of view of its adequacy to the English facts, or as a contribution to the theory of universal grammar. Instead, we shall simply construct an analogous proposal for Sanskrit, and consider its empirical and descriptive advantages, again as a possible alternative to the fully lexical solution proposed in 5.5.

We assume, then, that PS rules hold in the form in which they were given in Chapter 2, including PS5, which is responsible for the incidence of the past participle passive. In conjunction with a verbal element that has passive morphology (the main species of this have been sketched in 5.1) the two instances of Move NP must apply if they can. For convenience, we shall take the two movements as separate rules, but this is not to prejudge the ssûe of whether 'move NP' is a sufficient characterization for all purposes, if only the right form for all constraints etc. can be found. NP postposing will move the subject $\overline{\overline{N}}$ (under S) to an empty position in a $\overline{P}$, c-commanded by I (for 'instrumental'); and NP-fronting will move an $\overline{\overline{N}}$ from the transitive position inside $\overline{V}$ to a vacant subject position. Case-marking will apply after the movements are completed, assigning the new subject nominative, the other moved $\overline{\overline{N}}$ instrumental (cf. CI rules in 2.7).

The standard personal passive in A2 will therefore look as in (5.42) i or ii.

(5.42)i.

ii.

$$\overline{\overline{N}} \quad S \quad \overline{\overline{V}}$$

$$\overline{P}$$

$$\overline{\overline{N}}' \qquad \overline{P}$$

$$\overline{\overline{V}} \quad \text{Affix}$$

$$\overline{P}' \qquad \overline{V} \qquad \underline{Pred}$$

$$\overline{\overline{N}} \quad P \quad \overline{\overline{N}} \quad V$$

caitra Δ   I kusula bhid Kta   Δ

1 ⟶

⟵ 2

We leave to the Chomskyans the details of how simple movement rules can be constrained to act only to this effect.

The Move NP account is essentially a more elegant formulation of the structural 'SP' examined in 5.3. To the disadvantages it derives from this fact we shall turn later. But its splitting of the passive into three phenomena gives it some advantages over this crude proto-type.

The incidence of passive moi)hology occurs by processes quite indistinguishable from the lexical account. This has the disadvantage that the relation between active and passive sentences is more remote: as a result, an explicit account of how the active and passive forms of the verb are related -- morphologically and semantically -- would have to be given in the lexicon. But there is no reason why this could not be done. By contrast with the lexical account, however, the alignment of role and N will be based on the underlying position of the Ns in the structure, rather than on their surface case.

The particular advantages of this proposal, though, become clear only when we consider the impersonal passive. Here there will be no $\overline{\overline{N}}$ accompanying the V in any $\overline{V}$ where such verbs can be inserted. For this reason, only the subject $\overline{\overline{N}}$ is available to be moved. B3 is also derived as in (5.43).

(5.43) Impersonal Passive
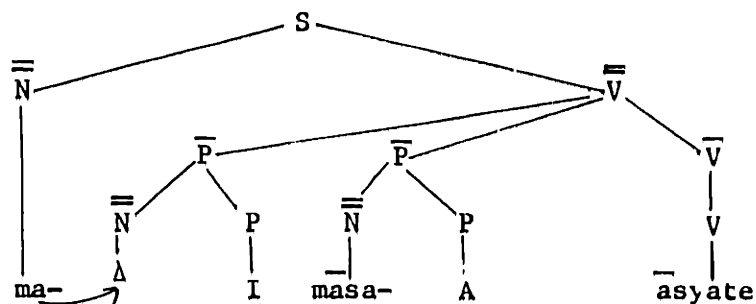
Transitive verbs, on the other hand, will have an accusative $\overline{\overline{N}}$ under $\overline{V}$: we suppose that, if present, this must obligatorily move when accompanied by a verb with passive morphology. By contrast, accusative adjuncts under $\overline{P}$ cannot be preposed. But given an intransitive verb, transitivization in some form can often provide an alternative slot for such an NP -- viz. in the direct object position next to V. From there it can be preposed (e.g. B2). Move NP, then, seems to work only for $\overline{\overline{N}}$s immediately dominated by S, or by $\overline{V}$.

Turning to reflexive passive, it is necessary to assume, as it was for SP, that certain verbs can appear in some sense with a subject $\overline{\overline{N}}$. In that case the reflexive and impersonal reflexive passive of bhid (A4 and 5) are represented in (5.44). The straight reflexive passive is generated by the first movement only, the impersonal reflexive by both.

(5.44) Reflexive Passive
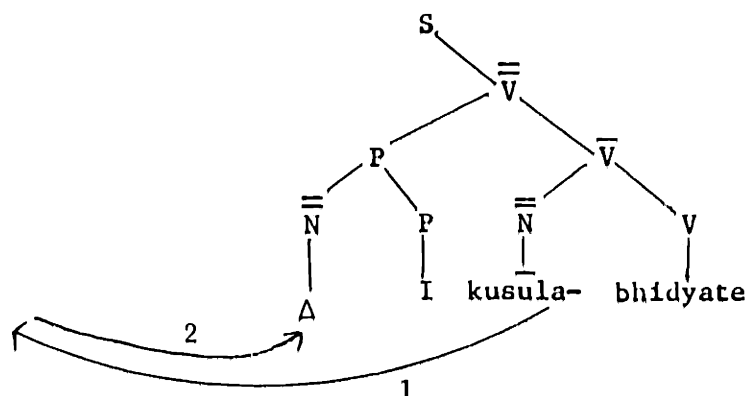
The problem here is obvious: where does the first application of Move NP move the $\overline{\overline{N}}$ to? It has been generally assumed that the possible 'landing-sites' for this rule are empty $\overline{\overline{N}}$ nodes (marked with 'Δ' in the preceding examples). But this poses a dilemma. If the natural interpretation of 'empty $\overline{\overline{N}}$', then it means 'lexically unfilled': but as noted in 5.2.3, such empty $\overline{\overline{N}}$s are interpreted anaphorically in our system. They can co-occur as subjects with any verb, and hence cannot be used to distinguish those that allow a reflexive passive. We are therefore forced to look for a new interpretation of 'empty $\overline{\overline{N}}$'. One possibility is that it might mean 'absent $\overline{N}$': this is the possibility illustrated in (5.44). Under this option, the supposed general constraint on where Move NP can move an N is forfeit. But perhaps we can appeal to the suggestion made in Baltin 1978, and suppose that $\overline{\overline{N}}$ is moved to the 'left-bracket' of the relevant constituent -- viz. S. (It will have to retain its dependence on S in order to be assigned Nominative, and also to explain its status as focus of Agreement: Agreement must apply within the domain of S.) This is not intended as a serious proposal for a new revision in the Revised Extended Standard Theory: (Baltin in fact explicitly excludes Passive and other traditionally structure-preserving rules from this theory of 'landing-sites'.) But it simply points out the sort of revisions that would have to be made if the conglomerate of grammatical theories which bears that name were to provide an empirically adequate analysis of the Sanskrit passive.

Besides these particular points relating to the "Move NP" analysis, the general criticisms relating to structural passives in general also hold. The theory provides no ready basis for the 1AEX, so that at least it could be stated naturally in those languages where it applies; it cannot give a general principle to characterize the restrictions that hold on the reflexive passive, and the account it gives (viz. the claim that certain verbs

can select an empty subject slot) violates a major constraint on the power

of lexical entries; and it cannot unite the use of the instrumental in the

apsive with other uses of that case.

5.5 LEXICAL ANALYSIS OF THE PASSIVE

5.5.1 THE PASSIVE LABEL

The lexical theory of the Passive in Sanskrit, which fits most naturally with the Case Linking theory expounded here, involves no movement rules. Instead it posits a complex consisting of, <u>one</u>, a minimal change in GSC together with the addition of a special linking rule, and <u>two</u>, another special linking rule, all of which we suppose take precedence over the normal subcategorization and linking rules. The whole complex is characteristic of the Sanskrit passive; and its incidence is a property of a number of morphemes which may be added to verb-stems. We shall express this by assigning such morphemes the label $\left[+ \text{Passive} \right]$, as a part, perhaps the only part, of their LE.

The precise content of the $\left[+ \text{Passive} \right]$ specification is the following.

(5.45) $\left[\underline{+ \text{Passive}} \right]$

    i. GSC: Transitive becomes intransitive

           (i.e. delete $\overline{\overline{N}}$ from the subcategorization).

     LS: Assign ES to displaced role.

    ii. LS: Assign Instrumental to vacated role.

To start with, the only morphemes to which we assign the label $\left[+ \text{Passive} \right]$ are -<u>ya</u>-, -<u>i</u>, and -<u>ta/na</u>-, the only morphemes with purely passive meaning. (The last of these is in fact more complicated in its uses.) Since each of these morphemes, so specified, are indistinguishable from others that are phonically identical, Panini's designations <u>yaK</u>, <u>CiN</u> and <u>Kta</u>

are more scientific: here the capital letters are equivalent to diacritic features within Panini's system, relevant to morphophonemic processes that we shall not go into here. Nevertheless, the terms themselves are useful as unambiguous names for the suffixes in question -- and we shall use them in what follows.

5.5.2   THE PERSONAL PASSIVE

The $\begin{bmatrix} + \text{Passive} \end{bmatrix}$ specification acts as one of the principles which affect the construction of LEs on the basis of other LEs. It particular stipulations take precedence over the other, more general, rules of grammatical and semantic linking.

To begin with the analysis of the personal passive A2. The active __bhid__ has the LE shown in (5.46).

(5.46)   MPS: bhid   7 Parasm

GSC: V transitive

FR: DO: S (GO: T G(broken))

LS: $NP_{trans} = T$

The $\begin{bmatrix} + \text{Passive} \end{bmatrix}$ label first of all requires that the transitive specification is changed to intransitive. This means that the specified link in the LS is now frustrated: by (5.45) i, therefore, that role is linked with ES. BY (5.45) ii the highest argument is linked with an instrumental, which will therefore figure in the GSC. This explains the content of (5.47).

(5.47)   MPS: bhid + yak   Atm.

GSC: $V_{intrans}$; $\overline{\overline{N}}_{Instr}$

FR: DO: S (GO: T G (broken))

LS: S = Instr

T = ES

__Bhidyate__, in whatever form from the paradigm, will be inserted in its place in phrase-structure like any other verb; the LE in (5.47) works

just as we have seen LEs do for active verbs (see 4.3) to fix the possible co-occurrence of $\overline{\overline{N}}$s with it. Like all verbs, <u>bhidyate</u> has an ES; and this will be linked with the nominative that occurs outside the $\overline{\overline{V}}$, under S. All this is enough to account for A2 and A3, the personal and (ungrammatical) impersonal passives of <u>bhid</u>.

By involving transitivity so intrinsically in the passive the theory at least describes the facts mentioned in 4.3 — viz. that in the case of 'ditransitives' one of the accusatives is always singled out as the one to become nominative in passive sentences (cf. the discussion of this within the RG framework in 5.2 above). In our analysis, it will be recalled, only one of these accusatives could occur under $\overline{V}$, and this was specifically linked to one of the arguments in the FR. By (5.45) this is the argument which will be represented by the nominative in the passive equivalent. To put this explicitly, we append the LE for <u>duh</u> 'milk' in its ditransitive form, and the corresponding LE for the passive <u>duhyate</u>.

(5.48) MPS: duh 2 Parasm.

GSC: V transitive

FR: DO: S (GO: T S)

LS $NP_{\text{trans.}}$
$\left[+ \text{ same case} \right]$

(5.49) MPS: duh + yak Atm

GSC: V_{intrans}; $\overline{\overline{N}}_{\text{Instr}}$, $\overline{\overline{N}}_{\text{Acc}}$

FR: DO: S (GO: T S)

LS: Ext. S = Instr.

T = Acc.

Int. S = ES

A problem here is the fact that the Theme, which selects an accusative for grammatical linking in the active (cf. 4.3), on the basis of

the $\left[+ \text{ same case}\right]$ marking, retains this case in the passive -- although the other role which was linked with an accusative in the active (in this particular example the lower source) is now linked with a nominative. It is as though some linking at least is effected <u>before</u> the transition from active to passive (by adding <u>yaK</u>) is made: but I do not have sufficient collateral data to expand on this point here.

An area in which RG scores over the account proposed here is that, as we saw in 5.2, RG predicts <u>which</u> argument will be the one to be selected, given an arbitrary ditransitive, for promotion to subject in the passive. Our theory makes it natural that only one should be selectable (for a transitive verb only takes one object $\overline{\overline{N}}$); but, in advance of making a particular entry in the LS of the LE of the verb concerned, it does not predict which the privileged accusative should be.

The mention of ES in the LS component of the entry is not an exclusive property of $\left[+ \text{ passive}\right]$ lexical entries. It seems that it is also reuired independently in the analysis of certain simple verbs of flowing and abounding. Consider for example the opposition displayed in (5.50).

(5.50) i   sravati valīkebhya udakam   (Pat
            flows (sg.) thatched-eaves B waterN   MhGh. Vt. 17 on
                                                             P. 3.1.6.)
            'water drips from the thatch'   3.1.6)

        ii sravanti valīkāni udakam   ibid.
            flow (pl.) thatched-eavesN waterN
            'the thatch is dripping water'

        iii sravanti valīkāni udakena   (Cf. Mhbh.
            flow (pl.) thatched-eavesN waterI   5.45, quoted in
                                                         Chapter 3, fn. 11)
            'the thatch is dripping with water'

It seems that either of the inherent participants in <u>sru</u> 'flow' may figure as surface subject -- i.e. be linked with its ES. The two partici-

pants are a theme — the liquid moves — and a [+ So] argument, designating the source or path of the liquid's movement.

The minimal lexical entry is given in (5.51).

(5.51) MPS: sru 1 Parasm.

       GSC: V intrans.

       FR: GO: T, [+ So]

       LS: —

This will generate the surface pattern seen in (5.50); the ES will be linked with the higher argument, T; and the [+ So] argument will be linked semantically, with an ablative.

To generate the alternative pattern seen in (5.50) ii and iii, it is only necessary to add to (5.51) the LS: "ES = [+ So]". This will require that the ES be linked with the inherent path or source, and hence that the theme find some other exponent case. According to the principle ennuciated in 1.4.5 above, the themes cannot be semantically linked. Therefore, some grammatical linking must be employed. (5.50) ii and iii shows that linking is possible with at least two of the three cases on the Normal Hierarchy, the accusative and the instrumental.

This example has shown that a specification of ES linking is desirable in the LS of some simpler verbs. It does not seem, therefore, that the power utilized by the Passive label goes beyond what is required in extreme cases even for single predicates.

5.5.3 PASSIVES OF INTRANSITIVE VERBS

In (5.52), ii is one result of applying Transitivization (4.42) to i.

(5.52) i. MPS: $\overline{as}$ 2 Atm. ii. MPS: $\overline{as}$ 2 Atm.

GSC: V intransitive GSC: V transitive

FR: BE: T P(sitting) FR: BE: T P(sitting) P

LS: - LS: NP_{trans} = outer P

Considering the passive of i. first, (5.45) predicts that it has no passive, for the "intransitive" in its GSC does not meet the structural description of (5.45). In ii. on the other hand, $\overline{as}$ is transitive with an object, the path of Duration (cf. 4.6.2). $\left[+ \text{Passive}\right]$ will apply here ex-actly as it did to bhid's LEs outputting the LE in (5.53).

(5.53) MPS: ... $\overline{as}$ + yaK Atm.

GSC: V intrans.; $\overline{\overline{N}}_{Instr}$

FR: BE: T P(sitting) P

LS: T = Instr

outer P = ES

How, then, do we generate the Impersonal passive? The answer lies in noting that, given what was said about 'internal objects', accusatives of content, in 4.4.2, there is another possible output for the application of Transitivization to (5.52) i. This is shown in (5.54).

(5.54) MPS: $\overline{as}$ 2 Atm.

GSC: V transitive

FR: BE: T P(sitting)

LS: NP_{trans} = P

A contrasting active and passive from an intransitive verb transitivized in just this way are quoted in (5.55-6).

(5.55) yathānyāyam vṛttim vartasva mātṛsu   R.2.58.21

        as-is-laid- behaviour   mothersL
          down   A   behaveIMPV

        'Behave as is right towards your mother and aunts.'

        (<u>lit.</u>: 'behave a behaviour...')

(5.56) kumāre bharate vṛttir vartitavyā ca rājavat   R.2.58.20

        princeLBharataL behav- to-be-   and king-like
                 iour   behavedN

        'And you must behave to Prince B. as to a king.'

        (<u>lit.</u>: 'a behaviour is to be behaved...')

(-<u>tavya</u>- is one of the suffixes which will be assigned the label ± Passive , along with its modal content.'

It is presumably possible for <u>as</u> to take its corresponding deverbal noun <u>āsanam</u> as an internal object; but in general, since the lexical content of this would be merely a repetition of what is in the verb-stem already, it is omitted. (Cf. the short discussion of object-deleting verbs in 4.6.2.) The same reasoning will apply to the passive. Hence intransitive verbs used in the passive with a nominative subject expressing the verb's content (as in 5.56) will be possible but rare. More commonly the internal object in the nominative will be omitted. This is our analysis of "impersonal passives" then: in effect, a special case of 'object deletion', when the object is internal, and has become the subject of a passive.

Before leaving the subject of the Impersonal Passive (as we shall continue to call it for convenience), two loose ends should be definitively tied.

First, there is the question of the 3sg. neuter agreement of the impersonal passive predicate. As it happens, the nominal <u>āsanam</u> is neuter

singular, so it would be just possible to claim that in every impersonal, a deverbal nominal in -ana- is the understood subject. But this is of course not the only sort of nominal that can play this role -- witness the feminine vṛttir in (5.56). And in any case the 3sg. neuter in impersonals is too universal a phenomenon across the languages of the world to make this Sanskrit-specific solution at all satisfactory (e.g. German: es wurde getanzt; French: il était une bergère; Latin: Cannis acriter pugnatum est.)

The answer is simply to assume that 3sg. and neuter are the unmarked categories, inevitable when the 'entity' referred to is abstract. Some ending must be applied, and any other would be arbitrary, implying some specific properties in the unexpressed element of which the verb is predicated. The verb does not agree with a specific type of deverbal noun: it shows by its inflexion, that it is predicated of something abstract.

This leads to the second loose end. As has been emphasized at various points above, impersonal passives are the only clearly impersonal passive constructions in the whole Sanskrit gamut. But the analysis here has reduced this special status, by claiming that they are really a form of personal passive, namely one with a content expression as subject, but the lexical insertion of subject suppresed because of its redundancy. Passive remains a structure-preserving rule. No modification is needed in PS2, the rule which inserts an obligatory $\overline{\overline{N}}$ (to surface with a nominative case), any more than object-deleting verbs need to be reclassified as intransitive to account for the instances where they appear within an object. Sentences with impersonal passive verbs will have a subject $\overline{\overline{N}}$ at the level of phrase structure as much as any 'personal' sentence: the absence of lexical in-

sertion is all that distinguishes them.[11]

It is perhaps worth adding a few words on the difference between two types of zero $\overline{\overline{N}}$s. Lexically empty $\overline{\overline{N}}$s may be so, on the one hand, because they are anaphorically interpreted: this is the usual case, and in this event the zero $\overline{\overline{N}}$ will have a quite definite reference -- so much so that the phenomenon has often been analyzed in the literature as Pronoun Drop. Where the noun absent is quite clear from the linguistic context, one might expect even to find the predicate agreeing with it in a way which belies the semantic content of the categories involved -- e.g. if dārāh masc. pl. 'wife' were understood, we might find masculine plural agreement. However, I have not managed to find any examples of this.

But there is another means of interpreting zero $\overline{\overline{N}}$s, where no specific reference is intended. In the case of object-deletors and impersonal passives, the content of the omitted $\overline{\overline{N}}$ is inferred from the FR of the verb. But in some cases, omission takes place without even this being possible: in

---

[11]Some, rather shakey confirmation of this analysis comes from the claim in the grammatical literature (e.g. Karijata on 1.4.52 -- cf. Joshi and Roodbergen 1975, p. 256) that object deletors (as pac 'cook', pa 'drink' etc.) are not akarmaka (intransitive), and hence cannot form an impersonal passive -- cf. Panini's rule 3.4.69 lah karmaṇi ca bhāve cakarmakebhyah, which explicitly restricts impersonal passives to akarmaka verbs. If this claim is correct, then our explanation is as follows: 'object-deleting' verbs already have a transitive object $\overline{N}$, even if this does not surface. Hence they cannot undergo transitivization with an internal object; hence there is no basis in the lexicon for the "impersonal passive" here. However, problems remain. On the one hand, from a theoretical point of view, it is not clear why the suppressed object of the object deletor cannot be utilized in the Passive to give an output observationally indistinguishable from an "impersonal passive": i.e. why can't a passivized 'object deletor' act as a 'subject deletor', leaving its subject $\overline{N}$ free of lexical insertion? On the other hand, closely related languages do allow impersonal passives from object deletors: e.g. Latin dies noctisque estur, bibitur (Plaut, Most. 1.3.78), quid agitur? amatur et egetur acriter (Plaut Pseud. 273), where we see impersonal passives of verbs meaning eat, drink and love, all of which can be used in the active with or without a transitive object. It is just possible that these passives are another sign that Latin, unlike Sanskrit, does have

such cases, the $\overline{\overline{N}}$ is assigned indefinite reference.[12]

> (5.57)   atha yad ásnāti tad upasadair eti   CH.U. 3.17.2 (R497)
>
>   and what eats3sg.   upasadaI goes3sg.
>   that (ceremony)
>
>   'And as for what one.eats, in respect of that (food) --
>   one performs an <u>upasada</u>.'

These are different from true impersonals (which exist in other

languages: e.g. Latin <u>paenitet me peccatorum</u> (cf. (2.7) above for gloss))

in that there is a definite argument in FS which corresponds to the sub-

ject: it is just indefinite as to its reference. With respect to Agreement,

in these cases the predicate's inflexion can only be semantic: there is no

specific N whose categories it could formally agree with. As a result

we find only the neuter singular in impersonal passives. In the case of

indefinite sentences like (5.57) the singular predominates; but the plural

is also found (cf. Renou; p. 497).

> (5.58)   yad aháš candramasam na pašyanti   Ap.S.S. 1.7 (R497)
>
>   what day   moonA   not see3pl.
>
>   'le jour où l'on ne voit pas la lune...'

(I presume that the difference corresponds to a distributive versus a

collective interpretation of the indefiniteness (cf. <u>each</u> vs. <u>all</u> in

English).

---

[11]underlying impersonal structure -- i.e. sentences without a
nominative $\overline{\overline{N}}$ node (cf. remarks at 2.2.2 above). On object deletors, cf.
ch. 4, fn. 7.

[12]Such indefinite sentences as (5.55-6) are largely confined to
sutra and bhāshyā literature. See Renou, p. 497.

The one-to-one correspondence between $\bar{\bar{N}}$s in phrase structure and arguments in FS is thus preserved. The reason that impersonal passives seem more impersonal than the putative impersonal actives considered in 2.2.2 is simply that the references of their missing subject is not specific.

5.5.4 THE REFLEXIVE AND IMPERSONAL REFLEXIVE PASSIVES

The reflexive passive differs from the personal passive in a number of ways. The three principals have already been mentioned.

1. It cannot occur with any $\overline{\overline{N}}$ representing the agent of the action referred to.

2. It is restricted to karmasthabhāvaka and karmasthakriyā predicates (cf. 5.2.3 above).

3. It can take an iteration of passive, resulting in the impersonal reflexive passive. (A5).

Within the Case Linking approach, it is natural to account for the first of these differences by simply deleting the second clause from the $\left[+ \text{Passive} \right]$ label's implications (5.45). This will make it no longer possible for instrumentals to be grammatically linked with the agent of these expressions. However, this would still leave semantic linking as a possibility. So it is necessary to go one step further: the agent (i.e. Actional Source) argument position must be deleted altogether.

We therefore postulate a lexical rule of Agent Deletion applying to DEs in rather the same way as Transitivization (i.e. it maps DEs onto DEs). The rule is simply formulated as in (5.59) and applies quite freely. (As the rule is lexical, the possibility is not rules out that in some dialects or in other languages, the rule might apply quite sporadically.)

(5.59) <u>Agent Deletion</u>

Delete the outer actional source from a DE.

Within Sanskrit it is necessary to add the condition in (5.60),
which is only given the title "reflexive passive" because that is its
main consequence.

(5.60) <u>"Reflexive Passive"</u>

Agent-Deletion implies $\left[+ \text{Passive} \right]$

It requires that the $\left[+ \text{Passive} \right]$ label be added to DEs undergoing Agent
Deletion. As we shall see, there are languages (e.g. English) which
possess (5.59) without (5.60).

Consider the effect of the two rules on <u>bhid</u>, whose normal DE
is repeated here for convenience.

(5.61) MPS: bhid 7 Parasm.

       GSC: V transitive

       FR: DO: S (GO: T G(broken))

       LS: NP_{trans} = T

Applying Agent Deletion gives the reduced FR <u>GO: T G(broken)</u>. The label
$\left[+ \text{Passive} \right]$ is now obligatory by (5.60); so the GSC is changed to in-
transitive, and the ES is assigned to the role which had held a stipulated
link with the $\overline{\overline{N}}$ under $\overline{\overline{V}}$ -- viz. the theme. We attempt to apply clause
2 of passive (5.45): but there is no vacated role to link the instru-
mental with. So clause 2 does not apply. We end up with an LE as in
(5.62).

(5.62) MPS: bhid + yak Atm.

       GSC: V intrans.

       FR: GO: T G(broken)

       LR: T = ES

This corresponds to the observed meaning and linking of the reflexive passive.

But that is not all: the other observed properties of reflexive passive follow without more ado. Essentially, Case Linking has predicted them.

First of all, bhidyate, as an intransitive verb (made so by $\left[+\text{ Passive}\right]$), can undergo transitivization with an internal object. This is explicitly attested for the analogous case of the verb tap 'to heat', passive tapyate, in its metaphorical meaning 'perform austerities'.

    (5.63)   tapyate tapas tapasaḥ   Kāś. 3.1.88

               is-heated heatA heaterN

               'The ascetic performs austerities.'

It is therefore possible for it, in turn, to undergo passive. No further morphology will be attached (cf. discussion of (5.30.1) above). But the transitivization will be undone, and the displaced (internal object) path will receive the ES. Clause ii of (5.45) will then apply to link an instrumental with the vacated theme. This gives the 'impersonal reflexive passive', whose LE appears in (5.64).

    (5.64)   MPS: bhid + yak Atm.

             GSC: V intrans.; $\overline{\overline{N}}$ Instr.

             FR: GO: T G(broken) P

             LR: T = Instr.

                 P = ES

Further, the restriction to karmasthabhāvaka and karmasthakriya follows too. The precise detail of what is involved does not emerge from Patanjali's account (discussion of vt. 3 on 3.1.67 -- cf. 5.2.3 above). But all the quoted examples of the karmastha...classes are either ex-

plicit causatives (āsayati, śayayati, sthāpayati) or else would in any case

be assigned an actional source, unbound to any other argument, as the

highest operator (avaruṇaddhi 'pen up', karoti 'make'). The same goes

for the traditional examples bhinatti 'break, split tr.', pacati 'ccok

tr.', lunāti 'cut, lop off'. All are actional predicates: and they have

an actional source which can be deleted by (5.58). By contrast, the

explicit exceptions given by Patanjali, cintayati 'think', mantrayate

'consult', gacchati 'go, dhāvati 'run', hasati 'laugh', although they

would in most cases (gacchati might be an exception) be analyzed with

an actional source as their highest argument, nevertheless all have

a specific property in common: as the kartṛstha... designation reminds

us, they all predicate an effect on the agent (if any), not on any

other argument. In our terms, this means that the actional source must

be bound to the theme, and we posit FRs as in (5.63).

(5.65) cintayati 'think' DO: S_i (GO_{Cognit}: T_i G)

(The FR for mantrayate is unclear.)

gacchati, 'go', DO: S_i (GO_{Posit}: T_i G)
 dhāvati 'run

hasati 'laugh' DO: S_i ($GO_?$: T_i G P (laughter))

To these FRs, Agent Deletion cannot apply without either elimi-

nating both S_i and T_i together, or else leaving T_i unbound. (The

precise prediction of the theory on this point has yet to be fixed.)

Either way, we shall end up with an illformed FR (cf. 1.3.8). So

Agent Deletion, and hence Impersonal Passive, cannot apply to

kartṛsthabhāvaka and kartṛsthakriya verbs.

Agent Deletion seems not to be confined to Sanskrit. Intransiti-

vization on English appears to make use of the rule too. Consider, for

instance, the facts in (5.66) and (5.67).

(5.66)   A   B

    i.   he cooks the rice   the rice cooks easily

    ii.   she kills the chickens   the chickens kill easily

    iii.   they broke his bones   his bones broke easily

    iv.   Jake felled the tree   the tree felled easily

    v.   Bert painted the wall   the wall painted easily

    vi.   Mervyn photographed the   the girls photographed
                     girls   well

(5.67) i.   Norm found an opening   * an opening found easily

    ii.   I heard the music through * the music heard easily
               the floor   through the floor

    iii.   The peg fits the hole   * the hole fits easily

    iv.   I own a bassoon   * a bassoon owns easily

    v.   Chiquita reached the   * the gulch reached quickly
               gulch

In these instances, all the verbs in (5.66) would naturally be analyzed with an agent (actional source) as their highest argument, something which is true of none of the verbs in (5.67). If this is deleted, the ES -- representing the obligatory surface subject in English -- will have to be linked with the next argument down, typically the embedded theme. Hence the sentences in (5.66)B. But Agent Deletion is inapplicable to (5.67).

5.5.5 THE "1AEX"

Although, as we showed in 5.2, Relational Grammar's 1-Advancement Exclusiveness Law does not hold in Sanskrit, it has been convincingly suggested as an explanatory principle for other languages. Our theory has the advantage of economically explaining how this can be so, at least as far as its effects on passive sentences are concerned.

All that is necessary is to suppose that in these languages, the second clause of the $\left[+ \text{ Passive} \right]$ label's effects is absent: i.e. the instrumental cannot be <u>grammatically</u> linked to the argument position vacated by the ES. All that is possible then is <u>semantic</u> linking — which, as we know is confined to proper actional sources (and paths): the themes, which characteristically in our system represent the subjects of the 'unaccusative' verbs of RG, will not be so linked — and hence such verbs will not passivize. Hence the pattern to which Perlmutter and Postal (to appear) have drawn attention: e.g. in German:

(5.68) es wurde von den Mädchen getanzt

(5.69) *es wurde von den Mädchen gestorben

<u>Tanzen</u> 'dance', having an actional subject, is passivizable; <u>sterben</u> 'die', whose subject is the theme in its FR, cannot.

A further point must be made, however. Our explanation of the ungrammaticality of (5.69) turns on the fact that there is no way to link the phrase <u>von den Mädchen</u> with an argument. However, the same opposition of grammaticalities is observed even when the agent phrase is absent.

(5.70) es wurde dort getanzt

(5.71) *es wurde dort gestorben

To explain this, however, we need only appeal to the definition of inherent arguments (4.5 -- p. 173): the first item there states that inherent arguments must be <u>expressible</u> somehow in the sentence of their predicate. The theme in (5.71) cannot be expressed by the usual passive agent expression with <u>von</u>. Nor is any other expression for it possible. Therefore the sentence as a whole must be ungrammatical. As (5.70) shows by contrast, this applies even in sentences where there is no <u>structural</u> reason for the $\overline{\overline{N}}$ to be present at all: passive sentences in German can in general suppress the agent phrase.

Our theory makes a further prediction. The explanation given here is not restricted to intransitive verbs. It predicts in fact that the personal passives of non-agentive transitive verbs should also be ungrammatical. I have not done extensive research in this, but the initial appearance of the facts in (5.72ff) is promising.

(5.72) der Vater besitzt ein Haus   *ein Haus ist vom Vater besessen

'The father possesses a house.'

(5.73) der Teufel hat Bruno besessen <u>OK</u>

Bruno ist vom Teufel besessen
worden

'The devil has taken possession of Bruno.'

(5.74) das Paket wiegt 50 g.   *50 g. $\begin{Bmatrix} \text{werden} \\ \text{sind} \end{Bmatrix}$ vom Paket gewogen

5.6 A TRANSFORMATIONAL-LEXICAL SOLUTION?

Wasow (1977) has recently generated considerable controversy by
suggesting that the English passive might be aphenomenon generated by
two rules, one lexical and the other transformational. The two rules
have different properties corresponding to their different statuses, but
in the majority of cases they produce indistinguishable results. The
distinguishing characteristics of the transformational passive are:
that it need not be structure-preserving; is unconcerned with any but
the structural properties of the string to which it is applied: may
be fed by other transformations; and has negligible exceptions. The
lexical passive has the negation of all these properties. Hence,
for example, the sentences in (5.75) are both transformationally derived,
those in (5.76) lexically.

(5.75) i. John was given a book.

ii. There was believed to have been a riot.

(5.76) i. John is unimpressed by Mary's cool.

ii. John looked astonished by the turn of events.

The idea is that the lexical passive creates an adjective --
the past participle (and, e.g., un- as a negating, rather than converse,
operator, applies only to adjectives). The transformational passive
simply creates a verbal structure, where this same-looking participle
is in fact nothing other than a verbal form: hence it is no problem that
given in (5.75) i has a bare NP complement, something not generally
allowed for adjectives.

BIBLIOGRAPHY

(excluding Skt. texts, for which see 2.0 above)

Abhyankar, Kashinath Vasudev (1961) A Dictionary of Sanskrit Grammar. Baroda: Oriental Institute. (Gaekwad's Oriental Series, no. 134.)

Abraham, Werner ed. (1978) Valence, Semantic Case and Grammatical Relations. Amsterdam: John Benjamins B.V. (S.L.C.S. vol. 1).

Akmajian, Adrian, Susan Steele and Thomas Wasow (1979) "The Category AUX in Universal Grammar" Linguistic Inquiry 10-1, pp. 1-64.

Anderson, John M. (1971) The Grammar of Case: Towards a Localistic Theory (1971) Cambridge: University Press.

(1977) On Case Grammar. London: Croom Helm, Humanities Press.

Anderson, Stephen R., and Paul Kiparsky edd. (1973) A Festschrift for Morris Halle. New York: Holt, Rinehart, Winston.

Andrews, Avery D. (1971) "Case Agreemnt of Predicate Modifiers in Ancient Greek". Linguistic Inquiry 2.2.

(1975) Studies in the Syntax and Semantics of Relative and Comparative Clauses Ph.D. diss. (unpubl.) M.I.T.

(1977) "The VP Complement Analysis in Modern Icelandic". North Eastern Linguistic Scoeity, proceedings of the VIIth meeting.

Apte, Vaman Shivaram (1917) The Student's Guide to Sanskrit Composition. Girgaon, Bombay: Oriental Publishing Co. (abbrev. 'A').

(1958) Principal V.S. Apte's Practical Sanskrit-English Dictionary. Revised and enlarged ed. by P.V. Gode and C.G. Karve. 3 vols. Poona. (abbrev. 'AD').

*
Bedell, George (1972) "On No" in East Asian Syntax: UCLA Papers in Syntax, vol. 3, ed. G. Bedell.

Bell, Sarah J. (1976) Cebuano Subjects in Two Frameworks. Ph.D. diss. M.I.T. (Now available from Indiana Univ. Linguistics Club, as "Bell 1979".)

Blake, Barry J. (1977) Case Marking in Australian Languages. Canberra: Australian Institute of Aboriginal Studies. (Linguistic Series, no. 23.)

Boehtlingk, Otto and Rudolf Roth (1855-75) Sanskrit-Wörterbuch. 8 vols. St. Petersburg: Buchdruckerei der kaiserlichen Akademie der Wissenschaften. (To be re-issued by Rinsen Book Co., Tokyo.) (abbrev. 'BRD'.)

Bresnan, Joan Wanda (1976) "On the Form and Functioning of Transformations". Linguistic Inquiry, 7.1, pp. 3-40.

(1976b) "Evidence for a Theory of Unbounded Transformations". Linguistic Inquiry, 2.4

(1977) "Variables in the Theory of Transformations" in Culicover et al. edd. pp. 157-96.

(1978) "A Realistic Transformational Grammar" in Halle et al. edd. (1978). Pp. 1-59.

Burrow, T. (1955) The Sanskrit Language. London: Faber & Faber.

Canedo, Jose (1937) Zur Wort- und Satzstellung in der alt- und mittelindischen Prosa. Gottingen: Vandenhoeck und Ruprecht.

Cardona, George (1970) "Some Principles of Panini's Grammar". Journal of Indian Philosophy 1. pp. 40-74.

(1974) "Panini's Karakas: Agency, Animation and Identity". Journal of Indian Philosophy 2. pp. 231-306.

(1976) "Subject in Sanskrit" in The Notion of Subject in South Asian Languages ed. M.K. Verma. Univ. of Wisconsin (Madison): South Asia Studies, publication, no. 2 (pp. 1-38).

Carter, Richard J. (1976) "Some Constraints on Possible Words". Semantikos 1.2 pp. 27-66.

(1977) "Some Linking Regularities" in Recherches Linguistiques 3-4. Paris: Univ. de Vincennes.

(1978a) "Why are there Prepositions?" in Recherches Linguistiques 5-6. Paris: Univ. de Vincennes. pp. 31-43.

(1978b) "Notes on the Semantics of Prepositions". Ibid., pp. 44-60.

(1978c) "Arguing for Semantic Representations". Ibid., pp. 61-92.

Černy, V. (1971) "Some Remarks on the Syntax and Morphology of the Verb in Avar". Archiv Orientalnij. 39. pp. 46-56.

Chafe, Wallace L. (1970) Meaning and the Structure of Language. University of Chicago.

Chomsky, Noam (1957) Syntactic Structures. The Hague: Mouton.

(1965) Aspects of the Theory of Syntax. Cambridge, Mass.: M.I.T. Press. (R.L.E. Special Technical Report, no. 11.)

(1970) "Deep Structure, Surface Structure and Semantic Interpretation" in Semantics edd. Danny D. Steinberg and Leon A. Jakobovits. Cambridge: Univ. Press. (pp. 183-216.)

(1973) "Constraints on Transformations". in Anderson and Kiparsky edd. pp. 232-86.

(1975) <u>The Logical Structure of Linguistic Theory</u>, New York: Plenum.
(Written in 1955.)

(1976) "Conditions on Rules of Grammar" in <u>Linguistic Analysis</u> 2,
pp. 303-350.

(forthcoming) "on Binding" to appear in <u>Linguistic Inquiry</u> 11.

and Howard Lasnik (1977) "Filters and Control" <u>Linquistic Inquiry</u>
8.3. pp. 425-504.

Cook, Walter A. (1978) "A Case Grammar Model (and its Application to a Hem-
ingway Text)" in Abraham ed.

Culicover, Peter W., Thomas Wasow and Adrian Akmajian edd. (1977) <u>Formal
Syntax</u>. New York: Academic Press.

Davis, Lawrence (1978) <u>Formal Studies in Bhartrhari's Philosophy of Grammar</u>.
Ph.D. diss. (unpub.) Univ. of Massachusetts, Amherst.

Delbrück, Berthold (1878) <u>Die altindische Wortfolge aus dem Çatapathabrah-
mana dargestellt</u>. Halle. (Syntaktische Forschungen, Nr. 3.)

(1900) <u>Vergleichende Syntax</u>. Bd. 3. Strassburg: Karl Trubner.

De Villiers, Jill G. (to appear) "The Process of Rule-Learning in Child
Speech: a New Look" in <u>Child Language</u> vol. 2, ed. K.E. Nelson.

Dixon, R.M.W. (1972) <u>The Dyirbal Language of North Queensland</u>. Cambridge:
Univ. Press. (Cambridge Studies in Linguistics, no. 9.)

ed. (1976) <u>Grammatical Categories in Australian Languages</u>. Canberra:
Australian Institute of Aboriginal Studies. (Linguistic series,
no. 22.)

(1977) <u>A Grammar of Yidin</u>. Cambridge: Univ. Press. (Cambridge
Studies in Linguistics, no. 19.)

(1979) "Ergativity". <u>Language</u> 55.1. pp. 59-138.

Dowty, David R. (1972) <u>Studies in the Logic of Verb Aspect and Time Refer-
ence in English</u>. Ph.D. diss. (unpub.) Univ. of Texas.

Emonds, Joseph E. (1972) "Evidence that Indirect Object Movement is a Struc-
ture-Preserving Rule". <u>Foundations of Language</u> 8. pp. 546-61.

(1976) <u>A Transformational Approach to English Syntax: Root, Struc-
ture-Preserving and Local Trnasformations</u>. New York: Academic
Press.

Fiengo, Robert (1974) <u>Semantic Conditions on Surface Structure</u>. Ph.D. diss.
(unpub.) M.I.T.

Fillmore, Charles J. (1968) "The Case for Case" in Universals in Linguistic Theory, edd. Emmon Bach and Robert T. Harms. New York: Holt, Rinehart, Winston.

(1971) "Some Problems for Case Grammar" in O'Brien ed., pp. 36-56.

(1977) "The Case for Case Re-opened" in Grammatical Relations edd. Peter Cole and Gerald Sadock. New York: Academic Press. (Syntax and Semantics Series, no. 8.)

Freidin, Robert (1975) "The Analysis of Passives". Language 51.2. pp. 384-405.

Fujioka, Norito (1968) "The Japanese Copula and Clause Auxiliaries no do, (no) desu etc." Journal/Newsletter of the Association of Teachers of Japanese 5.1 pp. 1-8.

Gazdar, Gerald (1979) Constituent Structure MS. Univ. of Sussex.

Gruber, Jeffrey (1967) "Look and See". Language 43.4 pp. 937-47.

(1976) Lexical Structures in Syntax and Semantics. Amsterdam: North-Holland. (Linguistic Series, no. 25.) (Includes a revised version of 19o5 MIT Ph.D. diss. Studies in Lexical Relations.)

Hale, Kenneth L. (1978) Obviation in Modern Irish. MS. M.I.T.

Laverne Jeanne and Paul Platero (1977) "Three Cases of Overgeneration" in Culicover et al. edd.

and Paul Platero (1978) Parts of Speech. MS. M.I.T.

Halitsky, D. (1975) "Left-Branch S's and NP's in English: a Bar-Notation Analysis". Linguistic Analysis 1. pp. 279-96.

Halle, Morris, Joan Bresnan and George A. Miller edd. Linguistic Theory and Psychological Reality. Cambridge, Mass.: M.I.T. Press. (M.I.T. Bicentennial Series, no. 3.)

Halliday, Michael A.K. (1967) "Notes on Transitivity and Theme in English-I" Journal of Linguistics 3. pp. 37-81.

(1970) "Language Structure and Language Function" in New Horizons in Linguistics ed. John Lyons. Harmondsworth: Penguin.

(1976) "Types of Process" in Halliday: System and Function in Language ed. Gunther R. Kress. Oxford: Univ. Press. (Paper written in 1969.)

Harris, Alice Carmichael (1976) Grammatical Relations in Modern Georgian Ph.D. diss. Harvard Univ.

Hinds, John and Irving Howard edd. (1978) Problems in Japanese Syntax and Semantics. Tokyo: Kaitakusha.

Hirt, Hermann (1937) Indogermanische Grammatik, Teil VII: Syntax II. Heidelberg: Carl Winter.

Hjelmslev, Louis (1935-7) La Categorie des Cas Aarhus: Universitets-forlaget. (Reprint ed. Wilhelm Fink, Munich, 1972: International Library of General Linguistics, Bd. 25.)

Hornstein, Norbert (1977) "S and X' Convention". Linguistic Analysis 3.2. 137-76.

Jackendoff, Ray (1976) "Toward an Explanatory Semantic Representation" Linguistic Inquiry 8.1. pp. 89-150.

    (1977) X̄ Syntax: a Study of Phrase Structure. Cambridge, Mass.: M.I.T. Press. (Linguistic Inquiry Monograph Series, no. 2.)

    (1977b) "Toward a Cognitively Viable Semantics" in C. Rameh ed. Georgetown Univ. Roundtable on Languages and Linguistics 1976. Washington, D.C.: Georgetown Univ. Press.

    (1978) "Grammar as Evidence for Conceptual Structure" in Halle et al. edd.

Jacobi, Hermann (1903) "Ueber dem nominalen Stil des wissenschaftlichen Sanskrits". Indogermanische Forschungen 14, pp. 236-51.

Jakobson, Roman (1936) "Beitrage zur allgemainen Kasuslehre: Gesamtbedeutungen der russischen Kasus" in Selected Writings II: Word and Language. The Hague: Mouton 1971.

    (1958) "Morphological Inquiry in Slavic Declension: Structure of Russian, Case-Forms" in American Contributions to the Fourth International Congress of Slavicists 1958, pp. 1-30.

Joshi, S.D. and J.A.F. Roodbergen (1975) Patañjali's Vyākaraṇa-Mahābhāṣya: Kārakāhnika (P. 1.4.23-1.4.55): Introduction, Translation and Notes. Poona: Univ. Press.

    (1976) Patañjali's Vyākaraṇa-Mahābhāṣya: Anabhihitāhnika (P. 2.3.1-2.3.17): Introduction, Text, Translation and Notes. do.

Kac, Michael B. (1978) Co-representational Grammar. Minneapolis: Univ. of Minnesota Press.

Katsumata, Senkichiro ed. (1954) Kenkyusha's New Japanese-English Dictionary. Tokyo: Kenkyusha.

Keenan, Edward L. (1976) "Towards a Universal Definition of 'Subject'" in Subject and Topic ed. C. Li. New York: Academic Press.

    and Bernard Comrie (1977) "Noun Phrase Accessibility and Universal Grammar" Linguistic Inquiry 8.1. pp. 63-100. (Additional evidence for the hierarchy is marshalled in Language 55.2 (1979).)

Kellogg, S.H. (1893) A Grammar of the Hindi Language New Delhi: Munshiram
    Manoharlal (Oriental Reprint, 1972).

Kiparsky, R. Paul V. (in press) Panini as Variationist. Cambridge, Mass.
    and Poona: M.I.T. Press and Poona Univ. Press.

        and J.F. Staal (1969) "Syntactic and Semantic Relations in Panini"
    Foundations of Language 5. pp. 83-117.

Kuno, Susumu (1973) The Structure of the Japanese Language. Cambridge,
    Mass.: M.I.T. Press. (Current Studies in Linguistics, no. 3.)

Kuroda, Shige-yuki (1978) "Case Marking, Canonical Sentence Patterns, and
    Counter Equi in Japanese (a preliminary survey)" in Hinds and Howard
    edd. pp. 30-51.

Kuryłowicz, Jerzy (1964) The Inflectional Categories of Indo-European. Hei-
    delberg: Carl Winter.

Lapointe, Steven (forthcoming) A Theory of Morphosyntactic Co-occurrence
    Restrictions. Ph.D. diss. Univ. of Massachusetts, Amherst.

Lasnik, Howard (1975) "Remarks on Coreference" Linguistic Analysis 1.4.

Lekach, Ann (forthcoming) "Speculations on the Interaction of Morphology and
    Syntax: A Look at Complex Verbs in Japanese". CUNY Forum 7-8.
    (North Eastern Linguistic Society, Proceedings of the IXth meeting.)
    (Revised version to appear in Otsu and Lekach edd.)

Lewis, Geoffrey L. (1953) Teach Yourself Turkish. London: English Universi-
    ties Press.

        (1967) Turkish Grammar. Oxford: Univ. Press.

Lieber, Rochelle (1978) Toward a Theory of Case. MS. M.I.T.

Lyons, John (1968) Introduction to Theoretical Linguistics. Cambridge: Univ.
    Press.

McCoy, Ana M.B.C. (1969) A Case Grammar Classification of Spanish Verbs.
    Ph.D. diss. (unpub.) Univ. of Michigan.

Marantz, Alec (1979) On the Acquisition of Grammatical Relational Concepts.
    MS. M.I.T.

Martin, Samuel E. (1975) A Reference Grammar of Japanese. New Haven: Yale
    Univ. Press.

Martinet, Andre (1955) Economie des Changements Phonetiques. Berne: A.
    Francke.

Monier Williams, Sir Monier (1899) A Sanskrit-English Dictionary. Oxford:
    Univ. Press and Delhi: Motilal Banarsidass.

Montagu, Richard (1974) "The Proper Treatment of Quantification in Ordinary English" in Formal Philosophy ed. Richmond Thomason. New Haven: Yale Univ. Press.

Nilsen, Don Lee Fred (1972) Toward a Semantic Specification of Deep Case. The Hague: Mouton.

Nordenfelt, Lennart (1977) Events, Actions and Ordinary Language. Lund: Doxa. (Studies in the Philosophy of Language, no. 3.)

O'Brien, Richard, ed. (1971) Languages and Linguistics Working Papers, no. 2. Washington, D.C.: Georgetown Univ. Press. (Georgetown Univ. Monograph Series on Languages and Linguistics, no. 24.)

Oehrle, Richard T. (1976) The Grammatical Status of the English Dative Alternation. Ph.D. diss. (unpub.) M.I.T.

Ostler, Nicholas D.M. (1976) Aspects of Case Agreement in Ancient Greek. MS. M.I.T.

　　　　(1978) The Grammatical Cases in Japanese: Simple and Desiderative Sentences. MS. M.I.T.

　　　　(1979/to appear) "Review of: R. Hudson: Arguments for a Non-Transformational Grammar." Journal of Linguistics 15.2.

　　　　(forthcoming) "A Non-Transformational Approach to Japanese Case-Marking and Inflexion" in Otsu and Lekach edd.

Otsu, Yukio and Ann Farmer Lekach edd. (forthcoming) Theoretical Issues in Japanese Linguistics. Cambridge, Mass.: M.I.T. Linguistics Dept. (M.I.T. Working Papers in Linguistics, no. 2.)

Perlmutter, David M. ed. (to appear) Studies in Relational Grammar 2.

　　　　and Paul Postal (to appear) "The 1 Advancement Exclusiveness Law" in Perlmutter ed.

Perry, Edward Delavan (1936) A Sanskrit Primer. New York: Columbia Univ. Press.

Postal, Paul (1977) "The Antipassive in French". North Eastern Linguistic Society, Proceedings of the VIIth Meeting. pp. 275-314.

　　　　and David M. Perlmutter (1977) "Towards a Universal Characterization of Passive". Berkeley Linguistics Society, Proceedings of the IIIrd Meeting.

Potts, Timothy (1978) "Case Grammar as Componential Analysis" in Abraham ed.

Quicoli, Carlos (1972) Remarks on Case Agreement in Ancient Greek. Last chapter of Aspects of Portuguese Complementation, Ph.D. diss. (unpub.) SUNY, Buffalo.

Quine, Willard Van Orman (1960) Word and Object. Cambridge, Mass.: M.I.T. Press.

Reinhart, Tanya (1976) The Syntactic Domain of Anaphora. Ph.D. diss. (unpub.) M.I.T.

Renou, Louis (1961) Grammaire Sanscrite. Paris: Adrien-Maisonneuve. (abbrev. 'R'.)

Rivas, Alberto (1977) A Theory of Clitics. Ph.D. diss. (unpub.) M.I.T.

Rocher, Rosane (1969) "The Concept of Verbal Root in Indian Grammar" Foundations of Language 1. pp. 73-82.

Sasaki, Tsuyoshi (1971) "A Case Grammar for Japanese" in O'Brien ed.

Sgall, Petr (1958) Die Infinitive im Rigveda. Acta Universitatis Carolinae, Philologica 2. Prague.

Shibatani, Masayoshi (1977) "Grammatical Relations and Surface Cases". Language 53.4 pp. 789-809.

       (1978) "Mikami Akira and the Notion of 'Subject' in Japanese Grammar" in Hinds and Howard edd., pp. 52-67.

Speijer, J.S. (1886) Sanskrit Syntax. Leiden: E.J. Brill. (1973 reprint: Motilal Banarsidass, Delhi.) (Abbrev. 'S'.)

       (1896) (under name 'Speyer') Vedische und Sanskrit-Syntax. Strassburg: Karl Trubner. (Grundriss der Indo-arischen Philologie und Altertumskunde, Nr. 6.)

Staal, J.F. (1967) Word Order in Sanskrit and Universal Grammar. Dordrecht: D. Reidel. (Foundations of Language Supplementary Series, No. 5.)

Starosta, Stanley (1978) "The One Per Sent Solution" in Abraham, ed.

Stockwell, Robert P., Paul Schachter and Barbara Hall Partee (1973) The Major Syntactic Structures of English. New York: Holt, Rinehart, Winston.

Taraporewala, Irach J.S. (1967) Sanskrit Syntax. New Delhi: Munshiram Manoharlal. (Abbrev. 'T'.)

Taylor, Harvey M. (1971) Case in Japanese. South Orange, N.J.: Seton Hall Univ. Press.

Tesnière, Lucien (1959) Elements de Syntaxe Structurale. Paris: Klincksieck. (2nd edn., 1966.)

Trithart, Lee (1975) "Relational Grammar and Chichewa Subjectivization Rules". Chicago Linguistic Socieyt, Proceedings of the XIth Meeting.

Vater, H. (1978) in Abraham ed.

Wasow, Thomas (1972) Anaphoric Relations in English. Ph.D. diss. (unpub.)
M.I.T.

(1977) "Transformations and the Lexicon" in Culicover et al. edd.,
pp. 327-60.

(1978) "Remarks on Processing Constraints and the Lexicon". TINLAP
Proceedings 2.

Whitney, William Dwight (1924) Sanskrit Grammar. Leipzig. (1973 reprint,
Motilal Banarsidass, Delhi.)

*Baltin, Mark (1978) Toward a Theory of Movement Rules Ph.D diss. (unpub.)
M.I.T.

#Gaedicke, Karl: Der Accusativ in Veda

Williams, Edwin (1975) "Small Clauses in English" in
Syntax and Semantics, vol.4, ed. John P. Kimball,
pp. 249-73.

BIOGRAPHICAL NOTE

The author was born on 20 May 1952 at Tunbridge Wells. He grew up in Tonbridge, Kent, England, attending Yardley Court Preparatory School and Tonbridge School. In 1970 he was elected to an open scholarship in Classics at Balliol College, Oxford, where he spent four years, taking a First in Honour Moderations in Greek and Latin (1973), followed by First Class Honours in Philosophy and Economics. (1975). From September 1975 he was a Ph.D. candidate in the Department of Linguistics at M.I.T., and in May 1979 accepted a position as Permanent Foreign Lecturer (sennin gaikokujin koshi) in English Language and Literature at Department of Humanities, University of Toyama, 3190 Gofuku, Toyama 930, Japan.

His intellectual interest spread from an early fascination with foregin languages (somewhat frustrated by the oppression inseparable from being a native speaker of English) through comparative philology to logic and philosophy, then back again to the middle ground occupied by linguistics. He visited India via the overland route for six months in 1971, and was there able to put his (then as ever) rudimentary knowledge of Sanskrit into some perspective, especially at the Theosophical Socoety's compound at Adyar, Madras. He has also travelled in Italy,, Greece and Turkey. He took up the study of Japanese at Harvard in 1975, primarily for nostalgic reasons, but his interest has since become more broadly based. The foundations of his knowledge of Paninian grammar, as well as the history of Japanese, were laid at the LSA's Linguistic Institute in Honolulu in 1977.

His publications are:

(1978) "Autosegmental Theory and Japanese Tone-Spread". North Eastern
Linguistic Society, Proceedings of the Eight Annual Meeting
(ed. Mark J. Stein), pp. 141-53.

(1979a) "Toshikage in Persia", a translation of the first two chapters of
Utsubo-monogatari (a Classical Japanese novel). Stone Lion Review
3, pp. 52-9. Harvard East Asian Graduate Students' Colloquium.

(1979b) Review of R. Hudson: Arguments for a Non-Transformational Grammar.
Journal of Linguistics 15.2

(forthcoming)
"A Non-Transformational Approach to Japanese Case-Marking and
Inflextion" in Theoretical Issues in Japanese Linguistics (edd.
Yukio Otsu and Ann F. Lekach: M.I.T. Working Papers in Linguistics,
No. 2).