Lexical Semantics in LFG

edited by
Miriam Butt & Tracy Holloway King

Studies in Constraint-Based Lexicalism

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A series edited by
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Contents

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Preface and Acknowledgements

We would like to thank the authors and the Indiana University Linguistics Club (IULC) for allowing us to reprint this volume. Thanks also go to *Natural Language and Linguistic Theory* for permission to reprint the Zaenen, Maling, and Thráinsson paper (the NLLT version supersedes the version that originally appeared in *Papers in LFG*). We would also like to thank the editors of the original volume, Lori Levin, Malka Rappaport, and Annie Zaenen, whose dedicated work made that volume possible.

In terms of the production of this volume, we would like to thank Christine Kaschny at the Universität Konstanz for her detailed editorial work and Katrin Schuhmann at the Universität Konstanz for her work on the index. At CSLI Publications, we would like to thank, as always, Dikran Karagueuzian.

1

Introduction

Miriam Butt and Annie Zaenen

This volume is a reissue of the original *Papers in Lexical Functional Grammar* that came out in 1983. The original collection was published by the Indiana University Linguistics Club and is no longer in print. The out-of-print status of the collection meant that the papers have not been easily accessible for years now, despite the fact that the papers introduced foundational ideas as to the interaction between syntax and lexical semantics and are in part still very heavily cited (e.g., Jane Simpson's paper on resultatives). Since the papers were also written in the days before pdf and on-line accessibility, getting a hold of copies of these papers has been next to impossible (unless one's local library happened to have acquired a copy). This reissue of the original collection seeks to bring the papers and the important ideas contained within them back into regular linguistic circulation.

The papers were written in the early 1980s, a time which witnessed a high level of syntactic energy that was generated around the newly formulated theory of Lexical-Functional Grammar (LFG). A meeting between Joan Bresnan and Ronald Kaplan in Cambridge in the mid-seventies led to a combination of computational, psychological and linguistic interests to form a theory of syntax that ambitiously sought to be linguistically elegant, computationally tractable and psycholinguistically explanatory. This ambition was clearly mapped out in the massive edited volume entitled *The Mental Representation of Grammatical Relations* (edited by Joan Bresnan), which came out in 1982. The volume collected solid syntactic work that has stood the test of time (Bresnan's article on 'Control and Complementation' still represents the authori-

Lexical Semantics in LFG.
Miriam Butt and Tracy Holloway King (eds.).

tative analysis of control phenomena in LFG), defining work on some of the formal foundations of LFG, and first forays into psycholinguistics.

While there has been little follow-up work in psycholinguistics so far,[1] the last 20 years have seen a continued growth of syntactic and computational work conducted within LFG. A diverse set of languages have been explored (and continue to be explored) from the perspective of LFG and the computational work has resulted in several large-scale, broad coverage grammars that are on the brink of being used in industrial applications (see Butt et al. 1999 for a description of this effort: the Parallel Grammar project). The foundational ideas behind the theory and many of the original analyses have proven to be resilient. Unlike other frameworks, LFG has not had to undergo a complete theoretical overhaul in order to stay abreast with modern syntactic thinking. Rather, as more languages and phenomena have been explored and understood, the theory has been extended by building on already established insights.[2] The work done in the early 1980s for the most part therefore remains just as current today as it was then and the analyses proposed then still tend to hold today.[3]

The original *Papers in Lexical Functional Grammar* collected a number of papers that were written during the heady times of the early 1980s when LFG was being established. The editors of the original collection were Lori Levin, Malka Rappaport, and Annie Zaenen, who were all at MIT at the time, either as graduate students, or as post docs. As a theory, LFG provided attractive alternative ways of thinking about problems of syntax and the interface between morphology, syntax and lexical semantics that had come up in the 1970s. The papers grew out of some of the heated debates that were raging then. One of the important ideas embodied in LFG was that the relations among various linguistic representations are not derivational. This was worked out for the relation between c-stucture and f-structure in Kaplan and Bresnan (1982), but by the early 1980s it was clear that these two representations were not enough to capture all interesting generalizations. Several of the papers in the collection address the emergence of what has become known as

[1] Though LFG did provide inspiration for some psychological models; see Bock and Warren 1985 and de Smedt 1996 for some discussion.

[2] Two nice examples of innovation which have extended the theory (rather than replacing parts of it) are functional uncertainty (Kaplan and Zaenen 1989) and feature indeterminacy (Dalrymple and Kaplan 2000).

[3] A notable exception is the role of *lexical rules*, which played a huge part in the analysis of the passive and argument alternations such as the English "dative shift" (see Sells 1985 for a succint description). These have more or less tacitly been replaced by LFG's *Mapping Theory* (see Bresnan and Zaenen 1990 and Butt 2005 for an overview).

'argument structure'. LFG proposes various levels of representation but contrary to derivational approaches, the claim is that these representations are heterogeneous in nature and use different primitives. Within the theory, the representations are now called projections. They are related through explicit mappings (see Dalrymple 2001 for illustrations).

Reading the papers now, some of the details of the argumentation seem arcane. The papers had to address assumptions within the newly articulated Government-Binding (GB), as well as its predecessor, Transformational Grammar. The argumentation is therefore at times hard to follow for those not steeped in the lore and logic of transformational thinking. However, looking back, the papers also turn out to have formulated some of the very basic ideas that are often taken for granted by the LFG practicioners of today. Some examples are: the subject condition (Baker), the separation of predicate-argument information from constituent structure (Rappaport) and the fact that subjects can be non-nominative, but can still be identified via a number of subject tests (Zaenen, Maling and Thráinsson). For one of the authors of this introduction, for example, the discovery of these papers was a revelation. This was textbook knowledge come alive — ideas about syntax and lexical semantics that had been taught as basic knowledge were here worried over in detail and presented for the first time. The precise unfolding and articulation of the ideas provide an extremely instructive look at foundational syntactic assumptions, both within LFG and the derivational tradition (from Transformational Grammar on to the Minimalist Program).

With the exception of Zaenen, Maling and Thráinsson's contribution, which came to be known as *the* landmark article on subjecthood and its relation to case in the version published in 1985, the other original papers have not been published elsewhere, even though they came to be regarded as classics as well (e.g., Simpson's contribution, which is often cited, but difficult to obtain).

In this reissue of the original papers, the editors have stayed as true to the original papers as was possible. That is, although the editors had to reinput (from scanned versions of the original) and reformat the content of the papers from scratch, they have tried to be as true to the original representations as possible. Typographic mistakes have been corrected, section headings have been added to Rappaport's paper, as well as close glosses of the Italian examples in Mark Baker's paper. KP Mohanan has chosen to preface his contribution by a note expressing his current feelings about his 1983 ideas. The editors have also decided to include the revised version of Zaenen, Maling and Höskuldur's contribution (as it appeared in the *Natural Language and Linguistic Theory* in 1985),

rather than the original version collected in *Papers in* LFG. The authors felt that this version would be more appropriate for a reissue.

In what follows, we briefly describe the main contribution of each paper from both the perspective of the time it was written in and the perspective of today.

Mark Baker's contribution is one of the first to take on the unaccusative/unergative distinction established for intransitives by work within Relational Grammar (RG). At the time, Burzio's now famous 1981 dissertation on the subject had appeared (framed within GB), as well as C. Rosen's (1981) (working in RG). Baker takes on the data from an LFG perspective, showing that lexical rules rather than structural configurations could account for the data quite nicely. As part of his analysis, he addresses the by now well-known facts of auxiliary selection and clitic climbing, but also surveys data from impersonal constructions and proposes that reflexives should be classed as unaccusatives, an idea that is still currently discussed, but remains controversial. At the time, Baker's contribution addressed important new data and insights that came out of work within RG (Perlmutter 1978). The data was central to the debates of the time and any self-respecting theory of syntax needed to be able to address it (hence also Burzio's 1981 dissertation). Looking back, one important idea that came out of Baker's paper is the formulation of the *Subject Condition* (all clauses must have a subject), which he needed in order to account for some of the unaccusative data. The Subject Condition is a hotly debated, but standardly invoked principle of LFG (although it was originally proposed as a universal, it has progressively been realized that this is probably a language specific condition). Baker also articulated in some detail the now standardly assumed relation between a semantic representation of event participants (e.g., sinker, sinkee) and a predicate-argument representation (e.g., agent, patient), which is more syntactically oriented and mediates between pure semantics and syntax in terms of grammatical relations/functions (e.g., subject, object), see his Figure 3. In sum, Baker's paper served to establish ideas that are still considered key with respect to an understanding of the Italian data in general and with respect to theoretical assumptions within LFG in particular.

KP Mohanan uses Malayalam causatives as a test bed for teasing apart the consequences of a configurational vs. a lexical analysis of argument alternations and case marking. Naturally, he concludes that a configurational approach to Malayalam cannot formulate the right kinds of generalizations about the data. Mohanan was (and is) one of the few generative linguists working on Malayalam. In the context of the time,

the data from Malayalam was fresh and exciting: the causative patterns and argument alternations were unexpected and therefore presented a challenge to any theory of syntax. Mohanan carefully and usefully spells out the assumptions of GB, RG and LFG and differentiates between them. The data he adduces with respect to Malayalam causatives are still representative: to date it is one of the few available papers on Malayalam causatives and it is perhaps the only one which comprehensively provides the relevant data and generalizations. Futhermore, as Mohanan himself observes in the note introducing his contribution, the typology of causative constructions that he establishes is very relevant even today. By formulating and using a number of subject tests, Mohanan establishes that causatives can be bi- or monoclausal at different levels. In English, for example, causatives are biclausal at both the level of semantics, the level of grammatical relations, and the surface syntax (periphrastic construction). In Malayalam, causatives are expressed morphologically (therefore syntactically monoclausal) and are semantically biclausal, but are functionally monoclausal (there is only one subject in the sentence). In Japanese, on the other hand, causatives are also expressed morphologically and are both semantically and functionally biclausal (there is more than one subject in the clause). This observation has never been fully dealt with in the derivational GB tradition, but it has continued to influence work within LFG well beyond the 1980s. One prime example is Matusmoto's (1996) work on the different kinds of causatives in Japanese, whereby distinctions are made in terms of biclausality at different levels of analysis. Mohanan suggests that these sorts of distinctions must be seen as a graded differentiation and that they should therefore be ideal for a modern analysis in Optimality-Theoretic (OT) terms (see Sells 2001 for a recent collection of work within OT-LFG).

Malka Rappaport (now Rappaport Hovav) took up the argumentation presented in Chomsky's (1970) famous 'Remarks on Nominalizations' and followed them to their logical conclusion. While agreeing with Chomsky that the relationship between verbs and the nominals derived from them must be stated in the lexicon via the *argument structure* that is common to both, she showed that this level of representation could not be encoded in structural terms. That is, argument structure does not just have to be category neutral, as demonstrated by Chomsky, it has to be structurally neutral as well. In other words, the deep structure (D-structure) of the time could not be equivalent to argument structure, as many researchers were assuming. The argumentation involved data from verbs which were known to not have nominalized counterparts, or unexpected counterparts, as shown in (1) and (2). Given the derivational

syntactic assumptions of the time, Rappaport showed that there was no derivation that could derive (2c) under the assumption that the verb and its nominalized version shared the same underlying structural encoding of arguments.

(1) a. The general commanded the troops to leave.
    b. *The general commanded to leave to the troops.

(2) a. *The general's command of the troops to leave.
    b. *The general's command the troops to leave.
    c. The general's command to the troops to leave.

Rappaport went on to argue that the grammatical functions linked to in nominal domains needed to be different than those linked to from within a verbal domain (i.e., POSS instead of SUBJ) and showed how facts about control in nominalization fell out from her analysis. Given the continued interest in the relationship between thematic arguments and the overt realization of these arguments in a variety of theories and the continuing discussions on the nature of POSS, (e.g., Grimshaw 1990, some of the papers collected in Butt and King 2003), Rappaport's paper remains highly relevant for today's analyses of nominalization. This paper is a true classic: it formulated foundational ideas about the relationship between lexical semantics (predicate-argument structure) and syntax that continue to be upheld today, while also providing a wealth of insights into questions of nominalization that still need to be taken into account by any analysis of nominalization.

Jane Simpson's contribution deals with the resultative construction. Her paper is not only one of the first to take up this issue, it also represents an extremely compact and comprehensive discussion of the relevant data. She observes that the right generalization with respect to resultatives in English must take the unaccusative/unergative distinction into account (an observation that is now taken for granted) in that resultatives can only combine with predicates which have an underlying object (as unaccusatives were argued to have in both RG and GB analyses of the time). Simpson shows that this must be thought of as a syntactic constraint, rather than a semantic one, as combinations which are ruled out in English are perfectly good in Warlpiri.

The particular analysis that Simpson proposes within LFG is one in which an XCOMP (representing the resultative complement) is added to the subcategorization frame of a predicate (she observes that XCOMPs make sense for resultatives as resultative complements are in complementary distribution with other XCOMPs: **I promised John happy to go there*). This is still a viable analysis within LFG today, although more

recent analyses of resultatives tend to discuss them in terms of argument structure. Resultatives in some sense are still considered to be an unsolved problem: several different proposals have been made for a treatment of resultatives (in terms of argument structure, complex predicate formation or "small clauses", see Wechsler (2005) and Neeleman (1994) for some recent proposals); no one proposal has managed to convince large segments of the linguistic community. Simpson's original proposal remains just as valid as it was 20 years ago, and the data and generalizations she established are still relevant today.

Annie Zaenen, Joan Maling and Höskuldur Thráinsson's contribution is not the one originally published in 1983, but a reworked version that appeared in *Natural Language and Linguistic Theory* in 1985. Both the editors and the authors felt that it would be absurd to reprint the earlier version in favor of a better worked out later version. This paper, which served to establish non-nominative case on subjects in Icelandic as one of the classic problems in generative linguistics, is thematically in line with the other papers in the volume as it argues for a separate representation of thematic roles (argument structure) and grammatical relations/functions. The relationship between the two is mediated via a set of association principles. These association principles foreshadowed the development of LFG's Mapping Theory (see Butt 2005 for a discussion) and principles of a very similar type are used within Role and Reference Grammar (Van Valin 1991, 1993).

Zaenen, Maling and Thráinsson (ZMT) began their look at Icelandic from the point of view of passivization, arguing that an approach in terms of case absorption, as had been proposed within GB, did not suffice to cover the facts: some objects retain their case under passivization in Icelandic. In order to establish that these objects did indeed become subjects, albeit non-nominative ones (genitive or dative), under passivization, ZMT established a slew of subject tests for Icelandic. The subject tests conclusively established that subjecthood could not be exclusively tied to nominative case. ZMT further argued that the right way to understand the Icelandic facts was in terms of grammatical functions and a set of association principles which associated both thematic roles and case with the right grammatical function.

In particular, they posited three types of case: semantic, lexical/idiosyncratic and functional. Semantic case was reserved for adverbials and adjuncts (e.g., locatives, etc.). Functional case somewhat corresponded to GBs structural Case, in that the two functional cases of Icelandic were considered to be nominative and accusative and were assigned per default to the grammatical functions subject and object. This default

case assignment could be preempted by lexical/idiosynractic case, which was taken to be stipulated as part of the verb entry. A given verb could thus state that its theme should be associated with a genitive, thus preempting the default accusative. This type of case marking is known as "quirky" case, a name which is unfortunate because it obscures the rather regular generalizations that ZMT uncovered for Icelandic. Goals, for example, are always associated with dative case; so this could have been stated as part of a regular association principle, rather than as a stipulation in the lexicon. Themes are more complex, as they can be associated with either genitive or dative, depending on the lexical semantics of the verb (see Maling 2001 and Svenonius 2002 for some recent discussions on Icelandic case).

ZMT were instrumental in showing that there are regular correspondences between case, grammatical functions and thematic roles in Icelandic. They also showed that the complex patterns involving non-nominative subjects and passivization in Icelandic could follow quite straightforwardly, given their assumptions about the interface between lexical semantics and syntax.

In reissuing the papers in this volume, we hope that the reader will (re)discover the original arguments and the wealth of data that gave rise to these arguments. We also hope that the reader will take as much pleasure as we did in (re)visiting this rather special collection of papers.

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2

Objects, Themes and Lexical Rules in Italian

Mark Baker

2.1 Introduction

A large amount of recent linguistic research has made it clear that all seemingly intransitive verbs are not created equal.[1] This is particularly obvious in Italian. Italian permits 'subjects'—pretheoretically, the Noun Phrase that can appear preverbally and that agrees with the verb—to optionally appear post-verbally in simple sentences. For example:[2]

(1) a. Giovanni arriva.
Giovanni arrive-3.P.SG
'Giovanni is arriving.'

b. Giovanni telefona. (B1)
Giovanni telephone-3.P.SG
'Giovanni is on the phone.'

c. Giovanni scrive una lettera.
Giovanni write-3.P.SG a-F.SG letter-F.SG
'Giovanni is writing a letter.'

[1]Thanks to Annie Zaenen, Joan Bresnan, and Malka Rappaport for their advice and critiques of various versions of this paper. Thanks also to Rita Manzini for her native Italian intuitions.

[2]Many of the example sentences are taken from the first chapter of Burzio (1981). The notation '(B1)' means that these sentences are (1) in the chapter.

Lexical Semantics in LFG.
Miriam Butt and Tracy Holloway King (eds.).

(2) a. Arriva Giovanni.
arrive-3.p.sg Giovanni
'Giovanni is arriving.'

b. Telefona Giovanni.
telephone-3.p.sg Giovanni
'Giovanni is on the phone.'

c. Scrive una lettera Giovanni.
write-3.p.sg a-f.sg letter-f.sg Giovanni
'Giovanni is writing a letter.'

where corresponding sentences in (1) and (2) are essentially synonymous. An obvious way of accounting for these sentence pairs is to assume that Italian has some kind of subject extraposition rule which moves the sentence-initial NP rightward into the verb phrase, and that this single rule uniformly accounts for all of the examples above. Several researchers, however, (cf. Napoli (1973), Perlmutter (1978), Rosen (1981), Burzio (1981)) have demonstrated that the (a) sentences must be distinguished from the (b) and (c) sentences because the 'inverted subject' (henceforth, 'i-subject') in (2a) behaves like a direct object in several significant ways, whereas the i-subjects of the other two sentences do not. Thus while all of the i-subjects have nominative case and show agreement with the main verb, 'deeper' grammatical phenomena (i.e. things other than inflectional morphology) such as preferred word-orders, the distribution of a certain cliticization process, the selection of aspectual auxiliary verbs, and the distribution of past participle agreement all induce the same bifurcation on the class of intransitive verbs.

Perlmutter (1978) explicated these facts in the framework of Relational Grammar (RG) by arguing that verbs like *arrivare* have underlying forms which take an argument with the grammatical function OBJECT and no argument with the grammatical function SUBJECT. Verbs like *telefonare*, on the other hand, take a SUBJECT argument and no OBJECT, while transitive verbs like *scrivere* take one of each. Sentences like (1a) then, are derived by allowing *arrivare*'s OBJECT to 'advance' and become a SUBJECT. The differences between (2a) and (2b) can now be tied to the fact that the NP of (2a) is an OBJECT at one level of representation, whereas the NP of (2b) is not. Perlmutter christens the *arrivare*-class verbs with the name 'unaccusative' and the *telefonare*-class verbs with the name 'unergative'; the root idea that there exist these two major classes of intransitive verbs cross-linguistically is known as the 'unaccusative hypothesis'. Rosen (1981) picks up these ideas of Perlmutter's, expands and refines them, and shows how they fit in with other Italian constructions—in particular, with reflexives and impersonal sentences.

Meanwhile, Burzio (1981) covers the same linguistic territory from a different theoretical perspective—that of Chomsky's (1981) Government-Binding Theory. In his system, unaccusative verbs ('ergative' verbs, in his terminology) project into deep structures of the form $[e]_{NP}$ V NP. The post-verbal NP can then either be moved into subject position by the transformation 'Move-α', or it can stay where it is and receive nominative case by a special kind of inheritance; hence it is called an inverted subject. Once again the explanation proceeds from the fact that the NP of (2a) is a deep-structure object (now a structurally defined notion, rather than a grammatical primitive) in a way that the NPs of (2b) and (2c) are not.

One fundamental way in which the Lexical-Functional Theory of Grammar differs from both Relational Grammar and Government-Binding Theory is that it is in a sense 'monostratal'. In RG, clauses can consist of more than one 'stratum', where the elements of the clause bear different grammatical functions in each stratum. The configuration of GFs in one stratum is mapped into the configuration of the next stratum in accordance with the rules of the language and the principles of the theory. RG crucially includes the claim that processes in natural language must be able to refer simultaneously to grammatical relations borne by an argument at different levels of representation. Government-Binding theory works in much the same way, assuming a D-structure phrase marker, which is mapped into an S-structure by applications of the rule 'Move-α'. Since in this theory grammatical functions are defined in terms of structural configurations, this has the same effect of changing grammatical relations. GB, too, can effectively refer to GFs borne at different levels since the information about earlier configurations is preserved at S-structure by trace theory. Lexical-Functional Grammar, on the other hand, has no such mechanism; instead, lexical forms of predicates are projected directly into a single constituent structure (which is phonologically interpreted), via the mediation of grammatical functions. This is known in the theory as the Principle of Direct Syntactic Encoding, and is motivated both by the desire to restrict the formal power of linguistic theory, and by the desire to arrive at a theory of grammar that respects psycholinguistic considerations (cf. Bresnan (1978)). In LFG, the relationships between sentences (such as actives and passives), captured by relational networks or pairs of phrase markers in the other theories, must be expressed as relationships between lexical forms, by way of lexical redundancy rules (e.g. papers in Bresnan (1982b)). Now both Rosen (1982) and Burzio (1981) argue that the evidence from Italian tells against a theory of this structure, because it is necessary to refer to differing *underlying* GFs to properly distinguish between sentence (2a)

and sentence (2b), or between sentence (1a) and sentence (1b)—which is an impossible notion in a true one-stratum theory. The goal of this paper is to demonstrate how the insights of the unaccusative hypothesis can be incorporated into LFG. As well as shedding light on the structure of Italian, the results will point to ways of more fully articulating the theory of lexical rules.

2.2 An LFG Account of Unaccusative Verbs

The first stage in developing an LFG analysis for Italian is to find a way of representing subject extraposition that relates the (2b,c) sentences to the (1b,c) sentences. Intuitively, the subject in Italian can simply appear in either one of two places. This intuition can be captured very easily in LFG[3]—one simply writes that the subject can appear in one of two places in the phrase structure rules:[4]

[3]Perlmutter (1982) argues that none of the extraposed 'subjects' of (2) actually bear the grammatical function SUBJ, but rather are 'chômeurs'. As such, they contrast with the sentence-initial noun phrases of (1) which are SUBJs. Perlmutter cites the examples:

(i) Dei profughi ungheresi sono rimasti
some-M.PL refugees-M.PL Hungarian-M.PL be-3.PL remain-PART.M.PL
nel paese.
in the-M.SG country-M.SG
'Some Hungarian refugees remained in the country.'

(ii) Sono rimasti dei profughi ungheresi nel paese.

(iii) Sono rimasti nel paese dei profughi ungheresi.

and claims that the 'pivot nominal' *dei profughi ungheresi* behaves differently when it appears preverbally, as in (i), than it does when it appears postverbally, as in (ii) and (iii). However, most of his arguments only distinguish between (i) and (ii), where the pivot nominal occurs in the direct object position, and can be analyzed as an encoding of the OBJ function. Inverted subjects which *cannot* be direct objects and are clearly extraposed, such as *Giovanni* in (2c) are not clearly distinguished from preverbal subjects by the tests in Perlmutter's paper. I claim that the true distinction is between sentence initial or final NPs—which are SUBJs—and NPs that appear (naturally) in the direct object position, which are objects. See the discussion of word order in section 4.

[4]Actually, there are many possible ways of writing phrase structure rules that will generate the surface facts noted so far. Other possibilities include:

(i) a. S ⟶ (NP) VP (NP)
(↑ SUBJ)=↓ ↑=↓ (↑ SUBJ)=↓

b. VP⟶ $\bar{V}$ (NP) . . .
↑=↓ (↑ OBJ)=↓

(ii) a. S ⟶ (NP) VP
(↑ SUBJ)=↓ ↑=↓

b. VP ⟶ $\bar{\bar{V}}$ (NP)
↑=↓ (↑ SUBJ)=↓

(3) a. S ⟶ (NP) VP
(↑ SUBJ)=↓ ↑=↓

b. VP ⟶
$\bar{V}$ (NP) PP* ($\bar{S}$) (NP)
↑=↓ (↑ OBJ)=↓ (↑(↓PCASE))=↓ (↑COMP)=↓ (↑ SUBJ)=↓

When one syntactically encodes a lexical form, if one accepts the option of having an NP sister to the VP under the root S, one will generate the 'normal' sentences of (1b,c). If one passes up this opportunity, and instead expands an NP at the end of the VP, one will generate the subject-extraposed sentences of (2b,c). If one chooses to expand both, one will end up with an f-structure for the SUBJ function which will have two distinct PRED features. Hence sentences like **Giovanni telefona Giovanni*, generated by the phrase structure rules, are ruled out by the Consistency Condition on f-structure (Kaplan and Bresnan (1980)). Finally, one could choose to expand neither of the two NPs, and have no SUBJ encoded at all. If the SUBJ function is assigned in the predicate-argument structure of the PRED of the sentence, the result will be incomplete. If, however, the SUBJ function is not assigned, there will be no problem. The possibility of doing exactly that will play a large role in what follows.

The next stage in the explanation is to make explicit the difference between *telefonare* and *arrivare* that underlies their different grammatical properties. I claim that the root-form predicate-argument structure (the form that first feeds lexical rules) of the first is *telefonare*$< \begin{smallmatrix}(\text{SUBJ})\\ \text{AGENT}\end{smallmatrix} >$, whereas the root form predicate-argument structure of the second is *arrivare* $< \begin{smallmatrix}(\text{OBJ})\\ \text{THEME}\end{smallmatrix} >$.[5] Then there exists a lexical rule in Italian which can apply to these unaccusative forms:

(4) OBJECT PREPOSING
(OBJ) ⟶ (SUBJ)

---

c. $\bar{\bar{V}}$ ⟶ $\bar{V}$ (NP)...
↑=↓ (↑ OBJ)=↓

This last set of rules will generate the same c-structure for sentences like (2c) as that assumed by Burzio's (1981) theory. For further considerations, see fn. 14.

[5]It would be fair at this point to demand me to be more specific about the content of the 'thematic roles' AGENT and THEME in these lexical forms. The difficulties involved in finding a simple semantic characterization of the differences between arguments of unergative and unaccusative verbs are well-known (see Rosen (1982)). However, in order to concentrate on the formal issues, I will delay discussion of this conceptual issue until section six. For the time being, it is enough to assume that they act as labellings for slots in the predicate-argument structure of the verb, and that they are grammatical terms which are based on semantic notions in a way to be clarified later.

Sentence (2a) uses the lexical form *arrivare*$<\begin{smallmatrix}(\text{OBJ})\\ \text{THEME}\end{smallmatrix}>$ directly, and the 'inverted subject' is a direct object in the technical sense of bearing the OBJ function. Sentence (1a) comes from *arrivare*$<\begin{smallmatrix}(\text{SUBJ})\\ \text{THEME}\end{smallmatrix}>$, which is a form allowed into the language because it can be related to *arrivare* (OBJ) by rule (4). Meanwhile, sentence (1b) and sentence (2b) both use the lexical form *telefonare*$<\begin{smallmatrix}(\text{SUBJ})\\ \text{AGENT}\end{smallmatrix}>$ with different choices made for the c-structure encoding of the SUBJ function. Finally, note that there is no fear of transitive forms such as *scrivere*$<\begin{smallmatrix}(\text{SUBJ}) & (\text{OBJ})\\ \text{AGENT} & \text{THEME}\end{smallmatrix}>$ undergoing object preposing, because the resulting form would contain two assignments of the SUBJ function—a violation of function-argument biuniqueness. The analysis so far is basically a translation of the unaccusative hypothesis into LFG-ese; there exist two kinds of verbs that only take one argument—verbs where that argument is an OBJ and verbs where it is a SUBJ. Now, however, object-preposing is characterized in the lexicon.

One obvious alternative to the tale told in the previous paragraph would be to claim that the 'basic' lexical form for the unaccusative verbs is *arrivare*$<\begin{smallmatrix}(\text{SUBJ})\\ \text{THEME}\end{smallmatrix}>$, so that the only difference between them and the unergative verbs is the thematic role of their sole argument. Then one would have a lexical rule of subject-postposing, where (SUBJ) $\longrightarrow$ (OBJ), analogous to the rule of object-preposing given in (4) above. This analysis would be essentially the same as the one proposed for French in Grimshaw (1980). I do not know of any direct empirical differences between these two lines, but I believe that there are two theoretical reasons for opting for the root-OBJ analysis. The first is that the rule of subject-postposing as stated applies to *telefonare* as well as to *arrivare*, destroying the basis for the grammatical differences between their respective i-subjects. A condition must be added to the rule, to the effect that the SUBJ must be a theme. There is nothing unheard of about this kind of condition—it appears, for example, in the statement of the English Participle-Adjective conversion rule given in Bresnan (1980). Nevertheless, nothing of the sort is necessary for the rule of object-preposing; so, all things being equal, the grammar containing it would be simpler. Second, a rule of object-to-subject will be needed independently to account for passive forms and certain impersonal forms. It will be seen below that these can be collapsed conveniently with rule (4) proposed for unaccusatives. On the other hand, no other cases of subject to object exist in Italian. It seems a little extravagant to move objects

to subjects and back again when one way will do.[6] Finally, choosing OBJ as the GF associated with a solitary theme paves the way for simpler and more restrictive principles of assigning grammatical functions to predicate-argument structure: we uniformly (initially) assign OBJs to THEME arguments and SUBJs to AGENT arguments (but see fn. 5).

Before proceeding to demonstrate how the differences between the two classes of intransitive verbs follow from the basic difference in their lexical forms, we must first give an account of their surface similarities. Thus, there is a certain class of grammatical processes which treat all 'normal subjects' and 'inverted subjects' exactly the same, regardless of whether the governing verb is unaccusative or unergative (or intransitive). The most obvious of such processes is verbal agreement—the verb invariably agrees with its i-subject in person and in number:

(5) a. Arriva Maria.
arrive-3.P.SG Maria
'Maria is arriving.'

b. Arrivano Maria e Giovanni.
arrive-3.P.PL Maria and Giovanni
'Maria and Giovanni are arriving.'

(6) a. Telefona Maria.
telephone-3.P.SG Maria
'Maria is on the phone.'

b. Telefonano Maria e Giovanni.
telephone-3.P.PL Maria and Giovanni
'Maria and Giovanni are talking to each other on the phone.'

[6]The value of this observation depends on one's perspective on Universal Grammar and its relationship to grammars of particular languages. Hence, if SUBJ ⟶ OBJ is a rule that is allowed by Universal Grammar and can be used in a particular language unless the grammar of that language specifically forbids it, then there is no conceptual disadvantage to having both SUBJ ⟶ OBJ and OBJ ⟶ SUBJ in a language. If, on the other hand, SUBJ ⟶ OBJ is a rule that is not part of UG, or is marked in UG, so that including it in a grammar will have a 'cost' associated with it, then the observation in the text that this rule can be done without will suggest that it is not part of the grammar of Italian. In point of fact (not counting morphological causatives, which change predicate-argument structure as well as grammatical functions), cases of SUBJ ⟶ OBJ seem very rare, at least compared to OBJ ⟶ SUBJ. The clear case that has been proposed that I know of is Grimshaw's (1980) rule of subject extraposition for French. Note, however, that this rule is restricted to a certain class of lexical items; in fact, almost exactly the same class of lexical items that form the unaccusative class in Italian. This makes it tempting to try a reanalysis of French with an unaccusative class of verbs and a OBJ ⟶ SUBJ rule and without a SUBJ ⟶ OBJ rule, parallel to the current analysis of Italian.

Furthermore, if we consider the only morpheme in Italian that shows Case overtly—the first singular pronoun—we notice that i-subjects always have nominative case:

(7) a. Carlo ha invitato { *io, me },
Carlo have-3.PL.SG invited-PART.M.SG I-SUBJ me-OBJ.STRESS
non lei. (Rosen 1981, 3.74)
not her-OBJ.STRESS
'Carlo invited me, not her.'

b. Sono arrivato { io, *me },
be-1.P.SG arrived-PART.M.SG I-SUBJ me-OBJ.STRESS
non lei.
not her-OBJ.STRESS
'I arrived, not her.'

Thirdly, since we propose to distinguish between the i-subjects of (5a) and (6a) by claiming that *Maria* in (5a) is an OBJ, we might expect that its i-subject be expressable as an object clitic, as other objects are. This, however, is not the case: no i-subject can appear as an object clitic:

(8) *La arriva.
her-OBJ.UNSTRESSED arrive-3.PL.SG
'She arrived.'

This last observation can be collapsed with the preceding one, given the standard assumption that 'object clitics' are in fact clitics with accusative case. Then i-subjects cannot be expressed as accusative clitics because they have nominative case. Hence we can characterize this class of processes in which unergative and unaccusative i-subjects are indistinguishable as those depending on verbal government of morphological/grammatical features: number, person, and case.

With this in mind, let us look at the LFG mechanisms for handling feature government more carefully. Doing Italian verbal morphology in the spirit of Bresnan (1980), one could write lexical affixation rules such as the following:

(9) a. *-a*: [V(I)___]$_{V-fin}$; (↑TNS)=pres., (↑ SUBJ PERS)=3,
(↑ SUBJ NUM)=sing.

b. *-ano*: [V(I)___]$_{V-fin}$; (↑TNS)=pres., . . . (↑ SUBJ NUM)=plural

c. *-e*: [V(II)___]$_{V-fin}$; (↑TNS)=pres., . . . (↑ SUBJ NUM)=sing.

(9a) says that *-a* takes a class I root verb as input, and makes a finite verb form, while adding certain equations to those of the verb, including specifications of features of its subject. (9b) is identical to (9a), except that it adds the number feature value 'plural' to its subject rather than

'singular'. (9c) is identical to (9a), except that it accepts as input a different class of verbs—the class including *scrivere* instead of the class including *arrivare*. Given these equations, agreement between the verb form and the subject is enforced by the consistency condition: if the features put in the f-structure of the SUBJ from the equations associated with the verb-form are different from those put in the f-structure by the equations associated with the SUBJ itself, the f-structure will be ill-formed. Now given all this, agreement between verbs and the inverted subjects of transitive and unergative verbs follows immediately, because the difference in c-structure encoding completely disappears at the level of f-structure, where agreement is defined. Unfortunately, agreement between verbs and the i-subjects of unaccusative verbs does *not* follow as it stands. The 'inflection equations' on the verb mention a SUBJ function not present in its clause nucleus, while totally ignoring the OBJ function which they should match with in order to get the facts right.

To fix this problem, we can borrow an idea mentioned in Bresnan (1980) to deal with pleonastic *there* in English and its interaction with verbal inflection. *There* is well known to have no semantic content in sentences like:

(10) There is a strange man at the door

Furthermore, in such sentences, the verb seems to agree with the object of the sentence:

(11) There are three strange men at the door

Bresnan accounted for these facts by assuming that 'to be' subcategorizes for a non-thematic SUBJ as well as the usual OBJ and XCOMP. The choice of the non-thematic subject is forced by the constraint equation $(\uparrow \text{SUBJ FORM})=_c$ 'there'. The lexical entry for *there* lacked a PRED feature, so that no incoherence arose. Agreement was then enforced by adding the equation $(\uparrow \text{SUBJ NUM})=(\uparrow \text{OBJ NUM})$, so that the verb agrees with the subject as usual, but now the subject agrees with the object as well. The result is that the verb agrees with the object.

To carry this analysis over into Italian, we can imagine that sentences like *arriva Giovanni* in fact have a non-thematic subject similar to *there*, but this SUBJ is never syntactically realized. Suppose that there is a universal constraint on lexical forms stating that they must contain the SUBJ function.[7] One can imagine three different strategies

[7]This idea, of course, is familiar from its analogues in other theories, which have been proposed both as linguistic universals and as notions specifically motivated in Italian. Compare, for example, the 'extended' part of Chomsky's (1981) Extended Projection Principle in GB theory, and the 'Final 1 Law' of Perlmutter and Postal (1983) in RG (cf. also Burzio (1981), Rosen (1981)). In each framework, the existence

that a language might use in order to satisfy such a constraint. First, it might simply require that all lexical forms have a normal, ordinary thematic SUBJ. This would imply that unaccusative verbs could not exist in the language (underlyingly, at least), and there will only be one category of intransitive verbs. Sanskrit is a possible candidate for this class (Marantz (1981)). Second, a language might allow non-thematic SUBJs and allow sentences to be syntactically encoded by supplying pleonastic, PRED-less pronouns which could act as subject-position place-holders in c-structure. English with *it* and *there*, and French with *il* would be languages of this class. Finally, a language could allow non-thematic SUBJs, but instead of allowing PRED-less pronouns, it would not require the SUBJ to be encoded in c-structure. The difference between these last two strategies could be straightforwardly related to the question of whether or not the language requires a SUBJ to appear in c-structure in general—the famous 'PRO-drop' parameter. A language which both allows sentences with no overt NP *and* contains pleonastic pronouns is conceivable, but would be at least doubly-marked and hence rare.[8] We take Italian to be a language of the third class.

Given all this, Italian can have underlyingly unaccusative lexical forms, as long as it ensures that they will gain SUBJs before being lexically inserted. This could be accomplished very generally by a 'fix-up' lexical redundancy rule:

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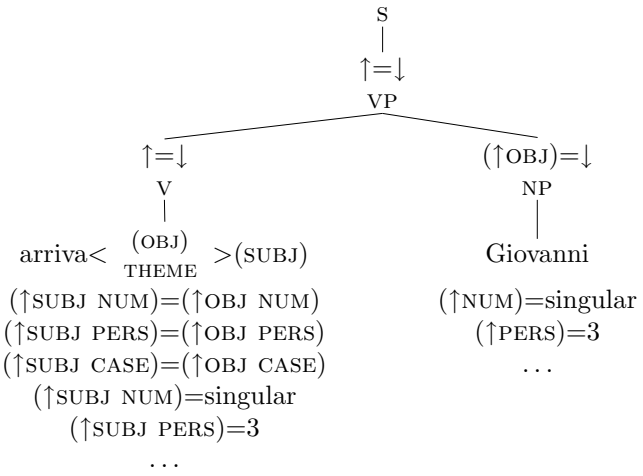
of empty subjects is motivated by essentially the same considerations: the need to explain patterns of agreement facts; and the desire to unmask hidden uniformities of linguistic structure both within and across languages. Yet in spite of their superficial similarities of function and purpose, the role that an empty subject can play in a particular framework is dependent on the architecture of that framework. For instance, LFG preaches the complete independence of f-structure and c-structure, with heavy constraints placed on each level individually. Hence the requirement of having a SUBJ need only be met at f-structure, and there is no need to complicate c-structure with ghost elements which cannot be objectively located. In GB, however, structural and functional notions are equated, which leads to complications as to how the functionally required empty subject 'fits in' structurally. Indeed at first glance the Italian empty subject cannot be either of the empty categories given by the theory (trace or PRO) because of the structural—government and c-commanding—characteristics of the position. Hence GB explanations become weak or complicated (cf. Chomsky (1981), Burzio (1981)).

[8]Modern Irish seems to be an example of such a language. Sentences with extraposed sentential subjects sometimes contain the pronoun *sé* 'it' as a pleonastic subject, and sometimes have no (phonologically overt) element in that position at all. Some predicates require a pleonastic *sé*; others forbid it; still others allow it to appear optionally. It seems impossible to explain this as anything more than lexically marked idiosyncracies of Irish predicates (from McCloskey).

(12) If a lexical form does not contain SUBJ in its grammatical function assignment, add a non-thematic SUBJ together with the equations (↑ SUBJ PERS)=(↑ OBJ PERS), (↑ SUBJ NUM)=(↑ OBJ NUM), and (↑ SUBJ CASE)=(↑ OBJ CASE).[9]

We will assume that this rule is the very last thing to happen as the form leaves the lexicon and ventures into the syntax. It should be noticed that this assumption presupposes some modification of LFG, which standardly assumes that all lexical rules are optional and not intrinsically ordered. I will assume that there can be different types of lexical rules and that some types may be required to apply before other types. In particular, 'fix-up' rules such as (12) can be required to apply after core GF changing rules (such as (4)) have all applied.

The f- and c-structures for *arriva Giovanni* are given in Figure 1.



[9]This rule seems to miss a generalization: that the empty subject agrees with the empty object in all the features that it could. It is not clear whether this is a true, linguistically significant generalization or not. Certainly variability exists across languages: English *there* agrees with an OBJ in number, but French *il* does not. There are also cases of partial agreement in languages of the world, for which the proper analysis might be similar to the above. If the generalization does prove significant, it could be captured very simply by adding only the equation (↑ SUBJ)=(↑ OBJ), making the two share all features. This would also obviate the need for a separate (OBJ) ⟶ (SUBJ) rule. I follow the line in the text, however, because it provides a more straightforward account of certain SUBJ-OBJ assymmetries in *ne*-cliticization and agreement in impersonal constructions, to be discussed below.

$$\begin{bmatrix} \text{SUBJ} & \begin{bmatrix} \text{NUM} & \text{singular} \\ \text{PERS} & 3 \end{bmatrix} \\ \text{PRED} & \text{`arriva'}< \begin{matrix}(\text{OBJ}) \\ \text{THEME}\end{matrix} >(\text{SUBJ}) \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{`Giovanni'} \\ \text{NUM} & \text{singular} \\ \text{PERS} & 3 \end{bmatrix} \end{bmatrix}$$

Figure 1 The f- and c-structures for *arriva Giovanni*

The fact that no lexical NP can appear in the SUBJ position of this sentence follows from the assumption that Italian has no PRED-less nouns; if an NP with a PRED feature were inserted under the SUBJ node, the resulting f-structure would be incoherent. Meanwhile, the NP on the right side of PSR (3a) is optional, so that the c-structure above is generable. This analysis accounts for the agreement between verbs and OBJs appearing when and only when no SUBJ is present without complicating the verbal inflection rules. Furthermore, it is strongly supported by the fact that when an unaccusative verb is embedded under a 'raising' verb, the raising verb agrees with the lower object:

(13) a. Sembr*a* arrivare Giovanni.
seem-3.P.SG arrive-INF Giovanni
'It seems that Giovanni is arriving.'

b. Sembr*ano* arrivare molti studenti.
seem-3.P.PL arrive-INF many-M.PL students-M.PL
'It seems that many students are arriving.'

c. Sembr*ano* arrivar*ne* molti.
seem-3.P.PL arrive-INF.OF-THEM many-M.PL
'Many of them seem to arrive.'

Sembra ('seems') in (13a) shows singular agreement, matching the i-subject of the lower clause, *Giovanni*, while *sembrano* in (13b) is plural to match *molti studenti*. Sentence (13c) is analogous to (13b) except that it has the partitive clitic *ne* which is associated with the quantifier *molti* in object position in the place of a full noun phrase. One property of the *ne*-cliticization process is that all and only direct objects are allowed to undergo it (see section 4 for a fuller account). Hence (13c) shows that the i-subjects of the sentences are structurally members of the lower verb phrases, and not extraposed subjects associated with the matrix clause. Yet in LFG a verb can only govern features of the functions contained in its own clause nucleus. Therefore there must be an empty,

non-thematic subject in the matrix clause nucleus which agrees with the object (i-subject) of the embedded clause nucleus. Since in LFG all and only SUBJ functions can be controlled, the 'upper' non-thematic SUBJ must control a lower non-thematic SUBJ, which in turn agrees with the object in its lower clause nucleus. In short, *sembrare* 'raises' the empty subject posited above in rule (12) and hence agrees with it. This is strong confirmation that such invisible SUBJs exist in Italian. The full c- and f-structures of (13b) are given in Figures 2 and 3.

The case properties of i-subjects follow from these notions in a very similar way. Suppose that in Italian every finite verb carries the equation (↑ SUBJ CASE)=nominative. Meanwhile, the vast majority of the (non-clitic) nouns have lexical entries with no specifications for case. The entries of the 1st person singular pronouns do, however, have specifications:

(14) a. *io*: (↑ PRED)='pronoun', (↑ NUM)=sing., (↑ PERS)=1,
(↑ CASE)=$_c$ nominative.

b. *me*: (↑ PRED)='pronoun', (↑ NUM)=sing., (↑ PERS)=1,
¬(↑ CASE)=$_c$ objective
nominative.

Now in an i-subject construction with an unaccusative verb, an empty subject will be added by rule (12). The verb will cause the case feature 'nominative' to be contained by this SUBJ, and then by the third equation added by rule (12), the OBJ must be nominative as well. Hence only *io* and not *me* will form a consistent f-structure when inserted as the i-subject bearing the OBJ function. Furthermore, it is natural to assume that the c-structure position of object clitics is associated with accusative case in accordance with a PSR such as:

(15) $\bar{V} \longrightarrow$ (CL) (CL) V
(↑ OBJ2)=↓ (↑ OBJ)=↓ ↓=↑
(↓ CASE)=dat. (↓ CASE)=acc.

Case information in the lexical entries of the clitics will then assure that they occur in the proper order (cf. Grimshaw (1980)). For example, the feminine direct object clitic *la* will have as part of its lexical entry the equation (↑ CASE)=$_c$ accusative. This equation will permit *la* to occur in the second clitic position, but not the first. This expresses the fact that *la* cannot be an indirect object in Italian, nor can it precede an indirect object clitic. But now if an i-subject were expressed as a clitic, the annotation on that clitic position in PSR (16) would give the i-subject an accusative valued CASE feature in f-structure, whereas the verb would give it a nominative-valued CASE feature, via the mediation of the empty

subject, as shown above. The result would be an inconsistent f-structure. Hence i-subjects cannot be expressed as clitics the way that most OBJs can be.

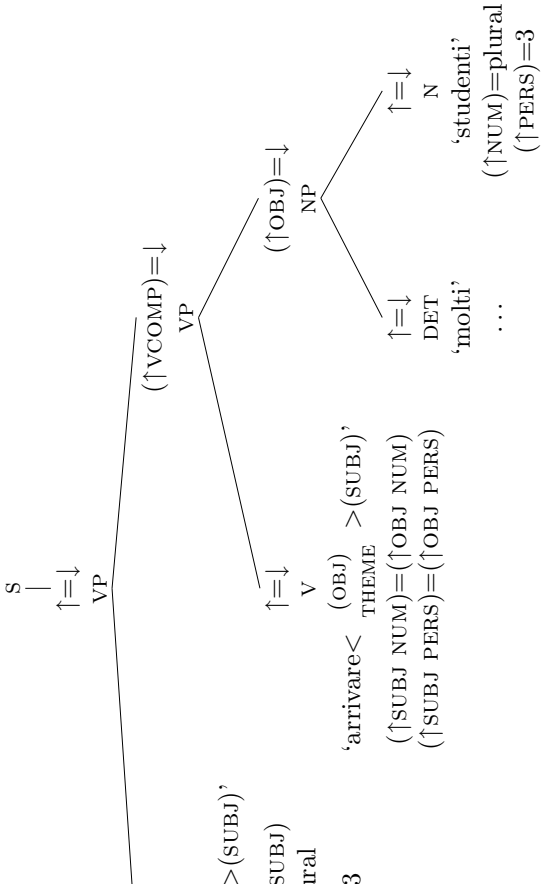


Figure 2 C-structure for *sembrano arrivare molti studenti*

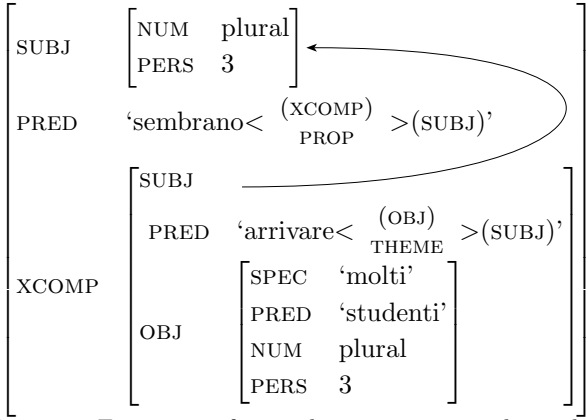


Figure 3 F-structure for *sembrano arrivare molti studenti*

The notions from this section form the basis for the grammatical differences between unaccusative and unergative verbs in LFG.

2.3 Related Constructions

Burzio spends a large portion of his dissertation discussing other Italian constructions, so that he can make comparisons between them and the intransitive sentences of primary interest in the work (cf. also Rosen (1981)). In particular, he considers the processes of inchoativization, passive formation, and impersonal formation. According to a Government-Binding type theory, each of these processes involves applying 'Move-α' to a structure of the form $[e]_{NP}$ V NP at some point in the derivation; in Relational Grammar each has a 2-1 (object-to-subject) advancement. Since precisely this is involved in the analysis of unaccusative verbs, one predicts that unaccusatives will pattern together with these other three constructions with respect to certain grammatical tests—a prediction borne out by the data. We shall go through these constructions one by one and show how LFG's account captures the same generalization.

In Italian, as in many other languages, there exists a fairly large class of verbs which have both transitive and intransitive uses, where the object of the transitive verb seems to correspond to the subject of the intransitive verb. In particular, they have the same selectional restrictions. For example:

(16) a. La marina americana ha
the-F.SG navy-F.SG Amercian-F.SG have-3.P.SG
affondato la nave. (B31)
sunk-PART.M.SG the-F.SG ship-F.SG
'The American navy has sunk the ship.'

b. La nave è affondata.
the-F.SG ship-F.SG be-3.P.SG sunk-PART.F.SG
'The ship has sunk.'

Verbs like *affondare* in (16b) are often called 'anticausatives', 'inchoatives', or 'statives'. They contrast with verbs like *mangiare* ('to eat'), which also have transitive and intransitive uses, but where the subject positions correspond and have the same selectional restrictions. Semantically, it seems that in the 'crossover' verbs, the intransitive verb has simply lost the agentive noun phrase selected by the transitive verb. This intuition, translated into a lexical rule, yields the rule:

(17) INCHOATIVIZATION[10]

$$\text{Verb} \left(\underset{\text{AGENT}}{\quad} \quad \underset{\text{THEME}}{\quad} \right) \longrightarrow \text{Verb}_{inch.} \left(\underset{\text{THEME}}{\quad} \right)$$

Note that the result is a lexical entry of exactly the same form as that posited for unaccusative verbs, which is the desired result. Verbs like *mangiare*, on the other hand, lose their object-patients due to a rule of intransitivization:

(18) INTRANSITIVIZATION
(OBJ) $\longrightarrow \emptyset$

This does not make unaccusative forms—forms that lack a SUBJ but contain an OBJ as a THEME—which again matches the facts.

Notice that these two rules are of different types, in that they operate on different levels of representation: the rule of inchoativization modifies a verb's predicate-argument structure, whereas the rule of intransitivization changes the grammatical function assignment that is made to a predicate-argument structure. This difference is designed in the theory to reflect a semantic difference between the two kinds of sentences: *John ate* implies that John ate something, but *The glass broke* does not imply that someone broke the glass. Hence inchoativization removes the agent argument semantically as well as grammatically, while intransitivization leaves the theme argument semantically but makes it unavailable for syntactic encoding (as symbolized by the null GF $\emptyset$) by binding it to an existential quantifier in a semantic representation. A more complete picture of these relationships can be seen in Figure 4, where predicate-

[10]Italian, like French, has a class of verbs which undergo an inchoativization process exactly like that described in the text, except that an apparently meaningless reflexive clitic appears in the unaccusative form, agreeing with the subject. For this problem, we will adopt Grimshaw's (1980) solution. This involves having a lexical entry for the reflexive clitics that lacks a PRED feature, and adding that the inchoativization rule, when applied to a verb lexically marked to be in the appropriate class, adds the equation $(\uparrow \text{REFLEX})=_c +$, insuring that a PRED-less reflexive clitic will appear.

argument structures and grammatical function assignments project all and only those aspects of 'pure' semantic structure which are relevant to syntactic encoding.

Figure 4 Diagram of Relationships

That this difference between losing a thematic role and binding a thematic role is relevant at the level of the lexical form is suggested by the following contrasts (due to Rita Manzini):

(19) a. They decreased the price to help the poor.
b. The price was decreased to help the poor.
c. *The price decreased to help the poor.

There is still an AGENT argument in the lexical form of the passive verb in the second sentence, which sanctions the appearance of a purposive clause, even though it is not syntactically encoded. The lexical form of the inchoative verb, on the other hand, has lost the agent role entirely and no purposive can appear.

Forms that undergo inchoativization become, of course, eligible for object-preposing in accordance with rule (4) above. This is how for example, the form of *affondare* underlying (16b) comes about. This analysis is slightly different from the lexical analysis of inchoativization for French given in Grimshaw (1980), in that Grimshaw's rule combines the actions of rule (17) and rule (4) into one process which simultaneously deletes the agent argument position and maps the OBJ function into the SUBJ function. At least for Italian, this combination of actions does not seem attractive. Verbs like *affondare* take i-subjects that behave like direct objects, just as other unaccusative verbs do. Hence the form *affondare*$< \underset{\text{THEME}}{(\text{OBJ})} >$ must exist at some point. It seems inappropriate to write a more complicated rule to sanction *affondare*$< \underset{\text{THEME}}{(\text{SUBJ})} >$ first, only to have to write a second rule taking SUBJ into OBJ. As it stands, the rules break down into elementary operations; the 'mid-way' form is needed independently; and the second rule is needed for other forms as well—a much more attractive state of affairs. Moreover, once again choosing the *affondare*$< \underset{\text{THEME}}{(\text{OBJ})} >$ form permits the possibility of associating underlying OBJs with THEME arguments uniformly, thereby restricting the set of possible lexical forms.

Turning our attention briefly to the passive construction in Italian, we find ourselves facing almost exactly the same situation as that presented by the rule of inchoativization. Lexical rules of passivization such as those proposed for English in Bresnan (1980) and for French in Grimshaw (1980) can be easily translated into Italian to yield:

(20) PASSIVIZATION (Grimshaw)
Functional Change:
$\text{verb}< \underset{\text{AGENT}}{(\text{SUBJ})} \quad \underset{\text{THEME}}{(\text{OBJ})} > \rightarrow \text{verb}_{pass} < \underset{\text{AGENT}}{(\text{OBL}AG/\emptyset)} \quad \underset{\text{THEME}}{(\text{SUBJ})} >$

Morphological Change: V $\longrightarrow$ V_{part}

Once again, this rule does two things at once (not counting the morphological change): it dissociates the SUBJ function from the agent argument and it substitutes the SUBJ function for the OBJ function in the theme argument. Now passive sentences can take i-subjects as well as normal subjects, and these i-subjects turn out to be objects according to the same tests that demonstrate the objecthood of the i-subjects of unaccusative verbs. Hence again some kind of (SUBJ) $\longrightarrow$ (OBJ) rule would be required. It is simpler to write passivization as:

(21) PASSIVIZATION

$$\text{verb}\langle \underset{\text{AGENT}}{(\text{SUBJ})} \quad \underset{\text{THEME}}{(\text{OBJ})} \rangle \rightarrow \text{verb}_{pass} \langle \underset{\text{AGENT}}{(\text{OBL}_{AG}/\emptyset)} \quad \underset{\text{THEME}}{(\text{OBJ})} \rangle$$

V $\longrightarrow$ V_{part}

This rule is similar to rule (20), except that the OBJ function of the lexical form does not become SUBJ; the OBJ function is still mentioned in the rule not because it changes, but because an object must be present for passivization to occur in Italian—i.e., Italian does not have impersonal passives. Thus, passive morphology in Italian states that although there is an agent of the verb, that agent is not encoded as the subject of the sentence, as it usually is. Instead, it may appear as an oblique argument, or be left implicit. Now, the lexical form sanctioned by the rule of passivization is subjectless and hence eligible to undergo the same object-preposing rule (4) used by unaccusative verb forms, accounting for the 'normal' passive sentences. If the object is not preposed, then according to the principles developed above, rule (12) will apply, adding a non-thematic subject whose mediation will cause the verb to agree with the object, thereby generating the i-subject form of the passive.

The third lexical process to be considered in this section is the impersonal construction in Italian. This process has a number of hidden complexities, and this exposition will not claim to be exhaustive. Nevertheless, the properties of impersonal constructions relevant here can be sketched straightforwardly enough. The basic fact is that impersonal sentences omit a lexical subject and add the clitic *si* to the verb. Thus:

(22) Con un po di musica, ...
with a-M.SG little of music-F.SG
'With a little music...

a. uno lavorerebbe meglio. (B14)
one work-COND.PRES.3.P.SG better
one could work better.'

b. si lavorerebbe meglio.
IMP work-COND.PRES.3.P.SG better

c. *uno si lavorerebbe meglio.
one IMP work-COND.PRES.3.P.SG better

In such sentences, *si* conveys that some unspecified human beings are involved in performing the predicated action. As such, it can either have a generic meaning, or one that is made specific by other, pragmatic factors. We can tell that *si* is a clitic, rather than a pronoun in the SUBJ NP position of PSR (3a) because it can occur between the verb and the dative clitic *gli*:

(23) Gli si telefona domani.
him-I.OBJ.UNSTRESSED IMP telephone-3.P.SG tomorrow
'One will phone him tomorrow.'

This impersonal form can give rise to a new kind of verbal agreement problem: it creates situations in which there is no full lexical NP for the verb to agree with at all. When this occurs, we find that finite verbs appear in their third person singular form, but past participles appear in plural form:

(24) Si è arrivat*i*. (B54)
IMP be-3.P.SG arrive-PART.M.PL
'One has arrived.'/'They have arrived.'

This apparent contradiction of features suggests that *si* does not function as a 'normal' SUBJ in such sentences, but as a grammatical marker which triggers an exceptional agreement process. Finally, if an impersonal verb form contains a direct object, three synonymous sentences are systematically possible: one with the object in place and this special impersonal agreement on the verb; one with the object in place and the verb agreeing with the object; and one with the object moved into subject position and the verb agreeing with it:

(25) a. Si guarda le manifestazioni sportive con
IMP watch-3.P.SG the-F.PL event-F.PL sports-F.PL with
interesse. (B23)
interest-M.SG
'One watches the sports events with interest.'

b. Si guardano le manifestazioni sportive con
IMP watch-3.P.PL the-F.PL event-F.PL sports-F.PL with
interesse.
interest-M.SG
'One watches the sports events with interest.'

c. Le manifestazioni sportive si guardano con
the-F.PL event-F.PL sports-F.PL IMP watch-3.P.PL with
interesse.
interest-M.SG
'One watches the sports events with interest.'

The post-verbal NP in (25b) is yet another i-subject which shows the syntactic properties of a direct object. Meanwhile, the pre-verbal NP in (25c) has all the characteristics of a normal SUBJ. In particular, it is subject to pronoun-drop, as are all and only subjects in Italian:

(26) Si guardano con interesse. (B24)
IMP watch-3.P.PL with interest-M.SG
'One watches with interest.'

These last sentences are sometimes referred to as a 'reflexive passive' in the Romance literature. It is very similar to the usual passive in that it deemphasizes the agent and makes the object prominent. There is however, a fairly subtle semantic difference in the treatment of the agent between the two. Roughly, the usual passive leaves the agent open, to be restricted in other ways, whereas the Italian impersonal reflexive 'passive' in a sense binds the agent to a specific 'unspecified human' element. For example, the normal passive is consistent with an agentive 'by-type' phrase; whereas the impersonal passive is not.

In order to account for this collection of properties, Lexical-Functional Grammar must begin with a lexical rule of impersonalization that accepts as input lexical forms that have SUBJs in their grammatical function assignments. The rule will (like the passive rule) dissociate the SUBJ function from its thematic argument position, assigning instead some kind of impersonal interpretation to that thematic argument. The only realistic alternative to this tactic would be to analyze the *si* clitic as another realization of the old SUBJ function—as a true impersonal pronoun, if you will. There are two motivations for rejecting this alternative, however. The first is that there is no value for the 'person' feature of *si* that will make a consistent SUBJ f-structure in sentences such as (24) following normal procedures: one verb says that it is singular; the other insists that it is plural. Secondly, the sentences in (25) illustrate that OBJs in impersonal constructions can freely become subjects. This would not be possible if impersonal *si* were an encoding of the SUBJ function, because then sentence (25c) would have a lexical form containing two assign-

ments of SUBJ—a violation of function-argument biuniqueness.[11] Hence we are led to a formulation of Italian impersonalization along these lines:

(27) IMPERSONALIZATION
semantic change: predicate (...x...) ⟶ pred (...'UH'...)
lexical form: verb <(SUBJ)... > ⟶ verb < ∅... >
added equation: (↑IMPERSONAL)=$_c$ +

At the semantic level, one of the potentially free arguments of the predicate is bound to an appropriate semantic constant. At the lexical form level, this projects into a form in which the corresponding thematic argument—the one previously associated with the SUBJ—is no longer open to syntactic encoding, as expressed by the symbol ∅ (cf. Grimshaw (1980)). This semantic change is signalled to our senses by the appearance of the morpheme *si* acting as a grammatical marker. Formally, *si* will have no PRED feature and will carry in its lexical entry the equation (↑ IMPERSONAL)=+. The constraint equation added by the impersonalization rule then serves to guarantee that *si* will appear in well-formed impersonal sentences. Comparing this rule to the rule of passivization, we observe that both eliminate a thematic SUBJ from their input lexical forms, but there are two basic differences. At the semantic level impersonalization 'fills' an argument with a specific semantic element, whereas passivization leaves its corresponding argument open, so that it can be expressed by obliques or be quantified over. Furthermore, impersonalization can be done to any thematic subject whatsoever, whereas in Italian passivization has an extra restriction—it only applies to transitive verbs.

Given this formulation of impersonalization, Italian is faced with a very specific problem: what verb morphology should be used in impersonal sentences that have no SUBJ to agree with? Note that the empty pleonastic SUBJ provided for by rule (12) is no help in answering this question for sentences like (24), because there is no object to be a source of grammatical features either. I suggest that Italian supplies a very specific way of filling this specific gap: it allows the impersonal feature to sanction the use of special lexical affixation rules:

(28) a. *-a*: [V___]$_{V-fin}$; (↑ TNS)=present, (↑ IMP)=$_c$ +
b. *-i*: [V$_{part}$___]$_{V-part}$; (↑IMP)=$_c$ +
CONDITION: (SUBJ) ∉ V's grammatical function assignment

[11] Of course, all lexical forms, including those underlying (17a,b), must have a SUBJ in accordance with the universal requirement discussed above. However, rule (12) which 'fixes up' lexical forms was assumed to apply after all other lexical processes, and in particular after object-preposing, so that the empty SUBJs it adds have no effect on the syntax of these sentences.

Because of the constraint equations associated with these suffixes, they are consistent only with impersonal sentences. The fact that these suffixes have homophonous forms that have different SUBJ NUM features is not paradoxical on this approach.[12] Finally, under the usual assumption that lexical rules are not inherently ordered or obligatory, there are two options for verbal morphology in an impersonal form that contains an OBJ. On the one hand, such a form meets the requirements for rule (28) and can show impersonal agreement; on the other hand, it can undergo the usual morphology rules and agree with its OBJ via the mediation of an empty SUBJ. If, however, the OBJ is fronted to a SUBJ, the normal processes will override the special rule (28) and only agreement with the SUBJ will be possible. This accounts for the three sentences in (25).

It is necessary to mention in passing that certain biclausal control structures are possible in which both the matrix clause and the embedded clause should have impersonal verbs. When these arise, however, only the upper clause contains the clitic *si*. Realizing that deeper insights probably lurk here, I will stipulate for the purposes of this paper that an open grammatical function will be [+impersonal] if the smallest clause nucleus properly containing it is.[13] Therefore, the clitic *si* will not have to appear in the embedded clause to supply this value.

The analysis of impersonal sentences in Italian has been fairly simple, but some of the more subtle properties of such sentences already follow from what has been said. This constitutes encouraging evidence that these notions are on the right track. For example, Burzio observes that the impersonal clitic *si* cannot generally appear on infinitives (as in equiverbs, for instance), but it is permitted in infinitives embedded under raising verbs:

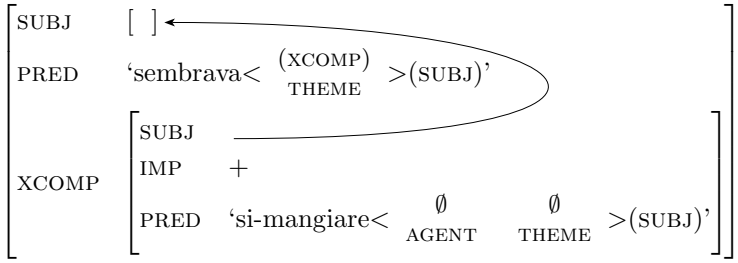
(29) ?Sembrava mangiar*si* molto bene. (B19)
Seem-IMPERF-3.P.SG eat-INF.IMP very well
'It seemed that one had good food.'

[12]Both Burzio (1981) and Rosen (1981) resolve the contradiction in another way: they assume that the impersonal element has plural features and that it idiosyncratically does not agree with fully inflected verbs. These verbs then appear in the third person singular form because it is the 'unmarked' variant. Such an account could be translated into LFG, but there seems to be no clear advantage in doing so.

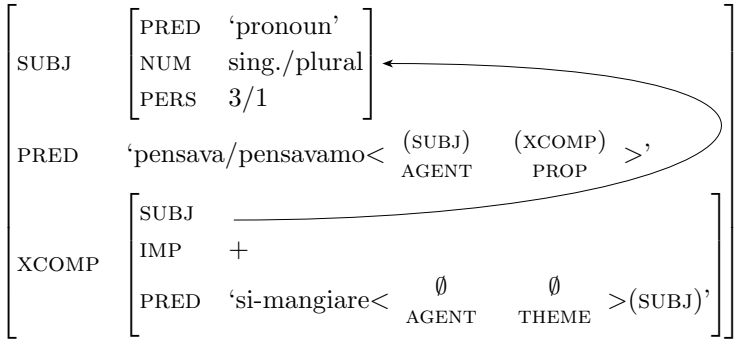
[13]It seems plausible that this is a special case of some universal principle by which open functions inherit aspectual features in general from closed functions containing them. An English example is suggested in fn. 5 of Bresnan (1980). Bresnan notes that some kind of feature-inheriting is needed to account for English perfect participles always requiring the auxiliary *have*. To accomplish this, she tentatively suggests writing the equation (↑ VCOMP PERF)=+ in the lexical entry of *have*. With the suggested convention one would simply have to put (↑ PERF)=+ in the lexical entry of *have*, and the VCOMP would inherit this value automatically. One can imagine how other more general considerations might derive the stipulation given in the text as well.

(30) *Pensava/Pensavamo mangiar*si* molto bene (B20)
think-Imperf-3.p.sg/1.p.pl eat-inf.imp very well
'It/We thought to have good food.'

Given the rule of impersonalization stated above, this contrast follows immediately from the contrast between raising verbs and equi-verbs in lfg. The lexical form for an equi-verb contains a thematic subj, which functionally controls the subj of the verb's xcomp. However in the case of sentence (30), the embedded verb is in its impersonal form, and hence does not subcategorize for a thematic subj. Hence, when the matrix equi-verb imposes its subj with a pred feature upon the xcomp's clause nucleus, the xcomp's clause nucleus will be incoherent. The lexical form for a raising verb, on the other hand, has a *non-thematic* subj as the functional controller of its xcomp's subj. Then when the xcomp is impersonal as in sentence (29), it too will take a non-thematic subj by rule (12), and as long as the shared subj is an 'empty', pleonastic subj without a pred value, no inconsistency will arise. The full f-structures of (29, 30) are given in Figure 5.



"Sembrava mangiarsi molto bene."



"*Pensava/*Pensavamo mangiarsi molto bene."

Figure 5 F-structures for (29) and (30)

The bottom line is that we have, in impersonalization, a third rule which suspends the SUBJ function, and hence creates lexical forms that show agreement between verb and object, and that feed the rule of (OBJ) $\longrightarrow$ (SUBJ).[14] These forms then make a natural class together with those created by inchoativization and passivization, as well as with basic unaccusative forms: they all have OBJs but no thematically assigned SUBJ. Thus LFG naturally captures Burzio's generalization that these constructions should pattern together.

Finally, I would like to nominate a fifth group of lexical forms for membership in this 'unaccusative' natural class: those formed by reflexivization as expressed by the reflexive clitic *si* and its inflectional variants. This constitutes something of a break from the tradition of Burzio (1981) and Rosen (1981), who treat reflexivization separately from the other processes we have considered. Nevertheless the syntactic similarities are compelling. Grimshaw (1980) argues that in French the reflexive clitic must be a grammatical marker signalling that one of the predicate's arguments is semantically bound, and not a pronoun that itself encodes that other argument. Her reasoning proceeds by showing that reflexive verb forms act like intransitives with respect to subject extraposition and causative formation, and it has analogues in Italian (cf. also Marantz (1981), who speculates that this is true of reflexivization processes universally). For these reasons, Grimshaw proposes a lexical rule of the form:

(31) REFLEXIVIZATION (Grimshaw)
Semantic effect: Pred (...x...y...) $\longrightarrow$ Pred (...x...x...)
Lexical form: verb ((SUBJ) (OBJ)) $\longrightarrow$ *si*-verb ((SUBJ) $\emptyset$)
Added equation: ($\uparrow$ REFLEXIVE)$=_c$ +

This rule is much like the rule of impersonalization, in that it binds an argument of the predicate in semantic structure—this time to another argument-value instead of to a semantic constant—and hence one less slot is available for syntactic encoding in the lexical form. Once again this change is signalled by requiring the presence of a clitic marker via a constraint equation.[15] Now in Italian, we can proceed to check on

[14]Indeed a rule of (OBJ) $\longrightarrow$ (SUBJ) is unquestionably needed to form object-preposed impersonal sentences. It is the independent need of this lexical rule that gives the simplicity arguments that motivate the given forms of the passive, unaccusative, and inchoative rules extra bite.

[15]Notice that his analysis as stated calls for two distinct PRED-less clitics which are homophonous in their third person forms: a reflexive *si* and an impersonal *si*. Rosen (1981) criticizes any theory which requires this distinction on the grounds that reflexive and impersonal clitics are identical cross-linguistically, citing Russian and Icelandic as non-Romance examples. In fact, Rosen's theory avoids having two

the nature of the intransitive verb that is so formed: is it unaccusative or unergative? When we apply the relevant grammatical tests, such as *ne*-cliticization, auxiliary selection, and participle agreement (to be described in detail in the next two sections), we find that reflexive verbs behave uniformly as unaccusatives. To anticipate for a moment, only direct objects can be expressed by the partitive clitic *ne*; yet the i-subject of a reflexive verb can be so expressed:[16]

(32) a. Parecchi prigionieri si sono uccisi. (B5.180)
several-M.PL prisoners-M.PL REFL be-3.P.PL killed-PART.M.PL
'Several prisoners have killed themselves.'

b. Se ne sono uccisi parecchi.
REFL of-them be-3.P.PL killed-PART.M.PL several-M.PL
'Several of them have killed themselves.'

Hence in Italian, it appears that reflexivization causes the argument associated with the SUBJ function to be suppressed rather than the argument associated with the OBJ function. We rewrite the rule as:

(33) REFLEXIVIZATION
Semantic effect: Pred (...x...y...) ⟶ Pred (...x...x...)
Lexical form: verb ((SUBJ) (OBJ)) ⟶ *si*-verb (∅ (OBJ))
Added equation: (↑ REFLEXIVE)$=_c$ +

This therefore is a fifth source of 'unaccusative class' lexical forms.

2.4 Grammatical Tests of Objecthood

Implicit throughout the discussion so far has been the notion that it is necessary to analyze the 'inverted subjects' of some verbs as objects

clitics, but at the cost of having two kinds of rules: two kinds of passive, two kinds of unaccusative advancement, and two kinds of dummy-introduction rules. In no case is there any semantic difference between the two kinds of rules; one simply creates a relational network of the type that triggers adding *si* whereas the other does not. I prefer to have two lexical items than to have two entire sets of rules. Furthermore, in the present analysis, the reflexive clitic and the impersonal clitic function similarly, in that they both indicate that the argument corresponding to the subject is bound semantically (or lost: the reflexive inchoatives of fn. 10). This could potentially be the basis of unifying the two.

[16]This fact, from Burzio (1981), is potentially a major problem for the RG theory of Rosen (1981). Her rule of *ne*-cliticization states that a term may cliticize if it is an object but *not* a subject in the relational network. Her account of reflexivization, however, depends on analyzing a single term as being, at one level, simultaneously a subject and an object. Thus a 'reflexive item' should never undergo *ne*-cliticization. If Rosen were to forsake her 'multiattachment' analysis of reflexives to deal with this fact, then she no longer has a clear example in Italian of generalizations that must mention the grammatical functions of a term independently of the level at which they are assumed by that term (cf. her *essere* assignment, *ne*-cliticization). Hence the motivation for RG's 'multistratal' expressive power is eroded.

and the 'inverted subjects' of others as extraposed subjects. Thus far we have shown how one can naturally give such an analysis within the LFG framework. Now, at last, we will explicitly look at the grammatical processes that motivate this line, and show that, given the story so far, the relevant facts fall out almost trivially.

The first area in which this theory of unaccusative and unergative verbs predicts a difference is word order. In LFG, constraints on word order are represented by the ordering of the elements on the right-hand side of phrase structure rules. A glance at the PSRs in (3) shows that an NP bearing the SUBJ function must follow all other verbal complements, whereas an NP bearing the OBJ function precedes all other verbal complements. Now precisely in case the grammatical function assignment of a lexical form contains the OBJ function, and not the SUBJ function, the verbal morphology will appear to agree with the object via the mediation of an empty, non-thematic SUBJ. This will make the NP that immediately follows the verb appear to be an inverted subject. This situation arises exactly in inchoativized forms, passive forms, impersonal forms, and unaccusative forms, such as *arrivare* above. On the other hand, if the SUBJ function is contained in the grammatical function assignment of the verb, the lexical affixation rules will force the verb to agree with this subject. Hence the only way that such a verb can have a post-verbal NP that it agrees with is to encode the SUBJ function in the verb-phrase-final NP position. Hence the 'inverted subjects' of transitive and unergative verbs are predicted to appear after all other verbal complements, while the i-subjects of unaccusative, passive and impersonal verbs should be able to appear before all other verbal complements. Checking this prediction is complicated somewhat by the fact that Italian has some kind of rule of complement shift that can scramble the constituents of the VP, making many word orders possible. This rule, however, is sensitive to the relative weights of the constituents, tending to put the heaviest constituents at the end of the VP (like the rule of heavy-NP shift in English). Thus we can keep the inverted subject 'light', and check for naturalness of word orders rather than for grammaticality of word orders. At this level, the prediction is borne out by the contrast of (34b) versus (35b):

(34) a. Giovanni pensa di studiare linguistica. (B71)
Giovanni think-3.P.SG to study-INF linguistics-F.SG
'Giovanni thinks to study linguistics.'

b. ??Pensa Giovanni di studiare linguistica.
think-3.P.SG Giovanni to study-INF linguistics-F.SG

c. ?Pensa di studiare linguistica Giovanni.
think-3.P.SG to study-INF linguistics-F.SG Giovanni

(35) a. Giovanni riusce a prendere il libro. (B72)
Giovanni succeed-3.P.SG to take-INF the-M.SG book-M.SG
'Giovanni succeeds in taking the book.'
b. Riusce Giovanni a prendere il libro.
succeed-3.P.SG Giovanni to take-INF the-M.SG book-M.SG
c. ?Riusce a prendere il libro Giovanni.
succeed-3.P.SG to take-INF the-M.SG book-M.SG Giovanni

where *pensare* is an unergative verb and *riuscire* is an unaccusative verb, both of which take XCOMPs. Note that the lack of a contrast between (34c) and (35c) is also explained by the theory: once an unaccusative verbal form has undergone the (OBJ) ⟶ (SUBJ) rule, nothing blocks it from syntactically encoding its SUBJ function as the last NP in the VP, just as intransitive verbs do, thereby generating the word order of (35c). Presumably these sentences are not fully natural because subject extraposition is limited by pragmatic factors involving the complexity of the sentence. Finally, we observe that the i-subjects of passive and impersonal sentences also appear in object position, in consonance with their proposed analyses:[17]

(36) a. Alcuni studenti furono
a few-M.PL students-M.PL be-PASS.REM.3.P.PL
persuasi a seguire la lezione.
persuaded-PART.M.PL to follow-INF the-F.SG lesson-F.SG
'A few students were persuaded to follow the lesson.'
b. Furono persuasi alcuni
be-PASS.REM.3.P.PL persuaded-PART.M.PL a few-M.PL
studenti a seguire la lezione.
students-M.PL to follow-INF the-F.SG lesson-F.SG

(37) a. Gli studenti si persuasero
the-M.PL students-M.PL IMP/REFL persuade-PASS.REM.3.P.PL
a seguire la lezione.
to follow-INF the-F.SG lesson-F.SG
'Someone persuaded the students to follow the lesson.'
'The students persuaded themselves to follow the lesson.'

[17]This does not seem to be true of reflexive sentences, however. Thus (37a) is ambiguous between the impersonal reading 'someone persuaded the students to follow the lesson' and the reflexive reading 'the students persuaded themselves to follow the lesson'. In contrast, (37b), with the i-subject in the direct object position, is *not* ambiguous: it has only the impersonal reading. This is evidence against the analysis of reflexives as suspending subjects instead of objects, given in the previous section. On the other hand, (45e) is an example where the inverted subject of a reflexive verb does act like a direct object. Burzio (1981) proposes a kind of hybrid analysis, which may prove to be the best approach.

b. Si persuasi gli studenti
IMP persuade-Pass.Rem.3.p.sg the-m.pl students-m.pl
a seguire la lezione.
to follow-inf the-f.sg lesson-f.sg
'Someone persuaded the students to follow the lesson.'

Another kind of grammatical evidence relevant to the distinction between unaccusative and unergative verbs comes from the process of s-pronominalization. In Italian, under certain conditions, an infinitival complement can be omitted, giving rise to a clitic on the verb. Hence:

(38) a. Mario sperava davvero *di vincere la*
Mario hope-Imperf-3.p.sg really to win-inf
gara. (B89)
the-f.sg race-f.sg
'Mario really hoped to win the race.'

b. Mario *lo* sperava davvero.
Mario it-obj.m hope-Imperf.3.p.sg really
'Mario really hoped it.'

Burzio then observes that this s-pronominalization cannot give the accusative clitic *lo* when there is a direct object:

(39) *Piero *lo* mandò Giovanni (a prendere
Piero it-obj.m sent-Pass.Rem.3.p.sg Giovanni to get-inf
il giornale). (B93)
the-m.sg newspaper-m.sg
'Piero sent it to Giovanni (to get the newspaper).'

although it is possible when there is an indirect object:

(40) Piero *lo* ha promesso a Giovanni (a
Piero it-obj.m have-3.p.sg promised-Part.m.sg to Giovanni to
prendere il giornale).
get-inf the-m.sg newspaper-m.sg
'Piero promised to Giovanni (to get the newspaper).'

Finally, the accusative clitic referring to a sentence is systematically impossible with ergative, passive, and impersonal verbs:

(41) (A prendere il giornale)
to get-inf the-m.sg newspaper-m.sg

a. *Giovanni lo riusce.
Giovanni it-obj.m succeed-3.p.sg
'Giovanni succeeds it.'

b. *Giovanni lo fu mandato.
Giovanni it-OBJ.M be-PASS.REM.3.P.SG sent-PART.M.SG
'Giovanni was sent it.'

c. *Giovanni lo si mandò.
Giovanni it-OBJ.M IMP sent-PASS.REM.3.P.SG
'Giovanni was sent it.'

although all of these sentences are fine with the infinitival complement spelled out, or with the locative clitic *ci* in place of the accusative clitic *lo*. Burzio's theory predicts these facts by claiming that in the (27) sentences the direct object position is actually filled by a trace bound by the subject NP. Hence whatever generally prevents accusative sentence pronominalization in (39) will also block it in (41).

LFG cannot refer to traces, but it can account for the same pattern of facts by properly restricting a lexical rule of S-pronominalization. A simple formulation of this rule is:

(42) S-PRONOMINALIZATION
Change: (XCOMP) ⟶ (OBJ)

Now notice that if for some extrinsic reason this rule can only apply before rule (4), which promotes objects to subjects,[18] all improper applications will be blocked by the principle of function-argument biuniqueness. Unaccusative, passive, and impersonal forms along with transitive forms will all still have OBJs in their grammatical function assignments, so that using (42) to create a second OBJ is forbidden. Should the assumption of rule ordering prove undesirable, LFG also has the option of restricting rule (42) with a thematic condition. This condition would have the effect of forbidding the rule to apply if the verb's predicate-argument structure contains a THEME assigned to some other grammatical function. In this case also, the rule will not apply to unaccusative, passive, impersonal, or normal transitive forms, because all of these forms have a THEME argument to which the OBJ function was (at least) originally assigned. Either way, LFG has all the theoretical vocabulary needed to account for this regularity in sentence pronominalization.[19]

[18] LFG generally considers lexical rules to be unordered, but work is currently underway investigating the possibility of breaking down the lexical rule component into smaller subcomponents. If this proves promising, then rule (42) and rule (4) are candidates for different subcomponents, in which case the order of their application could be extrinsically determined.

[19] Another approach would be not to have an S-pronominalization rule such as (42) at all, but to have two alternative function assignments to the predicate-argument structure of the predicate in question. Thus either an OBJ or an XCOMP could be assigned to its propositional argument to start with. This assignment process would, of course, have to respect the function-argument biuniqueness condition, so the propo-

The third syntactic argument that Burzio (and Rosen) put forth concerns the partitive use of *ne* cliticization. This is a construction in which a noun is stripped from its quantifying specifier and *ne* appears cliticized to the verb. Outside of the domain of inverted subjects, this process is possible for all and only direct objects:

(43) a. Giovanni ne ha insultati due. (B5)
Giovanni of-them have-3.P.SG insulted-PART.M.PL two
'Giovanni insulted two of them.'

b. *Giovanni ne ha parlato a due.
Giovanni of-them have-3.P.SG talked-PART.M.SG to two
'Giovanni talked to two of them.'

c. *Molti ne arrivano.
many-M.PL of-them arrive-3.P.PL
'Many of them are arriving.'

d. *Molti ne telefonano.
many-M.PL of-them telephone-3.P.PL
'Many of them are on the phone.'

Inside the domain of inverted subjects, we find that those of the transitive verbs and the now-familiar set of unergatives cannot undergo *ne*-cliticization, whereas the i-subjects of passives, impersonals, inchoatives, and reflexives as well as unaccusatives can. Hence:

(44) a. *Ne hanno fatto domanda molti. (B7b)
of-them have-3.P.PL made-PART.M.SG application many-M.PL
'Many of them have made application.'

b. *Ne telefonato molti. (B3b)
of-them telephone-PART.M.SG many-M.PL
'Many of them were on the phone.'

(45) a. Ne furono arrestati molti.(B8b)
of-them be-PASS.REM.3.P.PL arrested-PART.M.PL many-M.PL
'Many of them were arrested.'

b. Se ne guardano/guarda molti. (B29b,30)
IMP of-them watch-3.P.PL/watch-3.P.SG many-M.PL
'Many of them watch.'

---

sitional argument can never be assigned the OBJ function if the predicate already has a theme argument with that function. The propositional argument can only be expressed by the accusative clitic *lo* if it bears the OBJ function, which is possible only if there is no theme argument. These two approaches are nearly equivalent, but this second one may side-step technical problems about mapping an open GF (XCOMP) into a closed one (OBJ).

c. Ne sono affondato quattro. (B34b)
of-them be-3.P.PL sunk-PART.M.SG four
'Four of them have sunk.'

d. Ne arrivano molti. (B3a)
of-them arrive-3.P.PL many-M.PL
'Many of them are arriving.'

e. Se ne sono uccisi parecchi.
REFL of-them be-3.P.PL killed-PART.M.PL several-M.PL
'Several of them have killed themselves.'

This generalization follows immediately from the fact that the 'inverted subjects' of this latter class of verbs really bear the OBJ function, while those of the former still bear the SUBJ function. One of the options for the syntactic encoding of the OBJ function permitted in Italian is an accusative clitic under $\bar{V}$, while there is no such option for encoding SUBJ. All that we need to do is introduce a phrase structure rule for NP with the noun optional, give the right lexical entry for *ne*, and allow the object clitic position to take partitive clitics as well as accusative ones:

(46) $\bar{V} \longrightarrow$ (CL) (↑ OBL_{GO})=↓ ↓ CASE=dat. | (CL) (↓IMP)=$_c$ + ↑=↓ | (CL) (↑ OBJ)=↓ {(↓ CASE)=acc/ (↓ PART)=$_c$ +} | V ↑=↓

(47) NP ⟶ (SPEC) ↑=↓ (N) ↑=↓

(48) *ne*: (↑ PRED)= 'pronoun'
(↑ PART)=+
(↑ CL)=+
(↑ QUANT)

Then the c- and f-structures for (45d) will be as given in Figure 6. Note the automatic merger of the discontinuous constituent in f-structure. If the noun is included in NP with *ne* present, the OBJ will have two PRED values and consistency will be violated; if the noun is omitted from the NP with the *ne* absent, then the OBJ will have no PRED value, and completeness will be violated. Finally, the existence of the (↑ QUANT) equation in the lexical entry of *ne* requires the OBJ f-structure to contain a value for the quantifier feature, thus accounting for the partitive nature of the clitic. All the correct distributional facts follow.

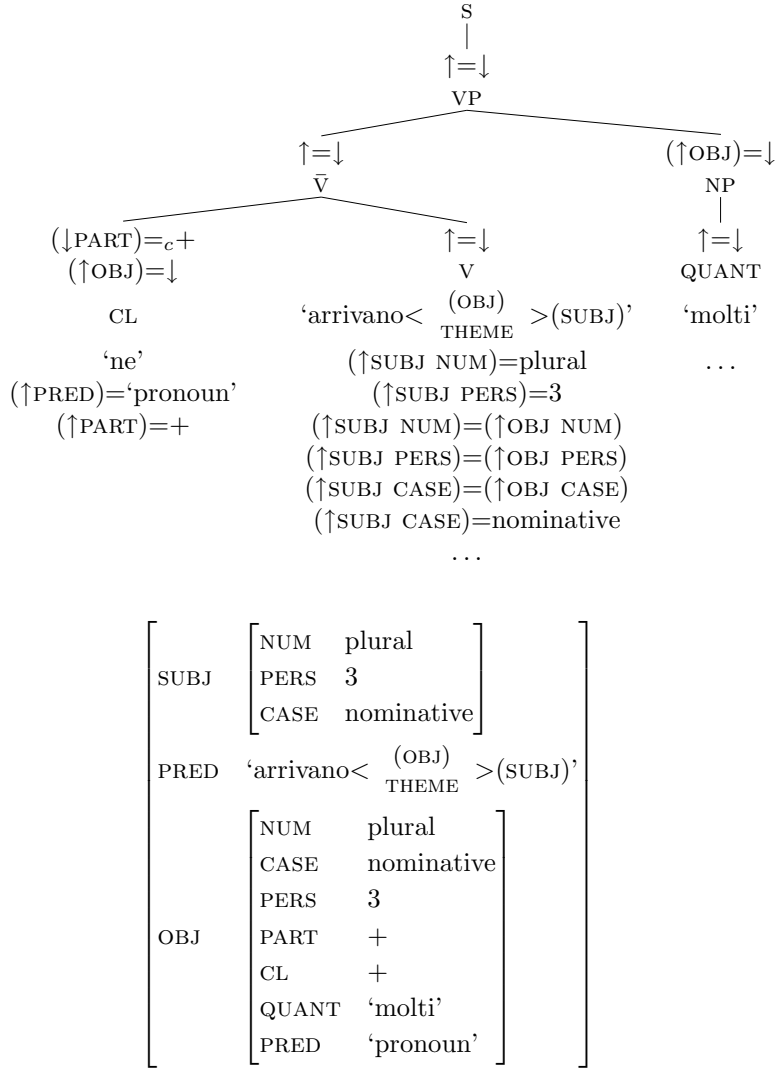


Figure 6 F- and c-structures for *ne arrivano molti*

2.5 Auxiliary Assignment and Participle Agreement

Two final grammatical processes that distinguish between the unaccusative class of verbs and the unergative class are the process of auxiliary assignment, and the related matter of participle agreement. In Italian, verbs can take one of two aspectual auxiliary verbs, *avere* (to

have) or *essere* (to be). Meanwhile, past participles either may or may not show agreement with some other element of the sentence. All four combinations of these two binary options are realized systematically by some class of Italian sentences. Thus normal transitive sentences and unergative sentences take *avere* and do not show participle agreement:

(49) a. Maria *ha* accusat*o* Sophia.
Maria have-3.P.SG accused-PART.M.SG Sophia
'Maria accused Sophia.'

b. Maria *ha* telefonat*o*
Maria have-3.P.SG telephoned-PART.M.SG
'Maria has called.'

Transitive sentences with the object replaced by an accusative clitic take *avere* and do show participle agreement with said clitic:

(50) Giovanni la *ha* accusat*a* (B52)
Giovanna her-OBJ have-3.P.SG accused-PART.F.SG
'Giovanni accused her.'

Impersonal versions of unergative verbs which have not undergone object-preposing take *essere* and do not show participle agreement:

(51) Si è telefonat*o* a Giovanni. (B53)
IMP be-3.P.SG telephoned-PART.M.SG to Giovanni
'One has called Giovanni.'

And finally, reflexive verbs, unaccusative verbs, their impersonal counterparts, passive verbs, and impersonal verbs that have undergone object-preposing all take *essere* and do show participle agreement:

(52) a. Maria è arrivat*a* (B51c)
Maria be-3.P.SG arrived-PART.F.SG
'Maria has arrived.'

b. Si è arrivat*i* (B54)
IMP be-3.P.SG arrived-PART.M.PL
'One has arrived.'

c. Maria è stat*a* accusat*a*
Maria be-3.P.SG be-PART.F.SG accused-PART.F.SG
'Maria has been accused.'

d. Maria si è accusat*a* (B51)
Maria REFL be-3.P.SG accused-PART.F.SG
'Maria has accused herself.'

Perlmutter (1978), working in the RG framework, was the first to give a fully general characterization of the conditions governing the appearance of *essere*:

(53) AUXILIARY ASSIGNMENT (RG style)
If a clause contains a term that heads both a 1-arc (i.e. is a subject) and an object arc (not necessarily at the same level), the auxiliary will be *essere*. Otherwise it will be *avere*.

Since all of the unaccusative class verbs—including passives and impersonals—contain an advancement from object to subject, all meet the condition for *essere* to appear. Burzio in his thesis accounts for the same facts in his GB framework, and adds a characterization of participle agreement. He puts forth the following generalizations:

(54) a. AUXILIARY ASSIGNMENT (GB style) (=B56)
The auxiliary will be realized as *essere* when a binding relation exists between the subject and a nominal constituent of the predicate.

b. PAST PARTICIPLE AGREEMENT
A past participle will agree (in gender and number) with an element binding its direct object.

In seeking to provide an account for these facts in LFG, the contrast between (49) and (50) is especially awkward, since LFG's fundamental tenet is the independence of functional-argument assignments and c-structure encodings. Yet participle agreement seems to be a functional process that precisely depends on how the OBJ function happens to be syntactically encoded—as a full NP or as a clitic. Agreement is done at the level of functional structure, and at that level, there is no inherent difference between (49) and (50) except the value of the OBJ's CL feature. This is not the sort of thing one cares to hang an agreement rule on; certainly not a rule that will account for the sentences in (52) as well.

Or are the f-structures of (49) and (50) the same? The discussion so far has ignored the auxiliaries from a functional standpoint altogether. There are two immediately possible analyses of these auxiliaries. The first is that they are members of a minor category, say AUX, which is introduced by the $\bar{\text{V}}$-expansion phrase structure rule given in (46), positioned between the last CL and the V head. This AUX would bear the equation $\uparrow=\downarrow$, and would transfer certain aspectual features from the auxiliary to the sentential f-structure. This line leads to the theoretical dilemma suggested above. The other line is to assume that the auxiliary itself is the head verb of the sentence, and that the remainder can be analyzed as an XCOMP. *Avere* and *essere* are then taken to be 'raising' verbs, with the lexical form verb$< \begin{smallmatrix}(\text{XCOMP})\\ \text{PROP}\end{smallmatrix} >$(SUBJ). This analysis is exactly along the lines of that assumed in Bresnan (1980) for the *be* of English passives and the *have* of English perfectives. One immediate

consequence of this is that any clitics in the sentence must be associated with the $\bar{V}$ of the auxiliary, not the $\bar{V}$ of the participle. Now the c- and f-structures of a typical member of each agreement class of sentences under these assumptions are as presented in Figures 7 and 8.

These structures present one new formal problem: the f-structure of (Figure 7b) is incomplete and incoherent. The clause nucleus of the XCOMP lacks an OBJ with a PRED value, whereas the main clause nucleus has one too many. Obviously, we would like to link the XCOMP OBJ to the main clause OBJ, simultaneously resolving both of these difficulties. This can be done by introducing a new lexical redundancy rule, similar to the universal rule of functional control, which will optionally assign to a lexical entry the pair of equations {(↑ OBJ)=(↑ XCOMP OBJ), (↑ OBJ CL)$=_c$ +}, while permitting *avere* to subcategorize for a non-thematic OBJ. This proposal weakens the LFG generalization that only the SUBJ of an open function can be functionally controlled, but in a fairly constrained manner. As the universal rule of functional control accounts for so-called 'NP-raising' and 'equi' phenomena (Bresnan (1982a)), so this new rule will account for 'clitic climbing' processes, which are well known in the Romance literature. Simple examples from Spanish include:[20]

(55) a. Luis quiere comerlas.
Luis want-3.P.SG eat-INF.THEM
'Luis wants to eat them.'

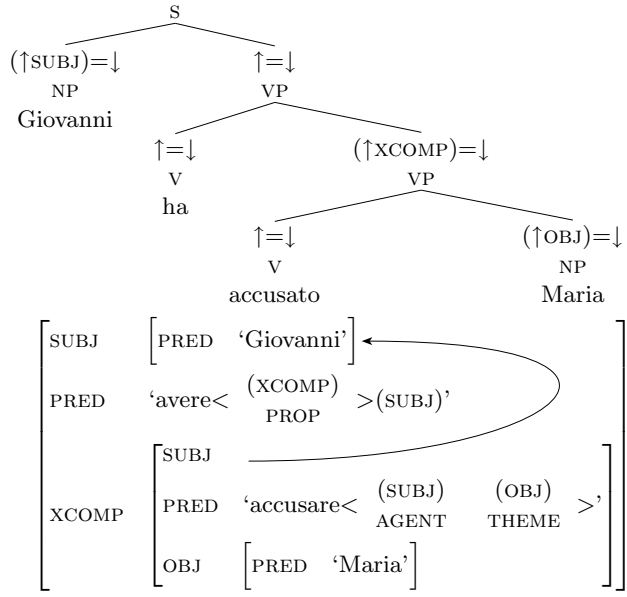
b. Luis las quiere comer.
Luis them want-3.P.SG eat-INF
'Luis wants to eat them.'

c. Luis trató de comerlas.
Luis tried to eat-INF.THEM
'Luis tried to eat them.'

d. Luis las trató de comer.
Luis them tried to eat
'Luis tried to eat them.'

[20] Aissen and Perlmutter (1976) propose analyzing such sentences not in terms of 'clitic climbing' but rather in terms of 'clause reduction', in which the matrix verb and the embedded verb essentially join, forming a one clause structure. Their evidence accounts elegantly for two basic collections of facts: the possible patterns of 'climbing clitics' when there are more than one, and the fact that embedded objects can become matrix subjects in certain cases, including reflexive passivization. Yet the theory in the text predicts the same reflexive passivization facts, as well as the fact that embedded objects presumably cannot become matrix subjects via 'normal' passivization. How troublesome the clitic patterning facts are depends on a more developed theory of markedness for lexical forms. I table the discussion at this point.

(a) Giovanni ha accusato Maria (*avere*, no participle agreement)



(b) Giovanni la ha accusata (*avere*, participle agreement)

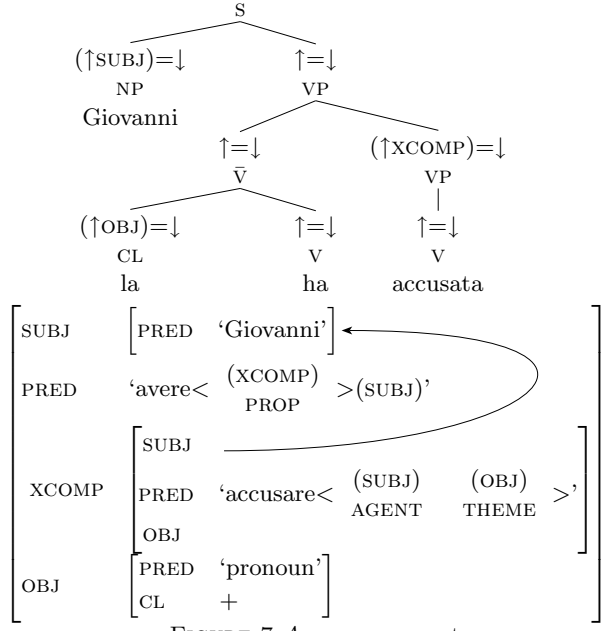
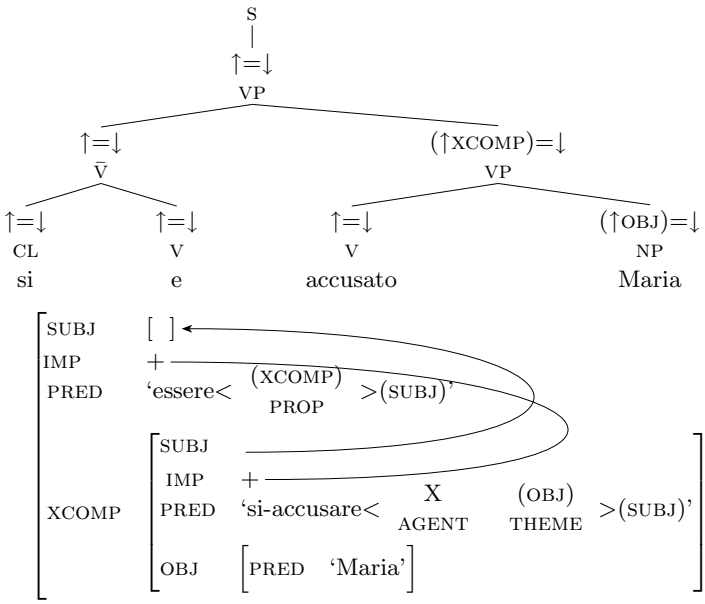


Figure 7 *Avere* agreement

(a) Si è accusato Maria (*essere*, no participle agreement)



(b) Quei libri sono letti (voluntiere) (*essere*, participle agreement)

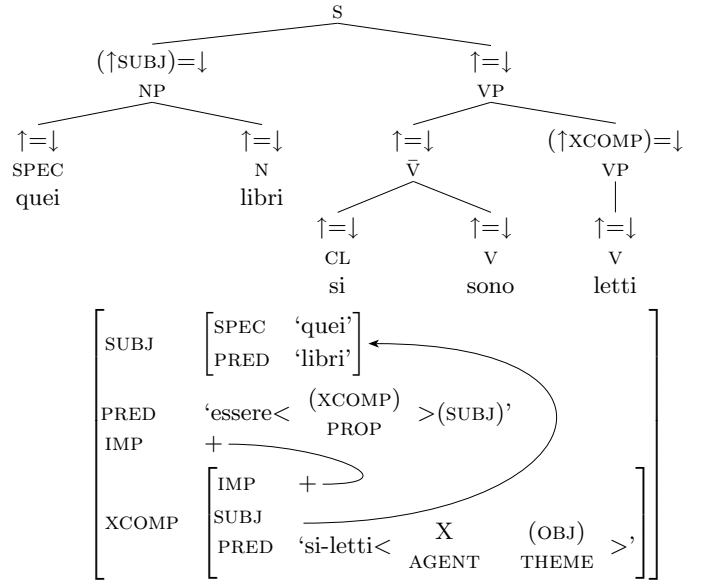


Figure 8 *Essere* agreement

With these f-structures in hand, it is now a simple matter to describe the distribution of *avere* versus *essere* and of participle agreement in LFG terms:[21]

(56) a. AUXILIARY ASSIGNMENT
If the grammatical function assignment of a lexical form assigns the SUBJ function to an AGENT argument position, assign the auxiliary *avere*. Otherwise choose *essere*.

b. PAST PARTICIPLE AGREEMENT
If the grammatical function assigned to the THEME argument of its lexical form is functionally[22] controlled by an f-structure outside its minimal clause nucleus, a participle will agree with that function in gender and number.

Notice that the auxiliary assignment rule implies that all subject-raising verbs will take the auxiliary *essere*. This is true because subject-raising verbs are by definition verbs that have a non-thematic SUBJ, so it is impossible for them to have agentive SUBJs—so they will never have the auxiliary *avere*. This prediction is correct for all of the 'pure' subject-raising verbs in Italian, such as *sembrare* 'seem', and *parere* 'appear'. (It is not true of epistemic modals.)

These rules can be formalized by introducing a new feature: ±ERGATIVE. A lexical redundancy rule will assign the equation '(↑ ERG)= −' to all lexical forms that assign SUBJ to the AGENT role in their grammatical function assignments, and the equation '(↑ ERG)=+' to the remaining forms. Then the verb *avere* simply selects for non-ergative participial complements via the constraint equation '(↑ XCOMP ERG)$=_c$ −'; *essere* for ergative complements via the equation '(↑ XCOMP ERG)$=_c$ +'. This same equative feature can be used to express the information needed for participle agreement. If the verb is *avere*, then the ERG value of the XCOMP must be −, so that the SUBJ is assigned to the AGENT role, so that the OBJ must be assigned to the THEME role, if there is an OBJ. Then if a particular lexical form of *avere* has a non-thematic OBJ and the equation '(↑ OBJ)=(↑ XCOMP OBJ)', assign it the equation '(↑ XCOMP PP-AGREE)$=_c$ +', where PP-AGREE is a feature added to the participle's lexical form by the agreement lexical affixation rules. For example:

(57) a. *-o*: $[\mathrm{V}_{part-}]_{V-part}$; (↑ PP-AGREE)= −

b. *-a*: $[\mathrm{V}_{part-}]_{V-part}$; (↑ PP-AGREE)= +
$$\left\{\begin{array}{l}(\uparrow \text{ OBJ GEND})=\text{fem.}, (\uparrow \text{ OBJ NUM})=\text{sing.}, (\uparrow \text{ ERG})= - \ / \\ (\uparrow \text{ SUBJ GEND})=\text{fem.}, (\uparrow \text{ SUBJ NUM})=\text{sing.}, (\uparrow \text{ ERG})=+\end{array}\right\}$$

[21] For clarification of the status of AGENT and THEME in the theory, see below.

Similarly, if the verb is *essere*, then the ERG value of the XCOMP must be +, so that the SUBJ must be assigned to the THEME role, if it is assigned at all. Since all forms of *essere* have the equation (↑ SUBJ)= (↑ XCOMP SUBJ), they will all be assigned the equation (↑ XCOMP PP-AGREE)=$_c$ +, but will require that the SUBJ function be grammatically assigned at the XCOMP level as an additional condition for the agreement to take place.

One can think of the past participle agreement rule as saying that when a theme argument comes from (functionally) far away, the participle must look more like it. Such a rule might help a parsing procedure do its job of piecing propositions together. Since unaccusative verbs, passive verbs, impersonal verbs, and reflexive verbs can all undergo (OBJ) ⟶ (SUBJ), they all derive forms with SUBJ assigned to THEME. Hence all four will take *essere* and show participle agreement. Thus LFG explains why they pattern together. Finally, there is one case in which Burzio's version of the past participle agreement rule and the LFG version might be considered to make different predictions. This is the case of a direct object which is a lexical NP reflexive pronoun. The f-structure of such a pronoun will not be functionally controlled, so LFG predicts no agreement. On the other hand, reflexive pronouns are grouped with traces in the class of anaphors in Government-Binding theory, and their bindings are subject to the same principles. Hence the subject will bind the direct object, and Burzio's rule predicts agreement. In fact, agreement does not occur:

(58) Maria ha accusat*o* se stessa (B63)
Maria have-3.P.SG accused-PART.M.SG herself
'Maria accused herself.'

Burzio points this out himself, and clearly his rule can be patched up, but the fact follows immediately from the LFG rule.

2.6 Constraints on Lexical Forms and Rules

Throughout this paper so far we have focused on what the Lexical-Functional theory of grammar can tell us about the structure of Italian; in this last section we shift our attention to what Italian can tell us about the structure of Lexical-Functional Grammar.

The first question to be taken up is the one that was our starting point in the introduction: do the Italian facts show the necessity of a multi-stratal linguistic theory, thereby implying LFG to be ill-conceived, as Burzio (1981) and Rosen (1982) suggest. Burzio's argument is basically constructive in nature, showing that the Italian evidence can be accounted for in terms of GB notions such as traces and binding rela-

tionships. The previous five sections illustrate how LFG, using somewhat different assumptions and different theoretical constructs, can capture the same generalizations, and stand as an adequate reply. Rosen's criticism, however, is more fundamental. Throughout the paper so far I have hedged on the theoretical content of the 'thematic roles' such as AGENT and THEME, which label the slots of a lexical item's predicate-argument structure. What they seem like they ought to be are labels for natural classes of semantic roles: agents are things that deliberately cause actions; patients undergo changes of state because of actions, and so on. Yet on this view, difficulties crop up quickly. For instance, there are numerous pairs of essentially synonymous sentences in which the subject of one seems to have the same semantic role as the object of the other, and vice versa. *I like that book* and *That book pleases me* is one such pair. In this case, either the thematic labels are assigned in a semantically ad hoc fashion, or rules that mention them (such as Italian auxiliary assignment or participle agreement) will go awry. Furthermore, if the thematic labels are based purely on the semantic structure of the predicate, one would expect synonymous verbs in different languages to have the same predicate-argument structure. This implies that if LFG will try to incorporate the unaccusative hypothesis in the form that different intransitive verbs have different thematic roles for their sole arguments, then exactly the same set of verbs should be unaccusative in every language. Yet Rosen shows that this conclusion is empirically false. Comparing lists of unaccusative verbs from languages (like Italian) in which membership in the class can be tested by independent syntactic tests, she finds good correlation, but also significant variation. She concludes that single stratum theories like LFG are inadequate.

I propose to respond to this argument by abandoning the purely semantic characterization of the AGENT and THEME labels in favor of more abstract, formally grammatical notions. Suppose that the thematic label AGENT is simply that—a syntactically primitive label that simply is one possible formal marker in the innately given vocabulary of lexical rules and forms provided for by universal grammar. As such, AGENT appears at the level of predicate-argument structure, which is a level in between some kind of pure semantic representation on the one hand, and full lexical forms with grammatical function assignments on the other. The content of the term AGENT then comes from characterizations of how semantic notions map into it and of how it maps into GFs such as SUBJ and OBJ.

Consider first the mapping from semantic notions onto AGENT and THEME. The hypothesis that this mapping depends only on the semantic features themselves is refuted by Rosen's argument as summarized

above. Suppose instead that the mapping is established in the process of language learning. We might think of the process of language acquisition as involving (among other things) constructing a cognitive interface between non-linguistic conceptual space and the formal representations made available by universal grammar (cf. Chomsky (1981)). Speculatively, we might plausibly imagine that establishing this interface is non-trivial because the two 'mental organs' involved have quite different natures: categories in conceptual space are fuzzy and blend continuously into one another; while categories in linguistic space are sharp and well-defined. Suppose further that the child brings to this acquisition problem an innate association between (for example) the linguistic notion AGENT and the 'core' semantic notion 'deliberate instigator of an action'. The child then must learn from experience how agent-like something must be to be an AGENT in his language; exactly where to draw the sharp linguistic lines through blurry conceptual space, if you will. For a particular lexical item, two kinds of evidence will be relevant to the child's decision of what its predicate-argument structure must be. One is the purely semantic information of how semantically similar the arguments of the verb are to the various 'semantic prototypes' that the child innately associates with argument labels. The other is the syntactic information of in what ways the arguments of the verb behave formally like the arguments of other verbs whose labels have been established. The first type of evidence should be universal, but the second kind will vary from language to language depending on what syntactic processes happen to occur in that language. Hence on this view, we expect the predicate-argument structures of similar verbs in different languages—and in particular their unaccusativity or unergativity—to be the same in a good number of core cases, but that non-negligible variation will also occur. This is exactly the state of affairs that Rosen (1982) reports. Furthermore, this view suggests that while it is possible for synonymous verbs to have contrasting predicate-argument structures, this will only happen when the semantic roles involved are not 'prototypical' semantic roles, so that the semantic evidence for AGENT-hood or THEME-hood is comparatively weak. Thus *The book pleased me* and *I like the book* are synonymous, where the semantic roles in question are things like experiencers and themes; but there is no verb like *ekorb* such that the sentences *I broke the glass* and *The glass ekorbed me* are synonymous. Finally, if the predicate-argument structures of verbs are determined by the interaction between semantic and syntactic evidence, we predict that in languages which have relatively few syntactic reflexes of the unaccusative/unergative distinction semantics alone will determine their structure. Therefore the two classes of verbs should be more easily char-

acterizable in semantic terms in such languages. To test this hypothesis, we can compare Italian and Dutch. We have already seen many syntactic signals of unaccusativity in Italian, and the evidence from auxiliary selection in particular should be readily available to the language learner. In Dutch, on the other hand, the only syntactic reflex of unaccusativity is failure to undergo impersonal passivization—evidence that should be essentially inaccessible to the language learner. Upon comparing the lists of unaccusative verbs in the two languages given in Rosen (1982), we find that the Dutch list is much more easily characterized semantically (cf. the 'Protagonist Control' notion) and individual verbs in Dutch are much freer to switch class depending on usage. Hence this language acquisition view of thematic labels seems to have all the right empirical consequences.

Finally, we return and consider the mapping from AGENT and THEME onto grammatical functions such as SUBJ and OBJ. I claim that, given the interpretation of thematic roles outlined above, this mapping can be extremely simple: SUBJs are always initially assigned to AGENTs, OBJs to THEMEs, and so on. LFG theory already maintains that all grammatical functions except SUBJ, OBJ, and OBJ2 are 'semantically restricted' in that they can only be assigned to certain thematic roles in the grammatical function assignment. For example an OBL_{GO} must be assigned to a GOAL role; a COMP must be assigned to a PROP. Furthermore, we observe that there never seems to be occasion to assign OBJ to an AGENT role. Now the analysis of unaccusative verbs as $\text{VERB}< \begin{smallmatrix}(\text{OBJ})\\ \text{THEME}\end{smallmatrix} >$ has the effect that we no longer need any basic, underived forms that assign SUBJ to a THEME role, as noted in section 2. This makes possible an expansion of the notion 'semantically restricted' into a notion of a universal initial GF assignment, and the definition of a basic lexical form: a basic lexical form is one that matches AGENT and SUBJ, THEME and OBJ, PROP and COMP or XCOMP, and so on. The basic lexical form then becomes the input into the battery of lexical rules, which thereby define the complete possibilities for mapping thematic roles into grammatical functions. One prediction of this proposal is that, abstracting away from lexical idiosyncracy, the existence of a form $\text{VERB}< \begin{smallmatrix}(\text{SUBJ})\\ \text{THEME}\end{smallmatrix} >$ in a language will imply the existence of a form $\text{VERB}< \begin{smallmatrix}(\text{OBJ})\\ \text{THEME}\end{smallmatrix} >$ in that language. The evidence for this is not strong in English, but it is not absent, either. Compare:

(59) a. ?There stood three men by the roadside.
b. ?*There ate three men in the dining room.

where *stood* is unaccusative and *eat* is unergative. Presumably, the restrictions on the insertion of PRED-less SUBJs in English keep some well-formed lexical forms from surfacing. Of course, the empirical force of this prediction is weakened somewhat by the imperfect correlation between semantic roles and thematic labels. Thus while the existence of the form VERB$< \overset{(\text{SUBJ})}{\text{THEME}} >$ implies the existence of the form VERB$< \overset{(\text{OBJ})}{\text{THEME}} >$ the verb could have the lexical form $< \overset{(\text{SUBJ})}{\text{AGENT}} >$ instead, and still be semantically identical to the unaccusative verb form. Nevertheless, a single form must behave consistently in the syntax.

The basic effect of this interpretation of predicate-argument structure is to make it equivalent to a learned initial grammatical function assignment, which is the thrust of Rosen's (1982) proposal for formulating the unaccusative hypothesis cross-linguistically in RG. Now in LFG, there have always been two things that can be referred to within a lexical item: the arguments that it contains in its predicate-argument structure, and the GFs that it contains within its function assignment. Thus, this view of predicate-argument structure implies that, in essence, grammatical processes in LFG can refer to initial as well as final (most recent) grammatical functions. Rosen might justifiably protest that this move in effect avoids her criticism of mono-stratal theories by construing LFG as a bi-stratal theory. So be it: LFG still contains nothing like the full-fledged Relational Network allowed in RG, and the applicability of a rule to a given lexical form must depend only on that lexical form itself, not on its history. No intermediate GF assignments are represented in a lexical form, only the most recent assignment, and the initial assignment, preserved in the labels on the verb's predicate-argument structure. Therefore LFG can still refer to no more than two levels of grammatical functions (initial and final) and so is more restrictive than Relational Grammar, which can refer in principle to arbitrarily many levels.

The Italian facts analyzed in this paper shed light on the structure of LFG in another way as well. A number of lexical forms and several rules have been exhibited, and yet there are many logically possible forms and rules that have never been needed in the course of explanation. In fact, the analysis of unaccusative verbs presented here makes possible a much simpler set of lexical processes for Italian than those previously proposed for French and English (cf. Bresnan (1980), Grimshaw (1980)). These results are thus suggestive of a number of strong constraints that might be put on lexical rules and representations universally.

One such way stems from the possibility of maintaining a universal initial GF assignment, thereby restricting the set of lexical forms that are possible in a language, as discussed above.

The second way to state such constraints is that analyzing unaccusative verbs as VERB$<\begin{smallmatrix}(\text{OBJ})\\ \text{THEME}\end{smallmatrix}>$ allows simplification of the rule system by eliminating the need for thematic conditions on functional changes. The rule that lies at the heart of the analysis is the simple, straightforward (OBJ) $\longrightarrow$ (SUBJ). On the other hand, if one takes the more traditional lexical structure VERB$<\begin{smallmatrix}(\text{SUBJ})\\ \text{THEME}\end{smallmatrix}>$ as the basic form, one needs to write the inverse rule, (SUBJ) $\longrightarrow$ (OBJ), and then add the condition that the SUBJ must be a theme, in order to capture the differences between unaccusative and unergative verbs. As mentioned above, the (OBJ) $\longrightarrow$ (SUBJ) analysis is simpler in this regard. Furthermore, if it were right to think in terms of (SUBJ) $\longrightarrow$ (OBJ), one would expect there to be languages that include this rule, but in its more general form, mapping all subjects into objects without condition. In fact, such cases rarely occur in languages of the world; the only time in which SUBJs seem to become OBJs quite generally is in rules like causativisation, in which the verb's predicate-argument structure is modified as well. In general, it seems that lexical rules can be factored into two types: those that affect predicate-argument structure only, such as inchoativization; and those that affect grammatical functions only, such as passivization. Banning conditions that refer crucially to the mapping between the two would greatly constrain the rules possible, thereby easing the task of the child learning the language. Maintaining this ban in full force may well be too strong, but the Italian examples show that one can get through a large number of 'core' cases without any compromise. This gives hope that thematic conditions, if needed at all, can be restricted in a principled way.

The final way in which the VERB$<\begin{smallmatrix}(\text{OBJ})\\ \text{THEME}\end{smallmatrix}>$ analysis allows simplification of the lexical system is that it breaks down the rules into elementary operations. Morphological changes aside, each rule does one and only one thing. The difference between this approach and more traditional analyses is especially noticeable in the rules of passivization and inchoativization, which are usually thought of as both getting rid of the subject and promoting the object at the same time. In Italian there is good reason to say that they only do the former, since the 'intermediate' forms exist on the surface. This has the conceptual advantage, mentioned above, that there is only one (OBJ) $\longrightarrow$ (SUBJ) rule that ap-

plies in many different situations, rather than lots of different rules that happen to prepose the object. Hence the linguistically relevant observation that passives, impersonals, inchoatives, and unaccusatives form a natural class is immediately capturable. A further advantage is that this conception makes rules like '(OBJ) ⟶ (SUBJ), (SUBJ) ⟶ (OBJ)' that permute grammatical functions impossible in principle—a strong and desirable result. It is still conceivable that a permutation could be effected, but only by a combination of three separate rules such as (SUBJ) ⟶ (OBJ2), (OBJ) ⟶ (SUBJ), (OBJ2) ⟶ (OBJ), and there would need to be independent motivation for each sub-step, or the process would be, I claim, unlearnable. This limitation on the power of a single rule, together with the general principle of function-argument biuniqueness thus limits greatly the power of the lexical rule system viewed as a whole. One apparent disadvantage of making rules be 'elementary operations' universally is the complete lack of any intermediate forms such as 'was read the book' in the English passive. Yet I claim that this gap can be charged to other facts about English. Suppose that English, unlike Italian, has a constraint that every sentence must have a lexically realized SUBJ—a strengthening of the universal requirement that SUBJs be present in lexical forms. Suppose further that it has only two PRED-less NPs: *it*, which is restricted to lexical forms that assign COMP functions; and *there*, which is generally restricted to certain verbs that subcategorize for it, such as existential *be*. Then one might perfectly well suppose that the intermediate form '$\text{read}_{pass} < \underset{\text{AGENT}}{\emptyset} \quad \underset{\text{THEME}}{(\text{OBJ})} >$' exists in English, but cannot surface directly, because there is no way for it to lexically realize a subject without being incoherent.

Obviously one does not make firm conclusions about Universal Grammar by looking at one corner of one language. Nevertheless, Italian seems to fill in gaps in the distribution of lexical forms that make some patterns begin to take shape, so that interesting possible generalizations and principles emerge. The next step is to look at a variety of languages and see to what extent generalizations such as these can be maintained.

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3

Move NP or Lexical Rules? Evidence from Malayalam Causitivisation

K.P. Mohanan

Preamble to the 2005 Edition

Since this article is a minimally edited version of what was originally circulated in 1983, a reader who was not pursuing syntax in the late seventies and early eighties would find much that is strange in it, and many issues either confusingly or incorrectly formulated. When the article was being written, the phenomenon of complex predicates had not yet become a "hot" topic in syntax, and I was not aware that the V+*give* and NP+V constructions in Malayalam (discussed in sections 3.5 and 3.6.2 respectively) were complex predicates. Given my current views on semantic structure and argument structure, I would not analyze either of these constructions the way I did in 1983 as structure changing operations on grammatical functions. Likewise, the formulation in (1b) conflates (to my embarrassment) the issue of transformations, which is a matter of the structure changes and structure building rules in the rule system, with that of lexicality, which is a matter of modularity or representational domains. "Quirky" case is not as irregular as I make it out to be in this article, as its distribution is governed by semantic information. Finally the reader should note that the term INSTR involves a strange mixture of different types of information: it refers to an adjunct, associated with the instrumental postposition.

Lexical Semantics in LFG.
Miriam Butt and Tracy Holloway King (eds.).

In spite of problems of this kind, the central claim in this article is of interest to current syntactic theory, especially in the context of OT-LFG. Evidence from bound anaphora and disjoint reference show that the semantically "bi-clausal" causative construction ([x cause [y pred . . .]]) has only one subject, and hence is "mono-clausal" at f-structure, in contrast to the bi-clausal causative construction in English illustrated in sentences like *Jane made Sue cry*. Given that the Malayalam causative is a morphological construction (internal to an x^0 category) while its English counterpart is phrasal, one might think that the typological difference in the f-structures that express the causative meaning is somehow a reflection of the difference at c-structure. This, however, cannot be the case: parallel evidence from bound anaphora and disjoint reference indicates that the causative construction in Japanese is bi-clausal at f-structure (T. Mohanan 1988), though a single lexical category at c-structure. The three-way distinction of causatives in English, Malayalam, and Japanese raises the question whether the constraints on the syntactic realization of the causative meaning are associated with particular langauges or with particular constructions in a language, the latter permitting the possibility of both bi-clausal and mono-clausal morphological causative constructions within the same language. Results of the investigation of such typological variations in the causative construction will be an important consideration in the fugure development of OT syntax.

3.1 Introduction

Two of the major controversies debated in current linguistic theory centre round the treatment of what may be called the 'relation changing' processes such as passivisation and raising, in contrast to the 'relation preserving' processes such as question formation and clefting (Chomsky (1981), Bresnan (1978), Perlmutter (1983, etc.)).[1] The former are subsumed under the rule of 'move NP' in the Government Binding (GB) theory (Chomsky (1981)) and the latter, under 'move *wh*'. Adopting this terminology, one may state the issues as follows:

(1) a. Is move NP an operation on the configurational structure (which is a representation that encodes the grammatical categories and their precedence and dominance relations) or is it an operation

[1]I am indebted, for comments, criticism and corrections, to Noam Chomsky, Joan Bresnan, Alec Marantz, Malka Rappaport, Lori Levin, Jane Simpson, Paul Kiparsky, Maria Luisa Zubizarreta, Ken Hale and K. G. Vijayakrishan. The material in this paper was presented to the students at the department of linguistics, University of Texas at Austin, and I benefitted a great deal from the discussion. No one, including myself, is responsible for the errors.

on the functional structure (which is a representation that encodes grammatical functions such as 'subject' and 'object')?

b. ls move NP a syntactic/transformational operation, or is it a lexical operation? (i.e., do the active and passive forms of verbs have two different lexical entries related by means of a 'lexical rule', or do they have the same lexical entry, the active and passive structures related by means of a 'syntactic' process?)

Answers to these questions bring out the fundamental differences among some of the current syntactic theories. With respect to (1a), for example, Lexical Functional Grammar (LFG) (Bresnan (1982), and this volume) and Relational Grammar (RG) (Perlmutter (1983)) assume that 'move NP' is an operation on grammatical functions, rather than on the configurational structure. In the (Revised) Extended Standard Theory up to Chomsky (1980), it was assumed that move NP is an operation on the configurational structure. With the proposal of 'Lexical Structure' in Chomsky (1981), however, the exact position is no longer clear. I shall argue that move NP in GB is, in fact, an operation on the level of grammatical functions autonomous from that of the configurational structure.

With respect to (1b), the answer in both GB and RG is that move NP is syntactic and not lexical. In both theories, the d(eep) structure object ([NP,VP]) becomes the s(urface) structure subject ([NP,S]) as a consequence of the operation associated with the passive. In contrast, the change from the object to the subject takes place in the lexicon in LFG, thereby yielding a new lexical entry associated with the passive construction.

This paper is an attempt to compare the approaches to NP movement in GB and LFG. More specifically, it demonstrates that causativisation in Malayalam should be treated in terms of function changing lexical redundancy rules.

In section 2, I present the basic assumptions that underlie this paper, and in section 3, an outline of the relation changing processes in Malayalam, including the passive and causative constructions, within the framework of LFG. Section 4 seeks to account for the same set of facts in GB, in terms of the rule of "assume a GF", proposed in Chomsky (1981). I shall show that the GB treatment of causatives in languages like Malayalam and Japanese is not in terms of configurational structure, but in terms of a representation that is equivalent to the functional structure.

The orthodox approach to the causative construction is that it has a biclausal underlying structure, with the verb 'cause' that takes a causer subject and sentential complement (Kuno (1973), Comrie (1976), Aissen

(1974), Kayne (1975), Rouveret and Vergnaud (1980), Chomsky (1981)). I shall show that the biclausal approach is inconsistent with the facts of Malayalam, and that the causative construction in the language is necessarily monoclausal, even though causatives in languages like Japanese may ultimately turn out to be biclausal (Marantz (1981)). The monoclausal treatment of causatives conflicts with the projection principle in GB: since the LF representation of causatives must have a biclausal structure, the projection principle requires that the d-structure and s-structure representations must also be biclausal. In other words, given the projection principle, GB has no analysis for Malayalam causatives, lexical or syntactic.

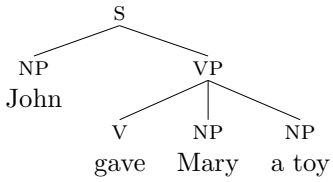
Sections 5 and 6 examine further phenomena that interact with the causative construction, providing additional support to the lexical monoclausal treatment of causatives. I shall show that the biclausal analysis of causatives in Malayalam is inconsistent with the most basic assumptions regarding subcategorization and case marking in any syntactic theory.

3.2 Basic Assumptions

3.2.1 Autonomy of Grammatical Functions

I assume that syntactic theory provides for an autonomous level that represents grammatical functions such as subject and object, as distinct from the level of configurational structure that represents precedence, dominance and categories. These two levels correspond, in LFG, to functional structure (f-structure), and constituent structure (c-structure) respectively. Given below are the bare essentials of the c-structure and f-structure representations of the sentence *John gave Mary a toy*:

(2) a. c-structure



b. f-structure

$$\begin{bmatrix} \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{John} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{Mary} \end{bmatrix} \\ \text{OBJ2} & \begin{bmatrix} \text{PRED} & \text{toy} \end{bmatrix} \\ \text{PRED} & \text{give}\langle \underset{\text{agent}}{\text{SUBJ}}, \underset{\text{goal}}{\text{OBJ}}, \underset{\text{theme}}{\text{OBJ2}} \rangle \end{bmatrix}$$

The assumption that grammatical functions constitute an autonomous level of syntactic representation is to be contrasted with the approach to grammatical functions which identifies them with configurational structures (cf. Chomsky (1965), (1980)). I assume that grammatical functions are syntactic primitives in the sense that there are no universal definitions of subjects and objects in terms of syntactic configurations, case features, semantic roles, or independently motivated logical operations (cf. Dowty (1982)). Though there are no universally applicable definitions, grammatical functions have a cluster of universal properties with respect to anaphora, control, passives, causatives, and the logical operations involved in semantic interpretation. The situation is not unlike that of other syntactic primitives like nouns and verbs (or +noun, +verb, for that matter). A language learner cannot pick out the nouns and verbs of a language on the basis of *a priori* non-linguistic knowledge, and there are no universal definitions that lead him to the identification of these categories. Yet, no linguist is unduly worried about using these concepts as primitives in his theory. The reason is that nouns and verbs are associated with a cluster of typical properties which provide an adequate characterisation. Subjects and objects are similar to nouns and verbs in this respect.

3.2.2 Configurational and Nonconfigurational Languages

Some of the strongest support for the hypothesis of the autonomy of grammatical functions comes from the study of languages which have been characterised as nonconfigurational.[2] Languages like Warlpiri, Japanese and Malayalam are nonconfigurational languages, while languages like English, Chinese and Arabic are configurational languages. A striking property of the nonconfigurational languages is their freedom of word order. To take an example, the five words in the following Warlpiri sentence can occur in all the possible combinations, and still mean the same and be grammatical:

(3) ngarrka-o ka wirupirli-mi kulu-parnta karli-o
man-ABS aux whistle-NONPAST bellicose-ABS boomerang-ABS
jarnti-rninja-karra
trim-INF-COMP
'The bellicose man is whistling while trimming a boomerang.'

Even though nonconfigurational languages exhibit flexible word orders, identifying the freedom of word order as the essential property that distinguishes configurational and nonconfigurational languages would be

[2]See Chomsky (1981), Hale (1980), Nash (1980), Farmer (1980), Simpson (1980) and (1983), Mohanan (1982c) for discussions on nonconfigurational languages.

misleading. Equally misleading would be to characterise them as languages with impoverished X-bar structure (cf. Hale (1980)). Nonconfigurational languages exhibit freedom of word order or impoverishment of X-bar structure in varying degrees. In Warlpiri, for example, words can be 'scrambled out' of what corresponds, in English, to NPs and PPs, and also out of non-finite clauses (see Nash (1980)). In Malayalam, the subject, objects, the verb, and the various adjuncts of a clause are order free with respect to each other (see Mohanan (1982c)), but the internal structure of the NP is rigid. In Japanese, the constituents of a clause are order free, but the verb must be in the final position (see Farmer (1980), Kuno (1973)). Some freedom of word order is seen even in configurational languages. Thus, in English, sentential modifiers such as *often* and various adverbial clauses enjoy a great deal of freedom of word order, though the relative order of subjects and objects is fixed. What, then, is the criterion for calling Warlpiri and Japanese nonconfigurational languages, while calling English a configurational language?

I would like to suggest that the answer is to be sought, not in the freedom of word order or X-bar structure, but in the way grammatical functions are syntactically encoded. A configurational language encodes grammatical functions in terms of syntactic configurations, a nonconfigurational language does not. Instead, it encodes grammatical functions in terms of devices like case or agreement (Bresnan (1982a), Mohanan (1982c)).

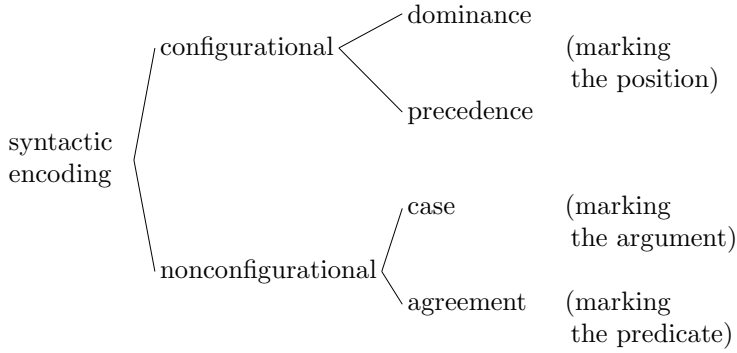
A configurational structure of the form [A B]$_C$, generated by the phrase structure rule C $\longrightarrow$ A B, provides two kinds of information, namely, precedence and dominance. It tells us that A precedes B, and that A and B are dominated by C. The configurational encoding of grammatical functions may make use of either or both of these properties of syntactic configurations. Thus, in a language like English, 'subject' is encoded as "the NP dominated by S" ([NP,S]), and 'object' as "the NP dominated by VP" ([NP,VP]) (ignoring the non-object NPs in the VP for the present). In a VSO language like Arabic, on the other hand, there cannot be a VP that dominates the verb and the object and does not dominate the subject.[3] In such languages, we may say that grammatical functions are encoded essentially in terms of precedence: subject is the [NP,S] that immediately follows the verb, and object is the [NP,S] that follows the subject.

[3] Aoun (1979) proposes a 'discontinuous VP' for Arabic. Note that the discontinuity of constituents is not allowed by configurations which encode both dominance and precedence, and hence discontinuos VPs can exist only in those phrase structure trees which do not incorporate precedence, such as the 'lexical structure' proposed by Chomsky (1981) (see the discussion in 3.1).

In a nonconfigurational language like Japanese which has no VP node and no fixed word order, neither dominance nor precedence provides the necessary clue for the identification of grammatical functions. Instead, what provides the relevant information is the morphological case features. Ignoring complications, we may say that subjects are in the nominative case, and objects, in the accusative case. In a language like Murinyapeta with no morphological case system, on the other hand, the auxiliary system provides positions for marking the person, number and gender of the subject and object, and these constitute the basis for identifying the grammatical functions.

The syntactic encoding of grammatical functions may be looked upon as part of the mapping establishing the link between the predicate and its arguments. One way of establishing this link is through structural positions (configurational encoding), and the other is to mark either the argument (with case inflections or pre/post positions) or the predicate itself (for features of the argument, namely, the agreement features). The accusative marker on an NP, for example, can be understood as saying "Interpret me as the primary object of the predicate"; the second person dual feminine marker at the object position in the verbal system can be understood as "Find me a primary object argument that is second person dual feminine." We may therefore schematise the various devices for the syntactic encoding of grammatical functions as follows:

(4)



The four types of syntactic encoding of grammatical functions are not to be understood as being mutually exclusive, as there are various redundant and nonredundant combinations of these. English, for example, exhibits all four of them. The distinction between the subject and object in English is based on dominance ([NP,S], [NP,VP]), while that between the primary object and the secondary object is based on precedence: the primary object is the NP that immediately follows the verb in the VP. Oblique objects in English are marked by prepositions like

to and *for*, which is an alternative to case marking. In the pronominal system, English uses cases redundantly, and in the present tense, uses agreement. Therefore, the real contrast is between configurational and nonconfigurational *encodings* of grammatical functions, not between configurational and nonconfigurational *languages*.

In the sections that follow, we shall have occasion to see how relation changing rules have different effects in different languages in terms of structural positions, case inflections, and agreement, while preserving the similarities with respect to relation dependent phenomena such as passivisation, anaphora, and control. The similarities follow from the universality of grammatical functions and the interpretive principles which are dependent on them, and the differences follow from the differences in the syntactic encoding of grammatical functions.

In a language that encodes grammatical functions in terms of structural positions, function changing (= relation changing) rules result in the corresponding changes in structural positions, thereby creating the effect of NP movement. In a language that encodes grammatical functions in terms of case features, on the other hand, function changing rules result in the corresponding changes in case, and no change in the structural positions. If this view of grammatical functions is correct, we predict that configurational languages will exhibit NP movement and nonconfigurational languages will not. However, there is no reason why nonconfigurational languages cannot have *wh*-movement. In other words, we expect both configurational and nonconfigurational languages to show or not show *wh*-movement. All the four expected combinations have, in fact, been attested:

(5)

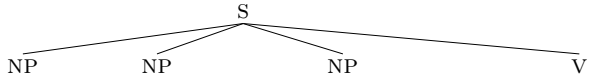
	English	Chinese	Hungarian	Japanese
configurational encoding (NP movement)	+	+	−	−
wh-movement	+	−	+	−
(See Huang (1980), Kiss (1981), Farmer (1980).)				

3.3 Function Changing Rules in Malayalam

3.3.1 Clause Structure and Case Assignment

Malayalam is a nonconfigurational language in which grammatical functions are encoded in terms of case features rather than in terms of structural positions. It has a flat "VP-less" clause structure, as exemplified in (6) (see Mohanan (1982c)):

(6)



'Mother gave the elephant to the child' (N=nom, D=dat, A=acc)

The constituents directly dominated by the S node are order free. Thus, SOV, SVO, OSV, etc. are all possible word orders in the language.

The facts of case assignment are given in (7):

(7) a. The subject gets the nominative case for unmarked verbs, and the dative case for verbs with modal clitics like *-aam* 'permission', and *-aṇam* 'must', and special verbs like *wiśakk* 'be hungry' and *iṣṭam aa* 'like'.

b. The primary object is accusative if animate, and nominative otherwise.

c. The secondary object gets either dative or dative2.

The case assignment principles are illustrated by (8).

(8) a. amma kuṭṭikkə aanaye koṭuṯṯu
mother-N child-D elephant-A gave
'Mother gave the elephant to the child.'

b. amma kuṭṭikkə oṟə puṯakam koṭuṯṯu
mother-N child-D one book-N gave
'Mother gave the child a book.'

c. amma kuṭṭiyooṭə oṟə kaaṟyam paraññu
mother-N child-D2 one thing-N said
'Mother told the child something.'

d. kuṭṭi puṯakaṯṯine patti aaloociccu
child-N book-A about thought
'The child thought about the book.'

e. kuṭṭikkə wiśaṉṉu
child-D hungered
'The child was hungry.'

f. kuṭṭi aanaye ṉuḷḷi
child-N elephant-A pinched
'The child pinched the elephant.'

g. kuṭṭikkə aanaye ṉuḷḷaṇam
child-D elephant-A pinch-MUST
'The child wants to pinch the elephant.'[4]

In (8a), the animate object 'elephant' is in the accusative case, but the corresponding inanimate object 'book' in (8b) is in the nominative case. (8d) shows that the absence of accusative ending in inanimate objects cannot be treated as morphologically unrealised accusative case feature: inanimate nouns do take the accusative case when required by postpositions. Thus, *patti* 'about' in (8d) requires a postpositional object with the accusative case, and 'book' shows up with the accusative case ending. (8e) is an example of the class of verbs that take dative subjects. (8f) and (8g) illustrate the effect of the modal clitic *-aṇam* on the subject. Without the clitic, the subject is in the nominative case, but when the clitic is attached, it is in the dative case.

The case assignment in postpositional phrases is quite varied, and is idiosyncratically determined by the postposition. Thus, the postposition *patti* 'about' takes an accusative object, *kuuṭe* 'with' takes a genitive object, and *kaarāṇam* 'reason' takes a nominative object (Mohanan (1982c)).

3.3.2 Tests for Subjecthood

The dative triggering modals can be used as a test for subjecthood in Malayalam: a subject is the NP that becomes dative when a dative triggering modal is attached to the verb.

In addition, one can use two tests for subjecthood in Malayalam, namely anaphora and control. These tests are given in (9):

(9) a. The antecedents of the reflexives *swa-* 'self' and *taan* 'self' must be subjects (Mohanan (1982a)).
b. In the participial adjunct clause with the complementiser *koṇṭə* 'while', both the controller and the controllee must be subjects (Mohanan (1982c)).

Given below are examples that demonstrate (9a):

(10) a. jooṇi meerīye swaṇṭam wiiṭṭil weccə umma weccu
Johnny-N Mary-A self's house-LOC at kiss put
'Johnny kissed Mary at Johnny's/*Mary's house.'

[4]There is another *-aṇam* in Malayalam, which assigns the nominative case to the subject, translatable as something like 'external necessity':

(i) kuṭṭi aanaye nuḷḷanam
child-N elephant-A pinch-MODAL
'It is necessary that the child pinch the elephant.'

b. [[swaṉṯam makan buḍḍhimaan aaṇə eṉṉə] rāajaawinə
self's son-N intelligent is that king-D
ṯooṉṉi eṉṉə] raaṇi maṉṯriye wiśwasippiccu
thought that queen-N minister-A persuaded
'The queen persuaded the minister that the king thought that the king's/the queen's/*the minister's son was intelligent.'

In (10a), the antecedent of *swaṉṯam* must be the subject 'John' and not the object 'Mary'. In (10b), the antecedent of *swaṉṯam* can be the subjects 'queen' or 'king', but not the object 'minister'.

(9b) is illustrated by (11):

(11) a. [___ aanaye ṉuḷḷikkoṇṭə] jooṇi meerīye umma weccu
elephant-A pinch while Johnny-N Mary-A kiss put
'Johnny kissed Mary, while Johnny/*Mary was pinching the elephant.'

b. *[jooṇi ___ ṉuḷḷikkontə] aana meerīye cawiṭṭi
Johnny-N pinched while elephant Mary-A kicked
'The elephant kicked Mary, while Johnny was pinching the elephant/Mary.'

(11a) shows that the controller of the *koṇṭə* clause must be the matrix subject, not the object. (11b) shows that the controllee must be the subject, not the object.

Because of the one-to-many relation between grammatical functions and case features, it is impossible to state (9a) and (9b) in terms of case features in a non ad hoc fashion. For the same reason, it is impossible to state them in terms of thematic roles either. I shall not attempt to demonstrate these points here, but simply refer the reader to Mohanan (1982a) and (1982c) for the details.

Having outlined some of the properties of grammatical functions in Malayalam, we are now ready to examine two of the processes that affect them, namely, the passive and the causative.

3.3.3 The Passive

The passive morpheme in Malayalam is the suffix *-appeṭ*, which attaches only to transitive verbs. When *-appeṭ* is attached, the original primary object becomes the subject, and the original subject becomes an instrumental with the instrumental case *-aal*:

(12) a. kuṭṭi aanaye ṉuḷḷi
child-N elephant-A pinched
'The child pinched the elephant.'

b. kuṭṭiyaal aana ṉuḷḷappeṭṭu
child-I elephant-N pinch-PASS-PAST (I = instr)
'The elephant was pinched by the child.'

Observe that passivisation in Malayalam does not involve any structural changes corresponding to NP movement. The formal change affected by the attachment of *-appeṭ* is simply one of case: the argument marked accusative in (12a) is marked nominative in (12b), and the nominative in (12a) becomes the instrumental in (12b). As in the case of anaphora and control, it is futile to characterise passivisation in terms of case changes (Mohanan (1982c)). On the other hand, the complex effects of case change, as well as the other syntactic consequences of passivisation, can be accounted for in a straightforward fashion by assuming that the effect of *-appeṭ* attachment is to make the primary object a subject. Within the framework of LFG, the rule of passivisation can be stated as follows:

(13) PASSIVISATION
a. attach *-appeṭ* to the stem.
b. i. (↑SUBJ) ⟶ (↑INSTR/∅)
ii. (↑OBJ) ⟶ (↑SUBJ)

I shall assume that lexical entries of verbs look like the following:

(14) *nuḷḷ*, V. PRED: 'pinch' < SUBJ agent , OBJ theme >

Rule (13) is to be interpreted as: wherever the function name (SUBJ) appears, replace it with (INSTR) or ∅, and wherever the function name (OBJ) appears, replace it with (SUBJ). The application of (13) to (14) creates the following lexical entry:

(15) *nuḷḷappeṭ*, V. PRED: 'pinch'< INSTR agent , SUBJ theme >

Recall that modals like *-aṇam* induce the dative case on the subject. As predicted by (13), the argument that gets the dative case after passivisation would be on the new subject. The assumption that *-appeṭ* changes primary objects to subjects, which is necessitated by the facts of case assignment, is further supported by the facts of anaphora and control. Thus, the new subject becomes an eligible antecedent of reflexives, and the old subject loses its eligibility. Similarly, the new subject becomes an eligible controller and controllee of the *koṇṭə* clauses, while the old subject loses the eligibility. I refer the reader to Mohanan (1982c) for the demonstration of these facts.

3.3.4 The Causative

Causativisation is an extremely productive process in Malayalam. As far as I know, there are no verbs which cannot be causativised. Examples of the process are given in (16) and (17):

(16) a. t̪innum 'will eat'
b. t̪iittum 'will feed'
c. t̪iittikkum 'will cause x to feed y'

(17) a. uṇarūm 'will wake up (intr)'
b. uṇart̪t̪um 'will wake up (tr)'
c. uṇart̪t̪ikkum 'will cause x to wake up y'

Most Indian languages exhibit the distinction between what are called 'direct' and 'indirect' causatives (Masica (1976)). In direct causatives, the causer is directly engaged in the action, while in the indirect one, the relation between the causer and the action is only one of indirect causation. The semantic difference between the two types of causatives parallels that of *eat* ∼ *feed* (direct) and *eat* ∼ *cause to eat* (indirect) in English. X can cause Y to eat simply by wearing a shirt with the picture of a lobster on it, but such a situation cannot be described as X feeding Y. In Malayalam, the two types of causatives usually appear with the same morphological form, resulting in ambiguity, but in the case of verbs which allow the less productive morphological processes of causation (e.g., gemination, denasalisation) in addition to the productive ones (affixation of *-ikk* and *-ipp*), the less productive processes denote direct causation and the productive one denotes indirect causation:

(18) a. booṭṭə muŋŋi
boat sank
b. kuṭṭi booṭṭə mukki (direct)
child-N boat-N sink-CAUSE-PAST
'The child sank the boat.'
c. kuṭṭi booṭṭə muŋŋiccu (indirect)
child-N boat-N sink-CAUSE-PAST
'The child caused the boat to sink.'

I shall characterise the distinction between the two kinds of causatives in terms of the thematic role associated with the causer. Thus, 'child' has the role [+causer, +direct] in (18b), while it has the role [+causer, −direct] in (18c). The former is an agentive causer, while the latter is a non-agentive causer.

The syntactic behaviour of the two kinds of causatives is identical in Malayalam. I shall, therefore, make no further distinction, and use the

form "X caused Y to Z" to gloss both direct and indirect causatives even when they are not ambiguous.

The syntax of causativisation can be described as follows: when an intransitive verb is causativised, the original subject becomes a primary object, and when a transitive verb is causativised, the original subject becomes an instrumental with the post position *koṇṭə*. In both cases, a new causer argument is added as the subject.[5]

(19) a. kuṭṭi kaṟaññu
child-N cried
'The child cried.'

b. acchan kuṭṭiye kaṟayiccu
father-N child-A cry-CAUSE-PAST
'The father made the child cry.'

c. amma acchanekkoṇṭə kuṭṭiye kaṟayippiccu
mother-N father-A with child-A cry-CAUSE-CAUSE-PAST
'Mother caused father to make the child cry.'

(20) a. kuṭṭi aanaye ṉuḷḷi
child-N elephant-A pinched
'The child pinched the elephant.'

b. amma kuṭṭiyekkoṇṭə aanaye ṉuḷḷiccu
mother-N child-A with elephant-A pinch-CAUSE-PAST
'Mother made the child pinch the elephant.'

When the intransitive verb *kaṟay* 'cry' (19a) is causativised, the causee becomes the primary object (19b). In contrast, the causee is an instrumental in (20b), as the base *nuḷḷ* 'pinch' is transitive.[6]

[5]The surface facts resemble causativisation in Romance languages to a great extent (Kayne (1975), Rouveret and Vergnaud (1980), Grimshaw (1982)).

[6]It must be noted that there is a small class of transitive verbs such as *tinn* 'eat', *kuṭikk* 'drink', *kaaṇ* 'see', *paṭhikk* 'learn', etc. which do not fit this pattern. These verbs behave like intransitive verbs, rather than like transitive verbs, under causativisation:

(i) kuṭṭi coorə ṯiṉṉu
child-N rice-N ate
'The child ate the rice.'

(ii) amma kuṭṭiye coorə ṯiitti
mother-N child-A rice-N eat-CAUSE-PAST
'Mother fed the child rice.'

Note that 'child' takes the accusative case and not the instrumental postposition, showing that it is the new object. 'Child' in (ii) is passivisable, but not 'rice'.

(iii) ammayaal kuṭṭi coorə ṯiittappeṭṭu
mother-I child-N rice-N eat-CAUSE-PASS-PAST
'The child was caused to eat the rice by the mother.'

Defining a transitive verb as one that has a primary object in its lexical entry (Grimshaw (1982), Bresnan (1982b)), we can see that the effect of causativisation on intransitive verbs is to change them into transitive verbs, as causativisation creates a new primary object. We therefore predict that a second application of causativisation on intransitives would be identical to the application of causativisation on transitives. This prediction is borne out by examples like (19c), in which the causee surfaces with the instrumental postposition *koṇṭə*.

I propose to account for the facts of causativisation in Malayalam in terms of the following rule:

(21) CAUSATIVISATION

a. Attach the causative morpheme

b. i. $\text{SUBJ} \longrightarrow \text{OBJ} \,/\, \left\{ \begin{matrix} \text{INSTR} \\ \emptyset \end{matrix} \right\}$

ii. Add $\begin{matrix} \text{SUBJ} \\ | \\ \left[\begin{matrix} +\text{causer} \\ \pm\text{direct} \end{matrix} \right] \end{matrix}$

The interpretation of (21b) is as follows. Given the lexical entry of a verb, change the subject to the object, and if this change is not applicable (e.g. if the verb already contains an object), then change it to either an instrumental or ∅. Add a new subject which is either [+direct] or [−direct]. If the verb already contains a [+causer, +direct], then the addition of this thematic role will be ruled out by the universal condition on the uniqueness of thematic roles.

Even though the verb morphology allows three layers of causativisation, the semantics allows at most two. Consider a nonagentive verb like *aar* 'become cold'. One can causativise this using the process of gemination, and derive the direct causative *aatt* 'make cold', where the new subject is [+causer, +direct]. One can now attach the suffix *-ikk*

(iv) *ammayaal kuṭṭiye coorə t̪iittappeṭṭu
mother-I child-A rice-N eat-CAUSE-PASS-PAST
'The rice was caused to be eaten by the child by the mother.'

(iv) shows that 'rice' is not an object, unlike the 'rice' in (i):

(v) kuṭṭiyaal coorə t̪innappeṭṭu
child-I rice-N eat-PASS-PAST
'Rice was eaten by the child.'

This phenomenon is found in other Indian languages as well. Masica (1976), for example, refers to these verbs as 'ingestive verbs', in the sense of verbs denoting taking in something either literally or metophorically. The existence of this class of verbs was apparently noted in Classical Sanskrit by Panini (Hock (1981)). I have no solution to the mystery of ingestive verbs. (For a historical account, see Hock (1981)).

to this form and derive the indirect causative *aattikk* 'cause X to make Y cold', where the new subject is [+causer, −direct]. The morphology allows one more layer of causativisation, namely, *aattippikk*, but this form is identical in meaning to *aattikk*. It cannot, in other words, mean 'cause X to cause Y to make Z cold'. Such a meaning will have two nonagentive causers, and the uniqueness condition forbids such a theta role assignment.

The fact that one cannot have two nonagentive causers associated with a verb form even when the morphology provides for the addition of a new causer is our first piece of evidence for the monoclausality of causatives in Malayalam. Had Malayalam causatives been bi- or polyclausal, there is no reason why there cannot be several nonagentive causers as underlying subjects of each cause clause.

Observe that (21) predicts that the original subject (the causee) is no longer the subject after causativisation. That this is indeed so is shown by the test of modal inducing clitics:

(22) kuṭṭikkə kaṟayaṇam
child-D cry-MUST
'The child wants to cry.'

(23) acchanə kuṭṭiye kaṟayikkaṇam
father-D child-A cry-CAUSE-MUST
'Father wants to make the child cry.'

(24) ammakkə acchanekkoṇṭə kuṭṭiye kaṟayippikkaṇam
mother-D father-A with child-A cry-CAUSE-CAUSE-MUST
'Mother wants to cause father to make the child cry.'

(25) *acchan kuṭṭikkə kaṟayikkaṇam
father-N child-D cry-CAUSE-MUST

(26) *amma acchane kuṭṭiyə kaṟayippikkaṇam
mother-N father-D child-A cry-CAUSE-CAUSE-MUST

In (22)–(24), the subjects are 'child', 'father' and 'mother' respectively, as shown by the dative case on them. That 'child' in (23) and 'father' in (24) are not subjects is shown by the impossibility of the dative on them in (25) and (26).

The test of anaphora provides additional support for the non-subjecthood of the causees:

(27) a. kuṭṭi swaṇṭam wiiṭṭil weccə kaṟaññu
child-N self's house-LOC at cried
'The child cried at the child's house.'

b. acchan kuṭṭiye swaṉṯam wiiṭṭil weccə kaṟayiccu
father-N child-A self's house-LOC at cry-CAUSE-PAST
'Father made the child cry at father's/*the child's house.'

c. amma acchanekkoṇṭə kuṭṭiye swaṉṯam wiiṭṭil weccə
mother-N father-A with child-A self's house-LOC at
kaṟayippiccu
cry-CAUSE-CAUSE-PAST
'Mother caused father to make the child cry at mother's / *father's / *the child's house.'

Recall that *swaṉṯam* can refer to any of the subjects higher up in the clause (10b). Now, (27b) shows that the causee ('child') is no longer a subject as it cannot serve as the antecedent of *swaṉṯam*. Similarly, (27c) shows that the new causee ('father') is not a subject either.[7]

Consider now the control facts. The following examples show that the causee is not an eligible controller of the *koṇṭə* clauses which require subject controllers:

(28) a. [___ meṯṯameel kiṭaṉṉu koṇṭə] kuṭṭi kaṟaññu
bed on lay while child-N cried
'The child cried, while the child lay on the bed.'

b. [___ meṯṯameel kitannu koṇṭə] kuṭṭiye acchan kaṟayiccu
child-A father-N cry-CAUSE-PAST
'Father made the child cry, while father/*the child lay on the bed.'

c. [___ meṯṯameel kiṭaṉṉu koṇṭə] acchanekkoṇṭə amma
father-A with mother-N
kuṭṭiye kaṟayippiccu
child-A cry-CAUSE-CAUSE-PAST
'Mother caused father to make the child cry, while mother/*father/*the child lay on the bed.'

Similarly, the examples in (29) show that the causee is not capable of being the controllee either:

(29) a. [___ kaṟaññu koṇṭə] kuṭṭi uraŋŋi
cry while child-N slept
'The child slept, while the child was crying.'

b. [___ kuṭṭiye kaṟayiccukoṇṭə] acchan uraŋŋi
child-A cry-CAUSE-WHILE father-N slept
'Father slept, while he made the child cry.'

[7]These facts distinguish Malayalam causatives from say, those in Japanese. The reflexive *zibun* in Japanese, which must find a subject antecedent, can refer either to the causer or to the causee in a causative construction (Kuno (1973), Farmer (1980)).

c. *[acchan___ kaṟayiccukoṇṭə] kuṭṭi uraŋŋi
father-N crycause-WHILE child-N slept
'The child slept while the father was making the child cry.'

d. [___ acchanekkoṇṭə kuṭṭiye kaṟayippiccukoṇṭə] amma uraŋŋi
father-A with child-A cry-CAUSE-CAUSE-WHILE mother-N slept
'Mother slept, while mother caused father to make the child cry.'

e. *[amma___ kuṭṭiye kaṟayippiccukoṇṭə] acchan uraŋŋi
mother-N child-A cry-CAUSE-CAUSE-WHILE father-N slept
'Father slept while mother caused father to make the child cry.'

f. *[amma acchanekoṇṭə___ kaṟayippiccukoṇṭə] kuṭṭi uraŋŋi
mother-N father-A with cry-CAUSE-CAUSE-WHILE child-N slept
'The child slept, while mother caused father to make the child cry.'

As shown by the possibility of control, the 'crier' in (29a), the primary causer in (29b) and the secondary causer in (29d) are subjects. In contrast, the crier in (29c) and (29f), and the primary causer in (29e) are not subjects. All these facts follow directly from rule (21b) which has the effect of destroying the subjecthood of the original subject.

What is the evidence that the 'demoted' subject of intransitives becomes an object? The primary evidence is case. The demoted subject of intransitives takes the accusative case if animate, and the nominative if inanimate. That of the transitives, on the other hand, takes the instrumental postposition *koṇṭə*. The second piece of evidence comes from passivisation. The demoted subject of the intransitive can be passivised:

(30) acchanaal kuṭṭi swaṇṭam wiiṭṭil weccə kaṟayikkappeṭṭu
father-I child-N self's house-LOC at cry-CAUSE-PASS-PAST
'The child was made to cry at the child's/*father's house by father.'
(cf. (27b))

When an intransitive verb is causativised and passivised, the original subject loses its subjecthood under causativisation and regains it under passivisation, thereby showing that causativisation changes the original subject to an object. In contrast, when a transitive verb is causativised, the original subject loses its subjecthood permanently. When a causativised transitive is passivised, the argument that acquires new subjecthood is the original object, not the original subject. Consider, for example, the operation of the passive on (23b):

(31) a. ammayaal aana ṉuḷḷikkappeṭṭu
mother-I elephant-N pinch-CAUSE-PASS-PAST
'The elephant was caused to be pinched by mother.'

b. *ammayaal kuṭṭi aanaye ṉuḷḷikkappeṭṭu
mother-I child-N elephant-A pinch-CAUSE-PASS-PAST
'The child was caused to be pinched by mother.'

The contrast between the causativisation of transitives and intransitives in terms of passivisation follows from rule (21).

It must be pointed out that when a transitive causative is passivised, the causee can no longer be expressed in Malayalam. Thus, in contrast to (31a), (32) is ungrammatical:

(32) *ammayaal kuṭṭiyekkoṇṭə aana ṉuḷḷikkappeṭṭu
mother-I child-A with elephant-N pinch-CAUSE-PASS-PAST
'The elephant was [caused to be pinched by the child] by mother.'

Given the rules of passivisation and causativisation in (13) and (21), the ungrammaticality of (32) is predicted by the principle of uniqueness which forbids, in effect, two occurrences of the same grammatical function in the same clause nucleus (Kaplan and Bresnan (1982), Grimshaw (1982)). Recall that both passivisation and causativisation change the subject of a transitive verb to INSTR. Therefore both 'child' and 'mother' are INSTR in (32), which is ruled out by the uniqueness principle. This fact provides us with crucial evidence for the formulation of the passive and causative rules in terms of SUBJ ⟶ INSTR, rather than leaving out the causee of causativisation and the agent of the passive without a grammatical function (cf. Chomsky (1981), Marantz (1981)). I have, however, no explanation for why it is the NP-*koṇṭə* that is omitted in the passivised causative, rather than the NP-*aal*.

Another contrast between the causativisation of transitives and intransitives is the omissibility of the causee in causativised transitives. Consider the following causativised versions of (22a) and (23a):

(33) a. *acchan kaīayiccu
father-N cry-CAUSE-PASS

b. amma aanaye ṉuḷḷiccu
mother-N elephant-A pinch-CAUSE-PAST
'Mother caused the elephant to be pinched.'

The causee is omissible in transitive causatives, but not in intransitive causatives. This contrast follows from (21). The subject of the intransitive, when causativised, becomes an object, and that of the transitive becomes an optional instrument.

3.4 L-structure and Assume a GF

Having given an account of the basic facts of causativisation in Malayalam within the framework of LFG, I shall now turn to the problems of accounting for the same facts within GB. Before I do so, it would be necessary to give a brief sketch of the treatment of relation changing processes proposed for nonconfigurational languages by Chomsky (1981), and develop the formal mechanism implicit in the proposal. I shall turn to this task directly below.

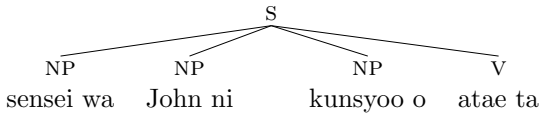
3.4.1 L-structure

Recent investigations into the properties of nonconfigurational languages have raised two interesting problems for the Revised Extended Standard Theory. First, nonconfigurational languages have a flat clause structure without a VP node. Therefore the configurational definition of the subject as [NP,S] (= NP of S) and the object as [NP,VP], proposed originally in Chomsky (1965), is no longer applicable to these languages, as both the subject and the object are dominated by the S node. The second problem is that there is no motivation in these languages for a 'move NP' rule at the level of configurational structure, and yet processes like passivisation and causativisation in these languages have properties identical to those in configurational languages (Bresnan (1982b), Mohanan (1982c)).

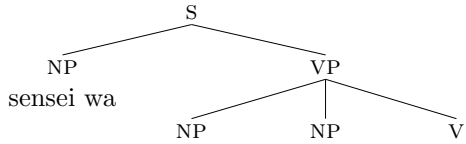
As a solution to these problems, Chomsky (1981) proposes the notion of *lexical* VP for the characterisation of grammatical functions in nonconfigurational languages. He defines 'lexical VP' as the verb and the complements that it subcategorises for, assuming that the verb does not subcategorise for the subject (see Marantz (1981) for some discussion). Thus, the configurational structure of the Japanese sentence in (34a) is (34b), but its lexical structure (i.e., the representation containing the lexical VP) is as in (34c):

(34) a. sensei wa John ni kunsyoo o atae ta
teacher TOP John D medal A give past
'The teacher gave John a medal.'

b. (configurational structure)



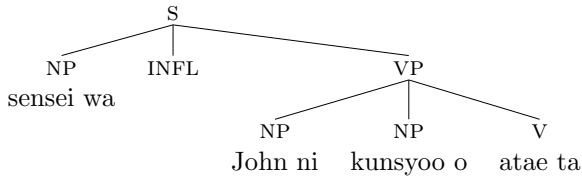
c. (lexical structure)



The NP dominated by S in (34c) is the subject ([NP,S]). One of the NPs in the VP will be the primary object ([NP^1,VP]), and the other will be the secondary object ([NP^2,VP]).

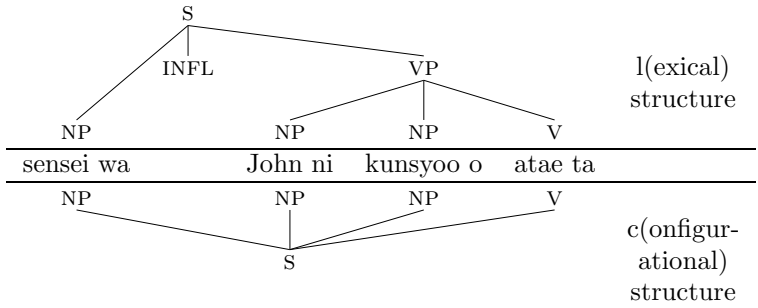
Chomsky assumes that it is lexical structure that determines case assignment/case checking. Thus, [NP,S] gets the nominative case, [NP^1,VP] gets the accusative case, and [NP^2,VP] gets the dative case. Now, case is assigned in GB by an X^0 category that has the feature [−N]. In English, for example, INFL assigns the nominative case to the subject of a finite clause, V assigns the objective case to the object, and P assigns the objective case to the prepositional object. In order to have a uniform account of case assignment for configurational and nonconfigurational languages, we may assume that INFL assigns the nominative case at the lexical structure in nonconfigurational languages as well. Thus, the lexical structure of (34a) must be, strictly speaking, (35):

(35)



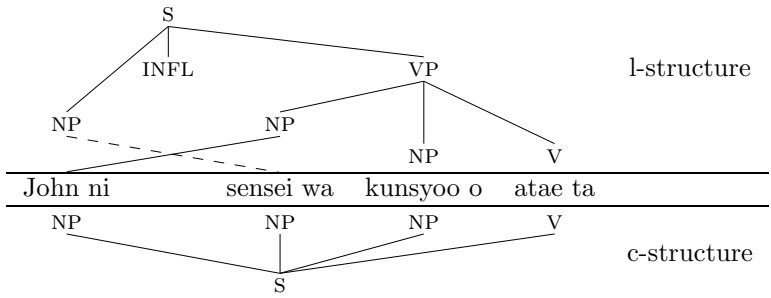
Chomsky proposes that the d- and s-structures of nonconfigurational languages are each pairs of configurational and lexical representations. Adopting the notation from metrical phonology (e.g. Halle and Vergnaud (1981), McCarthy (1981)), I shall represent the d-structure and s-structure of (34a) (which happen to be identical in this case) as (36):

(36)



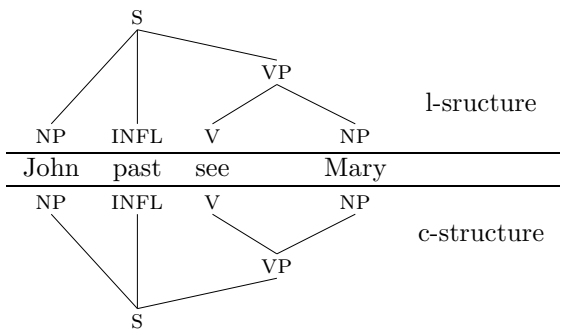
As Chomsky points out, the relative order of the NPs is irrelevant for the assignment of [NP,S], [NP^1,VP] and [NP^2,VP]. What this means is that the trees at the level of lexical structure do not encode the relation of precedence, unlike the trees at the level of configurational structure. Therefore, branches are allowed to cross at L-structure (see also Zubizarreta and Vergnaud (1981)):

(37)



Now, instead of saying that it is only in nonconfigurational languages that d- and s-structures are each pairs of c- and l-structures, we may say that it is so uniformly in all languages. Thus, the d- and s-structure of the English sentence *John saw Mary* will be as in (38):

(38)



If so, the typological distinction between configurational and nonconfigurational languages can be stated in terms of the option of having and not having c-structure mirror the l-structure. In configurational languages, the c-structure is required to mirror the l-structure, and there is no such requirement in nonconfigurational languages.

Given that the treatment of nonconfigurational languages demands that case be assigned at l-structure, it is best to generalise it as a universal principle to apply to all languages uniformly:

(39) Case is assigned at lexical structure.

Given that l-structure is the level that represents grammatical functions, what (39) says is that case is determined by grammatical functions and not the configurational structure. (This would imply that what has been characterised as 'exceptional case marking' is simply a case of objecthood in the matrix clause without theta role assignment from the matrix verb.)

3.4.2 Assume a GF

Chomsky (1981) proposes that nonconfigurational languages have rule (40), corresponding to the rule of move-NP in configurational languages:

(40) Assume a G(rammatical) F(unction).

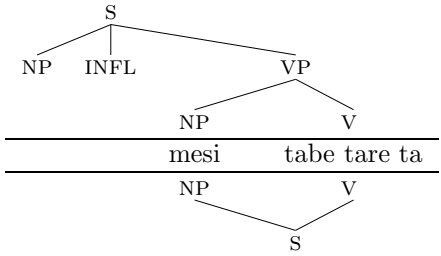
He gives the following example of passivisation in Japanese. Consider sentences like (41a) and (41b):

(41) a. John ga mesi o tabe ta
John N rice A eat PAST
'John ate rice.'

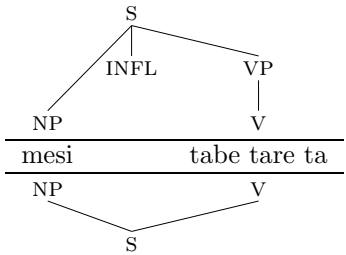
b. mesi ga tabe tare ta
rice N eat PASS PAST
'Rice was eaten.'

There is nothing to be said about (41a). *John* is the [NP,S] which receives the nominative case (from INFL), and *mesi* is the [NP,VP] which receives the accusative case from the verb. In (41b), on the other hand, *mesi* has the nominative case, which means that it is [NP,S] at the s-structure, though [NP,VP] at the d-structure:

(42) a. d-structure



b. s-structure



Chomsky assumes that the passive morphology absorbs the case assigning ability of the verb (to either the primary or the secondary object in Japanese), and precludes theta-role (= thematic role) assignment to the subject. Hence, *mesi* cannot receive case in (42a). In order to receive case, and satisfy the case filter, it must apply rule (40), and assume the GF of [NP,S]. Thus, while configurational languages use the rule of move-NP in order to satisfy the requirements of case filter, nonconfigurational languages use 'assume a GF'.

Observe that though the notions "NP of lexical S" and "NP of lexical VP" appear to provide universal definitions of subject and object, the representation in (42b) clearly shows that these are simple *notations* for encoding subjecthood and objecthood. Note that the verb *tabe* 'eat' does not subcategorise for *mesi* 'rice', and hence we cannot *define* a subject ([NP,S]) as the NP that the verb does not subcategorise for, or as the NP that gets its theta role from the VP rather than from the V. The *Aspects* characterisation of subjects and objects as [NP,S] and [NP,VP] was a definition, though inadequate, as it enabled one to identify subjects and objects on the basis of independently motivated configurational structure. This definitional character of the notion is lost as soon as it becomes a property of lexical structure, the only function of which is to provide a representation for grammatical functions. This point is clearer in the use of [NP^1,VP] and [NP^2,VP] as notations for primary and secondary objects.

In no sense can these notations be considered *definitions* of primary and secondary objects in nonconfigurational languages.[8]

By allowing lexical representations and configurational representations to be independent, GB makes the implicit assumption that the level of grammatical functions is autonomous from the level of configurational structure. The difference between GB and LFG then is simply in the way they are represented. In LFG, subjects are on par with the nonsubject functions in terms of dominance relations at f-structure: the clause that contains a subject, an object and a verb has a flat structure. In GB, on the other hand, subjects are distinguished from the other grammatical functions in being dominated by the clause node ([NP,S]) at the l-structure, while all other functions are dominated by the VP node ([NP,VP]). In both theories, however, further distinctions between the non-subject functions are made in terms of labels that do not involve the dominance relation. Thus, LFG refers to the primary and secondary objects as OBJ and OBJ2, while GB refers to them as [NP^1,VP] and [NP^2,VP] respectively. In both theories, in other words, objects and secondary objects (as well as the distinction between adjuncts and nonadjuncts, frequently appealed to in both theories) are primitive notions and not defined notions.

The real issues, therefore, between LFG and GB are not about the autonomy of grammatical functions or their primitiveness, but about the representation of the distinction between subjects and nonsubjects

[8]Chomsky (1981), for example, argues against the use of primitives like 'subject' and 'object' on the grounds that they cannot be identified on the basis of *a priori* knowledge. He makes a distinction between two kinds of primes in linguistic theory, namely, primitives and defined primes, corresponding to axioms and theorems in logic. He further holds that all primitives in linguistic theory must be such that the language learner is able to pick them out without any prior knowledge of the language. Thus, 'precedence' is a primitive notion because the learner can know what precedes what, without knowing anything about the language. Similarly, notions like agent and theme are also assumed to be primitives because one can presumably identify them from the 'meaning' of the verb, or from the action or situation it denotes. On the other hand, Chomsky argues, subjects and objects cannot be identified in this fashion, and therefore are not primitives. Now, since these notions cannot be universally defined on the basis of primitives (in Chomsky's sense) or other primes, it follows that they are not defined primes either. Chomsky assumes that all primes in linguistic theory must be either primitives identifiable on the basis of *a priori* knowledge, or defined primes, and therefore he objects to the use of notions like subject and object in linguistic theory. Notice, however, that the same objection is applicable to primes like nouns and verbs (or +noun, +verb), as well as to Chomsky's use of lexical VP, lexical [NP,S] and lexical [NP,VP]. None of these notions can be universally defined in terms of independent primitives or other primes, nor can they be identified on the basis of *a priori* knowledge. If Chomsky's objection were to be pushed to its logical conclusion, there would be very little left in linguistic theory. (See Bresnan (1982) for a criticism of Chomsky's objection to the primitive status of subjects and objects.)

in terms of the dominance relation at l- or f-structure, and about the syntactic versus lexical treatment of the relation changing processes.

GB, LFG, and Relational Grammar incorporate grammatical functions as primitives not derivable from syntactic configurations, either explicitly or implicitly. All these grammars treat relation changing operations like the passive as operations on grammatical functions. However, while GB and Relational Grammar treat these operations as syntactic transformations, LFG treats them as lexical operations.

In the terminology of LFG and Relational Grammar, what "assume a GF" says is "change grammatical functions". A difference between GB on the one hand and LFG and Relational Grammar on the other is that the latter make use of specific rules such as SUBJ ⟶ OBJ, OBJ ⟶ SUBJ, etc., while GB makes use of a single "change function" rule, the details of the realisation being left to the universal principles of case theory, projection principle, etc. The empirical content of "assume a GF", then, is that all relation changing processes can be collapsed into a single rule, the effects of specific changes being derivable from universal grammar. In the sections that follow, we shall examine some of the problems that this claim faces. We shall see that causativisation in Malayalam must be a lexical operation, not a transformational one.

3.4.3 The Projection Principle

Chomsky (1981) proposes the following universal principle of grammar called the projection principle:

(43) Representations at each syntactic level (i.e., LF, and d- and s-structure) are projected from the lexicon, in that they observe the subcategorisation properties of lexical items. (p. 23)

The principle is to be understood as follows: if a lexical item, such as a verb, subcategorises for, say an NP and a clausal complement (e.g. *tell*) then it must have an NP and a clausal complement at d-structure, s-structure, and LF. Since complement structures at all levels are projections of the subcategorisation frame, it follows that complement structures for a given lexical item must be the same at all syntactic levels.

The projection principle has far reaching consequences for the choices that are available to syntactic theory. To take a specific case, given that the LF representation of (44) is something like (45a), it disallows the s-structure and the d-structure to be something like (45b):

(44) John believes Bill to be honest.

(45) a. John [believes [Bill to be honest]]
b. John [believes Bill_i [e_i to be honest]]

In (45a), *believe* has a single complement, namely, the sentence *Bill to be honest.* In (45b), on the other hand, it has two complements, namely, *Bill* and *e to be honest.* This violates the projection principle which requires that the VP structure be the same at all levels. Therefore the projection principle rules out all versions of "object raising", i.e. of objects which do not receive their theta roles from their verbs.

The projection principle will also prevent movement which does not leave a trace. Suppose that the d-structure and s-structure of (46) were (47a) and (47b) respectively:

(46) John was murdered.

(47) a. NP [was murdered John]
b. John [was murdered]

The d-structure (47a) has a complement for *murder*, while the s-structure has none, violating the projection principle. Therefore it is necessary to say that the s-structure of (46) has an NP trace, as in (48):

(48) John_i [was murdered t_i]

Observe that the projection principle does not apply to the configurational structure in nonconfigurational languages, as these languages do not have a VP node, and hence do not have complement structures in clauses. In other words, c-structures in nonconfigurational languages are not projections of the subcategorisation frame In the lexicon, nor are they similar to LF representations. One may therefore say that it is this property that distinguishes the two types of languages, the parametric option being the choice of fulfilling or not fulfilling the requirements of the projection principle at c-structure:

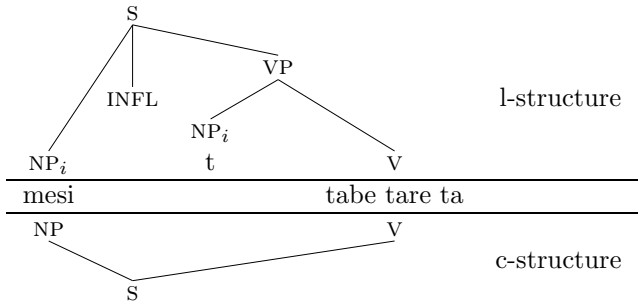
(49) In configurational languages, the projection principle is satisfied at each syntactic level; in nonconfigurational languages, the projection principle does not apply at the c-structure.[9]

It would follow from (49) that the c-structures and l-structures of configurational languages would be identical. Since the projection principle does not apply at the c-structure in nonconfigurational languages, the c-structure need not reflect the l-structure in these languages. Thus, the distinction that we had made earlier, that configurational languages encode grammatical functions in terms of configurational structure while nonconfigurational languages do so using other means (4), is derivable in GB from (49).

[9]The distinction may not be wholly accurate if we take into account VSO languages like Arabic and Irish. For the purposes of this paper, however, I ignore this issue.

Observe that the s-structure of (41b), given as (42b) (which is based on Chomsky's account) violates the projection principle. The d-structure (42a) has a complement in the VP which the structure lacks. The most straightforward way of avoiding this violation is to say that the s-structure of this sentence is not (42a), but (50), with an NP trace at l-structure:

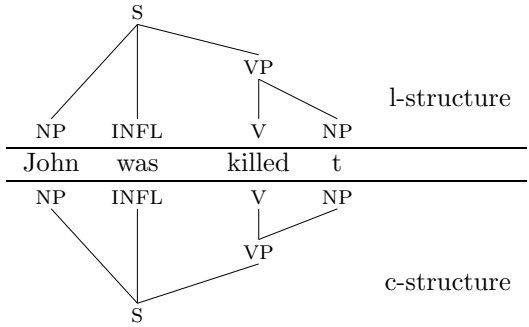
(50)



If (50) is the appropriate s-structure for (41a), then "assume a GF" is simply a case of move NP at l-structure. We do not, therefore, need a separate mechanism of "assume a GF" in the theory (cf. Zubizarreta and Vergnaud (1982)).

There is nothing that we need to say about the different effects of move NP in configurational and nonconfigurational languages, given that move NP applies at l-structure. Since the c-structure must reflect the l-structure in configurational languages (by (49)), move NP at l-structure would necessitate a corresponding movement at c-structure as well:

(51)



In nonconfigurational languages, on the other hand, move NP at l-structure does not require a change in the c-structure, as sanctioned by (49). The movement at l-structure does not affect the left to right order as l-structure does not encode the precedence relation. Thus, we find that all the special properties of "assume a GF" in nonconfigurational languages follow directly from the rule of move NP at l-structure, and

the typological distinction in (49). I shall therefore assume that "assume a GF" is not a separate mechanism of the grammar, but is simply an apparent effect of move NP at l-structure.

Thus, the interesting similarities and differences between configurational and nonconfigurational languages follow from an appropriate development of the ideas implicit in Chomsky's proposals of "assume a GF" and the projection principle. However, in order to make the right predictions, it is necessary to make the following assumptions:

(52) a. Case assignment takes place at l-structure (39).
b. The distinction between configurational and nonconfigurational languages depends on the relation between c-structure and l-structure.
c. NP movement is a rule at l-structure, and the projection principle causes a corresponding movement at c-structure in configurational languages.

The divergences between NP movement and wh movement are already beginning to be apparent: NP movement is a rule that applies at l-structure, while *wh* movement is a rule that applies at c-structure or LF.

3.4.4 Move NP and Malayalam Causativisation

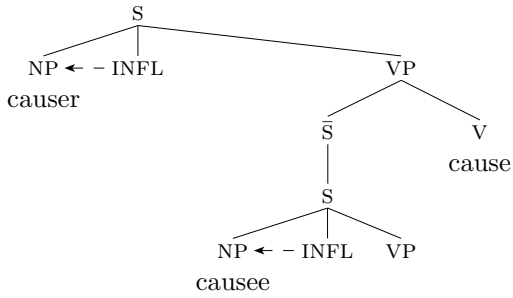
Consider the following Japanese sentences:

(53) a. John ga mesi o tabe ta
John N rice A eat PAST
'John ate the rice.'
b. Mary ga John ni mesi o tabe sase ta
Mary N John D rice A eat CAUSE PAST
'Mary caused John to eat the rice.'

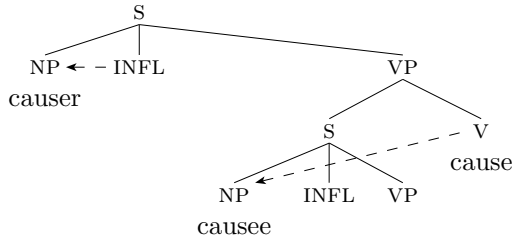
Chomsky assumes that (53b) has a biclausal structure, with *sase* taking a sentential complement. He suggests two possible l-structures for the construction, one with *sase* taking an $\bar{S}$ complement, and the other with *sase* taking an S complement, exceptionally case marking the embedded subject. These two solutions are represented in (54a) and (54b), with arrows indicating government and case assignment.[10]

[10]See Dalrymple (1982) for arguments that favour the structure in (54b). She points out that in Japanese causatives, the causer is disjoint in reference with the causee if the causee is a pronoun but not with the embedded object if that NP is a pronoun. Thus, *John* and *him*, would be disjoint in reference in sentences corresponding to *John caused him to trust Mary*, but not in *John caused Mary to trust him.* (54b), but not (54a) predicts this contrast.

(54) a.



b.



The facts of Malayalam causativisation, however, raise a problem for GB. First, at the level of LF, at least the indirect causatives (e.g. (18c)), which have the meaning "X caused Y to do Z" must have a biclausal structure. If so, the d-structure also must be biclausal, by the projection principle. Thus, the d-structure of (55) would be as given in (56):[11]

(55) acchan kuṭṭiye urakki
father-N child-A sleep-CAUSE-PAST
'Father put the child to sleep.'

[11]Note that unlike the Japanese *sase*, there is no single phonological realisation for the causative morpheme in Malayalam. It is variously realised as *-ikk-*, *-ipp-*, gemination, denasalisation, etc., and therefore the causative verb must be assumed to be an abstract CAUSE morpheme, in GB the phonological details of which are spelt out in some other component.

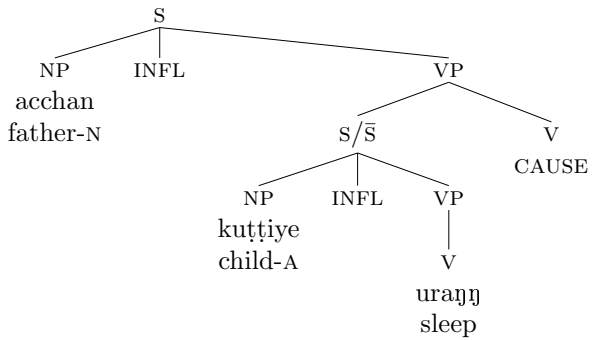
It may also be noted that, unlike Japanese, Malayalam does not allow the passivisation of secondary objects:

(i) a. amma kuṭṭikkə puṣṭakam koṭuṭṭu
mother-N child-D book-N gave
'Mother gave the book to the child.'

b. ammayaal kuṭṭikkə puṣṭakam koṭukkappeṭṭu
mother-I child-D book-N give-PASS-PAST
'The book was given to the child by the mother.'

c. *ammayaal kuṭṭi puṣṭakam koṭukkappeṭṭu
mother-I child-N book-N give-PASS-PAST
'The child was given the book by the mother.'

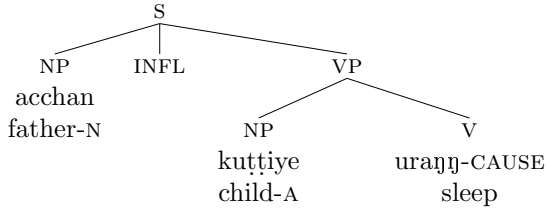
(56)



(The details of c-structure are left out as irrelevant for the discussion.) Recall that the subject of an intransitive verb becomes an object under causativisation: the causee does not exhibit any of the properties of [NP,S], but exhibits all the properties of [NP,VP]. Therefore, the s-structure of (55) must be said to be (57).

These d- and s-structures, however, violate the projection principle, as they do not have the same complement structures. Neither 'sleep' nor CAUSE has an [NP,VP] in its subcategorisation frame, or in the corresponding LF representation, and yet (57) contains one. (57), in fact, represents a structure in which an NP has been moved into a VP. Therefore, if the d-structure of the causative construction in Malayalam is biclausal, the Malayalam facts constitute a counterexample to the projection principle.

(57)



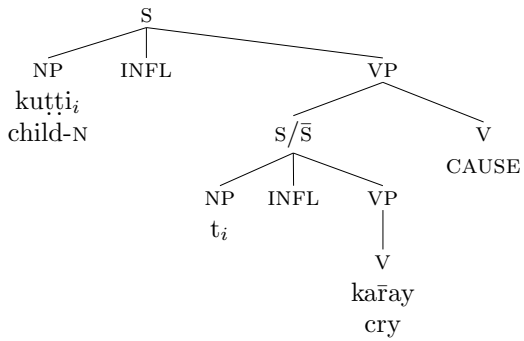
An alternative way to maintain the biclausal analysis of causatives while preserving the projection principle would be to adopt the exceptional case marking solution (54b), and say that the properties associated with subject in Malayalam, such as those relating to anaphora and control, are simply properties of NPs not governed by verbs (or postpositions).[12] I shall indicate below the details of this solution, and then show why this approach is not feasible for Malayalam.

Under the exceptional case marking solution, CAUSE takes an S complement rather than an S̄ complement, and governs and case assigns the

[12]Chomsky (personal communication).

causee exceptionally, just as the verb *believe* governs and case assigns *John* in *Bill believes John to be a fool*. This would account for the accusative case on 'child' in (55). The passive morphology absorbs the case of CAUSE, and precludes theta-role assignment to the subject, and hence the embedded causee NP moves, in l-structure, into the matrix NP position, where it can receive case from INFL (e.g. (30)):

(58)



In order to account for the fact that exceptionally case marked subjects do not have the subject properties in terms of anaphora and control, one may stipulate that NPs governed by V (but not by INFL) do not have the relevant subject properties. In other words, we stipulate the additional condition on [NP,S] that it should not be governed by V in order to be a controller, controllee, or antecedent of an anaphor.

The exceptional case marking solution raises several problems. To begin with, the control properties of *koṇṭə* 'while' clauses have their parallels in other languages (Mohanan (1982c)). Thus, the controller of the embedded subject of the *while* participial clause in English must be the subject:

(59) a. John kissed Mary while scratching himself/*herself.
b. Mary was kissed by John while scratching herself/*himself.

Now, subjects in English can act as controllers of *while* clauses even when exceptionally case marked by the matrix verb:

(60) a. They believed John to have kissed Mary while scratching himself/*herself.
b. They believed Mary to have been kissed by John while scratching herself/*himself.

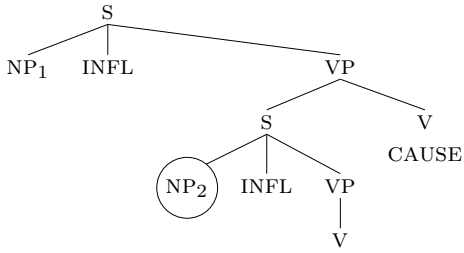
Under the exceptional case marking solution, we are forced to say that *while* clauses in English are controlled by the [NP,S] of the immediate matrix, while in Malayalam they are controlled by the nearest [NP,S] which is not governed by a verb. Clearly, such an ad hoc stipulation is

necessitated by the unwillingness to recognise the fact that intransitive subjects in Malayalam become objects under causativisation. Given the monoclausal analysis in section 3, English and Malayalam have identical control properties of *while* clauses: they are both controlled by the immediate matrix subjects.

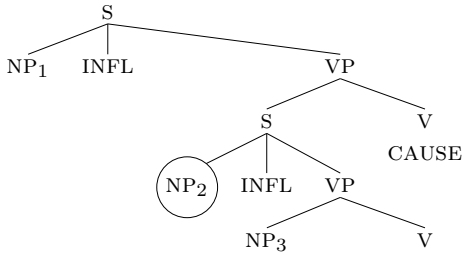
There are other technical problems. The exceptional case marking solution, for example, does not account for the case on the causee in transitive causatives. Recall that the subject of the intransitive verb gets the accusative/nominative case under causativisation, while that of the transitive subject gets the postposition *koṇṭə*. The biclausal analysis would predict the same case on both types of causees. In other words, the solution fails to distinguish between the structures in (61a) and (61b).

Why should the circled NP in (61a) get the accusative/nominative case while that in (61b) get an instrumental postposition? Within the biclausal analysis in GB there is no principled answer. Within the monoclausal lexical analysis, the answer is obvious: the transitive causative, unlike the intransitive causative, already has an object in its lexical entry, and therefore the principle of uniqueness does not allow the causee to become an object in the former.

(61) a. intransitive causatives



b. transitive clauses



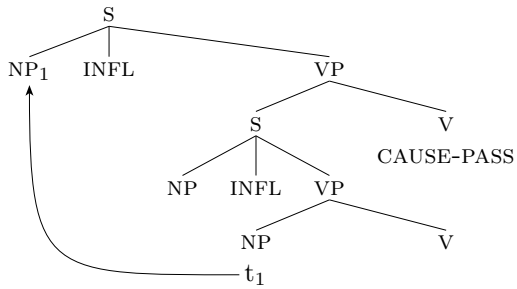
Observe that this is the result of the way we have formulated the rule of causativisation (rule (21)). One may, of course, ask why in some languages the rule couldn't have been something like (21′):

(21′)	SUBJ	(OBJ)	⟶	SUBJ	OBJ	(OBJ2)
	arg1	arg2		causer	arg1	arg2

A rule of this kind would demote the original subject into an object, and demote the original object into a secondary object. I have nothing to say on this issue.

Recall that the causativised intransitive subject is passivisable, while the corresponding causativised transitive subjects are not (examples (30) and (31)). Instead, what gets passivised in transitive causatives is the original object, the NP_3 in (61b). Why should the passive morpheme, attached to the matrix verb, cause the embedded object NP of (61b) to move to the matrix subject position?[13]

(62)



Given the binding conditions in GB, the movement indicated by (62), in fact, is impossible, as it would create an NP trace (an anaphor) which is not bound in its governing category. The facts of passivisation, on the other hand, follow directly from the account we gave in section 3.

We saw earlier that the causativised transitive subject is omissible, while the corresponding intransitive subject is not ((33a) and (33b)). The biclausal solution in GB has no explanation for this phenomenon either. In our account, the rule of causativisation stipulates the omissibility. Given that the only rule in GB is of the form "change the grammatical function" (= assume a GF/move NP), this theory does not allow such stipulations. Both LFG and GB, in fact, are inadequate with respect to this phenomenon in some sense. LFG describes the facts correctly, but does not explain why it is the INSTR rather than the OBJ that is omissible; GB has no description either.

Another phenomenon that points to the need for analysing the causative construction in Malayalam as being monoclausal within the framework of GB is that of disjoint reference. Consider the following sentences:

(63) a. *John admires him.
b. John admires his mother.

[13] I am grateful to Alec Marantz for pointing this out to me.

c. John wants Mary to admire him.

(Underlining indicates coreference.) In (63b) and (63c), but not in (63a), we can interpret *him/his* as referring to *John*. Readings like (63a) are blocked in GB by the following binding condition:

(64) Pronominals are free in their governing category.

Parallel facts obtain in Malayalam as well:

(65) a. *kuṭṭi awane aaraaḍhikkunnu
child-N he-A worships
'The child worships him.'

b. kuṭṭi awante ammaye aaraaḍhikkunnu
child-N his mother-A worships
'The child worships his mother.'

c. kuṭṭi [amma awane aaraaḍhikkaan] aagrahikkunnu
child-N mother-N he-A worship-INF wants
'The child wants mother to worship him.'

Consider now what happens in causative constructions:

(66) *kuṭṭi ammayekoṇṭə awane aaraaḍhippiccu
child-N mother-A with he-A worship-CAUSE-PAST
'The child made mother worship him.'

If the representation of (66) is 'child-N [mother-I he-A worship] CAUSE', the structure would be identical to that of (65c) 'child-N [mother-N he-A worship] want'. There would no longer be any explanation for the contrast between (65c) and (66) in terms of disjoint reference. As far as I can see, the only way to account for the facts of disjoint reference is to assume that (66) is monoclausal while (65c) is biclausal.[14]

In sum, given the assumptions of the Government Binding theory, the causative construction in Malayalam must be monoclausal at d- and s-structures. It is also clear that causativisation involves a process that changes a subject ([NP,S] in lexical structure) to an object ([NP,VP] in lexical structure). Such an operation cannot be the result of a syntactic rule in GB, as it would violate the projection principle. Therefore, it is necessary, in this theory as well, to assume that causativisation in Malayalam is a lexical function changing operation.

It is interesting to note that recent work within the GB framework arrives at similar conclusions, though not explicitly stated. Zubizarreta

[14]Tests similar to the ones used here to demonstrate that the causative construction in Malayalam is monoclausal indicate that the causative constructions in French and Japanese are perhaps biclausal (see Condon (1982), Dalrymple (1982)). (See also Marantz (1981) for a discussion of biclausal and monoclausal causatives.)

(1982), for example, argues that the affixation of the passive morpheme internalises an external argument. Thus, *John* is an external argument in *John saw Mary* but an internal argument in *Mary was seen by John*. What this means is that the passive form of a verb will have n+1 internal arguments corresponding to the n arguments of the active verb. Given the projection principle, it follows that the internalisation of arguments must be a lexical process, not a syntactic one. It also follows that underlying the active and the passive, there should be two different lexical entries (e.g. *saw*: NP; *seen*: NP, NP), the two entries being related by the lexical rule of internalisation. Observe that what internalisation does is to change a subject into a nonsubject, and therefore it looks fairly close to the rule SUBJ ⟶ OBL in LFG. Now, Zubizarreta also argues for an analysis of French causatives in terms of the rule of internalisation. Thus, when the causative *faire* is attached to a verb, it internalises the original external argument. Once again, this has the effect of changing the complement structure of a verb, and therefore cannot be a syntactic operation in GB. Since what causes the internalisation is *faire*, it follows that *faire* affixation is a lexical operation, and that V and *faire*-V are distinct lexical entries. Ignoring the details of implementation, Zubizarreta's analysis and the analysis presented in this paper point to the same conclusion: causativisation yields a new lexical entry in both languages.

If Malayalam causatives are syntactically monoclausal (i.e., monoclausal at d- and s-structures), the legitimacy of the projection principle becomes suspect. Recall that the indirect causatives have meanings that parallel *John caused Mary to eat*, and one would expect them to be biclausal at the level of LF. However, given the projection principle, these causatives must be monoclausal at LF if they are monoclausal at s-structure. What this means is that the meaning "X caused Y to Z" is represented in terms of a biclausal structure at LF in, say, Japanese, while it is represented in terms of a monoclausal structure at LF in Malayalam. If the relation between the output of LF and meanings is purely nonlinguistic (i.e., mediated by nonlinguistic belief systems, etc.) then one would expect that identical meanings in languages will be represented in terms of identical LF representations (unless the different LF representations happen to be logically equivalent). One wonders therefore why Malayalam and Japanese have distinct LF representations for the same meaning. Further, Chomsky (1981) claims that the acquisition of syntactic structures is made trivial by the projection principle: given meanings, the LF representations are available to the learner on *a priori* nonlinguistic grounds, and given the LF representation, the complement structures at d- and s-structures, as well as the subcategorisation frames are auto-

matically arrived at. If Malayalam is monoclausal at LF, this claim no longer makes sense, and the universality of LF becomes indefensible.

The arguments advanced above to demonstrate the monoclausality of Malayalam causatives hold only within a theory such as GB which assumes the projection principle. In a theory which allows operations such as the clause union (cf. Aissen (1974)), these facts can be accounted for by assuming that the causative construction is underlyingly biclausal, but becomes monoclausal prior to passivisation, and the application of the principles of case marking, anaphora, disjoint reference, and control. I shall now go on to demonstrate that the biclausal analysis of Malayalam causatives is implausible even within such a theory. My first argument is that causativisation is an input to a process of *give*-compounding, which I shall show to be a lexical process. Since causativisation has to feed a lexical process, it follows that causativisation too must be a lexical process. Even if we had some way of analysing *give*-compounding as a nonlexical process, the interaction of *give*-compounding with causativisation would create serious problems for the treatment of subcategorisation in any syntactic theory. My second argument is based on the phenomenon of 'quirky case' (e.g. dative subject). Under a biclausal analysis of Malayalam causatives, we would be forced to allow unprincipled case markings such as the embedded verb assigning case to the matrix object. Once again, such situations would be disallowed in any syntactic theory. Since a transformational account of causatives requires them to be biclausal underlyingly, it follows that causativisation in Malayalam is lexical, not transformational.

3.5 *Give*-Compounding and Causativisation

3.5.1 *Give*-Compounding

Malayalam has two verbs meaning 'give', namely *tarī* and *koṭukk*. *tarī* demands a secondary object in the first or second person, while *koṭukk* demands a secondary object in the third person:

(67) a. awan/ṉii enikkə puste̱akam te̱anne̱u/*koṭute̱e̱tu
he-n/you-N I-D book-N gave
'He/you gave me a book.'

b. awan/nāan ṉinakkə puste̱akam te̱anne̱u/*koṭute̱e̱tu
he-n/I-N you-A book-N gave
'He/I gave you a book.'

c. ṉaan/ṉii awanə puste̱akam koṭute̱e̱tu/*te̱anne̱u
I-n/you-N he-D book-N gave
'I/you gave him a book.'

In order to account for the special properties of the GIVE verbs, I propose the following lexical entries:

(68) a. *tar̄*, V. PRED: 'give' (SUBJ, OBJ, OBJ_2)
agent theme goal
(↑OBJ_2 CASE)=dat
(↑OBJ_2 PERS) ≠ 3

b. *koṭukk*, V. PRED: 'give' (SUBJ, OBJ, OBJ_2)
agent theme goal
(↑OBJ_2 CASE)=dat
(↑OBJ_2 PERS)=3

The equation (↑OBJ_2 PERS) ≠ 3 disallows third person secondary objects in (68a), while (↑OBJ_2 PERS)=3 enforces third person secondary objects in (68b). Now, what is interesting is that the 'give' verbs participate in the verb+verb compounding in Malayalam where the first stem can be freely chosen, and the second stem belongs to a small class of verbs such as *kaḷay* 'throw away', *poo* 'go', etc. A characteristic of this type of compounding is that the second stem does not retain any of its semantic content:

(69) a. awan kaccara kaḷaññu
he-N trash-N threw away
'He threw away the trash.'

b. awan coorə ṯiṉṉu
he-N rice-N ate
'He ate the rice.'

c. awan coorə ṯiṉṉəkaḷaññu
he-N rice-N ate threw away
'He ate up the rice.'

(70) a. awan pooyi
he-N went
'He went.'

b. gḷassə poṭṭi
glass-N broke
'The glass broke.'

c. gḷassə poṭṭippooyi
glass-N broke went
'The glass broke accidentally.'

(69a,b) and (70a,b) illustrate the use of the stems in independent constructions, (69c) and (70c) illustrate the use of compounds. Even though the use of V_1V_2 differs subtly from the use of V_1 alone, I shall assume

that the V_2 in V_1V_2 is 'semantically empty', and expresses the contrast between the empty and full uses of the verb in terms of not having or having a PRED feature. Thus, the verb *kaḷay* in (69b) has the predicate 'throw away', while that in (69c) has no PRED feature.

When the *give* verbs participate in the compounding process, what we find is that their predicates disappear as in the case of (69c) and (70c), but the verbs retain their restrictions on the person and case of the secondary object:

(71) a. amma pusṯakam waaŋŋi
mother-N book-N bought
'Mother bought the book.'

b. *amma kuṭṭikkə pusṯakam waaŋŋi
mother-N child-D book-N bought
'Mother bought the child the book.'

(72) a. *amma pusṯakam waaŋŋittannu / waaŋŋikkoṭuttu
mother-N book-N bought gave / bought gave
'Mother bought the book.'

b. amma kuṭṭikkə pusṯakam waaŋŋikkoṭuttu/ *waaŋŋittannu
mother-N child-D book-N bought gave / bought gave
'Mother bought the child the book.'

c. amma enikkə/ ṉinakkə pusṯakam waaŋŋittannu/
mother-N I-D / you-D book-N bought gave /
*waaŋŋikkoṭuttu
bought gave

(71a) and (71b) show that the verb *waaŋŋ* 'buy' does not subcategorise for a secondary object. (72a) shows that 'buy give' does subcategorise for a secondary object.[15] Thus, the subcategorisation requirement is passed on from the 'give' verb to the compound. Note also that *waaŋŋittar̄* does not allow third person secondary objects, while *waaŋŋikkoṭukk* takes only third person secondary objects. Thus, the restriction on the person (and case) of the secondary object is also passed on from 'give' to the compound.

The examples given above are not isolated instances. *Give* verbs compound with any other verb productively, as stated earlier. A few more examples are given below for the bewildered reader:

[15](72a) is grammatical if the secondary object is interpreted as PRO, the referent of which is provided by the context (see Mohanan (1982c) for a discussion of PRO in Malayalam). In the cited form, I assume that no such contextual clues are present.

(73) a. amma paaṭṭə paaṭi
mother-N song-N sang
'Mother sang a song.'

b. *amma kuṭṭikkə paaṭṭə paaṭi
mother-N child-D song-N sang
'Mother sang the child a song.'

c. *amma paaṭṭə paaṭikkoṭuṯṯu / paaṭiṯṯaṉṉu
mother-N song sang gave / sang gave

d. amma kuṭṭikkə paaṭṭə paaṭikkoṭuṯṯu / *paaṭiṯṯaṉṉu
mother-N child-D song-N sang gave / sang gave

e. amma enikkə / ṉinakkə paaṭṭə paaṭiṯṯaṉṉu / *paaṭikkoṭuṯṯu
mother-N me-D / you-D song-N sang gave / sang gave
'Mother sang me/you a song.'

(74) a. klaarkkə aapḷikeeṣan fooram fillə ceyṯu
clerk-N application form-N fill did
'The clerk filled the application form.'

b. *klaarkkə ṭiiccarkkə aapḷikeeṣan fooram fillə ceyṯu
clerk-N teacher-D application form-N fill did
Int.: 'The clerk filled the application form for the teacher.'

c. *klaarkkə aapḷikeeṣan fooram fillə ceyṯukoṭuṯṯu / ceyṯuṭaṉṉu
clerk-N application form-N fill did gave / did gave

d. klaarkkə ṭiiccarkkə aapḷikeeṣan fooram fillə ceyṯukotuṯṯu /
clerk-N teacher-D application form-N fill did gave /
*ceyṯuṭaṉṉu
did gave
'The clerk filled the application form for the teacher.'

e. klaarkkə enikke/ ṉinakkə aapḷikeeṣan fooram fillə ceyṯuṭaṉṉu /
clerk-N I-D / you-D application form-N fill did gave /
*ceyṯukoṭuṯṯu
did gave
'The clerk filled the application form for me/you.'

The productivity of *give*-compounding is illustrated by (74), every word of which is a borrowing from English. In each case, what we find is that the 'give' verb provides a new argument to the predicate-argument structure of the left member of the compound. Thus, in (72), *waaŋŋ* 'buy' provides the buyer and the bought, but not the recipient. It is 'give' that provides the third argument.

As stated earlier, I shall assume that the 'give' verbs which participate in compounding do not have any PRED feature in their lexical

entries. The grammatical functions of the 'give' verbs, and the thematic roles associated with them, however, are retained in the compounds. Thus, in contrast to the independent forms of 'give' in (68), I give below the compounding forms of the verbs:

(75) a. *tar̄*, V. (SUBJ, OBJ, OBJ_2)
agent theme goal
($\uparrow \text{OBJ}_2$ CASE)=dat
($\uparrow \text{OBJ}_2$ PERS) $\neq$ 3

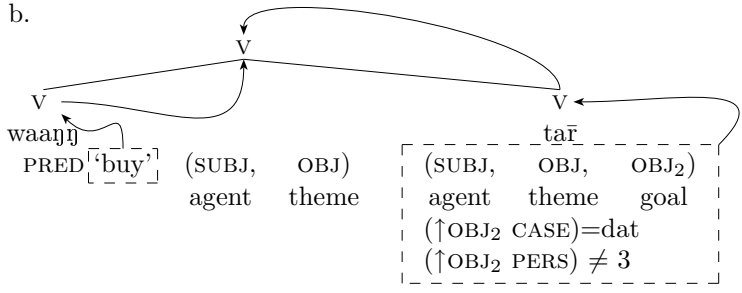
b. *koṭukk*, V. (SUBJ, OBJ, OBJ_2)
agent theme goal
($\uparrow \text{OBJ}_2$ CASE)=dat
($\uparrow \text{OBJ}_2$ PERS)=3

Comparing (68) and (75), it is obvious that the latter is derived from the former by a process that simply deletes the PRED feature, while retaining the rest of the information in the lexical entries. When the VV compounding takes place, the features of V_1 and V_2 percolate up to the root node.

I shall assume that in a VV compound, the only property that percolates up to the root node from the left member is the PRED feature. Thus, one may propose the following rule for the compounding, with the structure illustrated in (76b):

(76) a. V ⟶ V V
($\uparrow$PRED)=$\downarrow$ $\uparrow$=$\downarrow$

b.



From the left member, the meaning 'buy' percolates up, by virtue of the equation in (76a). From the right member, which is the head of the compound (Williams (1981), Lieber (1981), Selkirk (1982)), all other properties percolate up. The result of the percolation indicated in (76b) is the following lexical entry:

(77) *waaŋŋiṯṯar̄*, V. PRED 'buy' (SUBJ, OBJ, OBJ)
agent theme goal
(↑OBJ$_2$ CASE)=dat
(↑OBJ$_2$ PERS) ≠ 3

Observe that the lexical entry of 'give' requires a SUBJ, OBJ, and OBJ$_2$. When it is compounded with, say, monadic verbs, the 'meaning' of which does not allow the introduction of a theme object, the result is ungrammatical:

(78) a. amma aḏhwaaniccu
mother-N worked hard
'Mother worked hard.'
b. *amma kuṭṭikkə aḏhwaaniccukoṭuṯṯu
mother-N child-D worked hard
'Mother worked hard for the child.'

koṭukk demands a primary object, and *aḏhwaanikk* is inconsistent with a theme argument that can fulfill the OBJ function, and therefore (78b) is ungrammatical.

In the examples discussed earlier, we found that *give*-compounding can *add* a goal argument if the left member does not already have one. What happens when the left member contains such an argument? Consider the following examples:

(79) a. amma kuṭṭiyooṭə or̄ə swakaar̄yam paraññu
mother-N child-D2 one secret-N said
'Mother told the child a secret.'
b. amma ennooṭə or̄ə swakaar̄yam paraññu
mother-N I-D2 one secret-N said
'Mother told me a secret.'

(80) a. amma kuṭṭikkə / *'kuṭṭiyooṭə or̄ə swakaar̄yam
mother-N child-D / child-D2 one secret-N
paraññukoṭuṯṯu / *paraññuṭaṇṇu
said gave / said gave
'Mother told the child a secret.'
b. amma enikkə / *ennooṭə or̄ə swakaar̄yam paraññuṭaṇṇu /
mother-N I-D / I-D2 one secret-N said gave /
*paraññukoṭuṯṯu
said gave
'Mother told me a secret.'

When the left member of the compound already contains a goal, no new argument is introduced by 'give', as one may indeed expect to be the

case. The existing goal is accepted by 'give', but the restriction on the case and person of the OBJ_2 is still enforced upon it, as shown by (80a) and (80b).

In sum, the essential properties of *give*-compounding are as follows: 'give' does not contribute any PRED feature ('meaning') to the compound, but requires the compound to have a SUBJ, OBJ, and OBJ_2, and the case and person of the OBJ_2 to be dative and 3 respectively. If the left member of the compound already contains a goal, this argument is accepted by 'give'. If not, a new OBJ_2 argument is introduced into the lexical entry.

Since compounding is a word formation process, most syntactic theories would accept *give*-compounding as a lexical operation. In the government/binding theory, there is an additional reason for treating *give*-compounding as lexical. The process introduces a new OBJ_2 into a lexical VP, and given the projection principle, such an operation cannot be a syntactic one.

3.5.2 Causativised *give*-compounds

We shall now show that causativisation is an input to *give*-compounding. Since *give*-compounding is lexical, and syntactic operations cannot be input to lexical operations, we conclude that causativisation is lexical as well.

We found in the previous section that *give*-compounding assigns the grammatical function OBJ_2, with its restrictions on case and person, to a goal argument of the left member, if any. Now, what is interesting is that the left member of the 'give' compounds can be a causativised verb, and when the causees of such verbs can be interpreted as goals, they become OBJ_2 under *give*-compounding:

(81) a. jooṇ meerīye keṭṭi
John-N Mary-A tied (= married)
'John married Mary.'

b. raajaawə jooṇinekkoṇṭə meerīye keṭṭiccu
king-N John-A with Mary-A tie-CAUSE-PAST
'The king made John marry Mary.'

c. raajaawə jooṇinə / *jooṇinekkoṇṭə meerīye keṭṭiccukoṭuṯṯu /
king-N John-D / John-A with Mary-A tie-CAUSE-gave /
*keṭṭiccuṭaṉṉu
tie-CAUSE-gave
'The king caused John to marry Mary and John to benefit from it. = The king gave Mary to John in marriage.'

d. raajaawə enikkə / *ennekkoṇṭə meerīye keṭṭiccuṭaṉṉu /
king-N I-D / I-A with Mary-A tie-CAUSE-gave /
*keṭṭiccukoṭuṭṭu
tie-CAUSE-gave
'The king gave Mary to me in marriage.'

(82) a. kuṭṭi paaṭṭə paṭhiccu
child-N song-N learned
'The child learned the song.'

b. amma kuṭṭiye paaṭṭə paṭhippiccu
mother-N child-A song-N learn-CAUSE-PAST
'Mother taught the child the song.'

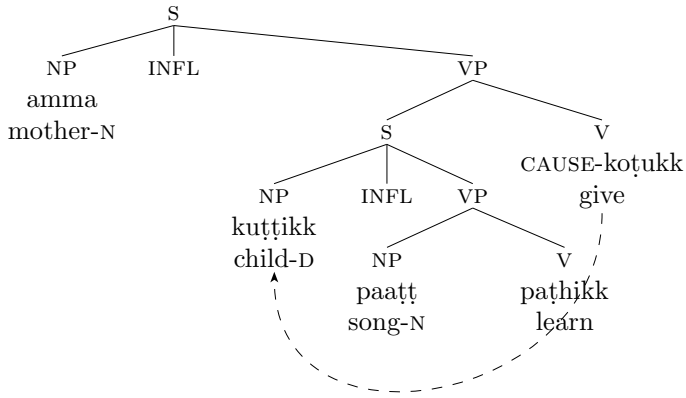
c. amma kuṭṭikkə / *kuṭṭiyekkoṇṭə paaṭṭə paṭhippiccukoṭuṭṭu /
mother-N child-D / child-A with song-N learn-CAUSE-gave /
*paṭhippiccuṭaṉṉu
learn-CAUSE-gave
'Mother taught the child the song (for the child's benefit).'

d. amma enikkə / *ennekkoṇṭə paaṭṭə paṭhippiccuṭaṉṉu /
mother-N I-D / I-A with song-N learn-CAUSE-gave /
*paṭhippiccukoṭuṭṭu
learn-CAUSE-gave
'Mother taught me the song (for my benefit).'

What we find in (81) and (82) is the same generalisation that we found in (72)–(74): when the left member is a triadic predicate, and one of the arguments can be interpreted as a goal, this argument is chosen as OBJ_2 in order to satisfy the restrictions imposed by the 'give' verb. In short, *give*-compounding, which is a lexical process, takes simple verbs and causativised verbs as its input, and treats them in the same fashion. Since a syntactic process cannot be input to a lexical process, it follows that causativisation is a lexical process as well.

Even if it were possible, in some theory, to treat *give*-compounding as a syntactic operation, the description of the interaction between compounding and causativisation would create serious difficulties under a syntactic biclausal analysis of the causatives. Consider for example the following structure:

(83)



The dotted line indicates case assignment and subcategorisation. Whether *koṭukk* is a sister of CAUSE or another verb taking the entire causative structure as its complement, we find a matrix verb subcategorising for an embedded subject, which no syntactic theory that I know of will permit. Thus, the biclausal analysis of Malayalam causatives leads to absurd statements of subcategorisation, with or without the projection principle. We conclude therefore that Malayalam causatives are monoclausal at the d(eep) structure as well as at the s(urface) structure in any syntactic theory.

3.6 Case and Causativisation

The final piece of evidence that points to the correctness of the monoclausal analysis of Malayalam causatives is the phenomenon of 'quirky' case. I use the term quirky case, following Andrews (1982) and Levin (1981), to refer to idiosyncratic case assignment which is typically preserved under function changing operations.

3.6.1 Preliminaries

Malayalam has three types of dative subjects, one of which qualifies as a quirky dative. The three types of dative subjects are illustrated in (84)–(86):

(84) Dative inducing verbs

a. kuṭṭikkə wīsaṉṉu
child-D hungered
'The child was hungry.'

b. kuṭṭikkə puṣ̱takam weenam
child-D book-N wants
'The child wants the book.'

(85) Dative inducing modals

a.i. kuṭṭi uraŋŋi
child-N slept
'The child slept.'

a.ii. kuṭṭikkə uraŋŋaṇam
child-D sleep-MUST
'The child wants to sleep.'

b.i. kuṭṭi aanaye ṉuḷḷi
child-N elephant-A pinched
'The child pinched the elephant.'

b.ii. kuṭṭikkə aanaye ṉuḷḷaam
child-D elephant-A pinch-MAY
'The child is hereby allowed to pinch the elephant.'

(86) Dative inducing NP+V constructions

a. kuṭṭikkə [[saṉṯooṣam] waṉṉu]
child-D happiness came
'The child was/became happy.'

b. kuṭṭikkə aanaye [[ḏeeṣyam] aayi]
child-D elephant-A anger became
'The child was angry with the elephant.'

Under causativisation, the dative simply disappears in (84):

(87) amma kuṭṭiye wīsappiccu
mother-N child-A hunger-CAUSE-PAST
'Mother made the child hungry.'

In contrast, the dative shifts to the new subject under passivisation and causativisation in (85):[16]

(88) a. kuṭṭiyaal aanakkə ṉuḷḷappeṭaṇam
child-I elephant-D pinch-MUST
'The elephant wants to be pinched by the child.'

[16](88), and not (87), is predicted by our theory. Since the modal is attached to the verbs which have undergone causativisation and passivisation (when these processes apply), the equation (↑SUBJ CASE)=dat attached to the modal correctly assigns the dative case to the new subject in (88). In the case of (87), however, the equation (↑SUBJ CASE)=dat should be changed to (↑OBJ CASE)=dat under causativisation (see the discussion of the quirky case in section 6.3). Instead, what we really have is an accusative object. Then further passivised, the causee appears in the nominative case:

(i) ammayaal kuṭṭi wīsappikkappeṭṭu
mother-I child-N hunger-CAUSE-PASS-PAST
'The child was made hungry by the mother.'

I have no solution to this problem.

b. ammakkə kuṭṭiyekkoṇṭə aanaye n̲uḷḷikkaṇam
mother-D child-A with elephant-A pinch-CAUSE-MUST
'Mother wants the child to pinch the elephant.'

In contrast to both, the dative of (86) is preserved, under function changing rules, on the original argument that takes the dative case:

(89) a. kuṭṭikkə wiśappə wan̲n̲u
child-D hunger came
'The child was hungry.'

b. amma kuṭṭikkə wiśappə waṟun̲n̲ṭi
mother-N child-D hunger come-CAUSE-MUST
'Mother caused the child to be hungry.'

c. ammayaal kuṭṭikkə wiśappə waṟun̲n̲ṭappeṭṭu
mother-I child-D hunger come-CAUSE-PASS-PAST
'The child was caused to be hungry by the mother.'

What is relevant for the purposes of this paper are the problems of case preservation, as illustrated by (89a–c).

3.6.2 The NP+V construction

To start with, observe that the NP+V construction illustrated in (86) and (89a) may be either monadic or diadic, depending on the properties of the head noun of the NP. Thus, *santooṣam* 'happiness' (86a) and *wiśappə* 'hunger' (89a) are monadic (= taking a single argument), while *d̲eeṣyam* 'anger' (86b) is diadic. Therefore, the verbals in (86a), (89a) are monadic, while that in (86b) is diadic. Thus, the number of arguments that the NP+V construction takes depends on the head noun of the NP.

In contrast, the case assigning properties of the NP+V construction are determined by the right member, namely, the verb. Thus, while the subject in (86a) is dative, that in the synonymous sentence (90) is nominative, showing that case assignment is inherited from the verb:

(90) kuṭṭi saṇṭon̲n̲oṣiccu
child-N became happy
'The child became happy.'

The verb *saṇṭon̲n̲oṣikk* in (90) and the noun *saṇṭon̲n̲oṣam* in (86a) are derived from the same root, *saṇṭon̲n̲oṣ*. Hence, it cannot be that the case assignment is determined by the noun, or by its thematic roles.

A more conclusive piece of evidence that shows that it is the V that determines case assignment is the fact that the cases change when the V is changed and the NP is kept constant. Thus, *aa* 'become' assigns the accusative case or the dat2 case to the object argument, while *waṟ* assigns only the dat2 case:

(91) a. kuṭṭikkə aanayooṭə / aanaye ḍeeṣyam aayi
child-D elephant-D2/ elephant-A anger became
'The child was angry with the elephant.'

b. kuṭṭikkə aanayooṭə / *aanaye ḍeeṣyam waṉṉu
child-D elephant-D2 / elephant-A anger came
'The child was angry with the elephant.'

Thus, we conclude that the thematic roles of the NP+V construction are supplied by the head of the NP, while the case assignment is supplied by the V.

The next question to consider is the grammatical function of the second argument in the NP+V constructions. The dative2 which is common on these arguments suggests that they may be oblique or secondary objects, rather than primary objects. Support to this assumption is offered by the fact that this argument cannot be passivised (i.e., cannot become the subject under passivisation), regardless of case:

(92) a. *kuṭṭiyaal / kuṭṭikkə aana / aanayooṭə
child-I / child-D elephant-N / elephant-D2
ḍeeṣyam aakappeṭṭu
anger become-PASS-PAST
(Passive of (90a))

b. *kuṭṭiyaal / kuṭṭikkə aana / aanayooṭə ḍeeṣyam
child-I / child-D elephant-N / elephant-D2 anger
waīappeṭṭu
come-PASS-PAST
(Passive of (90b))

Recall that it is only primary objects, not secondary objects that can be passivised in Malayalam (footnote 11). The ungrammaticality of (92a) and (92b) would therefore, follow from the assumption that 'elephant' is not a primary object in (91a) and (91b).

Yet another fact that lends additional support to the assumption that 'elephant' is not a primary object in (91) is its behaviour under causativisation and subsequent passivisation. Recall that intransitive subjects become objects, and transitive subjects become instrumentals, under causativisation. Given that a transitive verb is one with a primary object in its lexical entry, (91a) and (91b) should behave like intransitives if the 'elephant' in these sentences is not a primary object. This prediction is, in fact, borne out by the facts. Thus, when (91a) is causativised, the causee becomes a primary object, not an instrumental:

(93) amma kuṭṭikkə aanaye / aanayooṭə ḍeeṣyam
mother-N child-D elephant-A / elephant-D2 anger
aakki
become-CAUSE-PAST
'Mother made the child angry with the elephant.'

The argument 'child' in (93) is a primary object with a dative case. Because of the effect of case preservation, it is difficult to see that 'child' is the primary object in (93) on the basis of morphology. The evidence, therefore, has to be indirect. First, we note that (93), unlike (91a), is passivisable:

(94) ammayaal kuṭṭikkə aanaye / aanayooṭə ḍeeṣyam
mother-I child-D elephant-A / elephant-D2 anger
aakkappeṭṭu
become-CAUSE-PASS-PAST
'The child was made angry with the elephant by the mother.'

If the 'child' in (93) had been an instrumental with the quirky dative case, (93) would have no primary object, and therefore should be unpassivisable. The fact that it is passivisable indicates that it does contain a primary object. And 'child' is the only candidate for primary objecthood.

We are in fact, claiming that 'child' in (93) is a primary object, which becomes the subject under passivisation in (94). Evidence for the subjecthood of 'child' in (94) comes from anaphora and control. Thus, 'child' in (94), but not in (93) is an eligible antecedent of *swaṇṭam* 'self'.

(95) a. amma kuṭṭikkə swaṇṭam aanaye ḍeeṣyam
mother-N child-D self's elephant-A anger
aakki
become-CAUSE-PAST
'Mother made the child angry-with mother's/*child's elephant.'

b. ammaayaal kuṭṭikkə swaṇṭam aanaye ḍeeṣyam
mother-I child- self's elephant-A anger
aakkappeṭṭu
become-CAUSE-PASS-PAST
'The child was made angry with the child's/*mother's elephant by the mother.'

The fact that 'child' is a possible antecedent of *swaṇṭam* in (95b) shows that it is the subject. The facts of control demonstrate the same point:

(96) a. [___ me̲t̲̲tameel kiṭa̲n̲̲nukoṇṭə] amma kuṭṭikkə aanaye
bed loc lie while mother-N child-D elephant-A
d̲eeṣ̲yam aakki
anger become-CAUSE-PAST
'Mother made the child angry with the elephant, while mother/*the child was lying on the bed.'

b. [___ me̲t̲̲tameel kiṭa̲n̲̲nukoṇṭə] ammayaal kuṭṭikkə aanaye
bed loc lie while mother-I child-D elephant-A
d̲eeṣ̲yam aakkappeṭṭu
anger become-CAUSE-PASS-PAST
'The child was made angry with the elephant by the mother, while the child / *mother was lying on the bed.'

Under the assumption that 'child' in (93) is a primary object, the subjecthood of 'child' in (94) makes sense: passivisation changes primary objects to subjects. If, on the other hand, the argument were an instrumental in (93), there is no explanation for the subjecthood of 'child' in (94) with respect to anaphora and control. Therefore we conclude that 'child' is indeed a dative primary object, not a dative instrumental. If so, 'elephant' in (91) (as well as in (93)–(96)) is not a primary object, but must be a secondary object.

Finally, we note that 'elephant' in (91) is not an adjunct. Thus, it cannot be omitted from (91):

(97) a. *kuṭṭikkə d̲eeṣ̲yam aayi
child-D anger become
'The child was angry.'

b. *kuṭṭikkə s̲neeham wa̲n̲̲nu
child-D love came
'The child had love.'

On the basis of these facts, we conclude that the second argument in the NP+V construction is a secondary object or an oblique object.

A question that must be considered at this point is: are these constructions phrasal, or are they lexical? In other words, instead of treating them as NP+V constructions as we have assumed them to be, why can't we treat them as N+V compounds? The reason is that these constructions can contain phrases and even relative clauses as the left member, which shows the left member to be an NP and not an N:

(98) a. kuṭṭikkə aanayooṭə [[[oṯukkiyaal oṯuŋŋaatta]
child-D elephant-D2 suppressed-if suppress-neg-rel.part
ḏeeṣyam] aayi]
anger became
'The child felt towards the elephant anger that would not be suppressed if one tried to suppress it.'

b. kuṭṭikkə [[[maaṇṭipparakkuṇṇa] wiīsappə] waṇṇu]
child-D scratch-pull out-rel.part hunger came
'The child had a hunger that scratches and pulls out (the intestines).'

Assuming that relative clauses are not generated in the lexicon, we must reject the N+V analysis. The fact that the two constituents of *ḏeeṣyam aayi* and *wiīsappə waṇṇu* are put together in the syntactic component, not in the lexicon, has interesting consequences for the choices available for the description of quirky case, which we shall turn to at a later point.

To summarise the discussion so far: what we find is that in the NP+V constructions, the semantic roles are inherited from the head of the NP, while case assigning properties are inherited from the verb. The verb takes a dative subject, and if the noun provides a second argument, a dative2 or accusative oblique object.

3.6.3 An Account of the Facts

In order to account for the facts described in section 6.2, I propose the following phrase structure rule for Malayalam:

(99) $\bar{V} \longrightarrow$ NP V
$(\uparrow \text{COMP}) = \downarrow$
$(\uparrow \text{G}) = (\downarrow \text{G})$

The equations under the NP in (99) identify the NP as the complement of the $\bar{V}$, and identify all the grammatical functions of the NP as the grammatical functions of $\bar{V}$, which are ultimately the grammatical functions of the S that dominates it. I shall assume that nouns can have subjects, but not objects (in Malayalam at least; cf. Rappaport (1981, this volume)). This stipulation would guarantee that the second arguments are non-objects. Sample lexical entries are given in (100):

(100) a. *saṇṭooṣam*, N. PRED 'happiness' (SUBJ)
experiencer

b. *ḏeeṣyam*, N. PRED 'anger' (SUBJ, OBL.OBJ)
experiencer theme

These properties percolate up to the NP node by the general conventions (see Kaplan and Bresnan (1982)). The verbs in the NP+V constructions will have entries like the following:

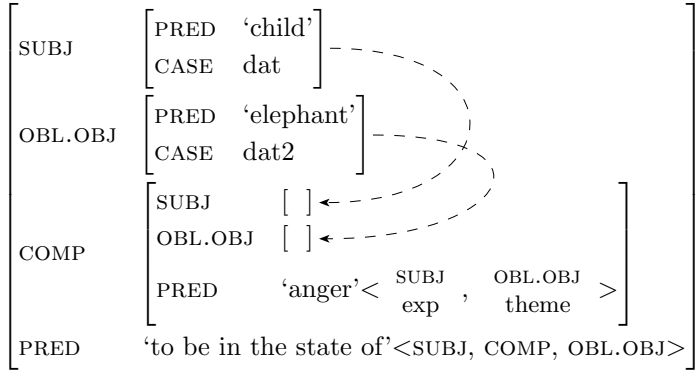
(101) a. *aa*, V. PRED 'to be in the state of' (SUBJ, COMP, (OBL.OBJ))
(↑SUBJ CASE)=dat
(↑OBL.OBJ CASE)=dat2/acc

b. *waṟ̄*, V. PRED 'to arrive at the state of' (SUBJ, COMP, (OBL.OBJ))
(↑SUBJ CASE)=dat
(↑OBL.OBJ CASE)=dat2

Observe that none of these entries contain thematic roles in their lexical entries. These are provided, as we noted above, by the nouns in the construction. In contrast to, say (101b), is the regular verb *waṟ̄* 'come' in *awan waṉṉu* 'he-N came', which has the following entry:

(102) *waṟ̄*, V. PRED 'come' (SUBJ)
theme

The way the phrase structure rule in (99) and the lexical entries in (100) and (101) work is as follows: since V is the head of $\bar{V}$ in (99), the specifications of the grammatical functions (SUBJ, OBL.OBJ, etc.) and case features (e.g. (↑SUBJ CASE)=dat) percolate up to the $\bar{V}$. Hence, the $\bar{V}$ dominating, say, *aa* (101a) is associated with (SUBJ, COMP,(OBL.OBJ)), (↑SUBJ CASE)=dat, and (↑OBL.OBJ CASE)=dat2. These grammatical functions are associated with the thematic roles by virtue of the control equations in (99). Thus, we derive the following functional structure for *kuṭṭikkə aanayooṭə ḍeeṣyam aayi* 'The child was angry with the elephant' (91a):

(103)


This treatment correctly reflects the fact that the thematic roles are inherited from the noun in the NP+V construction, while the case assigning peculiarities are inherited from the verb. An assumption implicit in

my account of *give*-compounding and the NP+V construction must now be explicitly stated. The specification of the lexical entry of a predicative word (verbs, nouns like *anger*, adjectives like *angry*) includes: (i) the definition of its meaning, (ii) the specification of the grammatical functions it takes, and (iii) the specification of the thematic roles it takes. My account assumes that any of these spacifications may be absent in an entry. Thus, the entry in (75) for the 'give' verbs leaves out the definition of the meaning, and the entries in (101) leave out the thematic roles.

The account given above correctly predicts all the peculiar properties of the NP+V construction in Malayalam. Consider, for example the NP+*aa* construction. Passivisation cannot apply to *aa* (92a) as it does not have a primary object in its lexical entry (101a). Causativisation can apply, replacing all the SUBJ entries by OBJ entries, and adding a causer subject, deriving (104) from (101ba:

(104) *aakk*, V. PRED 'cause to be in the state of'
(SUBJ, OBJ, COMP, (OBL.OBJ))
causer
(↑OBJ CASE)=dat
(↑OBL.OBJ CASE)=dat2/acc

Note that causativisation changes the subject to the object because *aa* does not already contain a primary object. Note also that, as a consequence of replacing SUBJ by OBJ, the specification (↑SUBJ CASE)=dat changes to (↑OBJ CASE)=dat, which accounts for the case preservation effect (93).

When passivisation applies to (104), we get the following lexical entry:

(105) *aakkappeṭ*, V. PRED 'be caused to be in the state of'
(INSTR, SUBJ, COMP, (OBL.OBJ))
causer
(↑SUBJ CASE)=dat
(↑OBL.OBJ CASE)=dat2/acc

The entry in (105) accounts for the sentence in (94). All the properties of anaphora and control pointed out in (95) and (96) follow from (104) and (105).

To summarise, the essential properties of the NP+V construction in Malayalam are the following. They exhibit quirky case, i.e., idiosyncratic case which is preserved under relation changing operations, on both the subject and the oblique object. The quirky cases cannot be directly associated with the thematic roles, as the same set of thematic roles

from the same noun shows different case assignments depending on the verb. It is the verb that determines case assignment, and the noun that determines thematic roles. The V that takes the NP+V construction, like other verbs, undergoes causativisation, behaving like an intransitive verb, as it does not have a primary object in its lexical entry. It does not undergo passivisation for the same reason. Once causativised, however, it undergoes passivisation as causativisation creates a primary object. All these facts are correctly accounted for by the lexical treatment of causativisation and passivisation proposed in this paper.

What is interesting about the quirky case phenomenon in Malayalam is that it demonstrates that quirky case cannot be handled by letting the thematic roles dictate the case in the lexicon. Levin (1981) and Levin and Simpson (1981), for example, propose to account for the case preservation effect in Icelandic by allowing direct links between thematic roles and case features, instead of the usual intermediary of grammatical functions:

(106) a. Structurally assigned case (no case preservation)

case_i	case_j
SUBJ	OBJ
$\theta\text{-role}_m$	$\theta\text{-role}_n$

b. Quirky case (case preservation)

case_x	case_y
SUBJ	OBJ
$\theta\text{-role}_m$	$\theta\text{-role}_n$

Passivisation, for example, would change (106a) to (107a), and (106b) to (107b):

(107) a.

case_k	case_i
GF_x	SUBJ
$\theta\text{-role}_m$	$\theta\text{-role}_n$

b.

case_x	case_y
GF_x	SUBJ
$\theta\text{-role}_m$	$\theta\text{-role}_n$

Since structurally assigned case is dependent on the grammatical function, it changes as the grammatical function changes, but the case that is linked to the thematic role remains unchanged when the grammatical function changes. This accounts for the case preservation effect in quirky subjects and objects.

Observe that Levin's proposal cannot be extended to Malayalam, as the case assignment in the NP+V constructions is determined by the

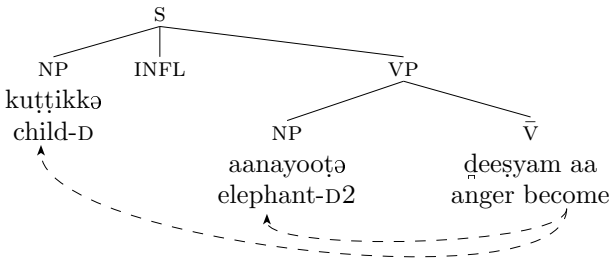
verb, and thematic roles by the NP. There is no lexical entry in these constructions such that case and thematic role can be directly linked.

Our solution to the case preservation effect crucially depends on the assumption that causativisation and passivisation are function changing rules which replace a grammatical function GF_i by another GF_j (e.g. SUBJ is replaced by OBJ in causativisation). Quirky case is encoded in the lexicon by means of equations like $(\uparrow \text{GF}_i \text{ CASE})=\text{case}_l$, and the rule that changes GF_i to GF_j also changes the equation to $(\uparrow \text{GF}_j \text{ CASE})=\text{case}_l$. Under alternate lexical treatments of passivisation and causativisation, such as the one in Marantz (1981), these processes are viewed as affecting the *features* of a lexical entry, rather than affecting the subcategorisation frame that contains the specification of the grammatical functions. Thus, Marantz uses features like [+transitive] for verbs that take objects, [+PredSR] for verbs that assign a thematic role to the subject, [+R] for raising verbs, etc. If processes like passivisation and causativisation are simply affixations that result in, say, the change of features from [+transitive, +PredSR] to [−transitive, −PredSR] (passivisation), then the facts of case preservation in Malayalam have no explanation. The feature changing approach cannot effect corresponding changes in specifications corresponding to $(\uparrow \text{GF}_i \text{ CASE})=\text{case}_l$. Therefore the Malayalam facts support the treatment of relation changing processes in terms of lexical rules which change grammatical functions in the lexical entries.

3.6.4 The NP+V Construction and the Biclausal Analysis of Causatives

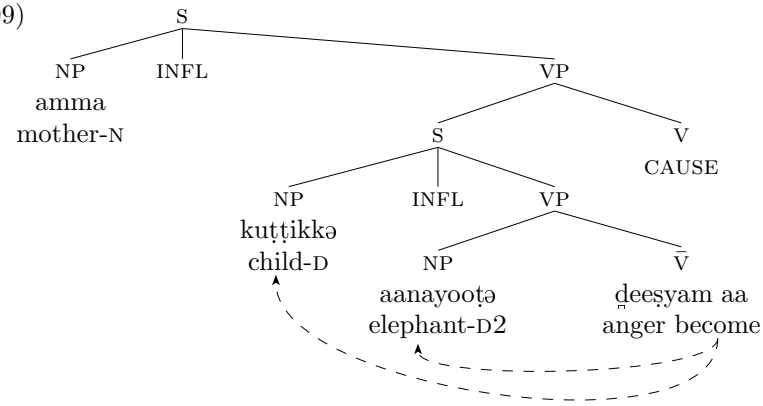
Having provided an account of the quirky case and its interaction with causatives in terms of the monoclausal analysis of causatives, let us now turn to the problems of accounting for these facts in terms of the biclausal analysis. Within GB, for example, the l-structure of (91a) will have the essential properties given in (108):

(108)



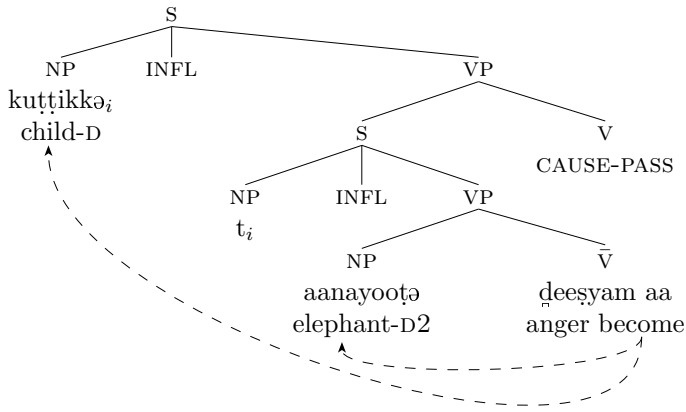
The dotted lines indicate case assignment. The causativised version of this sentence, namely (93), will have the structure in (109) under the biclausal analysis:

(109)



Consider now what happens when (109) is passivised (94). The passive morpheme, attached to CAUSE, absorbs its case assigning ability. The [NP,S] of the embedded S, namely, 'child' is moved from the embedded clause to the matrix [NP,S] position. The resultant structure would be as follows:

(110)



We are now forced to say that the embedded verb assigns case to the matrix subject, which is clearly an absurd result. One may explore the possibility of saying that *aa* 'become' somehow belongs to the matrix clause along with CAUSE. Such an approach, while providing a solution to the problem presented by (110), endangers (109), as we will now have to say that the matrix verb case assigns the embedded object ('elephant-D2'), which is equally undesirable. Therefore I conclude that there is

no solution to the phenomenon of quirky case in Malayalam under the biclausal analysis of causatives.[17]

3.7 Conclusion

We showed, in this paper, that processes like passivisation and causativisation are operations on the functional structure (f-structure in LFG and l-structure in GB), and not on the configurational structure, thereby providing support for the hypothesis that grammatical functions such as subject and object are primitive notions not derivable universally from the configurational structure. If our claim is right, then it is undesirable to collapse the configurational operation of move *wh* with the functional operation of move NP as in GB.

In LFG, the processes of passivisation and causativisation are handled in terms of lexical rules that change the specification of grammatical functions in the lexical entries. In Relational Grammar, on the other hand, these are function changing transformational operations in syntax. The approach to these processes in nonconfigurational languages proposed in GB is a variant of the treatment in Relational Grammar in that it employs function changing operations (assume a GF, or move NP at l-structure) in the syntactic component. We argued in this paper for the position taken in LFG.

[17]It may be mentioned that the phenomenon of quirky case itself is a source of embarrassment to the GB theory which holds that verbs do not assign case to the subject, as verbs do not govern them. In Malayalam, as well as in languages like Icelandic (Andrews (1982), Levin (1981), Levin and Simpson (1981)), the case idiosyncratically assigned by the verb to the object is preserved on the subject of the passive form. Since it is the verb, not the INFL that determines the case of the subject in these instances, the theory will have to allow case assignment by the verb to the subject. One may entertain the possibility of case assigning before NP movement, but this solution raises several problems such as: If the [NP,VP] already has case, why should it move to the [NP,S] position? Why doesn't the passive morpheme absorb the case of the verb? How is the case conflict resulting from the assignment of case by the verb and the INFL resolved? Further, if the NP gets case prior to movement, its trace has case as well, and therefore the distinction between anaphors (NP trace = un-case-marked trace) and variables (*wh* trace = case-marked trace) becomes lost. Therefore, case assignment to the object before the NP is moved to the subject position is not a viable solution either.

Similar difficulties arise if we allow the quirky case on the subject to be base generated, accounting for the impossibility of other cases by a case filter attached to the thematic role by the verb (Simpson (1983)). If GB allows the base generation of case in the subject position, then case marked lexical anaphors (reflexives, reciprocals) and case marked pronouns can occur in this position without being governed. Such anaphors and pronouns will not obey the binding conditions that require anaphors to be bound in their governing category, and pronouns to be free in their governing category. The result would be the prediction that such anaphors need not have antecedents at all, which I take to be an incorrect prediction.

Intransitive subjects become objects under causativisation in Malayalam, and therefore causativisation cannot be a syntactic operation in GB, given the projection principle that has the effect of forbidding movement into the VP. There are two solutions proposed for the causative construction in Japanese by Chomsky (1981), neither of which involves changing a subject into an object. These solutions involve the use of a biclausal structure for the causative construction. We showed that the biclausal analysis of causatives in Malayalam leads to serious difficulties in GB for the statement of control and anaphora, as well as for case assignment, passivisation and disjoint reference. Therefore, within a theory that assumes the projection principle, the causative construction in Malayalam must be monoclausal at all levels of representation, arrived at through a lexical operation.

The facts from Malayalam causativisation, in fact, suggest that the projection principle may turn out to be incorrect. Given the binding conditions in GB, the s-structure of Malayalam causatives must be monoclausal. The universality of LF representations, however, demands that these constructions are biclausal at LF. In other words, given the projection principle, GB has no analysis for Malayalam causatives.

Even within a theory that does not assume the projection principle and allows processes that combine two clauses into a single clause, the biclausal analysis raises problems of a serious nature with respect to subcategorisation and case assignment. First, causativisation feeds the lexical process of *give*-compounding, and must therefore be treated as a lexical rule. Even if *give*-compounding were to be handled as a syntactic process under some analysis, the biclausal analysis would violate the most uncontroversial assumptions about subcategorisation in any theory: it would force us to subcategorise 'give' in Malayalam for an embedded subject argument.

We also found that the transformational biclausal treatment of causatives leads to strange consequences such as an embedded verb case marking a matrix object, or a matrix verb case marking an embedded object. Once again, these are undesirable results in any theory, and therefore we conclude that causativisation in Malayalam is monoclausal, and cannot therefore be accounted for in terms of a transformational operation of move NP.

Thus, causativisation in Malayalam provides evidence for lexical operations on primitive grammatical functions, thereby also providing evidence against the collapsing of the configurational processes grouped under *wh* movement with the lexical functional processes grouped under move NP.

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4

On the Nature of Derived Nominals

Malka Rappaport

4.1 Introduction

In this paper, I will provide an analysis of derived nominals which seeks to answer the following questions: How is the relationship between a verb and its derived nominal to be expressed? How is the systematic absence of derived nominals corresponding to certain sentence types to be accounted for? Can we identify a property or set of properties distinguishing nouns from verbs which will account for the observed differences? I will suggest that the relationship between a verb and its derived nominal is to be represented by shared argument structure, and that this shared argument structure does not necessarily entail shared syntactic structure. I will further suggest that nouns and verbs differ crucially in the grammatical functions made available to them for the purposes of mapping arguments onto syntactic structure, and that there are differences in the linking conventions which govern the association of grammatical functions to the arguments of both categories.

In the first section of this paper, I briefly summarize the "Remarks" account of derived nominals, and review an attempt to answer some of the questions posed above in the framework of the government and binding theory. In the second section I show how the theory developed in the framework of this volume can account for a wide range of the properties of derived nominals, given minimal assumptions. In the third section I provide a preliminary account of control in nominals, and show how many of the properties of control in nominals follow from the assumptions made in this paper together with the theory of control presented in Bresnan (1982b).

Lexical Semantics in LFG.
Miriam Butt and Tracy Holloway King (eds.).

4.1.1 The "Remarks" Account

One of the motivations for the postulation of a distinction between deep and surface structure in generative grammar was that such a distinction allowed the grammar to express the fact that there may be more than one syntactic realization associated with a single argument structure of a predicate. In the *Aspects* model, active sentences and their passive counterparts share a single deep structure which represents, essentially, the logical relations obtaining between the constituents, and it is over this structure that the shared selectional restrictions are stated.

As is well known, in early generative theory the only means the grammar had at its disposal to express the relation between a sentence and its nominalized counterpart was the postulation of a nominalizing transformation. In "Remarks on Nominalization" Chomsky showed that assigning a common source for the related sentential and nominal constructions obscured the syntactic differences between the nominal and verbal categories. Shifting the burden of expressing the nominal-verbal relationship to the lexicon, Chomsky proposed that verbs and their derived nominals share lexical entries which are neutral with respect to lexical category. In that framework, argument structure is directly represented in syntactic structure, and so, to say that a verb and its derived nominal share argument structure was to say that they had isomorphic syntactic structures. A single projection rule could then map the AGENT argument of *destroy* onto the appropriate syntactic positions in both nominals and sentential constructions through the mediation of "generalized grammatical relations" introduced with the X-bar Theory. The generalized grammatical relations were defined over structure without reference to category, and thus assumed structural parallelism between the subject of sentences and noun phrases as well as between the object of sentences and noun phrases.

In "Remarks" Chomsky also noted that certain sentence types systematically lack derived nominal counterparts. This is true for sentences which have undergone Raising to Subject or Object, Dative Shift, Tough Movement, etc. These are sentences which do not directly reflect the logical relations obtaining between the constituents. Transformations responsible for the deformation of the underlying representations which do reflect these relations were assumed to be restricted to the domain of the sentence, and this provided an explanation for the systematic gaps mentioned above. Notice that this left unexplained *why* these transformations should be excluded from the domain of noun phrases. Is there a property of nouns from which these restrictions follow?

The only transformation which appears to apply within nominals is the passive (as in *the city's destruction by the enemy*). But it was shown that in non-derived nominals we have structures such as *the building's height* and *the play by Shakespeare* which could not be argued to be derived from transformed sentences. Passive was then decomposed into the processes of NP Preposing and Agent Postposing, whose structural descriptions were met both in noun phrases and in sentences.

The main features of the analysis may be summed up as follows:

a. Similarities between sentences and corresponding NPs are attributed to lexical entries which head nouns and verbs share.
b. Syntactic differences between them follow from the fact that they are generated by separate rules of the base. Transformations are sensitive to lexical category; some apply within NP and others do not.
c. Argument structure is directly represented in (deep) syntactic structure. The mapping between argument structure and syntactic structure is mediated by structurally encoded grammatical relations. Structural parallelism is therefore necessary for the expression of cross-categorial selectional generalizations (cf. Amritavalli (1980)).

4.1.2 Kayne's Analysis

Consider now how this analysis can be adapted into current transformational theory. Transformations involving complex operations have been broken down into primitives, and the differences between the various movement transformations have been factored out. What remains is a single unrestricted rule schema: Move Category. Restrictions on movement are not encoded into the rule itself, but rather in well-formedness conditions on the output (the ECP, the Case Filter, etc.). In this theory, Passive and Raising to Subject are virtually identical. Both involve movement from a non-case-marking θ-position to a case-marking non-θ-position. One cannot now merely stipulate that NP Preposing operates within nominals and Raising to Subject does not. In order to rule out Raising to Subject in nominals, one must formulate principles which render the output of such movement ill-formed.

Following Oehrle (1976), the double object construction is taken to be base generated, and not a result of NP movement. Raising to Object constructions are considered to involve exceptional case marking of the embedded infinitival subject from the matrix verb, not any kind of NP movement. Therefore, in order to account for the systematic absence of nominals such as those in (1)

(1) a. *Herbie's belief of Louise to be a great singer

b. *Herbie's gift of Louise of a bouquet

one must look not for restrictions on NP movement, but rather for restrictions on the application of *of*-insertion.

There have, in fact been some attempts to deal with these questions within the GB framework. I will now briefly consider the analysis presented in Kayne (1981), which is based on the following assumptions:

a. Derived nominals have deep syntactic structures which are isomorphic to those of their corresponding verbal constructions.
b. NP movement is restricted within NP as it is within sentences. Ill-formed nominals are ruled out by general principles such as the ECP and the Case Filter.
c. Nouns differ crucially from verbs in two respects:
   i. Nouns do not assign Case.
   ii. S is an absolute barrier to government for N; nouns cannot govern across an S boundary.
d. *Of*-insertion depends on government; *of* may be inserted only between an N and an NP which it governs.

The systematic absence of nominals corresponding to raising to subject constructions is accounted for by assumption (c.ii.) and the ECP. By the ECP, the trace in the subject position of the complement in (2) must be properly governed.

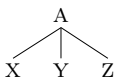
(2) $[[_{NP}$ Herbie's $]_i$ certainty $[_S$ $[t]_i$ to choose Louise $]$ $]$

But, by (c.ii.), the head noun may not govern across S. The trace remains ungoverned and the construction is ruled out by the ECP. There are no nominals corresponding to raising to object constructions such as the one in (3), since by (c.ii.), the head noun does not govern the NP in the subject position of the complement. By (d), *of* may then not be inserted, the subject of the complement cannot receive Case, and the construction is ruled out by the Case Filter.

(3) Herbie believes $[_S$ Louise to be a great singer. $]$

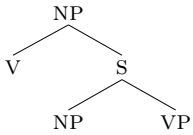
Kayne develops a notion of UNAMBIGUOUS PATH, and claims that for a relation of government to hold between two constituents, there must be an unambiguous path between them. From his definition of unambiguous path it follows that no constituent in a ternary branching structure such as (4) can govern any of the others.

(4)



It follows then that the double object construction cannot have the structure (4) at the lavel at which Case is assigned, since a verb may assign Case only to a constituent which it governs. Kayne goes on to claim that the most plausible structure we can assign the double object construction is (5):

(5)



Presumably, the verb assigns Case across the S boundary to the first complement. The second complement receives case from an abstract verb which Kayne takes to be somewhere between *have* and *be*. He can now account for the ungrammaticality of the following:

(6) a. *Herbie's gift of a book by Louise
(cf. Herbie was given a book by Louise.)
b. *Herbie's gift of Louise of a book
(cf. Herbie gave Louise a book.)

(6a) would have the structure

(7) [[Herbie's]$_i$ gift [$_S$ [t]$_i$ a book by Louise]]

The S boundary prevents the head noun from properly governing the trace, and this nominal is then ruled out by the ECP. (6b) would have the representation

(8) Herbie's gift [$_S$ Louise a book]

The S boundary between *gift* and *Louise* prevents the former from governing the latter, and so *of* may not be inserted. *Louise* has no way of receiving Case, and the nominal is ruled out by the Case filter.

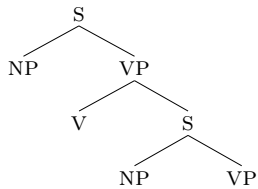
There are, in fact, many verbs which allow two complement types and which lack derived nominals with both of them. Kayne's claim is that in each case the two complements are embedded under an S node, and the absence of nominals with both complements follows from the assumptions above. The following are some representative examples:

(9) a. The engineers drained the pond of water.
The engineers drainage of the pond of water
b. Mary compelled her husband to quit his job.
Mary's compulsion of her husband to quit his job
c. She permitted John to buy her a present.
Her permission of John to buy her a present

d. They presented Mary with a cake.
Their presentation of Mary with a cake

Giving (9b) and (9c) a representation such as that in (10) is implausible for theory internal reasons within the GB framework. In that framework, by the Projection Principle, a verb appears in a syntactic frame at every level of representation which reflects the argument structure of the verb. Thus to provide (9b) with a structure in which the verb takes a single sentential complement is to claim that the verb *compel* is analogous to a raising to object verb like *believe* which selects only a sentential complement.

(10)



But, as (11) illustrates, the verb *compel* appears to select for a matrix NP.

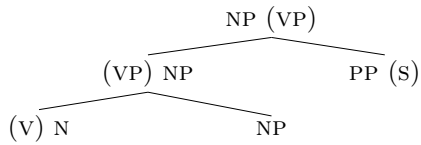
(11) *John compelled there to be food on the table.

The greatest problem for Kayne's analysis is the existence of derived nominals with two complements:

(12) a. John's presentation of a medal to Mary
b. The general's command to the troops to leave
c. The sale of missiles to Iran
d. His drainage of the water from the pond

By Kayne's reasoning, these double complements cannot be jointly embedded under an S node, nor can they be assigned a ternary branching structure, in the verbal or nominal constructions. They must have a representation something like (13).

(13)



We now have two representations for the double object construction (and any construction with two complements) — (5) and (13). But there is no syntactic evidence for either representation, aside from the fact that those which are assigned (5) don't have nominals with both complements, and those assigned (13) do. Kayne speculates that the second

complement in (13) may be "less closely bound to the verb"; it is a complement, but not an argument. This distinction is at best vague. In what sense can we say that the GOAL in (14a) is an argument, but not in (14b)? Its presence is obligatory in either case.

(14) a. He handed Mary a book.
His handing of Mary of a book
b. He handed a book to Mary.
His handing of a book to Mary
c. *He handed a book.
His handing of a book

An obvious generalization which Kayne's analysis fails to capture is that in the grammatical nominals of (12) each argument appears as the object of a preposition which reflects its thematic role, while this is not the case for the ungrammatical nominals of (9). For example, in (9d), *Mary*, the GOAL, does not appear as the object of the preposition *to* which canonically marks GOALs, but in (12a) it does.

Consider (12b) once again.

(12) b. The general's command to the troops to leave

Under the assumptions of the X-bar theory, since the noun *command* has the same argument structure as the verb *command*, it shares the same syntactic structure. But the verbal construction with the corresponding syntactic structure is ungrammatical:

(15) a. *The general commanded to the troops to leave.
b. *The general commanded to leave to the troops.

This is a pattern displayed by a class of verbs, including *promise, warn, order, permit, instruct, advise* and others, all of which signify some oral or written transfer of communication. In the grammatical forms of the verbal constructions, the GOAL may not be expressed as the object of the preposition *to*, and must appear as a direct object. In the corresponding nominals, however, the GOALs, if expressed at all, *must* appear as the objects of *to*.

(16) a. Herbie promised Louise to write.
b. Herbie's promise to Louise to write

(17) a. Seymour permitted Irving to take a break.
b. Seymour's permission to Irving to take a break

What emerges, then, as a fundamental problem for this analysis is the fact that it takes derived nominals to have SYNTACTIC structure which is isomorphic to that of the corresponding verbal constructions. If the

nominals *promise* and *permission* have syntactic complement structure which is identical to that of the related verbs, and *of*-insertion is purely structurally conditioned, there is no way to derive the nominals (16b) and (17b) or to prevent the ungrammatical nominals in (18).

(18) a. *Herbie's promise of Louise to write
b. *Seymour's permission of Irving to take a break

Amritavalli (1980) has pointed out the consequences of the X-bar assumptions for the analysis of nominals corresponding to the "emotive" verbs. The verbs of this large class, including *amuse, amaze, astonish, thrill, shock, bore, delight, interest, frighten* and many more systematically lack nominals corresponding to their active forms:

(19) a. The miracle amazed the people.
b. *The miracle's amazement of the people
c. The people were amazed at the miracle.
d. The people's amazement at the miracle

All these verbs have objects which may be characterized as EXPERIENCERs. The traditional analysis assumes that these nominals derive their syntactic structure from that of the related verbs. Under that analysis, we would have to assume that *of*-insertion is prevented from applying in case the object is an EXPERIENCER, thus rendering NP movement obligatory. But this approach admits only structural explanations for the failure of *of*-insertion to apply, since the rule is purely structurally conditioned. Thus, (19a) would have to be assigned a syntactic structure which is different from that of (20),

(20) The Romans destroyed Carthage.

since *of*-Insertion may apply to the nominal form of (20), yielding (21), but not to the nominal of (19a).

(21) The Romans' destruction of Carthage

We will return to a fuller analysis of these predicates in the next section. Here it is sufficient to note that these nominals cast doubt on the claim that shared argument structure entails isomorphism of syntactic structure, and that this in turn casts doubt on the claim that argument structure is directly represented in deep syntactic structure.

Before we go on to my own analysis of derived nominals, let us take a brief look at the relevant aspects of the theory presupposed.

4.2 The LFG Approach

The theory of LFG posits a level of predicate argument structure, autonomous from syntactic constituent structure. Each predicate is associated with zero or more arguments on which it imposes semantic selection. Active and passive verbs share selectional restrictions on their respective associated NPs precisely because they share identical argument structures over which semantic selection is stated. In this theory, we assume that a derived nominal inherits the argument structure of its corresponding verb (subject to modifications in certain cases, as we shall see). This accounts for the shared selectional restrictions which these verbs and nominals impose on their associated NPs. The problem then becomes not one of constraining NP movement or *of*-insertion, but of formulating rules of argument structure inheritance from verbs to nouns, and of determining how the association of members of a nominal's argument structure to syntactic positions differs from that of the association of members of a verb's argument structure to syntactic positions.

4.2.1 Mapping

Let us first look at how arguments of a verbal predicate are mapped onto the syntactic representations of sentences in which it appears. In the theory we are considering, the mapping between argument structure and syntactic structure is mediated by grammatical functions such as SUBJ, OBJ and COMP. The functions are taken to be universal; the mapping between these functions and constituent structure is language particular. Languages may encode grammatical functions configurationally, in terms of precedence and dominanceindexphrase structure!dominance, or they may use morphological devices such as case and agreement to encode grammatical functions. In English, for example, the grammatical functions SUBJ and OBJ are configurationally encoded, the argument bearing the SUBJ function is realized as "the NP immediately dominated by S ([NP,S])" and the argument bearing the OBJ function is realized as "the first NP immediately dominated by VP ([NP^1,VP])". See Mohanan (this volume) for a description of the way grammatical functions are encoded in Malayalam in terms of case.

Thus we find that the lexical entry of a verb has two autonomous levels of representation, one of predicate argument structure and one of grammatical function assignment, as illustrated in (22).

(22) *eat*: (eater, eaten)
SUBJ OBJ

The theory also assumes the existence of lexical rules which are interpreted as redundancy rules mediating related lexical items. Correspond-

ing to the two levels of representation in a lexical entry, we may identify two kinds of lexical rules. The first is a rule such as passive, mediating between lexical items which share the same thematic structure. Thus, the rule of passive, formulated as in (23), relates the lexical entries of the verbs *eat* and *eaten*.

(23) OBJ $\longrightarrow$ SUBJ
SUBJ $\longrightarrow$ { $\emptyset$ / OBL_{AG} }[1]

Eat and *eaten* both have the argument structure of (22), and the rule of passive describes an alternation in the assignment of grammatical functions to the arguments of that predicate argument structure.

The second kind of rule alters the predicate argument structure itself, entailing as well a change in the assignment of grammatical functions. Causativization is a rule of this second sort. It relates a given verb with n arguments to a verb with n+1 arguments, the newly introduced argument being the CAUSER. See Mohanan (this volume) for an extensive discussion of the rule in Malayalam, and Grimshaw (1982) for a description of the rule in French. The addition of a new argument to an argument structure entails also a change in the grammatical functions assigned to the arguments. Many of the changes in the assignment of grammatical functions are predictable from general constraints governing the association of grammatical functions with arguments. (See Mohanan and Grimshaw for discussion.)

Lexical rules such as passive and causative cannot be stated over a representation of thematic structure since, among other things, these rules make reference to subjects and objects regardless of the semantic roles borne by the subjects and objects. Nor can these rules be stated in terms of structurally determined NPs. Mohanan (this volume) has shown that in a case marking language such as Malayalam, the functions SUBJ and OBJ cannot be reduced to case markings; there is no one-to-one correspondence between grammatical function and case. Marantz (1980) has shown that in a language such as Yindjibarndi which has a very high degree of freedom of word order, passivized NPs cannot be structurally determined and must be lexically determined. If we wish to give a universal characterization of rules such as passive, and explain the invariant properties of the construction in various languages, the rule must be stated over a representation of grammatical functions.

[1] $\emptyset$ is a lexical symbol used to represent an argument which is present in the argument structure of a predicate but syntactically unrealized. It is interpreted as being existentially bound. See Bresnan (1982a) for details. OBL_{AG}, as will be explained below, is the oblique function which is labelled with the semantic type of argument with which it is compatible.

There are pervasive generalizations concerning the association of arguments with their syntactic expressions based on the semantic roles which those arguments bear, as has often been noted by case grammarians (for a recent discussion of the issue, see Marantz (1981)). For example, in nominative-accusative languages, in the morphologically unmarked cases, AGENTs are associated with the SUBJ function, and PATIENTs with the OBJ function.

Since throughout the paper we will be making reference to notions of thematic roles, let us pause a moment to describe the significance the labels we use for these roles have in the theory. It is clear that every argument of a predicate bears some semantic relation to the predicate by virtue of which it is considered an argument of that predicate. It is not clear that every argument bears a role associated with a natural class of arguments which is semantically characterizable. To the extent that there are generalizations to be made in the grammar about natural classes of arguments characterized by some semantic feature, the use of thematic role labels is justified. When we identify an argument of a predicate with a label such as AGENT, THEME, GOAL or EXPERIENCER, we are not claiming that the label exhaustively characterizes the semantic relation borne by the argument to the predicate. For example, the arguments of the verb *kill* may perhaps best be identified as a KILLER and a KILLEE. Nonetheless, we may also say that one argument bears the role of AGENT and the other the role of PATIENT. We view these thematic labels as partial features of more fully specified semantic characterizations. When we say that the KILLER is an AGENT, we mean that with respect to certain linguistic generalizations the KILLER argument patterns with other arguments which share a certain semantic feature which we label AGENT. We might then say that the KILLER bears the feature [+agent]. Since we view these labels as kinds of features, it might be sufficient, for the purposes of one linguistic generalization to identify an argument as, say, THEME, but for the purposes of another generalization, it might be necessary to further specify the semantic role of the argument as, say, [+affected] in order to isolate a subclass of themes.

In the discussion that follows, we will make use of fairly traditional thematic role labels. For some discussion of these notions, see Jackendoff (1976) or Amritavalli (1980).

The thematic roles which arguments bear are significant mainly for the aforementioned generalizations concerning the association of grammatical functions with arguments, what we will call LINKING CONVENTIONS following Ostler (1979). One of the conclusions of this paper will be that one of the significant ways in which nouns and verbs differ is

precisely in the linking conventions which are made available to the arguments of the different categories.

Following the insights of Ostler (1979) on grammatical versus semantic linking of arguments, we will make a distinction between the grammatical functions SUBJ, OBJ, and OBJ2, which are characterized as semantically unrestricted and the oblique grammatical functions, each of which may be assigned to arguments of a particular semantic type.

The semantically unrestricted nature of the SUBJ, OBJ and OBJ2 functions may be seen in a number of ways. First, there appear to be pairs of verbs which share thematic structure, but which nonetheless differ with respect to the grammatical functions assigned to the individual arguments.

(24) a. Fred fears the prospect of failure.
b. The prospect of failure frightens Fred.
c. I like a job well done.
d. A job well done pleases me.

Each verb in the above examples is a dyadic predicate which is associated with one argument which is interpreted as an EXPERIENCER and one which is interpreted as a thing EXPERIENCED. Yet, in examples (24a) and (24c), the EXPERIENCER is assigned the SUBJ function, and in examples (24b) and (24d) the EXPERIENCER is assigned the OBJ function.

Verbs of possession also display this kind of alternation. There are verbs in which the THING POSSESSED is expressed as SUBJ, as in (25a), and verbs in which the POSSESSOR is expressed as SUBJ, as in (25b).

(25) a. The book belongs to John.
b. John owns the book.

Second, as we have seen, a given predicate may have more than one way to assign grammatical functions to its arguments. For example, there are many rules in the languages of the world which effect the exceptional linking of an argument to the OBJ function. In English, such a rule is the rule of Dative Shift. The arguments of the predicate in (26) may be assigned the grammatical functions in the unmarked manner (26b), and this gives rise to sentences such as (26c).

(26) a. *sell*: (agent theme goal)
b. SUBJ OBJ OBL_{GO}
c. Fred sold the car to Fern.

But there is an alternate, somewhat marked way to assign the functions to the arguments of the predicate. In particular, the GOAL may be assigned the OBJ function, in which case the THEME is assigned OBJ2, giving rise to the double object construction.

(27) a. *sell*: (agent theme goal)
b. SUBJ OBJ2 OBJ
c. Fred sold Fern the car.

In some languages of the world, the exceptional linking of an argument to the OBJ function is a productive process. For example, in many Bantu languages, the addition of an applied affix may signal the exceptional linking of arguments bearing the BENEFACTIVE, LOCATIVE, INSTRUMENTAL or MALEFACTIVE roles to the OBJ function.

Just as there are processes which exceptionally link an argument to the OBJ function, the affixation of the passive morpheme dictates the assignment of the SUBJ function to the argument which in the related active form is assigned the OBJ function, as illustrated in (28).

(28) a. $sold_{pass}$: (agent theme goal)
b. $\{\emptyset,\text{OBL}_{AG}\}$ SUBJ OBJ_{GO}
c. The car was sold to Fern by Fred.

Third, the SUBJ and OBJ functions may be used to express a *grammatical* relation which obtains between an argument and a predicate in cases where there is no *thematic* relation obtaining between them. In (29),

(29) Herbie believed Louise to be giving a concert.

Louise bears the grammatical relation of OBJ to the verb *believe*. It also bears the thematic relation AGENT, but to the embedded verb *give*, not to the matrix verb *believe*. Likewise, in (30)

(30) Louise appeared to be throwing a ball.

Louise bears the grammatical relation SUBJ to the verb *appear*, but the thematic relation of AGENT to the verb *throw*, not to the matrix verb.

Finally, we find pleonastic elements such as *it* and *there* bearing the SUBJ and OBJ functions, as in (31).

(31) a. We believe there to be good reason to go.
b. It was believed that John had to leave.

Arguments which are not linked to one of the semantically unrestricted functions are linked to the range of oblique functions which we call semantically restricted. In the notation of Bresnan (1982a), the oblique functions are indexed according to the semantic types of arguments to which they may be assigned. For example, a verb may subcategorize for an OBL_{GO} function, and this function may be assigned to an argument bearing the GOAL role, while the $\text{OBL}_{BENEFACTIVE}$ may be assigned only to an argument bearing the BENEFACTIVE role.

Among other things, the semantically restricted nature of these functions explains why we do not find pleonastic elements linked to oblique functions.

(32) a. *John VERBED on there to be a riot.
b. *Mary VERBED with it to be certain that...

There may be more than one syntactic realization for an NP bearing an oblique function. For example, the verb *put* subcategorizes for an $\text{OBL}_{LOCATIVE}$, and this argument may be realized as the object of the prepositions *under, in, on*, etc., with an accompanied variation in meaning in each case.

(33) a. He put the book on the table.
b. He put the book in the closet.
c. He put the book under the table.

On the other hand, even when a particular oblique function is compatible with more than one syntactic realization, a lexical item may require that its oblique function be expressed in one particular way. Consider for example, the predicates in (34), drawn from the class of emotive verbs mentioned in the previous section.

(34) a. John was amused {with, at} that.
b. John was annoyed {with, at} that.
c. John was disgusted {with, at} that.

The arguments expressed as prepositional objects in these sentences all bear the role which we will call EXPERIENCED. An EXPERIENCED is a non-agentive cause of an experience. As these examples show, this role is compatible with a number of prepositions.[2] Nonetheless, some of these predicates idiosyncratically select a particular preposition for the expression of the EXPERIENCED.

(35) a. John was interested {in,*at} that.[3]
b. John was bored {with,*at} that.

In this section, we have taken a brief look at how arguments of a verb are mapped onto their syntactic expressions through the mediation

[2]In fact, the selection of the preposition depends on subtle semantic considerations, as the following examples reveal:

(i) John was amused {with, ?at} the toy.

(ii) John was amused {at, ?with} the sight of Mary falling.

I leave it to future research to determine the exact nature of these subregularities.

[3]It is highly unlikely that a principled semantic account will be found for the idiosyncratic selection of all prepositions. The idiosyncratic information may be supplied by constraint equations in the lexical entries of the predicates.

of grammatical functions. The theory posits an autonomy between argument structure and grammatical function assignment. We have also seen that lexical items with related or identical predicate argument structures may be related by lexical rules which alter grammatical function assignment. In the next section, we focus on the principles governing the mapping of arguments from a nominal's argument structure to their syntactic expressions. These principles will in turn help explain the systematic gaps in the correspondences between sentences and related derived nominals. We will also ask what kind of lexical redundancy rule relates the nouns to the corresponding verbs, whether or not it is the same kind of rule which relates the lexical entries of passive participles to their active counterparts and the two entries of verbs which participate in the dative alternation.

4.2.2 Linking in Nominals

The following are some of the salient properties of derived nominals which we would like our analysis to account for:

a. Prenominal NP is always thematic.
   i. No pleonastic elements
   ii. No raising to subject
b. Post nominal NP is always thematic (no raising to object).
c. Post nominal NPs always appear as the object of a preposition which expresses its thematic role.

We will assume that in the unmarked case, a derived nominal inherits the argument structure of its related verb. This means that the noun will share the same number and types of arguments as the related verb, and this will account for the shared selectional restrictions which related nouns and verbs impose on their associated NPs.

Recall now that in the theory we are considering, shared argument structure does not entail shared syntactic structure. The mapping between argument structure and syntactic structure is mediated by the assignment of grammatical functions. It is also a fundamental tenet of LFG that there need not be a one-to-one correspondence between grammatical functions and syntactic expression. Given this, we may ask the following question: Is it the case that the prenominal and postnominal NPs bear the SUBJ and OBJ functions respectively, differing only in syntactic expression from the SUBJ and OBJ of sentences? Or is it the case that derived nominals share only argument structure with their corresponding verbs and in fact differ in their grammatical function assignments?

When we consider the role which the SUBJ and OBJ functions play in this theory, it will become clear that many of the properties of derived nominals follow from the assumption that nominals do not make use of the SUBJ and OBJ functions, and have at their disposal only the POSS function and the range of oblique functions.

Recall from the previous section that the OBJ function is a semantically unrestricted grammatical function. One consequence of this is that arguments normally linked to oblique functions may under certain circumstances be exceptionally linked to the OBJ function. If the OBJ function is unavailable to the arguments of nominals, then this kind of exceptional linking will be unavailable as well. When we look at the data, we find that this is in fact the case.

Consider first the way in which complements of a dative predicate, with the argument structure in (36) are mapped onto syntactic structure.

(36) *sell*: (agent theme goal)

We have already seen that in the verbal constructions either the THEME or the GOAL may be assigned the OBJ function. In the first case, a transitive construction arises, and in the second, a ditransitive construction. In nominals, under our present assumptions, the arguments may be linked only to the appropriate oblique functions (we will return later to the prenominal position). Let us assume then that there is an OBL_{THEME} function, and arguments assigned that function are realized as objects of the preposition *of*. Returning then to the nominalized version of the predicate in (36), the THEME is assigned the OBL_{TH} function and the GOAL the OBL_{GO} function. This is schematically represented in (37).

(37)	argument structure:	*sale*: (agent	theme	goal)
	gram. func. assignment:		OBL_{TH}	OBL_{GO}
	syntactic expression:		PP [of___]	PP [to___]

Since the assignment of oblique functions to arguments is semantically restricted, there is no alternative to the assignment represented in (37). Thus, a nominal such as the one in (38) is ruled out because in that example, *Louise*, the GOAL, has been assigned the incompatible OBL_{TH} function.

(38) *Herbie's gift of Louise of a bouquet

This is the case for the nominalization of all predicates which participate in the dative alternation.

In the *command*-type predicates, discussed in section 1.2, the GOAL is obligatorily assigned the OBJ function in sentential constructions (these verbs are obligatorily transitive). In nominals, this function is unavailable. There is no nominal (39b) corresponding to (39a), because the

GOAL may not be assigned the incompatible OBL_{TH} function, and, if at all expressed,[4] must be assigned the OBL_{GO} function.

(39) a. The general commanded the troops to evacuate.
b. *The general's command of the troops to evacuate
c. The general's command (to the troops to evacuate)

Likewise,

(40) a. Randy's instructions to Deborah to meet him at two
b. Susan's advice to Amy to get ready
c. The warning to the residents to leave their homes
d. The order to the troops to attack

We also immediately have an explanation for the following contrasts:

(41) a. John fled the city.
b. *John's flight of the city
c. John fled from the city.
d. John's flight from the city

(42) a. John wrote the British Museum.
b. *John's writing of the British Museum (wrong reading)
c. John wrote to the British Museum.
d. John's writing to the British Museum

(43) a. The soldiers entered the city.
b. *The soldiers' entry of the city
c. The soldiers entered into the city.
d. The soldiers' entry into the city

Notice that these verbs take single complements so that there is no reason, on Kayne's account, to introduce an embedded S node to prevent a ternary branch and the insertion of *of*.

It appears then that in the case of derived nominals the object of the preposition *of* does not necessarily correspond to the direct object of the related verb, but rather to the argument which bears the role of THEME. The THEME may appear in the nominal as the object of *of* regardless of its syntactic expression in its verbal construction. Thus, alongside nominals such as *the destruction of the city*, where the object of *of* corresponds to the direct object of the related verb, we have nominals such as the ones in (44) where the object of *of* corresponds to the SUBJECT of the related verb.

[4] A question arises concerning the optionality of expression for all the arguments of a nominal. Are they not assigned a grammatical function, or are they linked to $\emptyset$, the null grammatical function? I will not pursue the question here.

(44) a. The arrival of the goods
b. Bill's impression of John

Notice also that the subject of a verb such as *destroy* cannot appear as the object of *of* in the derived nominal, since it is not a THEME,

(45) a. *The destruction of the Romans' (where Romans = destroyers)
b. *The destruction of the city of the Romans'

Since we are analyzing the objects of *of* as bearing the OBL_{TH} function, we can explain why the argument of an embedded complement never appears as the object of *of*. A nominal such as

(46) *Randy's belief of Deborah to be talented

is ruled out since *Deborah* bears no thematic relation to the predicate. We will return in section 3.1 to other principles of the theory which rule out patterns of raising in nominals.

Let us now take a closer look at the class of emotive predicates briefly discussed in section 1.2. Recall that these verbs systematically lack nominals corresponding to their active forms.

(47) a. The miracle amazed the people.
b. *The miracle's amazement of the people
c. The movie shocked the audience.
d. *The movie's shock of the audience

Now notice that the verbs of this class, which we have characterized as taking EXPERIENCER objects, are potentially ambiguous.

(48) Herbie amused Louise.

(48) is ambiguous between a reading in which Herbie is interpteted as an AGENT, intentionally amusing Louise, and one in which the element of volition is absent, and Herbie may be amusing Louise while he is unaware of her presence. The emotive verbs with their agentive readings not only lack nominals corresponding to their active forms, but also lack nominals corresponding to their verbal passive forms.

(49) a. *Amy's fright by the scarecrow
b. *The class's boredom by the lecturer
c. *Deborah's amusement by Randy
d. *Sam's annoyance by Dave

I would suggest that we are dealing here with a generalization concerning argument structure inheritance. There are no nouns which inherit the argument structure (50) from the related verb.

(50) (AGENT EXPERIENCER)

Perhaps another way of stating the generalization is to say that all nouns related to verbs of this class are stative.

We predict then that the nominals in (51), in which only the EXPERIENCER is expressed, do not have the argument structure in (50), but rather that of the non-agentive reading. This prediction is borne out as seen by the fact that the adverbial phrases in (51), which are incompatible with non-agentive predicates, render the nominals ungrammatical.

(51) a. The (*intentional) fright of the children
b. The (*malicious) boredom of the class
c. The displeasure of the poople in the room (*at 5 o'clock)
d. The (*accidental) terror of those in the room

This single generalization accounts for the ungrammaticality of the nominals in both (47) and (49), as well as the interpretation of the nominals in (51), without resorting to the assignment of any unmotivated syntactic structure.

In a footnote, Amritavalli notes the ungrammaticality of nominals such as (49), but does not relate it to the ungrammaticality of nominals such as those in (47). She suggests that sentences such as

(52) Louise was amused by Herbie.

are derived by a transformational role of passive, and that the ungrammaticality of nominals such as those in (49) follows from the impossibility of a transformational rule of passive feeding a lexical rule of nominalization. In the present framework such an explanation is not available. Instead, we offer the generalization that there appear to be no nominals with the argument structure (50), and we related the ungrammaticality of (47) and (49).

Notice, too, that (49), if grammatical, would have to have agentive readings, even though (52) can have either an agentive or a non-agentive reading. This is because the argument which bears the SUBJ function in an active sentential construction may appear as the object of *by* in the related passive sentential construction, no matter what role it bears, even if it is non-agentive (this was pointed out in Marantz (1981)). However, this appears not to be the case with nominals, as seen by the incompatibility of the *by*-phrase with the non-agentive nominal in (53).

(53) a. *The desire by Anne to pass the exam
b. A peaceful solution to the problem was desired by Anne.
c. *The knowledge of this fact by all the people

We have labelled the arguments of the *amuse* class, on the non-agentive reading, as in (54):

(54) (EXPERIENCER EXPERIENCED)

In the verbal construction, the EXPERIENCED is assigned the SUBJ function, while the EXPERIENCER is assigned the OBJ function. We saw in section 2.1 that there are verbs with the same argument structure (i.e. verbs whose arguments appear to bear the same semantic roles) which assign the OBJ function to the EXPERIENCED. Examples of such verbs are: *love, hate, envy, admire, revere, abhore, fear.*

What is striking about verbs with the argument structure in (54) is that an argument with the role of EXPERIENCED may never be assigned the POSS function, and this restriction holds whether the EXPERIENCED is assigned the SUBJ function in sentential constructions, or whether it is assigned the OBJ function in sentential constructions.

(55) a. Amy fears scarecrows.
b. Scarecrows frighten Amy.

In (55a), *fear* assigns the EXPERIENCED role to the SUBJ, while in (55b) *frighten* assigns that role to the OBJ. The restriction just mentioned above predicts that while (55a) will lack a "passive" nominal, (55b) will lack an "active" one. This prediction is borne out, and we can, in a principled way, rule out the nominalizations in (56) and (57).

(56) a. *Louise's love by Herbie
b. *Scarecrow's fear by Amy
c. *The politician's admiration by the voters
d. *Dog's hate by cats

(57) a. *The scarecrow's fright of Amy
b. *The performance's amusement of the children
c. *The movie's shock of the audience
d. *The sermon's boredom of the congregation

These nominals vitiate the claim that the thematic structure of a predicate is directly encoded in a d-structure representation which is shared by both the nominal and verbal expressions of these predicates. Although, for example, $fright_N$ and $frighten_V$ have the same number of arguments bearing the same semantic roles, they differ in the rules which map the arguments onto syntactic structure. In the verbal constructions, the causer of fright is assigned the SUBJ function. In the nominal, the POSS function replaces the SUBJ function. The causer of fright, on the non-agentive reading, is restricted from being assigned the POSS function, since it can be understood as bearing the role we have called EXPERIENCED.

What is the nature of the POSS function? Does it pattern with the semantically restricted or the semantically unrestricted functions? Like the SUBJ function, it may be assigned to arguments bearing a range of semantic roles. Nonetheless, we claim that the POSS function patterns with the semantically restricted functions.

First note that even in the case of a non-derived nominal, there is semantic selection between the head and the prenominal NP.

(58) a. yesterday's lecture
b. *the treetop's lecture

Second, although the POSS function may be assigned to arguments bearing a range of semantic roles, nonetheless, the NP must be thematic. The POSS function may never be assigned to a pleonastic element (**its certainty that it will rain*) or to the argument of a complement verb (**John's appearance to have left*).

Third, whether or not an argument of a derived nominal may bear the POSS function depends on as of yet poorly understood thematic restrictions. Anderson (1979), Rappaport (1980) and Fiengo (1980) have noticed that whether or not an NP may be "preposed" by NP movement in an NP depends on whether or not the argument in question is "affected" by the action of the predicate. This accounts for the ungrammaticality of the following:

(59) a. *History's knowledge (cf. knowledge of history)
b. *John's sight by Mary (cf. Mary's sight of John)
c. *The event's recollection (cf. recollection of the event)
d. *The problem's perception (cf. perception of the problem)
e. *The picture's observation (cf. observation of the picture)
f. *The novel's understanding (cf. understanding of the novel)

Thus, as is the case with all the oblique functions, whether or not an argument may be assigned the POSS function depends on its semantic role.

We may now pause and ask how in the lexicon the relationship between a nominal and its verbal base is represented. We have seen that an active verb and its passive participle have separate lexical entries. They are related by rules which make reference to grammatical functions. We saw that a rule such as passive cannot be stated over a representation of thematic structure since it does not show THEMATIC CONSTANCY: the passive rule relates the OBJ of the active to the SUBJ of the passive regardless of the role it bears.

On the other hand, what we see in the case of nominals is THEMATIC CONSTANCY: the function an argument bears in the nominal is not de-

pendent on the function of the corresponding argument of the verbal construction. The function it bears depends on its semantic relation to the head noun. If we were to relate nouns to verbs via rules which operated on grammatical functions, we would end up with a set of rules something like the following:

(60) SUBJ ⟶ POSS (condition: SUBJ ≠ EXPERIENCED)
OBJ ⟶ OBL_{TH}
OBJ ⟶ OBL_{GO}
OBJ ⟶ POSS (condition: OBJ = +affected)
SUBJ ⟶ OBL_{AG}

But this set of rules precisely does not capture the generalization concerning thematic constancy. Instead of formulating rules which operate on grammatical functions, we may simply suppose that nouns and verbs may share identical argument structures. This is similar to the idea presented in "Remarks" that nouns and verbs share neutralized lexical entries. It differs, however, in that all that is represented in the shared lexical entry, under present assumptions, is shared argument structure, not represented as shared syntactic subcategorization frames.

The mapping from argument structure to syntactic structure is, as we have seen, mediated by grammatical functions. The assignment of grammatical functions to arguments is governed by linking conventions. Nouns and verbs differ in that the linking conventions for the arguments of verbs intersect, but is not identical to the linking conventions for the arguments of nouns.

Oblique functions will be assigned to the same range of argument types in both nominal and verbal constructions. Thus, when an AGENT is semantically linked in a verbal passive, it is expressed as the object of the preposition *by*. The same is true for the AGENT of both derived and nonderived nominals:

(61) a. The performance by the company
b. The sonata by Beethoven

Likewise, the OBL_{GO} argument will be assigned to the GOAL arguments of both nouns and verbs.

But while arguments which are assigned oblique functions in nominals must always be assigned the appropriate oblique function (GOALs must always be assigned OBL_{GO}) verbs may either by stipulation or by means of a lexical rule link such an argument to a semantically unrestricted function. Furthermore, while there is usually a symmetry between nouns and verbs in that an argument assigned the SUBJ function is usually assigned the POSS function in nominal constructions, this is

not always the case. As we have seen, an argument bearing the EXPERIENCED role may bear the SUBJ, the OBJ or an appropriate oblique function in verbal constructions. In nominals, the EXPERIENCED may only bear an oblique function.

We will not go further into the issue of the structure of lexical entries and the precise way the lexical entries of nouns and verbs are related. For development of these ideas, see Levin (1986).

4.3 Control in Nominals

The claim that NPs associated with nominals are not assigned the functions of SUBJ and OBJ makes clear predictions when embedded in a theory of control and complementation within LFG. Bresnan (1982b) distinguishes two kinds of control: functional control and anaphoric control. The controller in a functional control relation must be assigned one of the semantically unrestricted functions SUBJ, OBJ or OBJ2. In particular, the oblique function bearing arguments may not be controllers in a functional control relation (see Bresnan (1982b) for details of how this follows from the assumptions of the theory). It follows, then, that infinitival complements to nominals may enter only into relations of anaphoric control. In this section, I will briefly outline the properties of the two kinds of control, and show that in fact the properties of control in nominals are those of anaphoric control, bearing out the predictions of the theory. For a complete discussion and theoretical motivation for the distinction between the two kinds of control, see Bresnan (1982b).

The two kinds of control distinguished in Bresnan (1982b) correlate with two kinds of clausal complements: functional control involves a predicative clause bearing an open grammatical function, while anaphoric control involves a non-predicative clause bearing a closed grammatical function.

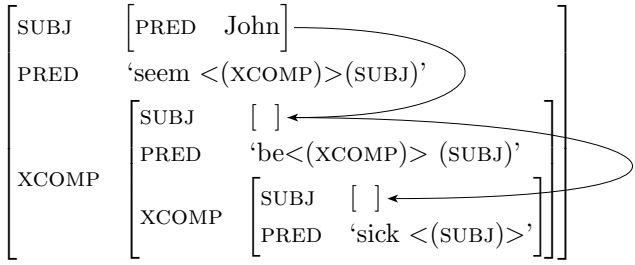
A predicative complement is one which lacks a subject of its own in both functional structure and constituent structure. Functional control arises when such a complement is supplied with a subject. For example, the verb *seem* has the lexical entry in (62),

$$\text{(62)}\quad \textit{seem} < \underset{\text{XCOMP}}{\text{(prop)}} \quad \underset{\text{OBL}_{GO}}{\text{(goal)}} > \text{SUBJ}^{5}$$
$$(\uparrow\text{SUBJ}) = (\uparrow\text{XCOMP SUBJ})$$

and sentence (63) has the f-structure in (64).

[5]The arguments within the angled brackets are thematically selected by the verb. The lexical entry in (62) contains the information that *seem* takes a non-thematic subject; i.e. it is a 'raising to subject' verb.

(63) John seems to be sick.

(64)


The equation in the lexical entry of *seem* identifies the controller of the subject of its complement. Functional control arises from the identification of the functional subject of the predicative complement with that of its controller, as supplied by the control equation. Thus, functional control entails the inheritance of all the features of the controller by the controlled subject. It follows from the principles of the theory (see Bresnan (1982b) for details) that a relation of functional control has the following properties:

(65) a. The controller must be present in the sentence.
b. The controller is identified as an argument bearing a particular grammatical function.
c. The control must be local.
d. There may be no split antecedents for a functionally controlled subject.

Anaphoric control is associated with a clausal complement bearing the closed grammatical function COMP. Such a clause has its own f-structure subject, which may or may not be morphologically realized. When it is not morphologically realized, the subject is identified as PRO which is interpreted as a pronominal with many of the features of morphologically realized pronouns such as *he* or *she*. Since the non-predicative clause has a subject of its own, the relation between the PRO subject and its controller is roughly analogous to that of a pronoun and its antecedent. In particular:

a. The controller need not be identified as an argument bearing a particular grammatical function.
b. The control need not be local.
c. The controller need not be present in the sentence.
d. There may be split antecedents for the controlled subject.

We have already seen that given the assumptions of this paper, we expect to find the properties of anaphoric control in nominals. In fact

this is true. First, the controller of an infinitival complement of a nominal cannot be identified as an argument of the matrix predicate which bears a particular grammatical function. The controller may bear a range of grammatical functions, and in fact need not be an argument of the matrix predicate.

(66) a. Deborah sent instructions to Charlene to meet Fern.
b. Charlene's instructions to meet Fern never reached her.
c. The instructions to meet Fern never reached Charlene.

Moreover, the controller need not be expressed in the sentence at all.

(67) No warning to evacuate was ever issued.

Thus, Bach's generalization (Bresnan (1982b:418)), that verbs of obligatory object control may never be detransitivized, does not hold for the corresponding nominals. Compare:

(68) a. *Deborah instructed to meet Fern.
b. The instructions to meet Fern
c. ??The general commanded to evacuate.
d. The command to evacuate was disregarded.

This follows if we assume that the complements of the verbal constructions are functionally controlled while those of the nominals are anaphorically controlled.

If the complements in nominals are anaphorically controlled, the theory forces us to analyze them as non-predicative complements bearing the closed function COMP. We now look for some independent evidence that infinitival complements to nominals are in fact non-predicative.

The closed complement function may be assigned to tensed and non-tensed clauses. Infinitival clauses bearing this function may usually appear with a lexical subject.

(69) a. We all prayed for Deborah to pass her exam.
b. We all prayed that Deborah will pass her exam.
c. Deborah prayed to pass her exam.

The complements in all the examples of (69) are non-predicative; the infinitive in (69c) has a PRO subject at f-structure. The obligatory coreference between the PRO and the matrix subject is determined by a principle of Obviation. The principle (Bresnan (1982b:383)) states that in an obviative clause, an unexpressed pronoun must be coreferential with the subject of the clause containing it, if that subject is an eligible antecedent. Thus, (69c) is an example of obligatory anaphoric control. We see, then, that while a predicative complement may never have an

expressed subject, there may be an alternation between expressed and unexpressed subjects in non-predicative complement clauses.

Now consider the following examples:

(70) a. Louise requested Herbie to call her.
b. *Louise requested for Herbie to call her.
c. Louise's request for Herbie to call her

(71) a. The king ordered the servant to place a pea under the prince's matress.
b. *The king ordered for the servant to ...
c. The king's order for the servant to ...

In these examples, we find verbs with infinitival complements which must be subjectless. These are verbs of obilgatory object control and the fact that they may not be detransitivized supports the hypothesis that they have predicative complements. In the corresponding derived nominals, however, there is an alternation between expressed and unexpressed subjects. This pattern holds for all verbs of this class including *instruct, advise, command, permit*, etc. Since there is an alternation between expressed and unexpressed subjects in these infinitives, we are forced to analyze them as non-predicative complements bearing the closed function COMP, which is exactly the conclusion we were forced to, given the assumption that nominals don't have arguments bearing the SUBJ or OBJ function.

The nominal and verbal forms of these predicates are all triadic, but we find a systematic difference in the assignment of grammatical functions to the associated arguments.

(72) *order*$_V$: (orderer (SUBJ) orderee (OBJ) content of order (XCOMP))

order$_N$: (orderer (POSS) orderee (OBL$_{GO}$) content of order (COMP))

One of the consequences of this difference is that in the verbal forms of these predicates, the subject of the clausal complement must be coreferential with the argument bearing the OBJ function, that argument which we assigned the ORDEREE or GOAL role. This is not the case in the nominal forms. Thus, while there may be at most two participants in the action of the verbal forms of these predicates, there may be three in the nominal forms.

(73) a. The king's order to the servant for the prince ...
b. *The king ordered the servant for the prince to ...

(74) a. Louise's instructions to Herbie for Max to bake...
b. *Louise instructed Herbie for Max to bake a cake.

The pattern displayed by the nominals is that of a verb like *signal*, which takes a non-predicative infinitival complement.

(75) a. John signalled Mary to follow him.
b. John signalled Mary for the kids to follow him.

Raising to subject and raising to object involve control of a predicative complement by a nonthematic subject and object respectively. The SUBJ and OBJ function may be assigned to nonthematic arguments because they are semantically unrestricted. Nominals lack these semantically unrestricted functions. Hence, they cannot have arguments which control predicative complements, since only arguments bearing semantically unrestricted functions can control predicative complements. Thus, patterns of raising to subject and raising to object are excluded from nominals.

Williams (1980) outlines a theory of control which distinguishes Obligatory Control from Nonobligatory Control, which correspond, roughly, to functional and anaphoric control respectively. Williams observes that infinitival complements to nominals appear to enter into relations of Nonobligatory Control, but he cannot relate this fact to any other property of nominals. In the analysis developed here, it is a fundamental property of nominals, unavailability of the SUBJ and OBJ functions to their arguments, which determines the kind of control found in nominals.

4.4 Conclusion

In this paper, I have given a preliminary account of derived nominals within a lexical framework. Among the important points which have emerged are:

a. The shared argument structure of a noun-verb pair is represented independently of syntactic structure. Thus, shared argument structure does not entail isomorphism of syntactic structure.
b. We have isolated a single crucial area in which nouns differ from verbs: the functions available for the mapping of arguments onto syntactic positions. The fact that nouns have only the semantically unrestricted functions available has far reaching consequences. It helps account for the systematic absence of derived nominals corresponding to certain sentence types, and for the kind of control relations found in nominals.

c. While active and passive verbs and simple and causativized verbs must be related by rules which manipulate the assignment of grammatical functions, no such rule relates nouns and related verbs. The linking conventions for the assignment of grammatical functions to arguments predict the grammatical functions which arguments of a noun will bear.

It is hoped that this paper will be a contribution toward broader theories of category types, control and a structured lexicon.

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5

Resultatives

Jane Simpson

This paper looks at certain syntactic and semantic conditions on a class of constructions which Halliday (1967) has called RESULTATIVE ATTRIBUTES.[1] A resultative attribute describes the STATE of an argument resulting from the action denoted by the verb. Thus, in (1) *I painted the car yellow*, the adjective *yellow* describes the colour of the car as a result of the action of painting it.

(1) I painted the car *yellow*.

(2) I painted the car *a pale shade of yellow*.

(3) I cooked the meat *to a cinder*.

(4) The boxer knocked John *out*.

The resultative attribute may be an adjective (1), a nominal (2), a transitive prepositional phrase (3), or an intransitive preposition (4).[2] I

[1]The work presented here is part of a study of resultatives that Lori Levin and I are making. I wish to thank a number of people for helpful criticisms and discussions, in particular, Joan Bresnan, Dick Carter, Noam Chomsky, Ken Hale, Paul Kiparsky, Beth Levin, Joan Maling, Haj Ross, Barry Schein, Tim Stowell, Edwin Williams, and Annie Zaenen.

[2]Emonds (1972) gives arguments that the particle *out* is an intransitive preposition. Bolinger (1971) shows that intransitive prepositions such as *out* can be used as resultative attributes. It must be mentioned that adjectives are the category most commonly used as resultatives. Nominals are the least common: witness the contrast between:

(i) a. I shot John dead.
b. *I shot John the/a corpse.
(unacceptable except on a strange benefactive reading)

Lexical Semantics in LFG.
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claim, as do Dowty (1979) and Randall (1983), that the matrix verb and the resultative attribute form a complex verb. I argue that such complex verbs are formed by a general lexical rule which adds a resultative complement. I will show how this lexical rule can be represented within a modified version of the Lexical-Functional Grammar framework (LFG) which allows initial grammatical functions (in particular, underlying OBJECTs).

The paradigm classes of verbs that take RESULTATIVE ATTRIBUTES are verbs of CONTACT and verbs denoting some CHANGE OF STATE. Verbs of contact appear only to be transitive. They are illustrated in (5).

(5) a. I shot John *dead*.
b. I shot/kicked/punched/beat John *to death*.

In contrast, change of state verbs can be transitive or intransitive. The (a) sentences of (6), (7) and (8) show transitive change of state verbs. The (b) sentences show their intransitive counterparts.

(6) a. I froze the icecream *solid*.
b. The icecream froze *solid*.

(7) a. I melted the butter *to a liquid*.
b. The butter melted *to a liquid*.

(8) a. I broke the vase *into pieces*.
b. The vase broke *into little pieces*.

(9) and (10) show that an intransitive change of state verb with a resultative attribute does not have to have a transitive counterpart.

(9) a. He flushed/blushed *red*.
b. *I flushed him *red*.

(10) a. He grew *old*.
b. *I grew the tree *old*.

In the transitive sentences, the resultative attribute is always predicated of the OBJECT, while in the intransitive sentence it is predicated of the SUBJECT. Observe that, if the transitive sentences are passivized, the resultative is predicated of the new SUBJECT, as (11) and (12) show.

(11) The car was painted *red*.

I assume that this has to do with semantic interpretation of categories: adjectives and prepositional phrases are readily interpretable as denoting STATES, but only a few nominals, such as *a pale shade of pink*, *the right length*, (which seem semantically close to adjectives) allow state readings. See Carlson (1977) and Stump (1981) for attempts to account for other differences between adjectives and nominals in terms of semantic interpretation.

(12) The icecream was frozen *solid*.

That is, the resultative attribute is predicated of the same argument in the active and passive.

In LFG, it is assumed that passive is a lexical rule which operates on the predicate argument structures of verbs, and converts OBJECTs into SUBJECTs (see Bresnan (1982b)). So, the controller of the resultative attributes in (11) and (12) is underlyingly an OBJECT.

Let us now examine the intransitive change of state verbs. Observe that they correspond semantically to a class of intransitive verbs which behave syntactically as though their surface SUBJECT were underlyingly an OBJECT. That is, intransitive CHANGE OF STATE verbs usually belong to the Unaccusative class of verbs, whose properties have been discussed by Perlmutter (1980) and Rosen (1981).[3]

The generalization so far is that resultative attributes are predicated of OBJECTs, whether surface OBJECTs, or underlying OBJECTs. Let us now consider transitive sentences. A resultative attribute cannot be predicated of the SUBJECT of a transitive clause, as (13) and (14) show.

(13) *I melted the steel *hot*.
(This cannot mean: *I melted the steel until I was hot.*)

(14) *I ate the food *full/sick*.
(This cannot mean: *I ate until I was sick.*)

This is a very important property of resultatives. No GENERAL SEMANTIC reason appears to block the resultative from being predicated of the SUBJECT, as the paraphrases with *until*, etc. show.[4] This is a language-particular restriction.

Let us turn now to intransitive verbs. I have shown that intransitive verbs denoting CHANGE OF STATE can co-occur with RESULTATIVE ATTRIBUTES. There is another class of intransitive verbs, which Halliday calls PROCESS-ORIENTED intransitive verbs. These verbs focus on the process, or manner, rather than on the result, of an action. For instance, a process-oriented verb like *dance* describes the MANNER OF MO-

[3]See Burzio (1981) and Marantz (1981) for treatments of the Unaccusative hypothesis within different versions of Government-Binding, and Baker (this volume) for a treatment within Lexical-Functional Grammar.

[4]In fact, in similar constructions in the Central Australian language Warlpiri, the resultative attribute can be predicated of a transitive SUBJECT.

(i) Puluku-rlu kapu-lu marna nga-rni kuntukuntu-karda.
Bullocks-ERG FUT-3PL grass-ABS eat-NPST fat-TRANSL
'The bullocks will eat themselves fat on the grass.'

See Simpson (1983).

tion, rather than a change of location. These verbs have been called Unergative by Perlmutter, because they often behave cross-linguistically as though their subjects were underlyingly subjects. That is, they have properties in common with the subjects of transitive verbs. They contrast with Unaccusative verbs, whose subjects have properties in common with the objects of transitive verbs. Since the subjects of transitive verbs cannot have resultative attributes predicated of them, we might expect that the subjects of Unergative verbs also cannot have resultative attributes predicated of them. This prediction is correct, as (15) shows:

(15) *I danced/laughed/jogged/walked/worked *tired*.

However, there is a way of predicating a resultant state of the subject of an Unergative verb. This is through the use of a reflexive construction to express the idea that, by performing some action to excess, the speaker did something to himself. I call this construction a fake reflexive. It is illustrated in (16)–(19).

(16) I laughed myself *sick*.

(17) I danced myself *tired*.

(18) I cried/sobbed myself *to sleep*.

(19) I shouted/screamed/yelled/bellowed myself *hoarse*.

Because the object is a reflexive pronoun, a resultant state is indirectly predicated of the subject.

A small class of transitive verbs, those whose objects are not necessarily expressed, can also take fake reflexives, allowing resultative attributes to be predicated of their subjects, as (20) and (21) show.

(20) a. I ate all day.
b. I ate myself *sick/to death*.
c. *I ate him *sick/to death*.

(21) a. He drank all through the evening.
b. He drank himself *into the grave/to death*.
c. *He drank her *into the grave/to death*.

Less commouly, both the intransitive verbs and the set of transitive verbs just described allow non-reflexive objects with resultatives.

(22) I cried my eyes *blind/out*.

(23) a. I ate him *out of house and home*.
b. She drank him *under the table*.

These objects do not bear the normal semantic relationship to the verbs *eat* and *drink*, that of THING EATEN or DRUNK. Instead they represent something which is affected by the intensity/excessiveness with which the subject performs the action. These constructions, and the fake reflexive + resultative constructions, focus on the EXTENT to which the action denoted by the verb is performed. In the fake reflexive constructions, the extent is expressed by stating the effect the action has on the SUBJECT; in the non-reflexive constructions, the extent is expressed by stating the effect the action has on something else (although the SUBJECT may be affected if the OBJECT is a body part: *I cried my eyes blind*).[5]

To conclude this section, I have shown that the following syntactic generalization appears to hold for resultatives in English.

> The controller of a resultative attribute must be an OBJECT, whether that OBJECT is a surface OBJECT, as in transitive verbs, or an underlying OBJECT, as in passives and intransitive verbs of the Unaccusative class, or whether the OBJECT is a fake reflexive, as in intransitive verbs of the Unergative class.

The controller cannot be the SUBJECT of a transitive sentence or of an UNERGATIVE intransitive verb, except indirectly, by means of a fake reflexive.

There are a number of language-particular semantic conditions on resultative attributes. I will discuss two.

First, the verb must necessarily affect the OBJECT, which is why verbs of contact and verbs of change of state appear so freely. Perception verbs do not in general affect the object of perception,[6] and so cannot appear with resultatives, even if an appropriate situation is set up. Consider the myth of Medusa, whose gaze turns people to stone. One cannot say:

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[5]Burzio (1981) discusses a construction appearing mostly with unergative verbs which has much the same semantic effect, the EXPLETIVE object construction:

(i) I ran the shit out of those shoes.

(ii) They fished the hell out of that lake.

Observe that, just as *my eyes* in *I cried my eyes blind* has no direct relationship to the verb *cry*, so the expletive object *the shit* has no direct semantic relationship to the verb *run*. The constructions differ in that the resultative attribute expresses directly the extent to which the action is performed, while in the expletive object constructions, the expletive object itself indicates the extent.

[6]Verbs of perception which focus on the manner or intensity, rather than on the act, do marginally allow resultatives:

(i) She stared him *down*.

(ii) ?Medusa stared the hero *into stone*.

(24) *Medusa saw the hero *stone/into stone*.

Similarly, consider the myth of Midas, who was afflicted with the power of turning anything he touched into gold. It is still inappropriate to say:

(25) *Midas touched the tree *gold/into gold*.

Another place where this necessary effect constraint operates is with verbs of contact. Most verbs of contact have two forms, one in which the OBJECT is an NP and is necessarily affected by the action, and one in which the OBJECT[7] is a PP with the preposition *at*, and is not necessarily affected by the action.

(26) a. I shot John.
b. I shot at John.

Only the former can appear with a resultative attribute:

(27) a. John was shot *dead*.
b. *John was shot at *dead*.
c. *John was shot *dead* at.

The second semantic restriction on resultatives concerns verbs denoting CHANGE OF LOCATION. Unaccusative verbs fall into two semantic classes: verbs denoting CHANGE OF STATE and verbs denoting CHANGE OF LOCATION. We have seen that verbs denoting change of state allow resultatives. But change of location verbs[8] do not allow resultative attributes, as the examples given below show.

(28) He emerged *bedraggled*.
(This means: He is bedraggled *when* he emerges, not as a result of emerging.)

(29) He fell (down) *dead*.
(The fall does not cause his death; he is dead WHEN he falls.)

[7]That *at John* has the function OBJECT within the LFG framework is shown by the fact that it can passivize:

(i) John was shot at.

See Bresnan (1982b) for an analysis of prepositional passives.

[8]Change of location verbs can be used *metaphorically* to denote change of state:

(i) a. He went mad.
b. She drove him mad.
c. He sent her mad.

But they cannot be used with both a change of location attribute and a change of state attribute.

(ii) a. *She went mad into the lunatic asylum.
b. **She drove him mad into the lunatic asylum.
c. **He sent her mad into the lunatic asylum.

The semantic generalization seems to be:

> If a verb attributes a change of location of some argument, it is not possible to have a secondary predicate attributing a change of state involving that same argument.

It extends to transitive verbs, as the unacceptability of (30) and (31) show.

(30) I sent John the vase *broken*.
(This cannot mean that the vase was broken by the act of sending it.)

(31) *She carried John *giddy*.
(This cannot mean that John became giddy as a result of being carried.)

Again, there is apparently no general semantic reason blocking the resultative interpretation.[9]

To sum up, I have shown that resultative attributes in English are subject to the *syntactic* constraint that they must be controlled by an OBJECT, whether underlying or surface, and they are subject to at least two language-particular *semantic* constraints: that the action necessarily affect the argument which the resultative attribute is predicated of, and that the verb's meaning cannot involve an inherent change of location. I have also shown that the control relations do not change under passive.

In the LFG theory, the most likely place for the statement of such regular restrictions is in the lexicon, in the lexical entry of the verb. If the resultative attribute is an argument of a verb, it is easy to represent restrictions depending on the meaning of an individual verb. If the resultative attribute is not an argument of a verb, but rather an attribute modifying some argument, it is hard to state the dependencies holding between the verb and the resultative attribute.[10] Let us look now at the possibilities for treating a resultative attribute as an argument of a verb.

Verbs are subcategorized for the FUNCTIONS of their arguments; these form part of their lexical entry. A verb such as *hammer* has the predicate-argument structure given in (32).

[9]The resultative construction in Warlpiri, for instance, can co-occur with verbs of change of location:

(i) Wanta-kurra ka-lu karli yirra-rni, linji-karda.
Sun-ALL PRES-3PL boomerang-ABS put-NPST dry-TRANSL
'They put boomerangs in the sun to dry.'

[10]I argue in Simpson (1983) that the relative freedom of Warlpiri resultatives, in comparison with English resultatives, can be attributed to the former being adjuncts which are not arguments of verbs, and the latter being complements which are selected by particular verbs.

(32) *hammer*$_1$: hammerer, thing hammered
<SUBJECT OBJECT>

This is read as follows:

> The verb '*hammer*$_1$' is a two-place predicate which is subcategorized for a SUBJECT and an OBJECT. The '*hammerer*' argument is linked to the SUBJECT, and the '*thing hammered*' is linked to the OBJECT.

Complements of EQUI and RAISING verbs, such as *to be a scholar* in (33) and (34), are assumed to have the function XCOMP:

(33) I persuaded John *to be a scholar*.

(34) I believe John *to be a scholar*.

The lexical entry for an EQUI verb such as *persuade* is given in (35).

(35) *persuade*: persuader, person persuaded, proposition
<SUBJECT OBJECT XCOMP>
(control equation) XCOMP SUBJECT = verb's OBJECT

This is read as follows:

> '*Persuade*' is a three-place predicate, which is subcategorized for a SUBJECT, an OBJECT and an XCOMP. The SUBJECT is linked to the '*persuader*' argument, the OBJECT to the '*person persuaded*' argument, and the XCOMP to the '*proposition*'. The control equation states that the SUBJECT of the XCOMP is identical to the OBJECT of the matrix.

I propose that transitive verbs with resultative attributes, such as *flat* in *I hammered the metal flat*, have lexical entries similar to that of *persuade*. The resultative attribute is treated as an XCOMP.

The lexical entry for *hammer*$_2$ (*hammer x flat*) is given in (36).

(36) *hammer*$_2$: hammerer, thing hammered, result
<SUBJECT OBJECT XCOMP>
(control equation) XCOMP SUBJECT = verb's OBJECT

This is read as follows:

> '*Hammer*$_2$' is a three-place predicate, which is subcategorized for a SUBJECT, an OBJECT and an XCOMP. The SUBJECT is linked to the '*hammerer*' argument, the OBJECT to the '*thing hammered*' argument, and the XCOMP to the '*resultant state*'. The control equation states that the SUBJECT of the XCOMP is identical to the OBJECT of the matrix.

I propose a general lexical rule relating the two-place predicate *hammer*1 with the three-place predicate $hammer_2$ (*hammer flat*), by adding a resultative attribute XCOMP. This rule is given in (37).

(37) XCOMP Addition Rule
Add a resultative attribute XCOMP.
Add the control equation: XCOMP SUBJECT = verb's OBJECT

When the XCOMP Addition Rule is applied to a transitive verb such as *paint*, the XCOMP is predicated of the OBJECT. This is illustrated in (38).

(38) a. *paint* <(SUBJ) (OBJ)> (underlying form)
b. <(SUBJ) (OBJ) (XCOMP)> (addition of XCOMP)
XCOMP SUBJECT = verb's OBJECT

The rule applies before PASSIVE. Passive changes all instances of OBJECT to SUBJECT, including the instance of OBJECT appearing in the control equation. The lexical entry for the passivized form is as follows:

(39) $paint_{passive}$ <(SUBJ) (XCOMP)> (addition of XCOMP)
thing painted result
XCOMP SUBJECT = verb's SUBJECT

When the XCOMP Addition Rule is applied to an intransitive Unaccusative verb such as *blush*, the XCOMP is predicated of the single argument, which is an underlying OBJECT. Then a rule of OBJECT $\longrightarrow$ SUBJECT, equivalent to the PASSIVE rule, causes both the underlying OBJECT and the OBJECT mentioned in the control equation to become SUBJECT. This is illustrated in (40).

(40) a. *blush* <(OBJ)> (underlying form)
b. <(OBJ) (XCOMP)> (addition of XCOMP)
XCOMP SUBJECT = verb's OBJECT
c. <(SUBJ) (XCOMP)> (OBJECT $\longrightarrow$ SUBJECT rule)
XCOMP SUBJECT = verb's SUBJECT

Observe that this account of resultative attributes crucially depends on being able to refer to UNDERLYING OBJECTS. The level of underlying grammatical functions is not as developed in LFG as it is, say, in Relational Grammar, or in the versions of Government-Binding developed in Burzio (1981) and Marantz (1981). However, I assume that it is possible to extend the theory in such a way as to allow rules such as the XCOMP Addition Rule.

An interesting property of the XCOMP Addition Rule is that it can be extended to fake reflexive constructions, on the assumption that these should be treated as Raising to Object constructions, like *believe*, in

contrast to the Equi-type constructions just described. Intuitively, in a sentence such as *I believe John to be happy*, the object of *believe* is not *John*, but rather the proposition *John be happy*. This is expressed in the lexical entry of the verb *believe* by assuming that *believe* is a two-place predicate, one of whose arguments is a proposition. The lexical entry for the verb *believe* is given in (41).

(41) *believe* believer, proposition
<SUBJECT XCOMP> OBJECT
(control equation) XCOMP SUBJECT = verb's OBJECT

This is read as follows:

> '*Believe*' is a two-place predicate, which is subcategorized for a SUBJECT and an XCOMP. The SUBJECT is linked to the '*believer*' argument and the XCOMP to the '*proposition*'. There is an OBJECT function not linked directly to an argument. The control equation states that the SUBJECT of the XCOMP is identical to the OBJECT of the matrix verb.

No argument is linked directly to an OBJECT function in the lexical entry, and so the control equation can only be satisfied by allowing the nominal representing the SUBJECT of the XCOMP to have two functions: that of SUBJECT of the XCOMP, and OBJECT of the matrix verb. (See Bresnan (1982a) for a fuller account of raising.) This is represented by having the OBJECT appear *outside* the angle brackets containing the list of grammatical-function/argument linkings.

Sentences such as *I danced myself tired*, or *I cried my eyes blind*, or *I ate John out of house and home*, seem semantically parallel to the example with *believe*, in that what syntactically is the OBJECT of the sentence acts semantically as the SUBJECT of the resultative attribute, rather than as an argument of the matrix verb.[11] For instance, in *I danced myself tired*, *myself* is not *danced*, nor in *I ate John out of house and home* is *John eaten*. *I danced myself tired* means that I danced to such an extent that I was tired.

Applying the XCOMP Addition Rule blindly to intransitive verbs without underlying OBJECTs creates RAISING of the right type, as (42) shows.

(42) a. *dance* <(SUBJ)> (underlying form)
b. <(SUBJ) (XCOMP)> OBJECT (addition of XCOMP)
XCOMP SUBJECT = verb's OBJECT

[11] See Schein (1982) for a similar analysis.

However, allowing the rule to apply blindly would predict that any unergative verb could appear with any resultative attribute and any object. Examples such as *She drank him under the table* should be commonplace. But they are not. Verbs in general are relatively restricted as to what resultative attribute, and what object they can appear with. So, while the rule does apply to such verbs, it is likely that most such verbs will have to list as part of their lexical entry what the FORM of the resultative and the object will be. For instance, the lexical entry for the verb *cry* might state that its XCOMP can be *out, red* or *blind*, and that the OBJECT (that is, the SUBJECT of the XCOMP) must be reflexive.

What reason is there to assume that resultative attributes are XCOMPs, other than that, by calling them XCOMPs, we make them part of the lexical entry of a verb? Evidence comes from an important constraint on the well-formedness of functional structures, the CONSISTENCY constraint (see Kaplan and Bresnan (1982)).

> CONSISTENCY:
> Every grammatical function and every functional feature must have a unique value.

For grammatical functions, this means that there cannot be, say, two SUBJECTs in a sentence, or, more controversially, two OBJECTs. Likewise, there can be only one XCOMP.

If these resultative attributes are really XCOMPs, then they should be in complementary distribution with XCOMPs created by other means, such as EQUI and RAISING.[12] This prediction seems to be borne out, on the whole.[13] Thus, (43) cannot mean that John is happy as a result of my promise.

(43) a. *I promised John *happy* to go there alone.
b. *I promised John to go there alone *happy.*

Similarly, (44) cannot mean that I am exhausted as a result of trying to please John.

[12]To my knowledge, attention was first drawn to the complementary distribution of resultatives and certain other complements in Halliday (1967).

[13]David Dowty pointed out to me that if locatives and intransitive prepositions are taken to be resultative attributes, examples such as the following are problematic.

(i) She dished the food out into the bowls.

If both *out* and *into the bowls* are distinct resultative attributes, then complementary distribution is violated. However, I think that in this example *out into the bowls* is a single complex resultative attribute. Similarly, in the following example *out cold* probably forms a complex resultative attribute.

(ii) The boxer knocked the men out cold.

(44) a. *I tried *exhausted* to please John.
b. *I tried to please John *exhausted*.

Even if the EQUI verb takes an object-controlled complement, as *persuade* and *ask* do, a resultative attribute cannot appear, as (45) and (46) show.

(45) a. *I persuaded John *happy* to go there alone.
b. *I persuaded John to go there alone *happy*.

(46) a. *I asked John *upset* to go there alone.
b. *I asked John to go there alone *upset*.

These sentences cannot mean that John is happy or upset as a result of my asking or persuasion.

In conclusion, I have shown that there are syntactic and semantic constraints on resultative attributes, and that resultatives can readily be expressed within the LFG theory as XCOMPs. A single lexical rule can be postulated to cover the main cases of resultative attributes, provided that the notion UNDERLYING OBJECT can be encompassed within LFG. Finally, if resultative attributes have the function XCOMP, then the CONSISTENCY constraint explains their distribution with respect to other XCOMPs.

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6

Case and Grammatical Functions: The Icelandic Passive

Annie Zaenen and Joan Maling and Höskuldur Thráinsson

Recent attempts to capture the universal characteristics of passive have moved away from relying on word order configurations.[1] Ignoring proposals that have recourse to essentially semantic means of capturing the active-passive relation (such as Gazdar and Sag, 1981; Dowty, 1982), there are two types of proposals that are currently being debated. The first is that passive morphology inhibits case marking, and hence that the advancement of the object to subject in passive is essentially forced by the violation of the constraint requiring that all NPs have case. This idea is embodied in slightly different forms in various GB and GB-related proposals (see, e.g., den Besten, 1981; Kayne, 1981; Chomsky, 1981; Freidin and Babby, 1982, 1983; see also Lieber, 1979).[2] The second proposal

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[2]The case-dependent approach is actually an adaptation of a traditionally made observation, namely, that oblique case is immune to passivization. Whereas the tradi-

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relies on grammatical functions, and is embodied in both RG and LFG. In this article we argue on the basis of data from Icelandic that the case-dependent approach is not general enough, whereas an approach based on grammatical functions gives the correct result both for Icelandic and also for languages such as German for which the case-dependent approach was developed. The main evidence for our argument comes from passives of the type illustrated in (1).

(1) Honum var hjálpað.
him-DAT was helped
'He was helped.'

We argue that such sentences contain a non-nominative subject.[3]

tional observation is correct for Icelandic under the proper interpretation of "oblique", its adaptation in the current GB literature is not. To show that the two approaches are not empirically equivalent, we can compare the following two quotes.

> I want to express in a generative framework the traditional insight among students of Germanic languages as well as among grammarians of older phases of English that oblique case is immune from passivization (den Besten, 1981:67).
>
> From most inflected languages we know that only those verbs which take an accusative object can form a personal passive. This seems to be the general rule, though in Old Greek also non-accusative objects can be made the subject of a passive sentence. In the Low German of my hometown (Krefeld) there is no distinction between dative and accusative, or rather, there is only one objective case. So verbs which in High German govern the dative (e.g., *helfen* 'help', *kündigen* 'give notice') come to be construed with the objective case in Lower German. In passive accordingly, we have personal constructions: *Ich werde geholfen, er ist gekündigt worden* (Marchand, 1974:98).

For Marchand, the notion 'subject' seems to coincide with that of nominative NP; hence his statement can be given an interpretation that allows it to apply correctly to both German and Icelandic. Den Besten's statement, however, does *not* hold for Icelandic, as we show. There are exceptions to Marchand's statement too, as he himself notes: Ancient Greek, but also Irish until it lost its dative case (C. Watkins, personal communication) and within Germanic, perhaps Modern Faroese, as described by Lockwood (1964), from whom we quote the following sentences:

(i) Teir fagnaðu Depilsmunnum væl.
they received the-depilsmen-DAT well

(ii) Depilsmenn voru væl fagnaðir.
the-Depilsmen-NOM were well received-NOM-PL.

However (ii) is probably not an example of a participle but is rather an adjectival form.

[3]Before proceeding with our analysis, however, we must remark that it would be all too easy to empty these theories of their distinguishable content. For example, if *case* is used not to refer to any morphologically observable properties of NPs but rather simply to refer to whatever behaves syntactically like an OBJect, then the case-marking theory of passivization becomes a notational variant of the function-based theory. Similarly, if OBJ is defined to be "whatever NP is assigned accusative case by

A second theoretical issue that we address is whether the same grammatical function can have more than one realization in the same clause. As we demonstrate, the Icelandic data at first glance seem to lead to the conclusion that this can happen, but virtually all current syntactic theories propose a prohibition against such double assignments. It is part of the θ-criterion in GB (Chomsky, 1981); it has been proposed as the stratal uniqueness law in RG (Perlmutter and Postal, 1983:92ff.) and as the functional uniqueness law in LFG (Bresnan, 1982b:163; Grimshaw, 1982:91). While there are empirical differences among these formulations, they lie beyond the scope of this article. As we demonstrate, a more careful study of the Icelandic data shows that it is compatible with the functional uniqueness principle and the assumption that only DOs passivize.[4]

Our attention is focused on what we call the periphrastic passive, illustrated in a noncontroversial instance in (2):

(2) a. Lögreglan tók Siggu fasta.
the-police took Sigga-ACC fast-ACC
'The police arrested Sigga.'

b. Sigga var tekin föst af lögreglunni.
Sigga-NOM was taken fast-NOM by the-police-DAT
'Sigga was arrested by the police.'[5]

---

the verb," then it will not be distinguishable from the case-assignment theory. In what follows, then, we assume that "case" and "function" are concepts with distinct morphologically and syntactically observable properties.

[4]The most problematic case of double objects discussed in the literature is that of Kinyarwanda (Gary and Keenan, 1977); see also Dryer (1983) for arguments that these are not really double objects. Zaenen (1983) argues that Kikuyu verbs that seemingly allow the double-object construction are better analyzed as allowing alternative assignments of grammatical functions; the argument is based on the interaction of passive with the prefixation of the direct object marker.

[5]Agent *af*-phrases are much less common in Icelandic passives than *by*-phrases are in English. A sentence such as (i) will always be interpreted as meaning (ii) rather than (iii):

(i) Bókin var tekin af Jóni.

(ii) 'The book was taken from John.'

(iii) 'The book was taken by John.'

However, other sentences, such as (iv), are multiply ambiguous for at least some speakers.

(iv) Myndin var tekin af Jóni.
'The picture was taken from/of/by John.'

Icelandic also has some morphologically "middle" forms in the suffix *-st*, some of which have a passive meaning, as illustrated in (3):[6]

(3) a. Ekkert heyrist fyrir fossinum.
nothing-NOM can-be-heard on-account-of the-waterfall-DAT
'Nothing can be heard on account of the waterfall.'

b. Úrið týndist.
the-watch-NOM got-lost
'The watch got lost.'

These are ignored in this article.[7] We assume that they are derived in the lexicon and not in the syntax.

The general outline of the study is as follows: After giving some background information about Icelandic syntax in section 1, we quickly review in section 2 the syntactic characteristics of grammatical subjects in Icelandic. We then discuss in section 3 the problem of which NPs that are in postverbal position in unmarked active sentences can show up as the subject of a passive sentence. In section 4, we give an LFG account of passives in Icelandic and outline the principles of case marking and assignment of grammatical functions that obtain in Icelandic. We show that our account does not force us to the conclusion that Icelandic has double objects. We then briefly discuss in section 5 whether German constructions such as the one illustrated in (4) should be treated in the same way as their superficially similar Icelandic translations.

(4) Ihm wurde geholfen. (German)
Honum var hjálpað. (Icelandic)
him-DAT was helped
'He was helped.'

[6]Example (3a) is taken from Einarsson (1945). Example (3b) shows that middle formation does not preserve oblique case; the verb *týna* 'to lose' takes dative objects in the active voice, dative subjects in the passive voice, but nominative subjects in the middle voice. See Zaenen and Maling (1990:137–152) for discussion of oblique case marking with respect to other quasi-productive lexical rules. Unaccusative verbs show that case preservation is not restricted to fully productive "syntactic" rules such as passive ("major" rule in the sense of Wasow, 1980). As far as we know, Bernódusson (1982) was the first to point out the existence of unaccusative verbs preserving accusative case on Themes.

[7]The use of the *-st*-passive is less widespread in Icelandic than it is, for example, in Swedish. This is not meant to imply that there are not some uses of the *-st*-forms in Icelandic that are not found in Swedish, for example, the one exemplified under (i):

(i) Þeir sögðust ekki vilja gera það.
they said-themselves not to-want to-do that
'They said that they did not want to do that.'

We show that the two constructions are syntactically very different in the two languages and then extend our account of case marking to cover the German data.

6.1 Some Relevant Features of Icelandic Syntax

Icelandic has the richest inflectional system of any modern Germanic language. There are four cases (nominative, accusative, dative, genitive) and three genders (masculine, feminine, neuter). To make it easier to follow the examples, we give the paradigm for personal pronouns in (5).

(5)

	Singular			Plural		
	Masc	Fem	Neut	Masc	Fem	Neut
NOM	hann	hún	það	þeir	þær	þau
ACC	hann	hana	það	þá	þær	þau
DAT	honum	henni	því	þeim	þeim	þeim
GEN	hans	hennar	þess	þeirra	þeirra	þeirra

The basic word order of Icelandic is SVO, both in main and in embedded clauses. The main verb directly follows any auxiliaries, as in English but unlike German. This is illustrated in (6).

(6) a. Ég hafði séð hana.
I had seen her-ACC
'I had seen her.'
b. *Ég hafði hana séð.

However, unlike English and like the other Germanic languages, Icelandic has the verb-second constraint. That is, the subject inverts with the finite verb whenever another constituent is topicalized. This is illustrated in (7).

(7) a. Ólafur fann peysuna sína í skúffunni.
Olaf-NOM found sweater-ACC his [+refl] in the-drawer-DAT
'Olaf found his sweater in the drawer.'
b. Peysuna sína *fann* Ólafur í skúffunni.
c. *Peysuna sína Ólafur *fann* í skúffunni.
d. Í skúffunni *fann* Ólafur peysuna sína.
e. *Í skúffunni Ólafur *fann* peysuna sína.

Thus far we have considered only simple transitive verbs with accusative objects. Icelandic, however, also has transitive verbs with dative and genitive objects, as illustrated in (8), and numerous ditransitive verbs (see section 3.2 below).

(8) a. Ég hjálpaði honum. DAT
I helped him-DAT

b. Ég mun sakna hans. GEN
I will miss him-GEN
'I will miss him.'

Icelandic has an impersonal passive construction, illustrated in (9). When no topicalization takes place in impersonal passives, a dummy *það* occurs in sentence-initial position, as shown in (9a). Whenever there is a topicalized constituent, dummy *það* cannot occur in the sentence, either before or after the finite verb. This fact is illustrated in (9b–d).

(9) a. Það var dansað í gær.
There was danced yesterday
'People danced yesterday.'

b. Í gær var dansað.

c. *Í gær var það dansað.

d. *Í gær það var dansað.

When the auxiliary is *vera* 'to be' or *verða* 'to be, become', the participle agrees in number and gender with the nominative NP in the clause.[8] This is illustrated in (10).

(10) a. Ólafur var farinn til Íslands.
Olaf-NOM was gone-MASC-SG to Iceland-GEN
'Olaf had gone to Iceland.'

b. Sigga var farin til Íslands.
Sigga-NOM was gone-FEM-SG to Iceland
'Sigga had gone to Iceland.'

c. Barnið var farið til Íslands.
the-child was gone-NEUT-SG to Iceland
'The child had gone to Iceland.'

6.2 Two Hypotheses: Subject versus Topic in Icelandic

Given these basic features of Icelandic syntax, there are two possible analyses of sentences such as the ones in (11), where a DAT or GEN is in the first position, and the tensed verb in second position is third-person neuter, singular.

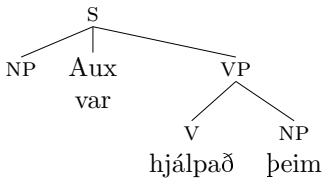
[8]Strong verb participles such as *fara* end in *-inn, -in, -ið*; one class of weak verbs (e.g., *telja*) also has participles of this form, but most weak verb participles end in *að*ur, *-uð, -ð*.

(11) a. Þeim var hjálpað.
them-DAT was helped
'They were helped.'

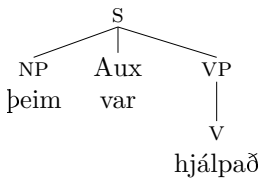
b. Hennar var saknað.
her-GEN was missed
'She was missed.'

The question is whether these forms are instances of topicalization in an impersonal passive construction, or personal passives in which the first NP is a bona fide subject. These two analyses are sketched in (12a) and (12b).

(12) a.



b.



Under the first hypothesis, sentences such as (11) are simply examples of impersonal passives combined with the topicalization of the dative or genitive NP; under this analysis, the sentences are theoretically unproblematic and uninteresting. Under the second hypothesis, however, the dative NP is indeed a grammatical subject, and the construction therefore presents difficulties for those accounts of passive that are based on case marking. In what follows, we argue that the correct analysis is (12b).[9] Before tackling that problem, we first review the arguments that have been amassed during the last years to the effect that nominative case marking is not a necessary prerequisite (nor a sufficient one) for subjecthood in Icelandic.

Recent research has shown that there are several syntactic properties that distinguish between topics and subjects in Icelandic (Andrews, 1982a,b, and 1990:165–185; Thráinsson, 1979; Maling, 1990:71–91; Zaenen, 1980). Andrews (1976) was the first to point out that this distinction does not coincide with that between nominative and non-nominative

[9]This destroys the argument given in section 4.2 of Maling and Zaenen (1990:383–407) against the application of the *that* t-filter in Icelandic. However, the general conclusion reached in that paper still holds.

NPs, and that contrary to traditional belief, a sentence such as (13) must be analyzed as having a simple subject-predicate structure with a dative subject and a nominative object.

(13) Henni hefur alltaf þótt Ólafur leiðinlegur.
her-DAT has always thought Olaf-NOM boring-NOM
'She has always found Olaf boring.'

Arguments for that view were further developed in Maling (1990:71–91), Andrews (1982a), and Thráinsson (1979), who summarizes most of the tests. We refer to these non-nominative preverbal NPs as *oblique subjects*. We illustrate here each property with an example of a nominative subject and an example of oblique subject and refer to the relevant literature for further discussion.

6.2.1 Raising

Only subjects can raise, as illustrated by the contrast between (14b) and (14d). The verb *sakna* 'to miss' takes a nominative subject and a genitive object.

(14) a. Guðrún saknar Haraldar.
Gudrun-NOM misses Harold-GEN
'Gudrun misses Harold.'

b. Ég taldi Guðrúnu í barnaskap mínum sakna
I believed Gudrun-ACC in foolishness my to-miss
Haraldar.
Harold-GEN
'I believed Gudrun in my foolishness to miss Harold.'

c. Haraldar saknar Guðrún.
Harold-GEN misses Gudrun-NOM
'Harold, Gudrun misses.'

d. *Ég taldi Haraldar/Harald sakna
I believed Harold-GEN/Harold-ACC to-miss
Guðrún/Guðrúnu.
Gudrun-NOM/Gudrun-ACC

Since *í barnaskap mínum* 'in my foolishness' in (14b) is an adverbial belonging to the matrix clause, its presence between the NP *Guðrúnu* and the infinitive complement *sakna Haraldar* 'to miss Harold' is good evidence that the NP has been raised into matrix object position. (See Thráinsson, 1979:389–393, for further discussion.) Of course, predicate nominals cannot be raised, despite their nominative case marking, as illustrated in (15).[10]

[10]Non-NPs cannot in general undergo raising, as shown in (i):

(15) a. Ólafur er bóndi.
Olaf-NOM is a-farmer
'Olaf is a farmer.'

b. Bóndi er Ólafur. (Topicalization)
a-farmer is Olaf
'A farmer, Olaf is.'

c. Ég tel Ólaf vera bónda.
I believe Olaf-ACC to-be a-farmer-ACC
'I believe Olaf to be a farmer.'

d. *Ég tel bónda vera Ólaf.
I believe a-farmer-ACC to-be Olaf-ACC

However, so-called oblique subjects can raise, as shown in (16):

(16) Ég tel henni hafa alltaf þótt Ólafur leiðinlegur.
I believe her-DAT to-have always thought Olaf-NOM boring-NOM
'I believe her always to have found Olaf boring.'

We can conclude that whatever the surface case marking, all and only grammatical subjects can raise. (See Andrews, 1982b, and Thráinsson, 1979, for further discussion.)

6.2.2 Reflexivization

A second test is reflexivization. Many speakers of Icelandic allow only grammatical subjects to be the antecedents of reflexive pronouns, or, more accurately, allow objects to be antecedents only if the reflexive occurs in a predicate complement predicated of that object (see Maling, 1986, for discussion). For such speakers, we find the same sort of contrasts with respect to reflexivization as we did with respect to raising. We give the judgments for those speakers who allow only subject-controlled reflexivization. (For other speakers, the contrasts are more subtle: subjects control obligatory reflexivization, whereas objects control reflexives only optionally; see Thráinsson, 1976, and Maling, 1990:277–287, for further discussion.) Boldface indicates intended coreference.

(i) *Ég taldi á fundunum í barnaskap mínum hafa verið margt
I believed [at the-meeting]$_{PP}$ in foolishness my to-have been many
fólk.
people

However, just when the PP can be analyzed as the grammatical subject, then it can undergo raising, as illustrated in (ii):

(ii) Ég taldi undir rúminu í barnaskap mínum vera góðan felustað.
I believed under the-bed in foolishness my to-be good hiding-place.

(17) a. *Sigga* barði mig með dúkkunni *sinni/*hennar*.
Sigga-NOM hit me-ACC with doll-DAT her (* [−refl])
'Sigga hit me with her doll.'

b. Ég barði *Siggu* með dúkkunni *hennar/*sinni*.
I hit Sigga-ACC with doll her (*[+refl])
'I hit Sigga with her doll.'

c. *Siggu* barði ég með dúkkunni *hennar/*sinni*.
Sigga-ACC hit I-NOM with doll her (*[+refl])
Sigga I hit with her doll.'

Again, the non-nominative subject can (in fact, must) control reflexivization, as shown in the following example:

(18) a. *Henni* þykir bróðir *sinn/*hennar* leiðinlegur.
her-DAT thinks brother-NOM her *[−refl] boring
'She finds her brother boring.'

b. *Hverjum* þykir *sinn* fugl fagur. (Proverb)
everyone-DAT thinks his [+refl] bird-NOM beautiful
'Everyone thinks his own bird beautiful.'

6.2.3 Topicalization and Subject-Verb Inversion

Subjects appear immediately after the finite verb if another constituent has been preposed; whenever an object has been topicalized, no further topicalization can take place.

(19) a. Refinn skaut Ólafur með þessari byssu.
the-fox-ACC shot Olaf-NOM with this shotgun
'The fox Olaf shot with this shotgun.'

b. *Með þessari byssu skaut refinn Ólafur.
with this shotgun shot the-fox-ACC Olaf-NOM

Similarly, in direct questions the tensed verb is immediately followed by the subject; hence, direct questions and topicalizations are incompatible, as shown in (20):

(20) a. Sigga hafði aldrei hjálpað Haraldi
Sigga-NOM had never helped Harold-DAT
'Sigga had never helped Harold.'

b. Hafði Sigga aldrei hjálpað Haraldi? (Yes/no question)
had Sigga-NOM never helped Harold-DAT
'Had Sigga never helped Harold?'

c. *Hafði Haraldi Sigga aldrei hjálpað?
had Harold-DAT Sigga-NOM never helped

d. Hvenær hafði Sigga hjálpað Haraldi? (WH-question)
when had Sigga helped Harold-DAT
'When had Sigga helped Harold?'

e. *Hvenær hafði Haraldi Sigga hjálpað?
when had Harold -DAT Sigga-NOM helped

f. Haraldi hafði Sigga aldrei hjálpað. (Topicalization)
Harold-DAT had Sigga-NOM never helped
'Harold, Sigga had never helped?'

The same is true of oblique subjects. Unlike topics, oblique subjects can immediately follow the finite verb.[11] As shown in (21b), topicalization can apply to sentences such as (13), in which case the oblique subject inverts with the finite verb.

(21) a. Hefur henni alltaf þótt Ólafur leiðinlegur?
has her-DAT always thought Olaf-NOM boring-NOM
'Has she always found Olaf boring?'

b. Ólafur hefur henni alltaf þótt leiðinlegur.
Olaf-NOM has her-DAT always thought boring-NOM
'Olaf, she has always found boring.'

c. *Hefur Ólafur henni alltaf þótt leiðinlegur?
has Olaf-NOM her-DAT always thought boring

6.2.4 Extraction

Most speakers of Icelandic do not generally allow topicalization in binding domains; in other words, they allow topicalization to occur in embedded *að* 'that'-clauses, but not under (indirect) questions, comparatives, relatives, and so on. This is illustrated by the contrast in (22). (For further discussion see Zaenen, 1980, and Rögnvaldsson, 1984.)

[11] Note that the superficially similar *Ist dir kalt geworden?* in German does not necessarily have to be analyzed as an instance of subject-verb inversion. According to German word order, both (nonsubject) *dir* and *kalt* can occur between the finite verb *ist* and the nonfinite *geworden* even without this rule, as illustrated in (i).

(i) Es ist dir kalt geworden. (German)
it is you-DAT cold become

(ii) *Það er þér kalt orðið (Icelandic)
*Það er þér orðið kalt.

It is clear that the Icelandic construction differs significantly from its German counterpart. See section 5 below for an account of certain syntactic differences between German and Icelandic.

(22) a. Jón telur að María hafi kysst Harald
John believes that Mary-NOM has kissed Harold-ACC
í gær.
yesterday
'John believes that Mary kissed Harold yesterday.'

b. Hvenær telur Jón að María hafi kysst Harald?
when believes John-NOM that Mary-NOM has kissed Harold
'When does John believe that Mary kissed Harold?'

c. Jón telur að Harald hafi María kysst
John-NOM believes that Harold-ACC has Mary-NOM kissed
í gær. (Topicalization)
yesterday

d. *Hvenær telur Jón að Harald hafi María kysst?
when believes John that Harold-ACC has Mary-NOM kissed

Again, oblique subject NPs pattern here with the nominative subjects as opposed to topicalized NPs, as shown in (23):

(23) a. Jón telur að henni hafi alltaf þótt Ólafur
John believes that her-DAT has always thought Olaf-NOM
leiðinlegur.
boring-NOM
'John believes that she has always found Olaf boring.'

b. Hvenær telur Jón að henni hafi þótt Ólafur
when believes John-NOM that her-DAT has thought Olaf
leiðinlegur?
boring
'When does John believe that she found Olaf boring?'

c. Jón telur að Ólafur hafi henni alltaf þótt
John-NOM believes that Olaf-NOM has her-DAT always thought
leiðinlegur. (Topicalization)
boring
'John believes that Olaf, she has always found boring.'

d. *Hvenær telur Jón að Ólafur hafi henni
when believes John-NOM that Olaf-NOM has her-DAT
þótt leiðinlegur?
thought boring

Note, in particular, that in (23d) the object *Ólafur* is not patterning like a subject, despite its nominative case marking.

6.2.5 Indefinite-Subject Postposing

When a subject is indefinite, it can be postposed by a rule of indefinite-NP postposing (plus *það*-insertion). This cannot be done when a non-subject is in first position.

(24) a. Það hefur þjófur stolið hjólinu mínu.
there has a-thief-NOM stolen bicycle-DAT mine-DAT
'A thief has stolen my bicycle.'

b. Hjóli hefur þjófurinn stolið.
a-bicycle-DAT has the-thief-NOM stolen
'A bicycle, the thief has stolen.'

c. *Það hefur hjóli þjófurinn stolið.
there has a-bicycle-DAT the-thief-NOM stolen

d. *Það hefur hjóli stolið þjófurinn.
there has a-bicycle-DAT stolen the-thief-NOM

Again oblique subjects pattern like nominative subjects rather than like topicalized NPs.

(25) a. Það hefur einhverjum þótt Ólafur leiðinlegur.
there has someone-DAT thought Olaf-NOM boring-NOM
'Someone found Olaf boring.'

b. Ólafur hefur einhverjum þótt leiðinlegur.
Olaf-NOM has somebody-DAT thought boring-NOM
'Olaf, somebody has found boring.'

c. *Það hefur Ólafur einhverjum þótt leiðinlegur.
there has Olaf-NOM someone-DAT thought boring

6.2.6 Subject Ellipsis

Another syntactic rule that distinguishes subjects from nonsubjects in Modern Icelandic is the kind of ellipsis that allows the subject of a coordinated clause to be deleted under identity with the subject of the preceding conjunct clause.[12] (The examples in (26c,d) are grammatical

[12]It is well known that Old Norse allowed rather free ellipsis of NPs under identity with some NP in the previous sentence. Faarlund (1980:70) observes that ellipsis in Old Norse does not seem to be sensitive to either subjecthood or nominative case but rather simply deletes any unstressed recoverable pronoun; one could argue that the basic condition was not strict identity but simply coreference. However, in the Modern Scandinavian languages, such ellipsis or coordination is sensitive to grammatical relations. The examples in (26) are based on Faarlund's Norwegian examples. Note further that sentences such as (i) where both subject and object are elided are grammatical, if somewhat stilted:

(i) Þeir fluttu líkið og ___ grófu ___.
they moved the-body and ___ buried ___

only if the verb *grafa* is interpreted intransitively as 'to dig' rather than transitively as 'to bury'.)

(26) a. Þeir fluttu líkið og þeir grófu það.
they-NOM moved the-corpse and they buried it
'They moved the corpse and they buried it.'

b. Þeir fluttu líkið og ___ grófu það. (Subj-Subj)
'They moved the corpse and buried it.'

c. ≠ Þeir fluttu líkið og þeir grófu ___. (Obj-Obj)
'They moved the corpse and they dug.'

d. ≠ Líkið var flutt og þeir grófu ___. (Subj-Obj)
'The corpse was moved and they dug.'

e. *Líkið hræddi þá og ___ grófu það.
the-corpse-NOM scare them-ACC and ___ buried it-ACC
'The corpse scared them and ___ buried it.' (Obj-Subj)

Now consider the coordination of sentences, one of which takes a nominative subject, the other an oblique subject. Consider the contrast between (27a) and (27b). Oblique subjects can be deleted under identity with nominative subjects, and vice versa, but objects cannot be deleted in this fashion, even when their case is nominative. This is illustrated by the following examples:

(27) a. Hann segist vera duglegur, en ___ finnst
he-NOM says-self to-be diligent, but ___-DAT finds
verkefnið of þungt. (Subj-Subj)
the-homework too hard
'He says he is diligent, but finds the homework too hard.'

b. *Hann segist vera duglegur, en mér finnst ___
he-NOM says-self to-be diligent, but I-DAT find ___-NOM
latur. (Subj-Adj)
lazy
'He says he is diligent, but I find [him] lazy.'

It is clear that ellipsis is sensitive to grammatical relations rather than to morphological case. In (27a), ellipsis is perfectly acceptable even though the cases differ because both NPs are subjects. However, (27b) is unacceptable, despite the fact that the coreferential NPs are both nominative case, because only one of the two is a grammatical subject. (For further discussion see Rögnvaldsson, 1990:349–353; and Bresnan and Thráinsson, 1990:355–365).

The syntactic constraints on this kind of "conjunct splitting" merit further investigation.

6.2.7 Infinitive Complements

Only subjects can be the target of EQUI-NP-deletion or be understood as "arbitrary" or anaphorically controlled PROs in Icelandic.

(28) a. Ég vonast til að fara heim.
I hope for to go home
'I hope to go home.'

b. Að fara heim snemma er óvenjulegt.
to go home early is unusual
'To go home early is unusual.'

Oblique subjects can also be the target of EQUI or be arbitrary PRO subjects of infinitives, as shown in (29). The verb *vanta* 'to lack' takes an accusative subject and an accusative object.

(29) a. Mig vantar peninga.
me-ACC lacks money-ACC
'I lack money.'

b. Ég vonast til að vanta ekki peninga.
I hope for ___-ACC to lack not money-ACC
'I hope not to lack money.'

c. Að vanta peninga er alltof algengt.
to lack money is all-too common
'To lack money is all too common.'

In conclusion, there are (at least) seven different syntactic criteria to distinguish subjects from topics in active sentences in Icelandic, and we see that these tests do not necessarily pick out the nominative NP.

6.3 Which Postverbal NPs can Passivize in Icelandic?

We are now in a position to return to the question posed above: what is the grammatical function of the preverbal NPs in passive sentences such as those in (11), repeated here for convenience:

(11) a. Þeim var hjálpað.
them-DAT was helped
'They were helped.'

b. Hennar var saknað.
her-GEN was missed
'She was missed.'

Note that regardless of the person or number of the initial NP, the verb is always the third-person singular. Verbs agree in person and number with a nominative argument; if there is no nominative NP, then the verb

occurs in the third-person (neuter) singular, which we take to be the unmarked form.

6.3.1 Oblique Subjects in Icelandic Passives

We now test the syntactic behavior of passivized oblique NPs using the same tests that we used above in section 2 for active sentences. As can be seen from the examples in the following sections, the preverbal dative NP in a sentence such as (11a) behaves in all respects like a grammatical subject.

Raising

A first such test is subject-to-object raising.

(30) Ég tel *þeim* hafa verið hjálpað í prófinu.
I believe them-DAT to-have been helped in the-exam
'I believe them to have been helped on the exam.'

The preverbal NP undergoes raising and keeps its dative case-marking.

Reflexivization

A second test is reflexivization. Many speakers of Icelandic allow only subjects to be the antecedents of reflexive pronouns, or, more accurately, allow objects to be antecedents only if the reflexive occurs in a predicative complement predicated of that object (Maling, 1990:277–287). For such speakers, we find the same sort of contrasts with respect to reflexivization as we did with respect to raising. Note that the reflexive is obligatory in (31).

(31) *Honum* var oft hjálpað af foreldrum *sínum/*hans*.
he-DAT was often helped by parents his [+refl]/*[−refl]
'He was often helped by his parents.'

Subject-Verb Inversion

Third, the preverbal dative can immediately follow the finite verb in direct questions, or if another constituent has been preposed.

(32) a. Var honum aldrei hjálpað af foreldrum sínum?
was he-DAT never helped by parents his
'Was he never helped by his parents?'

b. Í prófinu var honum víst hjálpað.
in the-exam was he-DAT apparently helped
'On the exam he was apparently helped.'

Extraction

Fourth, many speakers of Icelandic do not generally allow topicalization in binding domains; in other words, they allow topicalization to occur

in embedded *að*-clauses ('that'-clauses), but not under (indirect) questions, comparatives, relatives, and so on. However, these oblique NPs can appear preverbally in these contexts.

(33) a. Hann telur, að *henni* hafi verið hjálpað í gær.
he believes that she-DAT has been helped yesterday
'He believes that she was helped yesterday.'

b. Hvenær telur hann að *henni* hafi verið hjálpað?
when believes he that she-DAT has been helped
'When does he believe that she was helped?'

Indefinite-Subject Postposing

Fifth, the preverbal datives under consideration pattern like grammatical subjects rather than like topicalized NPs with respect to indefinite-subject postposing.

(34) Það hefur mörgum stúdentum verið hjálpað í prófinu.
there has many-DAT students-DAT been helped on the-exam
'Many students have been helped on the exam.'

Subject Ellipsis

Sixth, the preverbal dative can be deleted by subject ellipsis.

(35) Hann segist vera saklaus en ___ hefur víst verið
he-NOM says-self to-be innocent but ___-DAT has apparently been
hjálpað í prófinu.
helped on the-exam
'He says that he is innocent but has apparently been helped on the exam.'

Infinitive Complements

Seventh, just like other grammatical subjects, the passivized dative object can be the target of EQUI, as illustrated in (36a); it can also be understood as an arbitrary PRO subject of an infinitive, as in (36b).

(36) a. Ég vonast til að verða hjálpað.
I hope for to be helped
'I hope to be helped.'

b. Að vera hjálpað í prófinu er óleyfilegt.
to be helped on the-exam is un-allowed
'To be helped on the exam is not allowed.'

Thus, by the above seven tests, the preverbal dative and genitive NPs in (11) are clearly grammatical subjects and not topicalized objects, and the sentences in (11) must be analyzed as ordinary personal passives. It is clear that for Icelandic, oblique case is not immune to passivization.

6.3.2 Passive and Ditransitive Verbs

Icelandic has numerous ditransitive verbs. The possibilities are illustrated in (37) (from Thráinsson, 1979:21–22).

(37) a. þeir leyndu Ólaf sannleikanum. ACC-DAT
they concealed (from)-Olaf-ACC the-truth-DAT
'They hid the truth from Olaf.'

b. Jón bað mig bónar. ACC-GEN
John asked me-ACC a-favor-GEN
'John asked a favor of me.'

c. Ég sagði þér söguna. DAT-ACC
I told you-DAT a-story-ACC
'I told you a story.'

d. Ólafur lofaði Maríu þessum hring. DAT-DAT
Olaf-NOM promised Mary-DAT this-DAT ring-DAT
'Olaf promised Mary this ring.'

e. María óskaði Ólafi alls góðs. DAT-GEN
Mary wished Olaf-DAT everything-GEN good-GEN
'Mary wished Olaf all the best.'

We see that virtually any combination of two case-marked postverbal NPs is possible, except that the first NP can never be genitive case.

There are several different types of ACC-ACC verbs, but it is debatable whether any of them are truly ditransitive. First, there are transitive verbs such as *kalla* 'to name, call', as illustrated in (38).

(38) a. Þeir kölluðu hana Kiddu.
they called her-ACC Kidda-ACC
'They called her Kidda.'

b. Hún var kölluð Kidda.
she-NOM was called Kidda-NOM
'She was called Kidda.'

But this type of verb is not a true ditransitive verb, since the second postverbal NP is clearly an (objective) complement rather than a verbal object. This can be seen from the passive version in (38b), where the "retained complement" becomes nominative, agreeing with the subject NP it is predicated of.

Second, there are also simple transitive verbs such as *höggva* 'to hit' and *kyssa* 'to kiss', which can take an additional argument that might be described as a cognate object.

(39) a. höggva einhvern banahögg
to-hit someone-ACC a-deadly-blow-ACC
'to deal someone a deadly blow'

b. slá einhvern kinnhest
to-hit someone-ACC a-blow-on-the-cheek-ACC
'to give somebody a blow on the cheek'

c. kyssa einhvern rembingskoss
to-kiss someone-ACC a-loud-kiss-ACC
'to give somebody a smacking kiss'

Only the first postverbal NP in such constructions can passivize, as illustrated in (40), in which case the second object not surprisingly remains accusative.

(40) a. Skarphéðinn hjó þráin banahögg
Skarphedinn-NOM hit Thrainn-ACC a-deadly-blow-ACC
'Skarphedinn dealt Thrainn a deadly blow.'

b. Þráinn var höggvinn banahögg.
Thrainn-NOM was hit a-deadly-blow-ACC
'Thrainn was dealt a deadly blow.'

c. *Banahögg var höggvið þráin.
a-deadly-blow-NOM/ACC was hit Thrainn-ACC

We briefly discuss the analysis of this type of ACC-ACC verb below in section 4.4.

A third possible type of ACC-ACC verb, pointed out to us by an anonymous reviewer, consists of simple transitive verbs such as *keyra* 'drive', which can optionally be followed by a second accusative NP indicating the thematic role of 'path'. Here, too, only the first postverbal NP can passivize, and the second NP remains accusative.

(41) a. Hann keyrði bílinn þessa leið.
he drove the-car-ACC this route-ACC
'He drove the car this way.'

b. Bíllinn var keyrður þessa leið.
the-car-NOM was driven this route-ACC
'The car was driven this way.'

c. *Þessi leið var keyrð bílinn.
this route-NOM was driven the-car-ACC
'This way was driven the car.'

Similar facts obtain for the verb *aka* 'drive', which takes DAT rather than ACC case on 'car'. We discuss the analysis of these verbs, too, in section 4.4.

To the extent that none of the above-mentioned types are truly ditransitive, there seem to be no triadic verbs in Icelandic where both objects are marked accusative.[13] We assume this to be an accidental gap. Nothing in our account of case marking would prevent such a combination.

Ditransitive verbs fall into two classes with respect to passive. In the first class, only the first postverbal NP passivizes, as illustrated by the following examples with the DAT-DAT verb *skila* 'to return':

(42) a. Ég skilaði henni peningunum.
I returned her-DAT the-money-DAT
'I gave her back the money.'

b. Henni var skilað peningunum.
she-DAT was returned the-money-DAT
'She was given back the money.'

c. *Peningunum var skilað henni.
'The money was given back to her.'

d. Ég tel henni hafa verið skilað peningunum.
I believe her-DAT to-have been returned the-money
'I believe her to have been given back the money.'

e. *Ég tel peningunum hafa verið skilað henni.
'I believe the money to have been given back to her.'

The behavior of these verbs is straightforward, the only noteworthy detail being that a DAT object passivizes; but this should not be at all surprising after the discussion of the previous section. Examples (42a–c) contrast nicely with the following, where the verb *skila* is used as a simple transitive verb, taking a DAT Theme but with the goal realized as a PP-complement instead of as a DAT NP.

(43) a. Ég skilaði peningunum til hennar.
I returned the-money-DAT to her-GEN
'I returned the money to her.'

b. Peningunum var skilað til hennar.
the-money-DAT was returned to her
'The money was returned to her.'

[13] The well-known class of exceptions to passives such as *weigh* includes one superficially ditransitive ACC-ACC verb, namely, *kosta* 'to cost', illustrated in (i).

(i) Það kostaði mig eina krónu.
it cost me-ACC one kronur-ACC

Just as in English, neither postverbal NP passivizes. Our guess is that this is because the subject is not agentive enough. The classification of *kosta* thus depends on whether one thinks that a necessary criterion for (di)transitivity is having a passivizable object.

We see that when *peningunum* is the sole bare NP-argument, it can passivize. These facts seem to suggest that the mapping between grammatical functions and phrase structure positions in Icelandic is fairly fixed: subjects are mapped onto the preverbal NP, and direct objects are mapped onto the immediately postverbal NP. However, this mapping is not the only possibility for objects, as shown by the passivization pattern of the second class of ditransitives, namely DAT-ACC verbs such as *gefa* 'to give'.

In some sense, the DAT-ACC pattern represents the core class of ditransitive verbs: only these verbs survive as ditransitives in English and in the Scandinavian languages other than Icelandic, that is, in related languages without morphological case marking. All the other ditransitive verbs have become instead verbs taking NP-PP complements (presumably because at least one of the NPs is semantically quite predictable, for example, a recipient).

For DAT-ACC verbs, either postverbal NP can passivize, as illustrated in (44). Note that in (44a) the retained object is nominative (rather than accusative); this rather surprising fact follows from the principles for default case marking given in (61d) below.

(44) a. Konunginum voru gefnar ambáttir.
the-king-DAT were given-FEM-PL slaves-NOM-FEM-PL
'The king was given maidservants.'

b. Ambáttin var gefin konunginum.
the-slave-NOM-SG was given-FEM-SG the-king-DAT
'The maidservant was given to the king.'

As noted above, the verb agrees with the nominative argument even when this argument is not the grammatical subject, as in (44a).

To show that in both (44a) and (44b) the object has indeed become a subject, we run the examples through the tests for subjecthood summarized previously.

Raising

(45) a. Ég tel konunginum hafa verið gefnar ambáttir.
I believe the-king-DAT have been given-FEM-PL slaves-NOM
'I believe the king to have been given maidservants.'

b. Ég tel ambáttina hafa verið gefna konunginum.
I believe the-slave-ACC have been given-ACC the-king-DAT
'I believe the maidservant to have been given to the king.'

Reflexivization

(46) a. Konunginum voru gefnar ambáttir í höll sinni/?hans.
the-king-DAT were given slaves in palace his (+refl/?−refl)
'The king was given maidservants in his palace.'

b. Ambáttin var gefin konunginum vegna fegurðar
the-slave-NOM was given the-king-DAT because-of beauty
sinnar/?hennar.
her (+refl/?−refl)
'The maidservant was given to the king because of her beauty.'

Subject-Verb Inversion

(47) a. Um veturinn voru konunginum gefnar ambáttir.
in the-winter were the-king-DAT given slaves-NOM
'In the winter, the king was given (female) slaves.'

b. Um veturinn var ambáttin gefin konunginum.
in the-winter was the-slave-NOM given the-king-NOM
'In the winter, the maidservant was given to the king.'

(48) a. Voru konunginum gefnar ambáttir?
were the-king-DAT given slaves-NOM
'Was the king given maidservants?'

b. Var ambáttin gefin konunginum?
was the-slave-NOM given the-king-DAT
'Was the maidservant given to the king?'

Extraction

(49) a. Hvaða ambáttir heldur þú að konunginum verði
which slaves-NOM think you that the-king-DAT will-be
gefnar?
given
'Which maidservants do you think that the king will be given?'

b. Konunginum held ég að ambáttin verði gefin.
the-king-DAT believe I that the-slave-NOM will-be given
'To the king I think that the maidservant will be given.'

Indefinite Subject Postposing

(50) a. Það voru konungi gefnar ambáttir í vetur.
there was king-DAT given slaves-NOM in winter
'There was a king given maidservants this winter.'

b. Það var ambátt gefin konunginum í vetur.
there was slave-NOM given king-DAT in winter
'There was a maidservant given to the king last winter.'

Subject Ellipsis

(51) a. Konungarnir fóru víða og ___ voru oft gefnar
the-kings-NOM traveled widely and ___-DAT were often given
ambáttir.
slaves
'The kings traveled widely and were often given maidservants.'

b. Ambáttin kom frá Írlandi og ___ var gefin
the-slave came from Ireland and ___-NOM was given
konunginum.
the-king-DAT
'The maidservant came from Ireland and was given to the king.'

Infinitive Complements

(52) a. Að vera gefnar ambáttir var mikill heiður.
to be given slaves-NOM was great honor
'To be given maidservants was a great honor.'

b. Að vera gefin konunginum olli miklum vonbrigðum.
to be given the-king-DAT caused great disappointment
'To be given to the king caused great disappointment.'

c. Ambáttin vonast til að verða gefin konunginum.
the-slave-NOM hopes for to be given the-king-DAT
'The maidservant hopes to be given to the king.'

These tests show that both the dative object and the accusative object can be made grammatical subjects by passive. When the dative object is passivized, the postverbal "retained object" appears in the nominative case, and the verb agrees with it in number. At first glance, this might seem to contradict our conclusion that it is the preverbal dative NP that is the subject, but as we show below, the nominative case marking is predictable. The accusative object of the active becomes the nominative subject of the passive and passes the same subjecthood tests with equal success.

6.4 Passive in LFG

In Lexical-Functional Grammar, actives and passives are related by a lexical redundancy rule. Given the existence of impersonal passives in Icelandic, it seems reasonable to dissociate the part of the rule that relates the active subject to the passive *by*-phrase from the part of the rule that associates the active object with the passive subject. Hence, we have the two rules in (53), whose effect is illustrated in (54):

(53) a. SUBJ ⟶ AF-OBJ/∅
b. OBJ ⟶ SUBJ

(54)

	Agent	Theme
taka: V, 'take'	(SUBJ,	OBJ)
tekinn: V[+part]	(AF-OBJ,	SUBJ)

We ignore here the fact that the Agent is only rarely expressed in passive sentences in Icelandic. A treatment of optional Agents can be found in Bresnan (1982a); for the use of ∅ in lexical rules, see Bresnan (1982b:166). The auxiliary verbs *vera* and *verða* are treated as "raising" verbs that take a SUBJ and an XCOMP. No thematic role is associated with the subject of these verbs, and they get whatever subject their XCOMP gets (see Kaplan and Bresnan, 1982, for further explanation of the formalism used in LFG). The morphological principles assigning case are discussed below.

6.4.1 Grammatical Functions, Thematic Roles, and Case Marking in Icelandic

Our account of passive in Icelandic is based on the LFG analysis of passive sketched above. Note in particular that only NPs bearing the grammatical function OBJ passivize. To develop a full account of the passive construction, we need to specify how these rules interact with other components of the grammar. In this section, we outline our view of this interaction, particularly with respect to thematic roles and case-marking rules.

The Lexical Component

For the sake of clarity, we restate here the distinction made in LFG between semantically restricted and semantically unrestricted grammatical functions (GFs). The same distinction is made in Relational Grammar between "obliques" and "terms." SUBJ, OBJ, and OBJ2 are semantically unrestricted functions because they can bear any type of thematic role, depending on the verb. For example, in (55a) the SUBJ is an Agent, whereas in (55b) it is an Instrument.

(55) a. The president kissed the baby.
b. The wrench opened the safe.

This characteristic of SUBJs, OBJs and OBJ2s contrasts with the behavior of GFs such as *with*-phrases and *to*-phrases. While these PPs may bear more than one function, the functions are restricted by the form of the PP: there is no verb in English that expresses its Goal by means of a *with*-phrase, or its Instrument by means of a *to*-phrase. (This is necessarily an oversimplification; see Bresnan, 1982c, for a more elaborate discus-

sion, and Levin, 1985, for further developments.) Thus, the nonverbal constituents of a sentence can be classified as follows into two kinds of verbal arguments plus a category of adjuncts.

(56) ARG: (i) semantically unrestricted (SUBJ, OBJ, OBJ2)
(ii) semantically restricted
ADJ: all types of adjuncts

Case Assignment

Case can be assigned in (at least) three different ways, which we call *semantic*, *lexical* or *idiosyncratic*, and *functional* case assignment.[14] Semantic case marking includes such traditional "adverbial" categories as accusatives of time or duration, and instrumental datives: these are illustrated in (57).[15]

(57) a. Strákurinn beið *allan daginn.*
the-boy waited all-ACC day-ACC
'The boy waited all day.'

b. Hann tók vini sínum *opnum örmum.*
he took friend his [+refl] open-DAT arms-DAT
'He greeted his friend with open arms.'

We cannot consider this type of case assignment in any detail here. Depending on their function, semantically case-marked constituents are either semantically restricted functions or adjuncts. Idiosyncratic or lexical case marking is an idiosynratic property of a lexical item, assigned by a verb, preposition, or adjective. We assume that idiosyncratic case is associated with a particular thematic role, and that this case marking is assigned before thematic roles are associated with grammatical functions. Functional case marking is what is widely referred to as regular or "default" case marking, which results in nominative subjects and accusative objects. It is sensitive to surface grammatical relations and hence applies after all association principles and reassociation rules, including passive.

The Mapping between Thematic Roles and Grammatical Functions

Our account of passive relies on the existence of association principles which establish a mapping between thematic roles and grammatical relations. The existence of such association principles is assumed in vari-

[14] Although our terminology may differ, these are the same three types of case distinguished, for example, in Hjelmslev, and more recently in a GB framework in Babby (1980) and Freidin and Babby (1983).

[15] These examples are taken from Friðjónsson (1978).

ous current linguistic theories but has not been fully fleshed out.[16] Our account makes use of both universal and language-specific association principles.

We postulate a level of representation at which the valency of a verb is determined and its arguments can be distinguished in terms of thematic roles. At this level of thematic structure, verbs such as *dansa* 'dance' and *lesa* 'read' have the following representations:

(58) *dansa* 'dance' <AGENT>
lesa 'read' <AGENT, THEME>

The relationship between different verb forms can be represented in terms of the optional suppression of an argument. For example, we might want to express the relation between the causative and noncausative forms of a verb such as *fækka* 'decrease' as follows:

(59) *fækka* 'decrease' <(AGENT), THEME>

Idiosyncratic case marking takes this level as its input. Thus, we are assuming idiosyncratic case is assigned to thematic roles and not to grammatical functions. This assumption is motivated by the fact that for a given verb, the idiosyncratic case marking associated with a given thematic role is preserved under rules such as passive and raising when the GF changes. Hence, verbs such as *gæta* 'take care of' and *lofa* 'promise' get the following representations after the assignment of idiosyncratic case:

(60) *gæta* 'take care of' <AGENT, THEME>
[+GEN]
lofa 'promise' <AGENT, THEME, GOAL>
[+DAT] [+DAT]

A set of association principles determines which thematic role will be mapped onto which grammatical function. Some of the association principles seem to be universal, whereas others are language specific. Where the universal and the language-specific principles interact, the language-specific ones take precedence, and the universal ones act as elsewhere conditions. One universal principle that has often been proposed is that the Agent role is associated with the SUBJ-function. We assume that

[16] It is clear that this general schema owes much to the work of Anderson (1977) and Wasow (1977, 1980), to Ostler (1979) and Marantz (1981), and to Amritavalli (1980), Rappaport (1983), and Levin (1985). We do not have the time here to spell out the importance of these various contributions. These accounts assume the existence of something like a thematic level of representation. It is not completely clear to us that this is a purely linguistic level; it seems rather to be a level that mediates between cognitive and linguistic representations. In this paper, however, we treat it as a linguistic level.

this principle is by and large correct.[17] We also assume a hierarchy of grammatical functions.[18]

Given these background assumptions, we can now formulate the following set of association principles for Icelandic.

(61) Icelandic Association Principles

a. If there is only one thematic role, it is assigned to SUBJ; if there are two, they are assigned to SUBJ and OBJ; if there are three, they are assigned to SUBJ, OBJ, OBJ2. (*Universal*)

b. Agents are linked to SUBJ. (*Universal*)

c. Case-marked Themes are assigned to the lowest available GF. (*Language specific*)

d. Default case marking: the highest available GF is assigned NOM case, the next highest, ACC.[19] (*Universal*)

6.4.2 Applying the Association Principles

These association principles are not specific to passives; they also account for preverbal oblique NPs in active sentences, as in (62).

(62) a. Mér er kalt.
me-DAT is cold
'I am cold.'

b. Henni hefur alltaf þótt Ólafur leiðinlegur.
her-DAT has always thought Olaf-NOM boring-NOM
'She always found Olaf boring.'

We assume that Icelandic does not have any impersonal verbs in the sense of "subjectless" verbs, except for those with no semantic arguments. For example, weather verbs or those with PP-complements but no arguments realized as bare NPs.

Now note that the association principles given here allow for two different assignments of GFs in the case of accusative Themes that do not bear idiosyncratic case. The association convention in (61c) does not say anything about them, since it only specifies that idiosyncratically marked Themes will be associated with the lowest available GF. Hence,

[17] We have ignored throughout the problem posed by the existence of ergative languages. It is not clear to us whether ergativity should be thought of as a difference in association principles ("deep" ergativity) or in case-marking principles ("surface" ergativity), or both.

[18] The hierarchy of grammatical relations stems from work in Relational Grammar (Perlmutter, 1983; Cole and Sadock, 1977).

[19] The default case marking is in a certain sense the equivalent of "structural case marking" in GB, except that we allow for exceptions such as nominative objects (see (62b)).

in the ditransitive cases where we have a non-case-marked Theme and another nonsubject argument, we can assign the GFs in two ways. For a verb like *gefa* 'to give', we will get the following two possibilities.

(63)	*gefa*: V	<AGENT,	THEME,	GOAL> [+DAT]
	a.	SUBJ	OBJ	OBJ2
	b.	SUBJ	OBJ2	OBJ

Note that this type of dual association resolves the problem of double objects. Although we can associate either the Theme or the Goal with the direct object in the lexical form of a verb such as *give*, we are not able to associate both arguments with the direct object at the same time because the association principles respect functional uniqueness. Whichever GF the Goal is linked to will get marked with the (lexically assigned) dative case; whichever GF the Theme is linked to, it will get marked accusative in the active version by virtue of the principle of default case marking.

This solution is not empirically equivalent to a solution in which we have two direct objects. It predicts that whatever *other* characteristic of OBJ we might find in the language, it will *not* apply to the immediately postverbal NP (the "retained object") of a ditransitive verb in the passive because that NP must have been assigned to OBJ2. To test this prediction, other syntactic rules that single out OBJs as opposed to all other postverbal GFs in Icelandic must be found. Rögnvaldsson (1982) discusses some data that might illustrate such a rule, and that support our analysis of DAT-ACC verbs.[20] The evidence is based on the interaction of heavy NP-shift and reflexivization (at least for those speakers who allow nonsubject antecedents). Rögnvaldsson (1982:133–135) shows that the reflexivization possibilities reflect the underlying order of the two postverbal NPs. This is illustrated for an ACC-DAT verb, *svipta* 'deprive', by the examples in (64), taken from Rögnvaldsson (1982, his [74a-b] and [80]).

(64) a. Sjórinn svipti hana$_i$ [manni sínum$_i$].
the-sea deprived her-ACC husband-DAT her [+refl]
'The sea deprived her$_i$ of her$_i$ husband.'

b. *Sjórinn svipti [konu sína$_i$] manninum$_i$.
the-sea deprived wife-ACC his [+refl] the-man-DAT
'The sea deprived his$_i$ wife of the man$_i$.'

[20]We thank an anonymous reader for pointing out the relevance of these data.

c. *Sjórinn svipti manninum$_i$ [gömlu konuna sína$_i$...]$_{NP}$.
the-sea deprived the-man-DAT old wife his [+refl]
'The sea deprived of the man$_i$ his$_i$ old wife.'

Sentence (64b) is ungrammatical because the supposed antecedent does not precede the reflexive; however, crucially, applying heavy NP-shift to the first NP, as in (64c), does not make the reflexive possible.

One possible interpretation of this fact (not Rögnvaldsson's) is that an OBJ but not a OBJ2 can be the antecedent of a reflexive. This generalization (together with linear precedence) accounts for the contrast noted by Rögnvaldsson (1982:231–322, n. 25). The DAT-ACC class of ditransitive verbs appears to have not one but two reflexivization patterns; that is, either object can be an antecedent. The following sentences are based on Rögnvaldsson's examples.

(65) a. Ég gaf konungi [ambáttina sína].
I gave a-king -DAT slave-ACC his [+refl]
'I gave the king his maidservant.'

b. Ég gaf ambáttina [konungi sínum]$_{NP}$.
I gave the-slave-ACC king-DAT his [+refl]
'I gave the maidservant to her king.'

Example (65b) contrasts with (64c) above. (Note that the shifted (dative) NP in (65b) need not be especially heavy.) Given our analysis of DAT-ACC verbs as getting dual assignments to GFs, these facts receive a very simple and natural explanation: an OBJ but not a OBJ2 can be the antecedent of a reflexive. Given the underdetermination of GF assignments embodied in the principles (61a–d) and the alternative assignments displayed in (63), this follows naturally.

As pointed out by an anonymous reviewer, further support for alternative assignments as in (63) seems to come from the facts discussed in Bernódusson (1982:37–38). He observes that for many active DAT-NOM verbs (verbs with DAT subjects and NOM objects), either order feels natural ("eðlileg"); this intuition about "unmarked" word order correlates with the fact that either argument can occur between the finite and nonfinite verbs, a position reserved for grammatical subjects. The facts for actives are analogous to the facts for DAT-NOM passives derived from DAT-ACC ditransitive verbs.

The solution proposed here is preferable to one in which we would allow OBJ2 passivize in Icelandic. Under such a proposal, we would need a different principle to exclude double passivization in the case of di-

transitive verbs with other than DAT-ACC objects, a restriction that was illustrated above in (42).[21]

We conclude this section by presenting Table 1, which summarizes the case marking and the grammatical functions assigned to the arguments of the various classes of ditransitive verbs.

TABLE 1 Case Marking and Grammatical Functions of Ditransitive Verb Arguments

Verb Type	Thematic roles	Lexical case marking	Gram. functions (Association Principles)	Default case marking
DAT-ACC	Agent		SUBJ (61b)	NOM
	Theme		OBJ2/OBJ (61a)	ACC
	Goal	DAT	OBJ/OBJ2 (61a)	
ACC-DAT	Agent		SUBJ (61b)	NOM
	Theme	DAT	OBJ2 (61c)	
	Source		OBJ (61a)	ACC
ACC-GEN	Agent		SUBJ (61b)	NOM
	Theme	GEN	OBJ2 (61c)	
	Goal		OBJ (61a)	ACC
DAT-DAT	Agent		SUBJ (61b)	NOM
	Theme	DAT	OBJ2 (61c)	
	Goal	DAT	OBJ (61a)	
DAT-GEN	Agent		SUBJ (61b)	NOM
	Theme	GEN	OBJ2 (61c)	
	Goal	DAT	OBJ (61a)	

The default case-marking principle stated in (61d) correctly accounts for a rather surprising fact already noted in passing. Recall that in the passive sentence in (44a), the postverbal Theme is marked nominative, even though it is not the grammatical subject but rather a OBJ2. Since the Theme is not assigned idiosyncratic case by this class of ditransitive verbs, whether or not it becomes the subject in the passive version,

[21] Dual assignments have been shown to be independently motivated in other languages, and hence preferable to analyses that assume either that OBJ2s can passivize or that the same sentence can contain two (direct) OBJs. One such language is Kikuyu, as discussed in Zaenen (1983). Given that this possibility of alternative assignments does exist in the world's languages, we can make use of it for Icelandic. Our conclusion, then, is that Icelandic does not violate the functional uniqueness principle and can be analyzed along lines that are known to be independently necessary for other languages.

it will be the highest GF not already assignecl case. Hence, it will get nominative case by the default case-marking principle.

6.4.3 Verbs of Variable Polyadicity

The association principles make some further predictions that are borne out by the data. As in English, many verbs can be used with variable numbers of grammatical arguments. For example, the verb *óska* 'to wish' can be either a simple transitive verb taking a genitive Theme, or a ditransitive taking a dative Goal and a genitive Theme; in other words, the Goal argument is optional.

(66) a. Þú hefur óskað henni þess.
you have wished her-DAT this-GEN
'You have wished this to her.'

b. Þú hefur óskað þess.
you have wished this-GEN

c. *Þú hefur óskað henni.
you have wished her-DAT

Given the association principles for Icelandic in (61), the mapping between θ-roles and GFs is determined by the *polyadicity* of the verb. Hence, we predict that, for such verbs, the ability of an NP with a given thematic role (e.g., Theme) to passivize will also depend on the polyadicity of the verb. This can be seen from the different assignments of the OBJ-function in (67):

(67)

óska: V	(AGENT	THEME [+GEN]	(GOAL)) [+DAT]
a.	SUBJ	OBJ2	OBJ
b.	SUBJ	OBJ	—

Only when an NP is assigned to OBJ will it passivize.[22] As an idiosyncratically case-marked Theme, *þess* can only be assigned to the lowest available GF. When the verb is used as a simple transitive, this will be the OBJ function, and hence *þess* will passivize and raise as shown in (68a). But when *óska* is used as a ditransitive, *þess* will be assigned to

[22]Note further that passive in Icelandic is not restricted to NPs that are thematically linked to the passive verb. We also find passives in the so-called raising constructions, as shown in (i).

(i) Hún er talin vera dugleg.
she-NOM is believed to-be conscientious-NOM.

Such examples indicate that passive in Icelandic is not a lexical rule in the sense of Wasow (1977) or Chomsky (1981). We have not taken raising and EQUI constructions into account here; see Andrews (1982b) for a fuller treatment of case assignment in Modern Icelandic.

OBJ2, and hence will be unable to become the subject of a passive and subsequently be raised. This is illustrated by the contrast in (68).

(68) a. Þess var óskað (*henni).
this-GEN was wished (her [DAT])
'This was wished to her.'

b. Ég tel Þess hafa verið óskað (*henni).
I believe this-GEN to-have been wished (her [DAT])
'I believe this to have been wished to her.'

c. Henni var óskað Þess.
her-DAT was wished this-GEN
'She was wished this.'

d. Ég tel henni hafa verið óskað Þess.
I believe her-DAT to-have been wished this-GEN
'I believe her to have been wished this'

Other verbs that work the same way include *leyna* 'to conceal', ACC-DAT; *biðja* 'to ask', ACC-GEN; *skila* 'to return', DAT-DAT; *hóta* 'to threaten', DAT-DAT; *synja* 'to deny', DAT-GEN.[23] The judgments are extremely clear-cut. These facts show clearly that passive is not sensitive to thematic roles but rather must be expressed as an operation on grammatical functions.

6.4.4 Some Further Alternations

A few further alternations remain to be accounted for. Since we have not studied these alternations extensively, our proposals here are very tentative, but we want to give some indication of how such alternations could be analyzed within the general framework we are assuming.

In section 3.2, we noted the existence of a few different types of ACC-ACC verbs, some of which were arguably ditransitive. The first type, which was illustrated in (38) and is repeated here for convenience, is clearly not ditransitive:

[23]We can speculate about the reason for the distribution of DOs in Icelandic: on the one hand, all immediately postverbal NPs that are arguments of the verb are DOs, regardless of their case marking; on the other hand, all postverbal accusatives that are neither XCOMPs nor have a semantically restricted function can passivize. It is difficult to resist the temptation to link these observations to the fact that Icelandic is a language that has at the same time a rather rigid word order and a rich case-marking system. It has often been noted that languages have two major strategies to encode grammatical relations, the one being word order, and the other case marking. Icelandic does both, and it can be assumed that it is this convergence of properties that is illustrated in the notion of direct object that is used in the language: a DO is an argument that either immediately follows the verb or is an accusative object.

(38) a. Þeir kölluðu hana Kiddu.
they called her-ACC Kidda-ACC
'They called her Kidda.'

b. Hún var kölluð Kidda.
she-NOM was called Kidda-NOM
'She was called Kidda.'

In verbs of this type, the second NP is neither an OBJ nor a OBJ2 but rather an XCOMP, that is, an (objective) complement, and hence falls outside the scope of this paper, since predicative complements never passivize. The status of the second type, illustrated in (39), is not so clear:

(39) a. höggva einhvern banahögg
to-hit someone-ACC a-deadly-blow-ACC
'to deal somebody a deadly blow'

b. slá einhvern kinnhest
to-hit someone-ACC a-blow-on-the-cheek-ACC
'to hit somebody on the cheek'

c. kyssa einhvern rembingskoss
to-kiss someone-ACC a-loud-kiss-ACC
'to give somebody a smacking kiss'

Here, we have an alternation between a simple transitive form and what looks like a ditransitive form of the verb. For ease of exposition, let us refer to the second accusative, for example, 'a deadly blow', as a *cognate accusative*. The cognate accusative might be analyzed as (some kind of) an object; alternatively, it might be that the cognate accusative is actually a semantically restricted GF, that is, one restricted to a particular thematic role. As such, it would be neither an OBJ nor a OBJ2 and hence would not participate in any of the alternations we are discussing. The principles we have already formulated give us a way to test the correctness of this analysis: if alternating forms exist in which only the cognate ACC is present, do these monotransitive forms have passive counterparts? If the cognate accusative in sentences like (39) is assigned to a semantically unrestricted function, then its function is simply the highest available function given the polyadicity of the verb; we would then expect it to passivize when it is assigned to the OBJ-function. If, in contrast, it does not passivize when it is the sole postverbal NP, then we would want to look for arguments that, indeed, in both the ditransitive and monotransitive forms, the cognate accusative is either a semantically restricted (OBLique) argument or else not an argument at all.

It turns out that the cognate accusative can at least marginally be the sole postverbal argument, and in such examples it can be passivized, as illustrated in (69).

(69) a. Njáll hjó aldrei banahögg.
Njal hit never a-deadly-blow-ACC
'Njal never dealt a deadly blow.'

b. ?Banahöggið var höggvið á miðnætti.
the-deadly-blow-NOM was struck at midnight
'The deadly blow was dealt at midnight.'

c. Jón kyssir bara rembingskossa.
John kisses only loud-kisses-ACC
'John only gives smacking kisses.'

d. ?Rembingskossar eru oft kysstir í ástarsögum.
loud-kisses-NOM are often kissed in love-stories
'Smacking kisses are often given in love stories.'

Crucially, the ACC case marking turns into NOM, showing that, in these examples at least, it was not idiosyncratically assigned. These facts suggest that the cognate accusative should be analyzed as a OBJ2 in examples like (39), but as an OBJ when it is the sole postverbal NP, as in (69a,c).[24]

If this is right, the question becomes: what is its thematic role? Consider the example in (39a). The relation of *höggva* 'hit' to the animate object *einhvern* 'someone' seems to be the same with or without the cognate accusative; moreover, the thematic role of the cognate accusative is presumably the same with or without the "hittee". Although the "hittee" is arguably a Goal rather than a Theme, it seems unreasonable to assign the Theme role to 'a deadly blow' in either type of sentence. For most ditransitive verbs, the Theme is an obligatory argument. The cognate accusative, in contrast, is merely an optional complement; moreover, it certainly does not undergo the movement or action described by the verb 'hit'. It seems to be a semantically empty argument, one that cannot really be questioned or focused. In fact, its semantic contribution to the meaning of the verb is rather like a manner adverbial. Just what role it bears is not clear to us. What is clear is that such cognate accusatives necessitate the formulation of another association principle, to make sure that they are always linked to OBJ2 if another NP-argument

[24]This is not the only possible way to look at the data. We leave it to the reader to devise other possibilities too tedious to spell out at this point. The one we are exploring here, that is, the analysis as OBJ2, is the one that seems the most problematic for our general account of passive, but also the one that intuitively seems to us to be the most likely.

is present, since this assignment will not follow automatically from the principles in (61) if the cognate accusative is not an idiosyncratically case-marked Theme.

It also appears that these NPs are part of the VP. Consider the placement of an adverb such as *sjaldan* 'rarely' in sentences with an auxiliary verb, as illustrated in (70).

(70) a. *Hann hefur gefið barninu sjaldan pelann.
he has given the-child-DAT rarely the-bottle-ACC

b. *Hann hefur höggvið óvini sjaldan banahögg.
he has struck enemies-ACC rarely a-deadly-blow-ACC

Thráinsson (1986) argues that there is a class of adverbs in Icelandic (including *sjaldan*) that can occur anywhere in S as an immediate daughter of S (as long as other word order constraints, such as the verb-second constraint, are observed), but not embedded at a lower level, for example, within VP. He argues that in sentences with an auxiliary, there is a VP-node following the (finite) auxiliary dominating the verb and its (postverbal) arguments. If his arguments are correct, the examples in (70) indicate that cognate objects such as *banahögg* 'deadly blow' in (70b) are within the VP just like regular objects such as *pelann* 'the bottle' in (70a).

A third type of double accusative can be found with verbs such as *keyra* 'drive'. Here, we find the following alternations, pointed out by an anonymous reviewer:

(71) a. Hann keyrði bílinn þessa leið.
he drove the-car-ACC this route-ACC
'He drove the car this way.'

b. Hann keyrði þessa leið.
he drove this route-ACC
'He drove this way.'

The second accusative in (71a) behaves in some respects like an object, namely, it passivizes when it is the sole postverbal NP:

(72) *Þessi* leið hefur aldrei verið keyrð.
this route-NOM has never been driven
'This route has never been driven.'

However, when two postverbal NPs are present, as in (71a), only the first NP passivizes:

(73) a. Bíllinn var keyrður *þessa* leið.
the-car-NOM was driven this route-ACC
'The car was driven this way.'

b. *þessi leið var keyrð bílinn.
this-route-NOM was driven the-car-ACC

Here again, we have a pattern in which only the first postverbal NP passivizes, confirming principle (61a). (Similarly, for another another verb, *aka* 'drive', but with DAT rather than ACC case on 'the-car').

We assume that some transitive verbs allow the Path role, normally realized as a PP, to be assigned to the OBJ function when that position is otherwise unfilled. It is not entirely clear, however, how to analyze the accusative *þessa leið* 'this route' when it is the second postverbal NP and the OBJ function is filled, as in (71a). Such accusatives are frequently referred to as adverbials or semantic accusatives, which would suggest that they are not arguments (OBJ2) of the verb but rather some sort of adjunct. If that were the case, one might expect them to contrast with regular verbal arguments with respect to the VP-test discussed above. While most speakers agree that there is some difference, the judgments are unfortunately not very clear.

(74) a. ?*Jón hefur gefið barninu oft þennan pela.
John has given the-child-DAT often this bottle-ACC
'John has often given the child this bottle.'

b. ?Ómar hefur ekið bílnum oft þessa leið.
Omar has driven the-car-DAT often this route-ACC

In addition, the placement of manner adverbs gives a similar (weak) contrast:

(75) a. ??Hann mun gefa barninu mjög varlega þennan
he will give the-child-DAT very carefully this
pela.
bottle-ACC

b. Ómar mun keyra bílinn mjög varlega þessa leið.
Omar will drive the-car-ACC very carefully this route-ACC

It is not obvious what to make of these rather subtle differences. However, within our framework, the fact that *þessa leið* remains accusative when the dative object of *aka* 'to drive' is passivized clearly dictates treating it as an adverbial adjunct rather than as a verbal argument.

To summarize, we have proposed the following representations at the thematic level of the two classes of verbs discussed in this subsection.

(76) a. *höggva* 'strike' <AGENT, (THEME), (COGNATE-OBJ)>
b. *keyra* 'drive' <AGENT, THEME> or <AGENT, PATH>
c. *aka* 'drive' <AGENT, THEME> or <AGENT, PATH>
[+DAT]

The possible associations with GFs are shown in (77).

(77) a. *höggva*: <AGENT, (THEME), (COGNATE-OBJ)>
SUBJ OBJ OBJ2
SUBJ OBJ ———
SUBJ ——— OBJ

b. *keyra*: <AGENT, THEME> or <AGENT, PATH>
SUBJ OBJ SUBJ OBJ

c. *aka*: <AGENT, THEME> or <AGENT, PATH>
SUBJ OBJ SUBJ OBJ

If both the Theme and the Path roles for the verbs *keyra* or *aka* are realized, then the Path is an adjunct and not an argument of the verb.

6.5 German Association Principles

Having demonstrated that in Icelandic oblique NPs can be made grammatical subjects by passivization, we need to address the question of whether the same is true of German, which has constructions that are superficially similar. Consider the German equivalent of an Icelandic sentence such as in (4), repeated here for convenience.

(78) Ihm wurde geholfen. (German)
Honum var hjálpað. (Icelandic)
him-DAT was helped
'He was helped.'

Although the work on German syntax has not led to as extensive a study of the syntactic properties of subjects as has been made for Icelandic, it is clear that the German facts do *not* parallel the Icelandic ones. There are no reasons to assume that *ihm* in (78) above is a grammatical subject. Thus, the German examples, while superficially very similar to the Icelandic ones, are functionally quite different. Some of the evidence supporting this conclusion is illustrated in the following examples, mostly from Cole et al. (1978).

Subjects of infinitives in German can be controlled (either functionally or anaphorically), but this is not possible with the passives of verbs taking oblique case marking. Arbitrary PROs can be found as the understood subject of German infinitivals, as shown in (79a), but not with idiosyncratically marked NPs, as shown in (79b).

(79) a. Im Sommer zu reisen, ist angenehm.
in summer to travel is agreeable
'To travel in the summer is nice.'

b. *Geholfen zu werden, ist angenehm.
helped to be is agreeable
'To be helped is nice.'

c. Aufgenommen zu werden, ist angenehm.
admitted to be is agreeable
'To be admitted is nice.'

Similarly, EQUI control is not possible with the passives of verbs taking oblique objects. German has a rule of EQUI control, illustrated in (80).

(80) Er hofft, wegzugehen.
he hopes away to go
'He hopes to go away.'

As shown in (81a), this rule applies to passives; however, as illustrated in (81b), it does not apply to the dative NP of a passive sentence like (78).

(81) a. Er hofft, aufgenommen zu werden.
he hopes admitted to be
'He hopes to be admitted.'

b. *Ihm/*Er hofft, geholfen zu werden.
him-DAT/he-NOM hopes helped to be

Further examples can be found in Cole et al. (1978); for example, the preverbal oblique NPs cannot be deleted under identity with a (nominative) subject.

(82) a. Er kam und (er) besuchte die Kinder.
he-NOM came and (he) visited the children
'He came and (he) visited the children.'

b. Er kam und (er) wurde verhaftet.
he came and (he) was arrested
'He came and (he) was arrested.'

c. *Er kam und ___ wurde geholfen.
he came and ___-DAT was helped

d. *Er sah die Damen und ___ gefielen sie.
he saw the ladies and ___-DAT pleased them-FEM

e. *Er sah die Damen und sie gefielen ___.
he saw the ladies and they pleased ___-DAT

Nor can the oblique NP be deleted by relative clause reduction.

(83) a. Der das Buch lesende Junge heisst Wilhelm.
the [the book reading] boy is-named Wilhelm
'The boy reading the book is called Wilhelm.'

b. *Das der Junge lesende Buch heisst Sieben Legenden.
the [the boy reading book] is-named Seven Legends

c. Das vom Jungen gelesene Buch heisst
the [by-the boy read] book is-named
'The book read by the boy is called Seven Legends.'

d. *Der vom Lehrer geholfene Junge bekam eine gute Note.
the [by-the teacher helped] boy got a good grade
'The boy helped by the teacher got a good grade.'

e. *Der das Buch gefallende Junge sitzt da in der Ecke.
the [the book pleasing] boy sits there in the corner
'The boy liking the book is sitting there in the corner.'

Thus, the same type of tests that show that oblique NPs can be grammatical subjects in Icelandic also show that the German analogues cannot be analyzed as such.

As in Icelandic, the "quirky" arguments of passive verbs do not behave differently in this respect from the quirky arguments of active forms. Consider active constructions such as the one illustrated in (84).

(84) Mir ist übel.
me-DAT is nasty
'I am nauseated.'

Here too it can be shown that *mir* does not behave like a grammatical subject, as illustrated in the following examples.

(85) a. *Mir hofft, übel zu sein.
me-DAT hopes nauseated to be
'I hope to be nauseated.'

b. *Ich hoffe, übel zu sein.
I-NOM hope nauseated to be

c. *übel zu sein, ist unangenehm.
nauseated to be is disagreeable
'To be nauseated is disagreeable.'

In spite of the superficial similarities between Icelandic and German, the analysis of constructions without nominative arguments (be they active or passive voice) in the two languages must be quite different. We can account for these differences by means of one language-specific association principle for German, which replaces the language-specific principle for Icelandic in (61c):

(86) Case-marked *thematic* roles are assigned to OBJ2.

In other words, idiosyncratically marked arguments are associated with the function OBJ2 regardless of the valence of the verb. Thus the entire set of association principles for German is as given in (87):

(87) German Association Principles
  a. If there is only one thematic role, it is assigned to SUBJ; if there are two, they are assigned to SUBJ and OBJ; if there are three, they are assigned to SUBJ, OBJ, OBJ2. (*Universal*)
  b. Agents are linked to SUBJ. (*Universal*)
  c. Case-marked thematic roles are assigned to OBJ2. (*Language specific*)
  d. Default Case Marking: the highest available GF is assigned NOM case, the next highest, ACC. (*Universal*)

Remember that universal principles are interpreted as elsewhere conditions applying after any language-specific principles or assignments of restricted GFs. Hence, all idiosyncratically marked arguments will have the status of OBJ2s and thus will not passivize under the assumption that German has only the unmarked passive rule according to which only (direct) OBJs passivize. Thus, they will never be subjects in either passive or active sentences. This is exactly the result that we want for German.

Together with the functional uniqueness law, the association principles for German make some further predictions: in German (unlike Icelandic) we cannot get two idiosyncratically case-marked NPs after the verb. This follows from (87c) given functional uniqueness: two different idiosyncratically case-marked thematic roles cannot both be assigned to the same GF, namely, OBJ2. Thus, under the assumption that both DAT and GEN case are assigned idiosyncratically by the verb in German, there should be no DAT-DAT, DAT-GEN, or GEN-GEN verbs in that language.[25] Two accusative arguments are allowed if one is an OBJ and the other is

[25]This same prediction is made within the GB framework by Czepluch (1982); his modifications of the GB theory will not extend to Icelandic, however, where many of these combinations do occur. There are no GEN-GEN verbs in Icelandic either. We have not ruled out this possibility and treat it as an accidental gap in that language.

In support of the claim that verbs assign at most one lexical (i.e., idiosyncratic) case, Holmberg (1985) suggests that while the case marking on Themes is truly idiosyncratic in Icelandic, the apparent instances of two lexical cases actually reflect predictable case marking associated with particular thematic roles: for first objects, dative case marks [+recipient] and accusative case marks [−recipient]. Holmberg attributes the lack of GEN first objects to the fact that genitive case is not associated with any particular θ-role. The hypothesis that lexical items can assign at most one lexical case is clearly desirable from a theoretical standpoint, and Holmberg's characterization comes close to descriptive adequacy. Unfortunately, there are counterexamples that clearly require the assignment of lexical case to two arguments.

idiosyncratically marked and hence a OBJ2. In fact, DAT-GEN combinations do not exist in contemporary German; so the prediction made by our analysis is correct in that respect. Our predictions are also correct with respect to the behavior of verbs with two accusatives. The few cases that still exist allow only for the passivization of one of the objects, as shown by the following examples.[26]

(88) a. Ich habe ihn das Gedicht abgehört.
I have him-ACC the poem-ACC heard
'I had him recite the poem.'

b. Er ist das Gedicht abgehört.
he-NOM is the poem-ACC heard
'He recited the poem.'

c. *Das Gedicht ist ihn abgehört.
the poem-NOM is him-ACC heard

So we can account for the difference between Icelandic and German by means of one language-specific association convention for each language. This account also correctly predicts the nonoccurrence of a certain number of combinations in German. Some other gaps remain unexplained, however; for example, nothing in our account would prevent Icelandic from having GEN-GEN or ACC-ACC combinations in postverbal position.[27] We have shown that superficially very similar sentences in two rather closely related languages must be analyzed in quite different ways. In doing so, we have shown that a possibility rejected on the basis of German data, namely, that of oblique subjects and nonaccusative direct objects, actually exists within Germanic. This leads to an interesting question in historical syntax: was English in its earlier stages more like German or more like Icelandic? We will not try to answer that ques-

Among the DAT-GEN ditransitives are at least three verbs with first (DAT) objects that are not recipients: *synja* 'to deny', *varna* 'to deny', and *frýja* 'to question'.

[26]Of course, one must explain the fact that such forms existed in earlier stages of the language. Unfortunately, it is difficult to determine what their status was. They seem to have always been rather bookish (see Curme, 1922, for discussion). Our guess is the following: in earlier stages, the dative case was not just an idiosyncratic case marking on a OBJ2 but could also encode semantically restricted grammatical functions (e.g., instrumentals). Hence, there would have been no violation of the functional uniqueness law.

One might speculate about why the evidence in the modern stages of both Icelandic and German points to an analysis in which bare NPs tend to be analyzed as occupying a semantically unrestricted function. But it seems true that even in the German languages that have maintained overt case, semantically restricted grammatical relations are in general realized as PPs.

[27]As noted above in sections 3.2 and 4.4, it is debatable whether any of the superficially ACC-ACC verbs are truly ditransitive.

tion but instead merely note that it cannot be assumed on the basis of universal principles of language that English was like German, as has been done in some current work (see, e.g., Lightfoot, 1979, 1981).[28]

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[28]That such preverbal oblique NPs may have been grammatical subjects in earlier stages of English has been hinted at in Butler (1980), who gives statistics showing that they do not behave like normal impersonal constructions. See also Allen (1986), who shows that this ts true for some but not all such verbs, and also Harris (1975).

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Name Index

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