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On Pivots and Subjects*

Yehuda N. Falk
Department of English
The Hebrew University of Jerusalem
msyfalk@mscc.huji.ac.il
http://pluto.mscc.huji.ac.il/~msyfalk/

Grammatical functions lie at the heart of syntax. Traditional notions of grammatical functions are based primarily on the facts of fairly canonical nominative-accusative languages. Since it is this traditional kind of approach that has formed the basis of modern theories of grammatical functions, such as that assumed by LFG, it is important to subject it to critical consideration based on typological different languages.

The grammatical function that has come under the most scrutiny is subject. It has been argued by researchers on ergative languages (e.g. Dixon 1979; 1994) and western Austronesian "Philippine-type" languages (e.g. Schachter 1976) that the familiar notion is an amalgam of two distinct functions. One, which Schachter calls topic and Dixon calls pivot, is (roughly) a discourse function. The other, which Schachter calls actor and Dixon subject, is linked to semantics and argument structure. In nominative-accusative languages, the same nominal has both functions.

The usual response by theoreticians has been to reject the Schachter/Dixon claim in favor of a multistratal concept of subjecthood. For example, Bell (1983), working in Relational Grammar, treats the actor/subject as "initial 1" and the topic/pivot as "final 1", and Manning (1996a), working in LFG, analyzes the actor/subject as a-structure SUBJ and the topic/pivot as f-structure SUBJ.

This paper is an exploration of the alternative: the hypothesis that researchers like Schachter and Dixon are essentially correct.[1] There are several a priori reasons to explore such an alternative. First, it is more in line with a monostratal theory of syntax to treat functional notions like subject as monostratal. A theory that allows for multistratal (or even bistratal) functions is less constrained. Second, responding to questions about the validity of the concept subject by referring to subjects at different levels or strata of representation is begging the question. It is preferable to address the issue head-on, and see whether the split of subjecthood into inherently distinct and unrelated functions is justified. This is particularly true of a theory in which grammatical functions play a central role, rather than taking the back seat to c-structure configurations.

*Despite my disagreement with his conclusions, this paper has benefitted greatly from Chris Manning's study of ergativity (Manning 1996a). I would like to thank Joan Bresnan for comments on an earlier version of this paper. All the usual disclaimers apply.

[1]Both Schachter and Dixon make additional claims, more inimical to the LFG conception of syntax, which I do not address here and do not subscribe to. Schachter, at least by implication, questions the universality of grammatical functions in general. It seems to me that that step is not justified by the facts of Philippine-type languages and ergative languages. Dixon claims that his subject and pivot are defined in terms of the more primitive functions S, A and O. Here again, I do not believe that a valid case has been made.

1. The Proposal

In this section, we define the two grammatical functions into which Schachter and Dixon propose to factor the subject. We then examine what predictions we make for several constructions in which subjecthood is implicated.

1.1. Most Prominent Argument GF

The first function we will deal with is the one that Schachter calls actor and Dixon subject. Schachter identifies this function as having role-related properties. Dixon states that it is based on semantics, and is "that NP whose referent *could be* the 'agent' that initiates and controls the activity" (Dixon 1979: 101).

Looking more closely, it is clear that what Dixon means by semantics is lexical semantics; particularly argument-structure semantics. This is in line with Schachter's characterization. This function represents the argument of the verb that is agent-like in some sense, extended to include the sole argument of intransitive verbs even when they are not agentive.

From the perspective of the LFG theory of grammatical functions, the function in question is what Bresnan (in preparation) characterizes as an a(rgument)-function. A-functions are the functions that arguments of the predicate are mapped to, as specified by Lexical Mapping Theory: functions such as OBJ, OBL_θ, COMP, etc. Since it is not restricted to any specific thematic role, it is [$-r$] in the feature system of Bresnan and Kanerva (1989), Bresnan and Moshi (1990). It is not an object function, so it is [$-o$].[2] It thus has the feature decomposition attributed to SUBJ in earlier work on LMT, and the rules formerly thought to be responsible for mapping arguments to SUBJ will operate unchanged.

There is near-universal agreement that agentive arguments are in some sense more prominent in argument structure than nonagentive arguments. The [$-r$, $-o$] function is the grammatical function (usually) linked to the most prominent argument of a verb. Furthermore, as is clear from work on the relational hierarchy, the [$-r$, $-o$] function is itself the most prominent grammatical function. If the most prominent argument in a-structure is notated as $\hat{\theta}$, we can refer to the most prominent grammatical function as $\hat{\text{F}}$. In the unmarked case, $\hat{\theta}$ is mapped to $\hat{\text{F}}$, but under certain circumstances (such as passivization) some other argument is.

In terms of a-functions, there is no difference between nominative-accusative languages, ergative languages, and Western Austronesian languages. In a typical Agent-Patient transitive verb in all languages, the Agent maps onto $\hat{\text{F}}$ and the Patient onto OBJ. So, for example, the PRED value of a verb meaning 'kill' is the same in any language:

(1) $(\uparrow \text{PRED}) = \text{'kill } \langle(\uparrow \hat{\text{F}}) (\uparrow \text{OBJ})\rangle\text{'}$

The current proposal predicts that any syntactic construction dependent on a-functions will thus not distinguish between these different classes of languages. For this class of syntactic constructions, all languages will appear to be organized along nominative-accusative lines.

Early LFG included a principle called Functional Locality, stated informally as (2).

[2] In terms of the feature system of Alsina (1996), it would be [−obl, +subj], although the feature [subj] is misnamed if the thesis of this paper is correct.

(2) **Principle of Functional Locality** (Bresnan 1982b: 288)
Designators in lexical and grammatical schemata can specify no more than two function applications.

This principle is no longer assumed in LFG, and is violated inter alia by functional uncertainty equations. However, there is an important insight behind this principle: one wants to rule out equations such as (↑ COMP OBJ PRED) = 'hamster'. We propose that there is a narrower principle that only applies to a-functions. The idea is that a-functions, representing arguments of predicates, can only have their properties specified by the predicates of which they are arguments. We propose two possible statements of such a principle, a stronger one disallowing reference to a-functions by anything other than the predicate and a weaker one that allows extralexical equations to refer to a-functions.

(4) a. **Principle of A-Functional Locality** (stronger version)
An a-function AF may only be mentioned in a designator that is part of the lexical entry of the head of which AF is an argument.

b. **Principle of A-Functional Locality** (weaker version)
An a-function AF may not be mentioned in a designator that is part of the lexical entry of a head of which AF is not an argument.

If some version of this principle is correct, as seems likely, it applies to the function $\hat{F}$.

1.2. PIV

The other "subject" function, which, following Dixon, we will call PIV(OT), is harder to pin down. Schachter associates it with "reference-related properties," such as definiteness, relativizability, and the ability to float quantifiers. Following traditional Philippinist usage, he calls it the topic, but makes it clear that this is a different use of the term from the usual discourse notion. Cooreman, Fox, and Givón (1988) show that the PIV in Tagalog does not have the discourse-continuity properties (measured in terms of referential distance and topical persistence) that a discourse topic would exhibit. Cooreman (1988) shows the same results for Dyirbal, and concludes that syntactic pivothood has no consequences for discourse structure.

More useful is Dixon's (1979: 101) characterization of PIV: it "is normally obligatory in a sentence, receives the unmarked case, may be cross-referenced in the verb, and is the pivot for operations of coördination and subordination." The end of the quotation emphasizes what seems to be the major function of the PIV: it is involved primarily in subordination and coordination contexts, and relates more specifically to coreferentiality of arguments in different clauses. That is to say, it provides continuity between different clauses within the same sentence. In the words of Foley and Van Valin (1984: 128–9), "[the] most notable function [of pivots] is in cross-clausal syntax, where they are important as the controllers and targets of NP ellipsis." In this respect, it is similar to the discourse topic, which provides continuity between sentences in the discourse. One can think of it, somewhat oxymoronically, as a syntactic-discourse function.

Unlike $\hat{F}$, PIV is not an a-function, and thus is not part of the a-structure of the predicate. It formally has the status of a d(iscourse)-function, and by the Extended Coherence Condition (Bresnan in preparation) it must be defined as identical to some a-function. In some

languages (those often called syntactically nominative-accusative) PIV is identified with $\hat{F}$, while in others (syntactically ergative) it is identified with OBJ (in a transitive clause). Note the f-structures of the following sentences in Basque (Bittner and Hale 1996 (41a)) and Dyirbal (Dixon 1994 (1.7)).

(3) a. Miren- ek ni jo n- au.
Miren- ERG me.NOM hit 1SG- have.3SG
'Miren hit me.'

b.
$$\begin{bmatrix} \text{PIV} & [\text{“Miren”}] \\ \hat{F} & \text{----------} \\ \text{OBJ} & [\text{“me”}] \\ \text{PRED} & \text{‘hit } \langle(\uparrow\hat{F})(\uparrow\text{OBJ})\rangle\text{’} \end{bmatrix}$$

(4) a. ŋuma yabu- ŋgu bura- n
father.ABS mother- ERG see- NFUT
'Mother saw father.'

b.
$$\begin{bmatrix} \text{PIV} & [\text{“father”}] \\ \hat{F} & [\text{“mother”}] \\ \text{OBJ} & \text{----------} \\ \text{PRED} & \text{‘see } \langle(\uparrow\hat{F})(\uparrow\text{OBJ})\rangle\text{’} \end{bmatrix}$$

In Western Austronesian Philippine-type languages, a third approach is in evidence. The identity of the pivot is determined by the morphological shape of the verb. Various affixes, generally misnamed "voice" affixes, add equations of the following sort to the lexical entries of the verbs:[3]

(5) "Active voice": $(\uparrow \text{PIV}) = (\uparrow \hat{F})$
"Direct object voice": $(\uparrow \text{PIV}) = (\uparrow \text{OBJ})$
"Indirect object/locative voice": $(\uparrow \text{PIV}) = (\uparrow \text{OBJ}_\theta)$
etc.

Note the following examples (Kroeger 1993 (3.13)) and their f-structures.[4]

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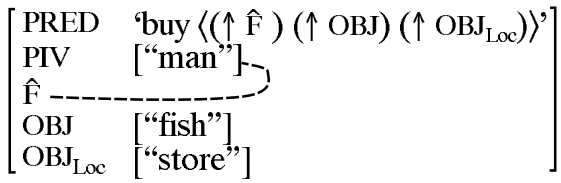
[3]There are some interesting complications concerning objects, obliques, and adjuncts. In the first place, the "direct object voice" suffix is *-in* and the "indirect object voice" suffix is *-an*, but with some verbs *-in* is used when a normally dative-marked nominal becomes pivot, and with other verbs *-an* is used when the pivot is what would normally be marked accusative (Schachter 1987). I assume without argument that the a-function of the pivot is accurately reflected by the voice affix, and not by the Case it would normally be marked with.

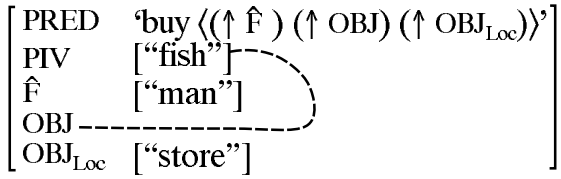
A second problem is the ability of certain adjunct-like elements to be pivot. I suspect that this is yet another piece of evidence that the complement/adjunct distinction is more fluid than is usually thought, as suggested by Jackendoff (1990) and Alsina (1996). Foley and Van Valin (1984) remark on the general ability of Philippine languages to have pivots that are not core arguments; in the present context, however, I don't see that as being a problem. The fact that these languages have a morphological indication of which argument has been chosen as pivot makes the wider options for pivothood natural.

[4]A note on the glosses. The voice affixes are glossed ACT for active, DO for direct object, and IO for indirect object. The Case clitic *ng* is glossed ERG when it marks the Actor and ACC when it marks the Patient; although Kroeger does not make this distinction, glossing GEN everywhere, most other sources do. Finally, I am assuming that the locative phrase in this set of sentences is a secondary object, and thus is marked as pivot by the IO affix.

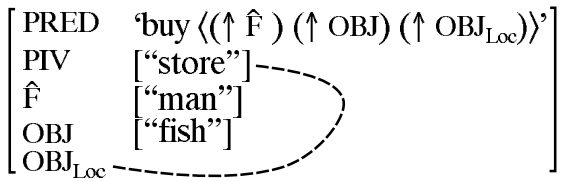
(6) a. B-um- ili ang lalake ng isda sa tindahan.
PERF.ACT- buy NOM man ACC fish DAT store
'The man bought fish at the store.'

b.


(7) a. B-in- ili- Ø ng lalake ang isda sa tindahan.
PERF- buy- DO ERG man NOM fish DAT store
'The man bought the fish at the store.'

b.


(8) a. B-in- ilh- an ng lalake ng isda ang tindahan.
PERF- buy- IO ERG man ACC fish NOM store
'The man bought fish at the store.'

b.


2. Predictions

Our descriptions of the grammatical functions F̂ and PIV provide a basis for us to predict which subject function will be implicated in various constructions.

2.1. Anaphora

One construction that is sensitive to subjecthood is anaphoric binding. According to Jackendoff (1990, 1992), anaphoric binding is the syntactic expression of argument binding in Conceptual Structures. The Lexical Conceptual Structures (LCSs) of many verbs include argument positions bound by other argument positions. If Jackendoff is right, we would expect that binding in the syntax would be expressed in terms of syntactic concepts related to Conceptual Structure: a-functions, specifically F̂.

That binding is sensitive to a-functions is a well-established fact. In many languages, reflexives must be bound by "subjects." As has often been noted in the literature on ergativity, the relevant notion of subject identifies the same nominals as subjects in ergative languages as in nominative-accusative languages. It is this fact that led Bittner and Hale (1996) to declare the [SPEC, IP] position in their theory of Case to be an Ā position, and thus inert to Binding Theory.

In other languages, the relational hierarchy of a-functions plays a role in the binding of reflexives, through the requirement that the antecedent must outrank the reflexive. For these purposes, if the Agent and Patient are both expressed as core functions, the Agent can be shown to outrank the Patient in all languages. This is expressed in our theory by the universal mapping of the Agent to a higher function than the Patient.

The situation with binding is slightly more complicated, however, because in some languages, the "logical subject" can also be an antecedent for reflexives. More precisely, as observed by Manning (1996a: 57–8), there are three possibilities: antecedence by either grammatical subject or logical subject, antecedence by only the grammatical subject, or (much rarer) antecedence by only the logical subject. Under the current proposal, these can all be accounted for. The relevant notion of grammatical subject is, as already noted, what we are calling $\hat{F}$. The logical subject, not a subject at all under our analysis,[5] is $\hat{\theta}$. That is to say, these are the most prominent arguments at the levels of f-structure and a-structure respectively. The two can be collapsed as $\hat{X}$. Thus, the antecedent of a reflexive may be $\hat{X}$, $\hat{F}$, or $\hat{\theta}$, depending on the language. Since binding is a syntactic relation, not a lexical one, it is more properly dependent on f-structure prominence; this would explain the relative rarity of $\hat{\theta}$ as the specification of the antecedent of the reflexive.

It also should be noted that the identity of a particular argument as $\hat{\theta}$ is recoverable from f-structure. The a-structure of a lexical item enters the f-structure as its PRED value; $\hat{\theta}$ is the argument adjacent to the left angle bracket.[6] Thus, the sensitivity of anaphora to a-structure information should not be taken as evidence that a-structure defines a stratum of grammatical functions distinct from the stratum defined by f-structure, as argued by Manning.

Finally, we wish to briefly address the argument by Manning (1996b) that a theory of binding based entirely on a syntactic level of argument structure separate from f-structure is to be preferred. The essence of the argument is the following:

> We would like to have a strong universal theory of binding, and so it is an a priori unwelcome position to have to concede that binding can be influenced by various levels seemingly at random from language to language. Is it just a random fact that anaphors in Tagalog fairly closely track thematic roles, while in other languages the correlation is less obvious? I would wish to argue that such facts are not coincidences but follows from the different operations on argument structure that various languages possess. [p. 12]

It seems to me that there is a basic misunderstanding behind this. In a modular theory, constructions are subject to constraints at multiple levels of representation simultaneously. LFG's architecture emphasizes this. In any case, a binding structure will be required to meet conditions at the level of Conceptual Structure (including so-called thematic conditions), at c-structure (linear order), and at some level encoding grammatical functions. The question is simply what the level encoding grammatical functions looks like. Furthermore, that the different levels have different degrees of influence is already established independently of the choice of representation of grammatical functions (Bresnan 1995). And the fact that Tagalog seems to reflect Conceptual Structure roles more directly than certain other languages does reflect differences in operations on a-structure (the lack of operations like passivization), but

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[5]Bresnan (1982a: 66) states: "The notions of 'logical subject' and 'logical object' … represent a confusion of different levels of representation."

[6]This also allows for multiple $\hat{\theta}$s on complex predicates, such as causatives, if we allow internal bracketing in the a-structure. See Alsina (1996), Manning (1996a) and others.

this is reflected in f-structure. It seems to me that Manning is making the same mistake here that GB Binding Theory makes, in trying to put too much of anaphora into a single structure instead of recognizing its architectural complexity.

2.2. Imperative addressee

Another subject property that has been frequently cited as a property of what we are calling $\hat{F}$ is the property of being the addressee of an imperative (Dixon 1979, Schachter 1976, Manning 1996a). While there is clear semantic motivation for the addressee of an imperative to be limited to Agents, it is noteworthy that not all Agents can be addressees; in particular, passive agents cannot. There must therefore be some syntactic rule involved as well.

The syntactic side of imperatives is the lexical assignment by the imperative verb of addressee features (such as second person) to one of its arguments. This is done through a-functions, and in particular the a-function generally assigned to Agents.

(9) $(\uparrow \hat{F}\ \text{PERS}) = 2$

This also falls out naturally under the present theory.

2.3. Chaining

In coordinate structures in many languages, one constituent can be shared among all the conjuncts. This shared constituent can be called the chained constituent, and (following Dixon 1979) the construction can be called Chaining, or Topic Chaining.

From the perspective of the present theory, Chaining involves continuity between clauses; it is not clause-internal or a-structure related. Therefore, if it is GF-based, it should be sensitive to PIVhood, not $\hat{F}$hood. This seems to be correct, based on the few languages that there is evidence for. The best known case is Dyirbal.

(10) (Dixon 1994 (1.10,20))

a. [ŋuma yabu- ŋgu] [bura- n banaga- nʸu].
father.ABS mother- ERG see- NFUT return- NFUT
'Mother saw father and he returned.'

b. [nʸurra ŋana- na bura- n] [banaga- nʸu].
you.PL.NOM we- ACC see- NFUT return- NFUT
'You saw us and we returned.'

Kroeger (1993) shows that the same pattern holds in Tagalog.

(11) (Kroeger (2.30))

a. [Pumunta sa tindahan] at [bumili ang kapatid ko ng bigas].
PERF.ACT.go DAT store and PERF.ACT.buy NOM sibling my ACC rice
'My brother went to the store and bought some rice.'

b. [Tinukso ng mga kaibigan] at [kinagalitan si Juan ng kaniya =ng guro].
PERF.tease.DO ERG PL friend and PERF.anger.IO NOM Juan ERG 3SG.DAT LNK teacher
'Juan was teased by his friends and scolded by his teacher.'

Chaining is a difficult construction to test because there are other ways in which arguments can appear to be absent from coordinated clauses. For example, in pro-drop languages the missing argument could be a null pronoun. Kroeger shows that it is possible to distinguish between pro-drop in coordinated clauses and Chaining in Tagalog. Such an analysis would appear to be the correct one in languages like Tongan, where the function of the missing argument seems to be determined by the semantics of the conjunction, and Chukchee, which allows free omission of arguments in conjoined clauses.

(12) Tongan (Dixon 1994 (6.72,73))

a. na'e [[tā'i 'a Mele 'e Hina] mo [kata]].
PST hit ABS Mary ERG Hina and.simultaneous laugh
'Hina hit Mary and Hina (simultaneously) laughed.'

b. na'e [[tā'i 'a Mele 'e Hina] 'o [kata]].
PST hit ABS Mary ERG Hina as.a.result laugh
'Hina hit Mary and as a result Mary laughed.'

(13) Chukchee (Polinskaja and Nedjalkov 1987 (4))

a. [Ətləg- ə ekək winren- nin] ənkʔam [yet- gʔi].
father- ERG son.ABS help- 3sg3sg.AOR and go- 3sgAOR
'The father helped the son and he (the father or the son) left.'

b. [Ətləg- ən ik- wʔi akka- gtə] ənkʔam [winret- gʔi].
father- ABS say- 3sgAOR son- DAT and help- 3sgAOR
'The father spoke to the son and he (the father or the son) gave help.'

Another strategy is the one used by English, in which VPs and I′s can be coordinated, giving the appearance that an argument has been omitted. The latter strategy can be shown (on the basis of word order) not to be the correct analysis for either Tagalog (Kroeger 1993) or Dyirbal (Falk 1996). The fact that few languages provide evidence for Chaining is thus not an argument against its being PIV based.

2.4. Long Distance Dependencies

As first observed by Keenan and Comrie (1977), relativization and other long distance dependency (*wh* movement) constructions are often limited to subjects. The framework developed here predicts that in a language with such a restriction the relevant notion of subject is PIV. We predict this on conceptual grounds, and perhaps on formal grounds. Conceptually, since PIV is the function of interclausal continuity dependencies that can extend over several clauses should involve PIV. The formal prediction depends on the status of the Principle of A-Functional Locality. If the stronger form of the principle is valid, then a functional uncertainty equation of the form (14a) would be allowed but one of the form (14b) would be disallowed.[7]

(14) a. $(\uparrow \text{DF}) = (\uparrow \text{GF}^* \text{PIV})$

b. $(\uparrow \text{DF}) = (\uparrow \text{GF}^* \hat{\text{F}})$

[7]A principled exception to the Principle of A-Functional Locality needs to be made for the path in the functional uncertainty equation.

The evidence from languages in which PIV and $\hat{F}$ do not coincide is that this prediction is correct. There are numerous languages in which a PIV which is also OBJ can be moved, while $\hat{F}$ in a PIV=OBJ sentence cannot, including Dyirbal, Tagalog, Inuit, the Mayan languages, Chukchee, Toba Batak, Balinese, and Indonesian (Manning 1996a, Arka and Manning 1998).

As with Chaining, we do not predict that all languages will limit *wh* movement to PIV. For example, languages like English that have an empty c-structure element at the extraction site (Bresnan 1995) use an inside-out functional uncertainty equation to establish the dependency. Such an equation only mentions the clause-external d-function to which the argument is linked. Free extraction of any function could also be due to a general equation of the form:

(15) $(\uparrow \text{DF}) = (\uparrow \text{GF}^* \text{GF})$

Such an equation does not mention an a-function and therefore is not a violation of either version of the Principle of A-Functional Locality. The relational hierarchy effects noted by Keenan and Comrie (1977) could be attributed to the ability in some languages of the extraction site being marked (in f-structure) by a null resumptive pronoun.[8] The inability to extract objects of adpositions in many languages is plausibly the consequence of a (probably phonological) constraint against adposition stranding.

2.5. Control Constructions

We turn now to a more difficult family of constructions: those involving control. Control, in its broadest usage, refers to constructions in which an element (usually the subject) of a (usually nonfinite) subordinate clause is unexpressed, and is interpreted either as being identical to an element of the main clause or as arbitrary (generic). The main clause element can be called the controller and the unexpressed position in the lower clause the controllee.

Following the seminal work of Rosenbaum (1967), a taxonomic distinction is generally drawn between two types of control constructions: Equi,[9] in which the shared argument is a θ argument of both clauses, and Raising, in which it is a θ argument only of the lower clause. In transformational theories, where D-structure mirrors semantic argument structure, this taxonomic distinction reflects the formal analysis as well. However, work in LFG has shown that the formal analysis is more complicated.

The two major kinds of control constructions in LFG are functional control and anaphoric control (Bresnan 1982b), formally very different constructions. In functional control, the controller and controllee have the same value. This kind of control is a lexical

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[8]Of course, for this to work a theory of null resumptive pronouns needed; and I am not in a position to offer one. But I would imagine that null resumptive pronouns are like other null pronouns: introduced (optionally) in the lexical entries of verbs. But while ordinary null pronouns are specified by equations of the form (ia), null resumptive pronouns are specified (ib).

(i) a. $(\uparrow \text{AF PRED}) = \text{‘PRO’}$
b. $(\uparrow \text{AF}) = (\text{DF GF}^* \uparrow)$

In both cases, the extent of applicable a-functions would be determined by line-drawing on the relational hierarchy. But this needs to be worked out.

[9]In GB theory, the term control is used with a narrower meaning to refer just to Equi constructions.

property of the governing verb, which has the following equation in its lexical entry (with some core function specified for GF).

(16) $(\uparrow \text{GF}) = (\uparrow \text{XCOMP SUBJ})$

Functional control of certain kinds of adjuncts is also allowed. In anaphoric control, on the other hand, the controllee is an unexpressed pronoun and the control relation is one of anaphoric binding. The lexicon of the language allows an empty pronominal element to be the value of some argument, and an anaphoric link is established.

The distinction between anaphoric and functional control does not correspond exactly with the distinction between Equi and Raising. Raising must be analyzed as functional control (to prevent a violation of Coherence) and arbitrary control constructions (sometimes called SuperEqui) must be anaphoric control, since there is no grammatically determined antecedent. But ordinary Equi constructions could be either functional or anaphoric control. To further complicate matters, complex predicate and serial verb constructions bear a superficial resemblance to control constructions. (Manning 1996a argues, for example, that a construction in Dyirbal that has been analyzed as control is really a serial verb construction.) In other words, not surprisingly, the analysis of control constructions requires more than a superficial division into Equi and Raising. That having been said, let us examine the predictions made by our theory and try to determine their empirical validity in a preliminary way.

The controller in either kind of control is determined semantically. While early LFG treated the choice of controller in functional control constructions as syntactic, the work of Jackendoff (1990), Sag and Pollard (1991), and others has shown that it is the semantics of the main verb that determines which argument controls. The present theory suggests, but does not predict, that the functional controller should be a PIV. It suggests it because control is related to interclausal continuity, which is what the PIV function exists for. It does not predict it, however, because an equation associated with a control verb can reference $(\uparrow \hat{\text{F}})$ (or $(\uparrow \text{OBJ})$) without violating the Principle of A-Functional Locality. One might expect, then, that languages could differ on this: some languages (as in Bresnan 1982b) specifying the controller as some core function ($\hat{\text{F}}$, OBJ, OBJ_θ) and others specifying it as PIV. In anaphoric control, the controller has no special syntactic status, so there is no reason to expect any limitation on what function it can have.

The choice of controllee is more limited than the choice of controller. Here, too, semantics plays a role, in that the controllee must be the appropriate kind of participant (generally one able to control the action of the subordinate clause). However, there are also syntactic constraints. In anaphoric control, the controllee argument must be lexically specified as a null pronoun (i.e. [PRED 'PRO']) with whatever features are necessary for control.[10] Abstracting away from causative coercion (Sag and Pollard 1991), this will normally be $\hat{\theta}$. Different languages may differ on how far down the relational hierarchy they allow such specification, and the semantic constraints generally limit it to the highest argument anyway. But, since what is involved is specification of features of an argument of the verb, the notion of subject that would be relevant is $\hat{\text{F}}$.

The controllee in functional control is a completely different matter. With Raising, there are no semantic restrictions on the controllee, since there is no semantic relationship involved. (For Equi constructions, semantics does still play a role, of course.) However, the

[10]In Bresnan (1982b), this is indicated informally with the feature [U +].

controllee is specified syntactically not by the verb of which it is an argument, but rather by the higher verb. The Principle of A-Functional Locality, in either the stronger or weaker version, prohibits the higher verb from designating an a-function of its complement. It can either indicate an unspecified GF or it can specify PIV. That is to say, choice of functional controllee should either be free or limited to PIV. We summarize our syntactic predictions below.

(17)	Anaphoric control:	controller–	no restriction
		controllee–	possibly restricted to $\hat{F}$ or $\hat{\theta}$
	Functional control:	controller–	core function or PIV
		controllee–	unlimited or PIV

As far as can be ascertained from the literature, these predictions seem to be correct. In Tagalog, for example, Kroeger (1993) distinguishes between anaphoric and functional control, both of which he claims exist in the language. In the anaphoric control construction, the controller and controllee are determined by semantics, regardless of PIV status.[11]

(18) (Kroeger 4.39)
Nag- atubili si Maria =ng hiram- in ang pera.
PERF.ACT- hesitate NOM Maria COMP borrow- DO NOM money
'Maria hesitated to borrow the money.'

In functional control constructions (including Raising), both controller and controllee must be PIV.

(19) (Kroeger (5.48))
Nagpilit si Maria =ng bigy- an ng pera ni Ben.
PERF.ACT.insist.on NOM Maria COMP give- IO ACC money ERG Ben
'Maria insisted on being given the money by Ben.'

(20) (Kroeger (2.17))
a. Inasah- an ko na awit- in ni Linda
expect- IO 1.SG.ERG COMP sing- DO ERG Linda
ang pambansang.awit.
NOM national.anthem
'I expected that Linda would sing the national anthem.'
b. Inasah- an ko ang pambansang.awit na [awit- in
expect- IO 1.SG.ERG NOM national.anthem COMP sing- DO
ni Linda].
ERG Linda
'I expected the national anthem to be sung by Linda.'

[11]More precisely, if the subordinate verb is in the volitive mood the controllee must be $\hat{F}$ for semantic reasons. In the nonvolitive mood, in which $\hat{F}$ is semantically marked as noncontrolling, $\hat{F}$ is possible only as an arbitrary controllee. Kroeger claims that in nonvolitive complements the controllee must be PIV, but one of his examples has a non-PIV (5.46a). The restriction to PIV is not explained by my account (nor his), but if essentially correct it may be due to the function of PIV.

c. *Inasah- an ko si Linda na [awit- in
expect- IO 1SG.ERG NOM Linda COMP sing- DO
ang pambansang.awit].
NOM national.anthem
'I expected Linda to sing the national anthem.'

There also seem to be nominative-accusative languages in which functional controllers are limited to PIV. Neidle (1982) argues that there is no object functional control in Russian, for example. In Balinese, on the other hand, there is no limit on functional controller, but the controllee must be PIV (Arka and Simpson 1998). In Inuit (Manning 1996a), what is demonstrably anaphoric control is limited (in our terms) to a semantically appropriate argument (our $\hat{\theta}$) at both ends, without regard to grammatical functions. In Chukchee (Comrie 1979), the controllee must be $\hat{F}$. Finally, and contrary to the predictions of certain theories of syntax, there are languages in which functional controllees are not limited to one particular function. This is true, for example, of Niuean.

(21) (Seiter 1983 (11a, 12a, 13a))

a. To maeke [ke lagomatai he ekekafo e tama ē].
FUT possible SBJCTV help ERG doctor ABS child this
'It will be possible for the doctor to help this child.'

b. To maeke e ekekafo [ke lagomatai i tama ē].
FUT possible ABS doctor SBJCTV help ABS child this
'The doctor could help this child.'

c. To maeke e tama ē [ke lagomatai he ekekafo].
FUT possible ABS child this SBJCTV help ERG doctor
'This child could be helped by the doctor.'

Ura (1994) cites several additional languages in which nonsubjects can raise (i.e. be functional controllees).

While more work needs to be done on control patterns, it seems that the predictions made by the theory argued for here are on the right track. Unlike the theory of Manning (1996a), our theory does not predict that controllees must be $\hat{F}$. It does predict a correlation between which arguments are involved in the control relation and whether it is functional or anaphoric control.

2.6. Case Marking

At first glance, Case marking appears problematic. Case marking is related to argumenthood, so it should be sensitive to a-functions ($\hat{F}$, OBJ, OBL, etc.) and oblivious to pivothood. However, the conventional wisdom is that nominative/absolutive Case marks the PIV, and this is one the properties that Dixon attributes to the PIV. We will argue here, however, that the prediction of the theory is correct, and that pivothood is not directly relevant for Case marking.

The argument will consist of two parts. First, we will show that it is not true that PIVs are invariably marked nominative/absolutive. We will then outline a possible direction for a theory of Case which accounts both for Case marking in general and for nominative/absolutive marking.

The apparent relationship between pivothood and nominative Case is clearest in nominative-accusative languages. However (with the exception of quirky Case marking)

nominative-accusative languages have no other Case to mark the PIV. Thus, the place to look for evidence is in ergative and Philippine-style languages.

The first piece of evidence that nominative/absolutive Case is not directly related to pivothood comes from ergative languages in which the $\hat{F}$ is invariably the PIV (so-called morphologically ergative languages). In such languages as Warlpiri and Basque, in which the choice of PIV is the same as in nominative-accusative languages, the unmarked Case (absolutive) still appears on the (nonpivot) OBJ of transitive clauses. Such languages would be predicted not to exist under a theory that associates absolutive Case with pivothood.

Second, even in ergative languages in which the PIV of a transitive clause is the OBJ (so-called syntactically ergative languages), the PIV is not inevitably marked nominative/ absolutive. This is due to the phenomenon of split ergativity. In Dyirbal, for example, first and second person subjects ($\hat{F}$) are nominative[12] while first and second person OBJs are accusative. Despite this, it is the OBJs that are demonstrably the PIVs of their sentences.

Philippine languages also exhibit PIVs that are not marked nominative. Experiencer predicates in Tagalog, for example, can appear in sentences with no nominative argument (when the OBJ is indefinite), but Kroeger (1993) presents evidence that the OBJ is the PIV in such constructions. He suggests that a similar situation may obtain in exclamatory sentences, in which the sole argument is marked with ergative (his genitive) Case but seems to have PIV properties. Again, the conclusion is that there is no direct relation between pivothood and nominative.

The inevitable conclusion seems to be that pivothood is not directly connected to Case marking. We will present here a very sketchy approach to Case marking in LFG which seems to draw the correct connection between a-functions and Case. In the normal case, Case directly mirrors a-function: $\hat{F}$ is ergative, OBJ is accusative, OBJ_{Goal} is dative, and OBLs are marked with some Case marking that reflects their thematic role. The connection has always been easiest to draw in LFG for OBLs: the CASE (or PCASE) feature has been assumed to be identical to the name of the grammatical function, and oblique constituents could then be introduced on a c-structure branch with the functional annotation $(\uparrow (\downarrow \text{CASE})) = \downarrow$. Direct Cases have been more complicated because the
CASE feature has always been assumed to have as its value the traditional name of the feature. However, there is no reason to assume this is correct. Suppose that the Case feature lexically introduced by ergative Case marking is [CASE $\hat{F}$], the Case feature of accusative Case is [CASE OBJ], and so on. The same formal system that introduces oblique Cases can then introduce direct Cases.

The picture in the preceding paragraph needs to be polished somewhat. The phenomenon of quirky Case shows that Case marking is controlled by the verb. We can then view the usual Cases as introduced by default lexical annotations on the verb of the form:

(22) $(\uparrow \text{AF CASE}) = \text{AF}$

Under such a system[13], Case marking is entirely dependent on a-functions.

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[12]Although the usual name here is nominative rather than absolutive, there is no overt morphological distinction between the two. Both lack overt morphological marking.

[13]I would not want to claim that this is all there is to Case marking. The insightful study of Nordlinger (1998) needs to be considered, for example. But this will do for a first approximation.

So how does nominative/absolutive Case fit into this picture? It is suggested by Falk (in preparation) that it doesn't. Following tradition and several strands of modern research, Falk argues that nominative and absolutive are not Cases at all, but rather realize unmarked Case. Briefly, unmarked nominals have f-structure CASE features by virtue of (unification with) lexical annotations in the verb but they do not have their own CASE feature.[14] The distribution of marked and unmarked nominals is governed, as first noted by Silverstein (1976), by various hierarchies of properties. This is a matter entirely orthogonal to both Case marking and pivothood.

2.7. Discourse Prominence

In some languages, it has been shown that the PIV has special discourse prominence, as discussed by Foley and Van Valin (1984) and Manning (1996a). This prominence is difficult to pin down, but as Manning shows for Inuit it relates somehow to definiteness, specificity, and/or wide scope. We do not have anything to add to Manning's excellent coverage, but simply note that since PIV is a d-function, it is to be expected that being PIV would have discourse related consequences.

We also suggest, with a little trepidation, that the ability to launch floating quantifiers may be a discourse related property. In some languages, such as Tagalog, this is a property that is unique to the PIV. However, there are other languages where the ability to float quantifiers seems to be subject to the relational hierarchy.

3. Subjecthood and Typology

If the SUBJ function of LFG is to be factored into $\hat{F}$ and PIV, as suggested by Schachter and Dixon and outlined here, does this mean that there is no such thing in UG (or the grammars of individual languages) as SUBJ? This is the position expressed in concluding remarks by Schachter (1976: 515):

> For if the conclusion that I have reached, to the effect that sentences of Philippine languages do not have subjects, is in fact correct, then obviously it cannot be the case that *subject* represents a linguistic universal. Rather, it represents a common, but non-universal, clustering of properties which need not in principle be assigned to a single constituent type.

It strikes us, however, that Schachter is wrong on this, and that there still is a place for the function SUBJ.

In examining the typology of languages, it is striking that there is a large class of languages with the cluster of properties listed in (23).

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[14]For more details, see Falk (in preparation), where the basic analysis is constructed from a theory-neutral perspective and implementations are suggested for GB and LFG. In general, it seems that a theory of Case needs to recognize a distinction which can be formalized in LFG as f-structure Case (the feature CASE) vs. c-structure Case (a functional category (K) related to N). The parallel structure architecture of LFG seems to me to be tailor-made for handling certain facts about Case; however, there are still many details to be worked out. (Actually, f-structure Case and c-structure Case need to be distinguished from yet a third kind: morphological Case. Morphological Case seems to be more closely related to c-structure Case than f-structure Case (because of unification at f-structure), but in some languages c-structurally unmarked Case is marked morphologically with a nominative Case marker.)

(23) a. The PIV is always $\hat{F}$.
b. There is no ergative Case, so PIV/$\hat{F}$ has unmarked Case (in the sense of §2.6; i.e. nominative).

This, of course, is a description of ordinary mundane nominative-accusative languages, such as English. Given the predominance of such languages in the world, a theory of UG must be able to account for their existence, and apparent unmarked status.

Suppose that the ergativity parameter is (24).

(24) **The Ergativity Parameter** (off for ergative languages)
The functions $\hat{F}$ and PIV are fused into a single function SUBJ that combines the properties of the two functions.

This fused function is, as observed by Bresnan (in preparation), both an a-function and a d-function. The reason it is both is that it combines the two more elementary functions. A language which takes this option may not refer to the individual functions $\hat{F}$ and PIV: the fusion is complete. The result is a simpler grammar, but also a more limited one.

This suggestion, combined with the skeletal theory of Case outlined in §2.6, can start to explain the lack of ergative Case in nominative-accusative languages. Ergative Case has the feature structure [CASE $\hat{F}$]. However, the grammar of a nominative-accusative language cannot refer to $\hat{F}$ by virtue of the Ergativity Parameter, so [CASE $\hat{F}$] is not possible. The theory of Case would need to be worked out in more detail for this to go through, but it seems like a promising direction.

4. Comparison with Other Approaches

We briefly compare our approach with two other recent approaches to subjecthood.

4.1. Inverse Mapping

In a study of grammatical functions in ergative and Philippine-type languages, Manning (1996a) looks at much the same set of facts that we do, but comes to a very different set of conclusions from ours. Manning proposes a theory in which there are two strata of grammatical functions: a(rgument)-structure and g(rammatical)r(elations)-structure. In Manning's theory, all languages have the same mapping from thematic relations to a-structure, but there are different mappings from a-structure to gr-structure. Mapping can be direct (with A-SUBJ mapping to GR-SUBJ and A-OBJ to GR-OBJ) or inverse (A-SUBJ mapping to GR-OBJ and A-OBJ to GR-SUBJ); syntactic ergativity is the use of an inverse mapping. The translation between the functions we have motivated here and Manning's is as follows:

(25) Manning's A-SUBJ = $\hat{F}$
Manning's A-OBJ = OBJ
Manning's GR-SUBJ = PIV
Manning's GR-OBJ = ???

To a large extent, Manning's theory makes the same predictions as ours. This is because Manning's a-structure functions are equivalent to what we are calling a-functions, and his gr-structure functions are the equivalent of d-functions. It seems to us that the main

differences are Manning's separation of a single level of representation in classical LFG into two levels, and his use of the function names SUBJ and OBJ.

As Manning himself points out, the introduction of new levels of representation into linguistic theory needs to be carefully justified. It is not surprising that much work in LFG has been and continues to be devoted to arguing that there is evidence for the separation between c-structure and f-structure or that recent work in the transformational tradition has questioned the need for certain levels of representation. It is therefore important to evaluate Manning's bistratal theory of grammatical functions with a critical eye. Manning's level of a-structure represents relative thematic prominence and the core/noncore distinction (term and nonterm in Manning's terminology), while the level of gr-structure represents discourse prominence. In standard LFG these are all represented in f-structure, since f-structure includes both a-functions and d-functions. In the analysis developed here, we have pushed the existing LFG architecture (with a single stratum of grammatical functions) in an attempt to understand the properties of ergative and Philippine-type languages. Like Manning's, our analysis locates the difference in which argument is assigned a certain type of discourse prominence. However, Manning's position seems to be that this provides justification to separate argument prominence and discourse prominence into distinct strata of grammatical functions.

Manning's line of reasoning seems to us to be very much like the justification for multiple levels of representation in the derivational transformational tradition. Consider a sentence like (26).

(26) What did the Klingon eat?

The nominal *what* serves two functions in this sentence: OBJ and FOCUS. The derivational line of reasoning says that these two functions must be represented at different levels of representation. Monostratal theories like LFG and HPSG have rejected this, in favor of an analysis in which both functions are represented at the same level. It is unclear how Manning's reasoning differs.

It also should be noted that Manning's concept of a-structure is very different from that of Bresnan and Kanerva (1989), Bresnan and Moshi (1990), Bresnan (1994), Alsina (1996), and others in LFG. The usual LFG conception of a-structure is that it defines the nature of the mapping from thematic roles to grammatical functions. This is done through a feature-based classification of thematic arguments on one hand and grammatical functions on the other. As noted earlier, a-structure is a component of f-structure, in the form of the value of the PRED feature of the head. The importance of a-structure has been shown in LFG work on locatives, unaccusatives, applicatives, complex predicates, and other constructions, but this is not the same as the level that Manning calls a-structure.

It is also unclear exactly what the names SUBJ and OBJ are supposed to mean to Manning. We have seen, for example, that $\hat{F}$ and PIV have distinct properties due to their different natures: it is unclear what is to be gained by calling them both subjects. It is even less clear what it means to say that the Agent in a syntactically ergative language is OBJ. It seems that all that Manning means by OBJ is non-PIV core argument. This is not what OBJ usually means. In calling the Agent OBJ in ergative languages and DO verbs in Philippine languages, Manning follows Kroeger's (1993) analysis of Tagalog. However, Kroeger also does not argue directly for this position. There is one morphological quirk of Tagalog that seems to point in this direction: ergative and accusative Case are morphologically identical (*ng* /naŋ/ for common nouns, *ni* for proper nouns); under the Kroeger/Manning analysis, OBJs uniformly get the same Case. But it is clear from examining other Philippine languages that

this is nothing more than a superficial similarity: in related languages ergative and accusative Case are different. For example, in Cebuano (Bell 1983) accusative is identical to dative and distinct from ergative.

4.2. Structural Approaches

Approaches very similar to the one argued for here, but in a purely c-structural framework, are those of Guilfoyle, Hung, and Travis (1992) and Bittner and Hale (1996). We will very briefly consider them here.

Based on data from Malagasy, Tagalog, Cebuano, and Malay/Indonesian, Guilfoyle et al. argue for a GB analysis in which there are two "subject" positions: [SPEC, IP] and [SPEC, VP]. Building on the VP-internal Subject Hypothesis, they suggest that in some languages both positions can be filled at S-structure.

Given the assumptions of GB theory and the VP-internal Subject Hypothesis, [SPEC, VP] is a θ position while [SPEC, IP] is not. Thus, [SPEC, VP] is filled at D-structure (by the Agent argument of the verb), while [SPEC, IP] is empty at D-structure and gets filled by the movement of an independently present nominal. From the perspective of the approach developed here, [SPEC, IP] is Guilfoyle et al.'s structural equivalent of the function PIV, while [SPEC, VP] is $\hat{F}$.

Guilfoyle et al.'s prediction about the division of labor between PIV and $\hat{F}$ corresponds closely to ours. As in our analysis, $\hat{F}$ is related to argument structure and thus has argument-related subject properties. PIV, on the other hand, has properties relating to factors other than argument structure. Among the properties of PIV that they enumerate are accessibility to extraction, the ability to launch floating quantifiers. Among the properties of $\hat{F}$ is antecedence of reflexives. Ability to be controlled seems to be shared by both.

Within the framework that they assume, a nominal becomes PIV (moves to [SPEC, IP]) by virtue of not being assigned Case. They work out the analysis in detail for Malagasy, where the prefix *an-* appears on agent pivot verbs, the suffix *-na* on patient pivot verbs, and both appear on the verb if the pivot is something else specified in the lexical entry of the verb.

(27) (Guilfoyle et al. (4,6))

a. M- an- sasa (manasa) ny lamba amin' ny savony ny zazavavy.
TNS- ACT- wash the clothes with the soap the girl

b. Sasa- na (sasan') ny zazavavy amin' ny savony ny lamba.
wash- DO the girl with the soap the clothes

c. An- sasa- na (anasan') ny zazavavy ny lamba ny savony.
ACT- wash- DO the girl the clothes the soap

'The girl washes the clothes with soap.'

The analysis is that the prefix is part of the verb and assigns Case to the Patient, while the suffix is part of INFL and assigns Case to the Agent in [SPEC, VP]. The one that is not assigned Case moves to [SPEC, IP], where it can be marked nominative. The attractiveness of this proposal comes from the combination of prefix and suffix: in such a case, both Agent and Patient are assigned Case and something else must move instead. An alternative analysis must treat the circumfix *an-…-na* as a third morphological element, unrelated to the AP prefix and PP suffix. Furthermore, constituent order facts in Malagasy support this analysis: the trace of the verb (which moves to INFL) intervenes between the Agent and the Patient, so the Patient is in a position adjacent to the verb if it is Case marked.

Attractive as it is at first glance, the Case-theoretic account faces some problems. Some of these problems are apparent in the analysis of Malagasy. In the first place, it requires an approach under which transitive verbs do not have the inherent ability to assign Case. This contradicts most approaches to Case in the GB tradition. Second, the fact that both Agent and Patient are assigned Case if the circumfix appears on the verb is not enough to explain the movement of another argument to [SPEC, IP]. As Guilfoyle et al. observe (fn 7), the preposition must be assumed to incorporate into the verb as well. If it did not, it would surface and assign Case to the nominal. This incorporation must be stipulated, and though Guilfoyle et al. claim that it is similar to an applicative construction, in the Malagasy case there is no morphological indication of the incorporation.

Further problems emerge when the analysis is extended to other Austronesian languages. Unlike Malagasy, languages like Tagalog do not combine the ACT voice affix and the DO voice affix if an oblique argument becomes the pivot. This may indicate that, messy though it may be for Malagasy, the correct treatment of oblique-pivot affixes is simply as separate affixes. The word order facts are also less cooperative in other languages, as Guilfoyle et al. point out and discussed in detail for Tagalog by Kroeger (1993). Finally, it is unclear how the Guilfoyle et al. analysis would extend to syntactically ergative languages.

Bittner and Hale propose a theory of Case that shares some of the structural features of Guilfoyle et al.'s analysis: there is a VP-internal subject position (adjoined to VP in their analysis) corresponding to our $\hat{F}$ and [SPEC, IP] corresponding to PIV. Inability to be assigned Case causes a DP to move to [SPEC, IP]. Under normal circumstances, the subject can be assigned Case but the object cannot, so it moves to [SPEC, IP] resulting in a syntactically ergative structure. The object is structurally prominent in such a language, resulting in behavior we have attributed to the function PIV. On the other hand, since [SPEC, IP] is an $\bar{A}$ position in their system, the subject is more prominent than the object for operations that involve A positions, such as binding.

In Bittner and Hale's theory, the movement of the Caseless object is the result of a principle that requires Caseless elements to be governed by C. Morphological ergativity results from allowing this without movement, by making IP and VP transparent to government. In morphologically ergative languages nothing moves to [SPEC, IP], but the subject is the structurally prominent nominal in the clause.

To allow Case to be assigned to an object, a D must be adjoined to the verb to create a Case competitor. It is then the subject that is left without Case. The subject either raises to [SPEC, IP] or gets governed in situ by C through government transparency. Either way, the subject is the most prominent element in the clause.

As for Philippine-type languages, Bittner and Hale adapt Guilfoyle et al.'s analysis. For Bittner and Hale, the ACT voice prefix *an-* is a D adjoined to V, resulting in a nominative-accusative construction where the object can be assigned Case but the subject cannot and must move to [SPEC, IP]. The DO voice suffix *-n* is not discussed; Bittner and Hale gloss it as INFL but do not explain why it is absent in ACT voice sentences.

As with the analysis of Guilfoyle et al., Bittner and Hale's approach is similar to ours but requires all languages to have the same c-structure configurations, even radically nonconfigurational languages like Warlpiri. Instead of directly addressing the question of grammatical functions, it creates a complex web of c-structural conditions which conspire to create the surface grammatical relations that the analysis proposed here creates directly.

5. Final Comments

It has been claimed (e.g. by Marantz 1984) that theories of syntax in which grammatical functions are not defined in terms of structural configurations are inherently less explanatory than GB-style theories. In fact, it is often the opposite that is the case. Hiding grammatical functions behind an array of structural constraints often obscures their nature as functions.

In this study, we have attempted to motivate the properties normally attributed to subjects in terms of two more basic functions. We have shown that hypothesizing the functions $\hat{\text{F}}$ and PIV, and treating them as functions, can explain the properties they exhibit, particularly the array of properties in ergative and Philippine-type languages. The resulting system is more explanatory than related c-structural approaches, in which the surface system is a coincidence instead of the direct result of the need for interclausal continuity. It is also superior to a bistratal GF-based approach, in which the function name SUBJ is arbitrarily used to refer to distinct functions at the different strata.

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