

BRANCHING AND DISCHARGE

Hubert Haider, Univ. Stuttgart (03/92)¹

- 0. Introduction
- 1. Unexplained issues in double object constructions
- 2. Directionality and the discharge of A-Structure: a crosslinguistic perspective
- 3. BC and a principled account of double object constructions
- 4. Independent evidence
- 5. Implications for functional projections
- 6. Summary and conclusion

0. Introduction:

There is a fact, easy to check and yet as puzzling as it is simple, that has not yet been fully appreciated: The VP-internal basic serialization patterns of non-verbal elements are cross-grammatically invariant. A particularly perspicuous case is the pattern of double object constructions with a directional PP. Both in OV- and in VO-languages the order is the one indicated in (1). Examples from two languages of each type are given under (2).

(1) - IO - DO - PP -

- (2)
- a. daß sie *jedem_i ein Paket an seine_i Privatadresse* schicken werden (German)
 - b. omdat ze *iedereen_i een packje naar hem_i thuis* zullen opsturen (Dutch)
 - c. that they will send *everybody_i a package to his_i home address*
 - d. at de forklarede *hver deltager_i problemet på hans_i eget sprog* (Danish)
- that they explained every participant the problem in his own language

The puzzling feature is that the position of the verbal head, whether preceding or following, does not interfere with the serialization pattern. If parametric headedness variation were in fact a symmetric property, we would expect VO-structures to mirror the serialization of the OV-structure, as illustrated under (3).

- (3)
- a. [IO [DO [PP V]]]
 - b. [[[V PP] DO] IO]

It is remarkable on the one hand that (3b) is not found as the VO-analogon of (3a), and it must come as a surprise on the other hand, that the relevant branching structure of (1) must be the same, both in OV and VO-systems. It has been noted by Barss & Lanik (1986) that (4) cannot be the correct branching structure for a sequence like in (1).

(4) [[[V IO] DO] PP]²

Variable binding as illustrated in (2) and other grammatical phenomena sensitive to c-command³ point to the conclusion that the branching structure for OV- and VO-VPs must be the same. It is right-branching. The resulting structure for a V-final VP is (5a). (5b) captures the desired configuration as well, but cannot be the adequate structure assignment for a V-initial VP.

- (5)
- a. [IO [DO [PP V]]] (=3a)
 - b. [V [IO [DO [PP]]]] (preliminary)

The offensive property of (5b) is obvious. It violates the endocentricity condition of X'-projections, since the head appears at the top of the projection line, and not at the bottom.

Larson (1988) presents a specific account of the so-called English dative alternation which is intended to capture the relevant branching property of the construction. He proposes that the V-position in (5b) is a derived position. V has raised from a position adjacent to the most deeply embedded argument. His analysis, however, involves ad hoc assumptions (see the discussion below) and does not arrive at a principled answer for the real question: What rules out the left-branching structure for an English VP and what enforces the right-branching one? He proposes an empirically motivated analysis, but one that does not provide an answer for why both (3b) or (4) are ruled out as the simple structure for a VP in VO-languages on principled grounds.

Obviously, the right-branching VP in English must be the result of an UG-restriction. But as the theory stands, the correct branching configuration cannot be inferred from the data by the learner. We cannot reasonably assume that the highly indirect evidence that provoked Larson (1988) to postulate his (1988) analysis could trigger the proper structuring of the VP for a first language learner.

The solution proposed in this paper is direct and simple: Projection structures are universally right branching⁴ (*the branching conjecture*), due to a basic property of UG.⁵ lexical information onto a universal structural configuration.

The typological variation reduces to the headedness. The assumptions sketched out amount to a certain version of a „universal base hypothesis“. The universal base is the product of a mapping parameter. Universal discharge conditions of a universally structured argument structure force the verb to move if it is a progressively licensing head: The only possibility for a verb to gain c-command over all arguments under progressive directionality on a right branching structure is head-raising. Thus V-movement of the Larsonian kind is triggered by a well established principle, which requires that the A-structure be discharged completely. If, however, the verb is a regressively licensing head, it is able to discharge its A-structure in situ, since all discharged position are within licensing domain on the right branching structure once the directionality of head-licensing meets the universal branching directionality.

The paper is organized as follows. In section 1, several shortcomings of Larson's analysis are highlighted. Section 2 presents evidence for the crosslinguistically invariant properties of A-structure and its discharge. These insights are combined with the branching conjecture (BC) in section 3, in order to derive a principled analysis for multiple argument constructions. Section 4 provides independent evidence for the branching conjecture from head initial N-projections and the position of phrasal stress. A few consequences of the branching conjecture are very briefly traced in section 5. Summary and conclusions comprise section 6.

1. Unexplained issues in double object constructions

According to Larson (1988), the D-structures corresponding to (6a,b) are (7a,b), respectively. The D-structures in (7) are supposed (Larson 1990:602) to meet a relativized version⁶ of Baker's (1988) Uniformity of Theta Assignment Hypothesis.

- (6) a. (XP) sent_i a letter e_i to Mary
 b. (XP) sent_i Mary_j e_i e_j a letter
- (7) a. [VP [V' e [VP a letter [V' send to Mary]]]]
 b. [VP [V' e [VP e [V' [V' send Mary] a letter]]]]

There are at least three undesirable aspects of Larson's proposal, which I shall try to highlight in the following discussion. It suffers from arbitrariness, it does not offer a principled explanation for the trigger of V-raising and NP-movement, and it is framed in a construction specific manner.

First of all, it seems arbitrary to not place the phrase a letter into an identical DS-configuration in (7a) and (7b), if one assumes that UTAH (relativized or not) dictates the mapping from ©-structure to syntactic structure. Hence (7a) should be replaced by (8).

- (8) [VP [V' e [VP e [V' [V' send to Mary] a letter]]]]

Secondly, it is unclear, why the sister of the verb in the basic position, viz. @SSFN~Mary@SSNO~ in (7b), should move to Spec-V, in the derivation of (6b) from (7b), rather than the sister of V'. One would expect, given the adjacency requirement for case assignment, that the non-adjacent NP, that is the phrase *the letter*, should move in (7b). This would result in the ungrammatical sentence (9), however:

- (9) *John sent_j a letter_i e_j Mary e_j e_i

Evidently, this sentence cannot be ruled out by appealing to the (relativized) UTAH, because the DS-configuration (7b) satisfies it. Larson (359f.) assumes that after movement of the inner NP, namely *Mary* in (7b), the V'-projection is optionally reanalyzed as V and is thereby turned into a case assigner for *a letter*. This is both ad hoc and unsatisfactory. Obviously, the target position of NP-movement must be a case position, otherwise the moved NP *Mary* in (6b) would be caseless. Hence there are two case positions, in principle, namely the target position and the V-adjacent base position. Hence (9) should be an optimal derivation. It will be argued in section 2 of this paper that these problems are pseudo-problems, because there is no need for NP-movement at all.

Finally, it is unclear, as noted by Speas (1990:79), what could license empty heads in the D-structure, not related to any lexical item.

Next, we have to ask ourselves what licenses the kind of structure Larson suggests. Under his perspective, its empirical raison d'être is its utility for performing V- and NP-movement on it. Theoretically, however, it is unclear what might give rise to this kind of structure. One has to ask, why the core grammar of English contains and requires a structure like (7) rather than the structure indicated in (3b) or (4), repeated for the sake of convenience under (10):

- (10) a. [[[V PP] DO] IO] (=3b)

b. [[[V IO] DO] PP] (= 4)

Finally, Larson's analysis is implicitly construction specific. Postulating a derived NP-position for the „dative“-NP singles out a specific class of structures, that involve NP-movement and V'-reanalysis (Larson 1988:359f.). The comparative data on multiple object constructions in section 2 will provide strong evidence that „dative-shift“ should be discarded in favor of an A-structure based analysis of the facts under discussion. The construction specific aspect becomes clear if we consider the double object plus PP structures, referred to already in (2).

- (11) a. We cannot forward him any mail we receive to his holiday residence
 b. We cannot forward any mail we receive to him to his holiday residence
 c. *We cannot forward his holiday residence any mail we receive to him

A comparison of (11a) and (11c) reveals that it is not a structural property of the most deeply embedded GOAL-PP that it may surface as an NP moved to SPEC-V, as one might think, given the analysis of (7b). In order to derive (11b), a specific position must be singled out on thematic grounds. „NP-movement“ in this respect differs significantly from uncontroversial cases of NP-movement, as in passive or raising. In this constructions, every NP that happens to appear in the specific structural environment is moved to the Spec-position, semantic variation notwithstanding (cf. 12). In combination with the need for a reanalysis rule, the analysis is tailored too tightly to the specific construction.

- (12) a. The mail_i was forwarded e_i
 b. The cadillac_i was driven away in e_i (Chomsky 1981:123)
 c. Tabs_i are kept e_i on him

That the thematic relation of the moved NP is irrelevant for „move-alpha“ is obvious, especially if an idiom chunk is involved, as in (12c).

The gist of this brief appraisal of Larson's position is the insight that it lacks theoretical underpinning. Irrespective of its empirical merits or deficits, the grammatical causality of the structure assignment it employs is enigmatic.

2. Directionality and the discharge of A-Structure: a crosslinguistic perspective

2.1 Unitary and alternative base order

This section focuses on universal properties of A-structure that are preserved, as an epiphenomenon of A-structure projection, in the particular D-structure configurations, due to a universal discharge operation. The comparison of verb-class specific D-structure arrangements in languages with morphological Case systems, namely Icelandic and German, will provide crucial insights into the determinants of the „dative“-construction of the English type.

It is worth emphasizing that in languages like German and Icelandic, there have to be distinguished **three classes** of double object verbs. The distinguishing factor is the respective base order.

- (13) Verb classes a. NOM < {**ACC** < **DAT**, **DAT** < **ACC**} (cf. 18a)
 b. NOM < **ACC** < **DAT** (cf. 18b)
 c. NOM < **DAT** < **ACC** (cf. 18c)

Class (13a) allows two alternative base orders, whereas verbs of class (13b) and (13c) have exactly one base order. This fact has gone unnoticed in German for a long time, because scrambling of the order in (13b,c) produces the alternative surface orders as well. For German it is not as easy as for Icelandic to recognize the difference between alternative base orders and derived scrambling order. But it is possible to factor out the base orders by means of objective criteria.

Icelandic, as a VO-language, lacks scrambling, hence the different base orders can be checked by direct inspection and it has been noticed that there are indeed alternative serializations which behave in such a way as base orders are expected to. Zaenen & Maling & Thrainson (85:468f.) concede, that a verb like *gefa* (give) appears „to have not one but two reflexivization patterns: i.e., either object can be the antecedent“:

- (14) a. Ég gaf konungi_i ambáttina sína_i
 I gave a king_{DAT} the slave hisself (I gave a king his own slave)
 b. Ég gaf ambáttina_i konungi_i sínum_i
 I gave the slave_{ACC} king hisself (I gave the slave to his own king)

What is important to note is that the given order is crucial. The reversal of the objects in (14) yields ungrammaticality, because the c-command restriction on binding is violated. Moreover, the verb *gefa* is a verb that allows alternative passivization patterns. Either the Dative-NP is fronted and behaves like a subject in every respect except agreement with

the finite verb (cf. Zaenen & Maling & Thrainsson (85: 460f.) on quirky subjects), or the direct object is fronted and appears as Nominative and shows all subject privileges.

Alternative passivization or alternative reflexivization patterns are not found with the class (13b,c) verbs, however. Take, for instance the verb *svipta* (deprive) which allows the order of ACC-DAT only. Zaenen & Maling & Thrainsson (85:468) discuss an example of Rögnvaldsson's, repeated under (15):

- (15) a. Sjórinns svipti hanni_i [manni sínum_i]
 the-sea deprived her(A) husband(D) her[+REFL]
 the sea deprived her_i of her_i husband
 b. *Sjórinns svipti [konu sína_i] manninum_i
 the sea deprived wife(A) his[+REFL] the-man(D)
 the sea deprived his_i wife of the man
 c. *Sjórinns svipti manninum_i [gömlu konu sína_i ...]
 the sea deprived of the man [his old wife ...]

Sentence (15b) is ungrammatical, because the antecedent does not c-command the reflexive. Reordering, for instance by means of heavy NP-shift, as in (15c), does not improve the acceptability. This is a clear contrast to a verb like *gefa*. The following example, which I owe to Halldór Sigurðsson (p.c.), exemplifies that passivizing *ræna* (rob), another ACC-DAT-verb, allows only the non-quirky subject variety, which in turn is out for verbs which have DAT-ACC as the only basic order.

- (16) a. Eg rændi Ólaf veskinunu
 I robbed Ólaf(A) (of) the wallet(D)
 b. Ólafur var randur veskinu
 c. *Veskinu var randur Ólafur

Further evidence for alternative base orders comes from ergative verbs with DAT-NOM or NOM-DAT orders. Zaenen & Maling & Thrainsson (85:469) give credit to Bernðsson for his observation, „that for many active DAT-NOM verbs either order feels natural.“ A verb *leidhast* (bore), however, does not belong to this class. It is the ergative counterpart of (13b) with only one basic order, which is DAT-NOM, as illustrated in (17). Thus, the only candidate for the subject position is the DAT, which yields a quirky subject construction, discussed in great detail by Sigurðsson (1989:205-210).

- (17) a. að mér höfðu leiðst fyrirlestrarnir
 that mér(D) have bored the-lectures(N)
 that the lectures have bored me
 b. *að fyrirlestrarnir höfðu leiðst mér
 that the lectures have bored me

Examples of the corresponding verb-types in German are given in (18). The decisive evidence for the justification of this grouping, however, is not as readily accessible as for Icelandic. It is of a more indirect nature, since we have to make sure that what we might take as an alternative *base* order is not a *derived* scrambling order.

- (18) a. {empfehlen, erklären, geben, schicken, vorstellen, }
 recommend, give, explain, send, introduce,
 b. {abgewöhnen, beibringen, gönnen, verübeln, verweigern, zutrauen, }
 wean, administer, not to begrudge, to blame sth. on so., deny, to think sb. capable of sth.
 c. {aussetzen, ausliefern, entziehen, unterziehen, unterwerfen, zuführen, }
 expose so. to sth., extradite, take away from, submit to, subject to, to bring to

Since the German facts on anaphoric binding between objects are notoriously murky and hence controversial, and since binding of pronominal variables is not sensitive to base orders,⁸ I shall adduce evidence of a different kind: In a lengthy study on „normal word order“ and „normal intonation“ Höhle (1982) showed that judgements on *focus spreading* are robust and sensitive for base versus derived order. He found a correlation between basic word order and maximal focus spreading and derived word order with the focus being confined to the minimal maximal projection that contains the focus accent. The examples under (19) illustrates this criterion. Bold face marks the locus of focus.

- (19) a. daß Carl_{NOM} die Lösung_{ACC} fand (spreading)
 b. daß die Lösung_{ACC} Carl_{NOM} fand
 c. daß er sein Geld_{ACC} seiner Frau_{DAT} gegeben hat (spreading)

d. daß er seiner Frau_{DAT} sein Geld_{ACC} gegeben hat (spreading)

e. daß er sein Geld_{ACC} seiner Frau_{DAT} nicht gönnte

f. daß er seiner Frau_{DAT} sein Geld_{ACC} nicht gönnte (spreading)

g. daß er seine Kinder_{ACC} ihrem Einfluß_{DAT} aussetzte (spreading)

h. daß er ihrem Einfluß_{DAT} seine Kinder_{ACC} aussetzte

An easy way of checking the spreading potential of focus is a question-answer pairing. Questions like those in (20) focus on nested portions of the clause. (20a) focuses on the NP, (20b) on the VP and (20c) on the whole clause, respectively:

- (20) a. What did Carl find?
b. What did Carl do ?
c. What has happened?

The sentence (19a) is an acceptable answer for any of the questions in (20), while (19b) would be inadequate in each case. (19b) would be adequate only for the question (21). The fact that it is inadequate for (20c) shows that focus does not spread if the verb and the focused phrase do not form a minimal complete constituent.

(21) Who found the solution?

Therefore, the different spreading potential for ACC-DAT serialization is a criterion for differences in the base orders. Inversion of ACC and DAT does not affect the spreading potential of focus for a verb like *give*. This indicates that both orders are base orders. The two examples of the other verb classes, however, differ on the one hand in their respective spreading order and, on the other hand, they lose the spreading potential if the base order is inverted. Spreading requires both, basic word order and normal intonation⁹, that is an accent on the preverbal phrase.

These facts, namely the existence of verb specific base orders with alternative base orders for some verbs, call for an expansion in terms of the device that determines the base structure. This is the operation of A-structure discharge.

2.2 The organization of the A-structure

If there is base order variation for objects, this is evidence for an A-structure dependent determination of base order and counter-evidence for the hypothesis that the base order is determined by a structurally fixed order of grammatical functions. Since the verbs involved show crosslinguistically invariant orders, the A-structure of the respective verb must be organized in an invariant fashion, and since the corresponding verbs are identified on conceptual-semantic grounds, it must be the conceptual organization that determines properties of A-structure which in turn determines the projection onto a syntactic structure which eventually determines the base order of arguments.

Given that the organization of A-structure reflects the organization of the conceptual representation, there must be an interface between these different pieces of information. This interface is the lexical entry. Each semantically contentful lexical entry defines a mapping from a conceptual representation to a grammatical representation. In my view, there is no *direct* interaction between conceptual representations and grammatical representations apart from the lexical interface. Let me dwell for a moment on one consequence of this view point: Semantically contentful notions of ©-roles and ©-hierarchies cannot play any role as primitive notions in the grammar, since these notions are framed in terms of conceptual information. What we perceive as ©-hierarchies are generalizations on the A-structure properties of lexical items. Since the conceptual representation determines certain properties of A-structure and since A-structure determines certain properties of syntactic representation we perceive an apparent correlation between properties of syntactic structure and properties of conceptual representations. This myopic perception is theoretically insignificant, however, because it concerns a phenomenon that finds its explanation in a theory of A-structure in the lexical entry. The lexical entry is the only exchange office between two entirely different currencies of information structure. The currency of grammar and the currency of conceptual representations are invalid outside their respective domain. The only mode of interaction is the currency exchange in the lexicon. What we need is a theory of the invariants of this exchange.

One implication of this perspective is obvious. A principle that directly maps conceptual information onto structural representations cannot be a principle of grammar. It is but the reflection of the function the lexically stored A-structure carries out. Thus I shall claim that Baker's (1988:46f.) UTAH as a principle of this quality is, where it is correct, a descriptive generalization over the lexically mediated mappings.

Various proposals have been ventured in this spirit (cf. Speas 1990:30f. and the literature cited there). I will adopt a proposal of Bierwisch (1991), since it captures the crucial property, namely the transfer of *structural* properties from conceptual representations to grammatically relevant representations in the lexical entry in an explicit and direct way.

(22) The structure of A-structure

Semantic form (SF):	λx	λy	λz	$[\dots (x) \dots (y) \dots (z) \dots]$
	:	:	:	$\} \leftarrow \text{„Theta-grid“}$
Grammatical form (GF):	F_i	F_j	F_k	
	Argument positions		Conceptual representation (CR)	

For canonical entries, SF is a complex propositional condition. λ -operators abstract over variables in SF. An **argument position** in A-Structure is an ordered pair $\langle \lambda x_i F_i \rangle$, where the lambda-abstractor λx_i represents a „ **θ -position**“ and F_i the **grammatical information** associated with it. The notion of a θ -role becomes a purely descriptive label for a variable in a particular configuration in CR, let us say as a variable of a particular CR-predicate.

The discharge of the linking features, which provides the projection-license for A-positions, mirrors the mechanism of functional application (λ -conversion) in λ -categorial grammars. Thus the linear order of the λ -abstractors in (22) is genuine *structural* information. If linking takes place in the projection position (like in German), the D-structure configuration reflects the A-structure configuration directly.

$$(23) \quad \begin{array}{ccc} \lambda z & \lambda y & \lambda x P \\ F_i & F_j & \underline{F_k} \end{array} \rightarrow [F_k [F_j [F_i X^0]]] \text{ (German: h-final)} \\ \text{discharge}$$

How is the order of the operators determined? The order reflects the rank of the variables bound by the operator in CR. In general, the rank is determined by the depth of embedding of the variable to be bound. The operator that binds a variable lower in the conceptual structure is outranked by an operator that binds a less embedded variable. The interesting case is (24b): Here one operator binds two occurrences of the variable z . In (24a), z occurs in the least embedded configuration. Hence z is the highest ranking variable and its operator the highest ranking operator. In (24b), however, one occurrence of z is the most deeply embedded variable. Hence the operator binding z is outranked by the other operator.

$$(24) \quad \begin{array}{l} \text{a. } \lambda x \lambda y \lambda z [R_i z [R_j y [R_k x]]] \\ \text{b. } \lambda x \lambda y \lambda z [R_i z [R_j y [R_k x [R_l z]]] \end{array}$$

There is another property of A-structure, however, that goes together with the highest occurrence of a variable. This is *subject selection*, that is the designation of the external argument. The prediction is as follows: A verb like (24b) will project the subject in a VP-internal position that is lower than the object position. Let us take a concrete example, for instance the notoriously problematic case of psych-predicates like in (25).

$$(25) \quad \begin{array}{ll} \text{a. like/fear:} & \lambda y \lambda x [x E y] \\ \text{b. please/frighten:} & \lambda x \lambda y [y \text{ CAUSE } [x E y]] \end{array}$$

The λ -abstractor representing the subject θ -role of *frighten* binds **two** variables in the semantic form, namely the Cause-of-emotion variable and the target-of-emotion variable¹⁰ and reflects the particular conceptual organization of the given verb. This captures for instance Pesetsky's (1990) insight that the „THEME-role“ of the subject of *frighten* and the object of *fear* is not identical. He suggests a differentiation of **THEME** into **Cause** and **Subject matter**. The subject of *frighten* denotes the cause of emotion, whereas the object of *fear* names the target of emotion. In fact, the subject of *frighten* is both, the cause and the target of emotion, as (25b) indicates.

The ranking-rule will yield an A-structure in which the experiencer outranks the cause&target of emotion. But the DP that is linked to the cause&target-of-emotion argument will be the subject. In English, this entails raising to a spec-position. In German, however, this results in an ACC<NOM basic order.

(26)	a. daß Linguisten _{NOM} Balladen _{ACC} interpretieren	[maximal focus]
	that linguists interpret ballads	
	b. daß Linguisten _{ACC} Balladen _{NOM} interessieren	[maximal focus]
	that ballads interest linguists	
	c. daß Balladen Linguisten _{NOM} e _i interpretieren	[minimal focus]
	d. daß Balladen _{NOM} Linguisten e _i interessieren	[minimal focus]

Focus projects if the pitch accent of the clause rests on the most deeply embedded position. This is the default position of sentence stress (Cinque 1993, see sect. 4.2). Stress on a position higher in the structure (cf. 26c,d) amounts to narrow focus. The focus does not project. If the preverbal phrase, that is the phrase which would receive the sentence stress, is scrambled, then the structural environment for default stress is destroyed, because the trace cannot receive stress. Hence any other stresses position yields a non-default stress, hence minimal focus.

That the argument that represents the cause of emotion is a transitive subject the originates in a VP-internal position is reflected by the different binding properties illustrated in (27).

- (27) a. [Pictures of herself_j do not [interest her_j e_i at all]
 b. *[Pictures of herself_j]_i do not [e_i describe her_j accurately]

Given that a psych verb like *frighten* or *interest* characterizes a concept with the cause and the target position in the CR being bound by a single operator in SF, it follows that the two „θ-roles“ do not occur as independent arguments with this class of verbs.¹¹

Let us return to the central issue, namely the interface function of A-structure: The relation between A-structure and CR preserves an essential structural property, namely the relative embedding of the terms on each side. It is this property that gives rise to the impression that D-structure configurations reflect a thematic hierarchy. In fact they do so, but not for the reason that is claimed responsible. Thematic hierarchies do not influence D-structure configurations in a theoretically significant sense. What one might perceive as thematic hierarchies is the effect of discharging non-arbitrarily structured A-structures onto a syntactic representations. Syntactic structure ends up with parallels to structural properties of CR only insofar as the non-arbitrariness is a consequence of structural parallels in CR and A-structure. Thematic hierarchies describe equivalence classes of lexical items modulo the ranking effect. It is important to note, however, that thematic hierarchies are not part of the grammar. A Theta hierarchy is just a façon de parler. It sloppily addresses the ranking effect in the mapping between A-structure and CR. Discarding thematic hierarchies is discarding the need for a principle of uniform θ-assignment. Uniformity of θ-assignment is guaranteed by a discharge condition for an ordered A-structure like the one proposed by Higginbotham (1985) in the modification of Speas (1990, sect. 2.3).

2.3. The discharge of A-structure

Discharging the A-structure amounts to the projection of A-structure onto a syntactic representation. A head licences A-positions on its projection line. The linking features are assigned to a phrase in this position, which thereby is linked to the A-position. Linking is the syntactic „visibility“-device. Since the linking features as part of the A-structure are tied to an operator in SF, the linked phrase counts as „θ-marked“. The linking-features identify the phrase linked to the position as the phrase that instantiates the variable in the A-structure which is bound by the operator that is paired with the respective linking features in the A-structure. This captures Chomsky's (1981:334) notion of visibility as a requirement for θ-assignment. A few general assumptions suffice for characterizing the general properties:

- (28) A-structures are discharged in a crosslinguistically uniform sequence

The statement (28) is a necessary consequence of the crosslinguistically uniform determination of the variable-rank by CR. If CRs are structured in obedience to universal conditions¹², which seems to be a *conditio sine qua non*,¹³ the ranks of the variables are crosslinguistically invariant and so is the ranking of the operators in the A-structure.

- (29) a. The branching structure is unambiguous, hence binary (Kayne 1984:133)
 b. Head-government (= licensing) is directional (Kayne 1984:168)
 c. The discharging head and the discharged position govern¹⁴ each other („sisterhood condition“)

The following condition, which reformulates Speas' (1990:60) definitions, will suffice as a basis for deriving (28):

- (30) a. An A-structure A of a lexical head H is discharged, iff all positions in A are discharged in the projection of H
 b. A syntactic position X in the projection of H is a discharged A-position A of H if
 i) X and Y govern each other, and
 ii) X takes the linking features of A

Since licensing by government is directional (29b), and since the branching structure is binary, there will be discharged exactly one A-position per branching. If, as it seems to be the case, an A-structure is discharged on a rightbranching structural array, a regressively licensing head, that is for instance a verb in an OV-language, will govern all the

positions discharged along the projection line, since these positions are left of the projection line and the verb governs to the left. On the other hand, any position attached to the projection line will govern the head of the projection by virtue of c-commanding it (cf. 31a).

The situation is different in a VO-system. We might expect the mirror image result of the OV-system, but as pointed out above, this is not the case. What we find resembles the OV-system, with the head in a derived position (cf. 31b).

- (31) a. [IO [DO [PP V]]] (= OV-projection)
 b. [[V_i IO] [e_i DO] [e_i PP]] (=VO-projection)

The structure (31b) captures the empirically attested c-command relations between the A-positions involved.¹⁵ According to the assumption that A-structures do not differ crosslinguistically, the A-positions involved in (31) must have been discharged in the same order, hence the first one is the most deeply embedded and the last one to be discharged, in this case the IO, is the position that c-commands all other positions. The crucial difference between (31a) and (31b) is the directionality of the head element. Since the V in a VO-system governs progressively, it cannot discharge its argument in situ. All positions except the immediate sister position are beyond the scope of *directional* licensing, since they are to be found on a *left* branch. Thus the verb has to move for every further A-position it discharges, whence its projection initial position after completion of discharge. If this characterization is correct, the difference between a head initial and a head final projection is a difference in the directionality of licensing. The rest follows from independent principles.

This is the point to re-introduce the question of the introductory section: What rules out the left-branching structure for an OV-system and what enforces the right-branching one? The answer should be as simple as possible:

- (32) *Branching Conjecture (BC)*
 For any two nodes *directly* attached to the *same* (extended) projection line, the node that precedes c-commands the node that follows.

The BC is a restriction on the branching of the main projection line with respect to the positioning of projected positions: They are projected on the left hand side of the projection line. Thus any movement to the right is ruled out as well as basegenerated adjunction.¹⁶ (32) is meant to describe a primitive property of the language faculty. It characterizes the structural property of UG-conform data structures. The direction of branching is not learned, and it cannot be learned. If it were to be learned, the learner would be trapped: Left-headed constituents would be taken to be left-branching or flat, right-headed ones to be right-branching or flat. Negative evidence only (binding, superiority, etc.) could trigger the restructuring.

Given the above mentioned conditions of discharge, the θ -criterion in combination with BC suffices for the derivation of (31b): The θ -criterion requires that all positions in the A-structure be discharged. According to (30) the A-positions are discharged on a binary tree such that the discharged positions and the head c-command each other. Because of BC, syntax provides rightbranching structures only. Hence a progressively licensing head is stuck after having discharged the first position. The θ -criterion forces the full discharge. (30) enforces mutual government with the proper directionality for the head. There is only one possible way to cope with all these demands simultaneously: There must be as many head positions as there are A-positions to be discharged¹⁷. The result is a projection with a head chain, that is a structure like (31).

Of course, this is not the complete picture yet. If the requirement for a head chain meets the requirement of binary branching, the result is straightforward: Every discharged position except the first must be a specifier position, in X'-theoretic terms. The verb cannot discharge more than one immediate sister positions without violating binary branching: If DO, contrary to (33a), were an immediate sister, the verb, the DO and the node dominating the embedded projection that contains the PP would be dominated by the same node. Is (33a), however, a licit structure in terms of the X'-system?

- (33) a. [V_i [IO [e_i [DO [e_i PP]]]]]
 b. [_{VP} V_i [IO [e_i [_{VP} DO [e_i PP]]]]]
 c. [_i XP [_{HP} h [YP]] (h = head)

If the DO in (33a) occupies a sister-position of the (first) projection of the head, this position could be either a specifier position or a complement position, depending on the relation to the head. Since the head in (33a) governs progressively, the position is ungoverned and hence does not qualify as a complement position. But if it is a specifier position, its dominating node must be a maximal projection of the head, that is a VP. Thus the DO and the PP in (33b) form a complete X'-configuration in terms of the basic template (33c). What are the consequences for the X'-status of (33b)?

According to Chomsky (1992), X' -structures are restricted to the form specified in (33c). In the context of our discussion, however, (33c) is the characteristic X' -template for head-initial structures. It is the special case resulting from a more general set of restrictions. If the government-requirement for heads under directionality is combined with the BC, (33c) will result as the only structure in which the head stands in a local relation to a phrase. It is either the spec-head or the head-complement relation. The head-complement relation is subject to the directionality of government. Thus, for head final structures, there is no singularity restriction on the number of complements because the branching structure meets the directionality requirement of the head, and hence it may govern any number of complement-positions on its projection line.

Returning to (32b), we note that its structure is complex. It is composed of two instances of (33c). Its compositionality, however, is a purely structural configurationality. The embedded VP-node is a structural complement to an element which is not distinct from its own head element. Thus, this VP qualifies as a node on the same composite projection line, since a projection line consists of nodes that share the same head element. This situation must be kept distinct from thematic VP-complementation, as in the case of perception verb complements, for instance. In this case the two verbal heads are distinct. This VP-complement therefore must be thematically licensed. If the projections are not distinct, thematic licensing is impossible and not necessary. (33b) is the result of mapping the argument structure of a single lexical item onto a structural configuration that meets the requirements of the X' -system under the BC.

This completes the characterization of A-structure discharge in a system like the English one. It is worthwhile pointing out that (33) obeys the technically refined „sisterhood requirement“ for an A-projection. The literal version of the „sisterhood condition“ is replaced by the condition of mutual c-command, modulo head-chains. This condition covers the right contexts for both systems of discharging an A-structure. Every A-position is c-commanded by an element of the head chain, and every A-position c-commands an element of the head chain. Given that mutual c-command defines sisterhood, both (33) and (31a) fulfill the sisterhood-requirement.

3. BC and a principled account of double object constructions

In section 2.1, it has been pointed out that Icelandic and German provide evidence for alternative base orders in projections involving direct and indirect objects. Alternative base orders arise if there are alternative rankings in the A-structure. If there are alternative rankings in one language, however, there must be alternative rankings in other languages as well for verbs involving the same conceptual structure. The immediate implication for double object constructions is obvious: Dative shift verbs in English or continental Scandinavian languages are those verbs for which there exists an alternative ranking for IO and DO. The languages under discussion, however, differ with respect to the linking features (morphological dative vs. unmarked objective).

- (34) *Conjecture*: Verbs of the „dative-shift“-class à la English are a (proper) subset of the verb class which allows two basic orders in languages of the type of Icelandic or German.

The English verbs do not differ from the respective verbs of a language like Icelandic in terms of A-structure. They do differ, however, in terms of the linking possibilities. Icelandic and German have a morphologically overt Dative case-morphology. There seems to be one more correlation between languages with and without overt Datives. Only languages with overt datives show oblique dative functions of the type illustrated in (35):

- (35) a. Der Doktor nahm *dem Mann* Blut ab (German: = d)
 b. Læknirinn tók *manninum* blóð (Icelandic: =d; Kress 1982: §509)
 c. Je *lui* ai lavé la voiture (French)
 I him have washed the car
 d.*The doctor took *the man* off blood (took off blood from the man)
 e.*Ik heb *hem* de auto gewassen (Dutch: = c)
 f. Ich habe *ihm* das Auto gewaschen (German: =c)
 g.*I washed *him* the car
 h.*Jeg vaskede ham bilen (Danish; = g))

The empirical generalization is formulated as (36).

- (36) *Conjecture*: Languages that lack overtly coded case lack the class of semantically restricted case functions on bare DPs (i.e. in non-prepositional contexts).

These two conjectures lead to an understanding of why the order ACC-DAT of Icelandic and German surfaces as the order ACC-PP in English and other languages and not as a double object construction. Obviously there must be a difference in the linking requirement that rules out (37b) as an alternative structure of (37a). The discharge system would provide the alternative rankings, as Icelandic and German illustrate:

- (37) a. Brian gave Sophia a nickel
b. *Brian gave a nickel Sophia

For expository and illustrative purposes I will wagger trespassing into a discussion of CR-structures, but I do not subscribe to any specific claim, except that there must be a CR-basis for the alternative ranking, a fact that can be established on linguistically safe territory, namely by means of comparative grammar. Let us suppose for expository purposes, following Speas (1990:86f.), that a concept like „give“ has the two alternative CR-structures sketched in (38), in the bracketed part. The different CR-structures trigger different rankings for the DO- and IO-arguments. In (38a) the Y-variable, which corresponds to „theme“, is ranked higher than the Z-variable. (38b) is the converse structure.

- (38) a. $\lambda z \lambda y \lambda x$ [X cause [become [Y be [at Z]]]]
b. $\lambda y \lambda z \lambda x$ [X cause [become [Z [have Y]]]]

This particular analysis for *give* cannot be generalized, of course, to other verbs with alternative rankings, since it depends on the particular semantics of *give*. From a more general point of view, we expect alternative rankings to occur in at least two cases. Either the CR of a lexical item is structurally ambiguous, as in the case of *give*, or it involves a commutative predicate. With respect to *give*, CR-agnostics like me will contrive at least some linguistic consolation for the justification of the above described structural differences in CR-structure from the observation that there are basic lexemes in various languages that seem to differ exactly with respect to the *have* vs. *be-at* relation.¹⁸

- (39) a. Er hat ein neues Auto d. The new car belongs to him
b. He has a new car e. Er besitzt das neue Auto _{ACC}
c. Das neue Auto gehört ihm _{DAT} f. He owns the new car

It is worth noting that the Dative-NP in (39c) does not find corresponding an NP but a PP complement in English. The reason for the ungrammaticality of (40) is the same as that for (37b). The objective case cannot be employed for oblique functions.

- (40) *The new car belongs him

Evaluated in combination, these observations point to the conclusion that the semantic restrictions on the local relation involved in (38) are incompatible with the linking potential of objective case, as a purely structural relation without lexically specifiable linking properties.

Conversely, we will expect that those verbs in English that correspond to the verbs that do not allow any other order besides DAT-ACC in Icelandic and German will lack a NP-PP alternation. Examples of this class are given under (41):

- (41) a. Can you spare me the details? (German: DAT-ACC-*ersparen*)
b. *Can you spare the details to me?
c. I envy you your fine garden (German: DAT-ACC-*neiden*)
d. *I envy your fine garden to you
e. Forgive us our sins (German: DAT-ACC-*vergeben*)
f. *Forgive our sins to us
g. I deny you the permission (German: DAT-ACC-*verweigern*)
h. *I deny the permission to you

A fact noted by Dowty (1978), namely the unambiguous passivization property¹⁹ of verbs that lack „dative shift“, has a close parallel in Icelandic: Verbs with the unique basic order DAT<ACC have only quirky subjects in the passive. The ACC-object receives NOM, but it cannot be shifted to the subject position.

Finally, those verbs that exclusively require ACC-DAT order in Icelandic and German either do not exist in languages like English or they are of the NP-PP type (compare the glosses for the verbs in [18c]). This confirms the close correlation between the semantic restrictions on the Dative and the corresponding PP.

The picture that emerges from this discussion combines the insight that „dative shift“ is a lexically determined²⁰ property, as Oehrle originally suggested in his dissertation with Larson's (1988) claim that an English VP must provide more than one V-position if the data that bear on c-command are to be reconciled with the serialization patterns. The present account puts these insights on a principled basis by relating them to universal conditions of A-structure, discharge and branching, under a crosslinguistic perspective.

3.1 Particle distribution and double object constructions

Verb-particle combinations are separated by V-movement. This is easy to verify for OV-systems. Particles, however, do not seem to move. This observation turned out to be problematic for Koster's (1988) claim that English is a camouflaged OV-System. He realized that the actual distribution contradicts his analysis (Koster 1988: sect. 4), because the particles do not appear in a clause final position if the VP contains more than one phrase.

- (42) a. We should *send* her *up* something
 b. *We should *send* her something *up*
 c. *Wir *bieten* Maria *an* etwas
 d. Wir *bieten* Maria etwas *an*
 we offer Mary something _{PRT} (= on)

Particle stranding in German (42c,d) or Dutch is produced by V-second, that is the fronting of the verb to a clause initial functional head position. The contrast in (42b,c) shows that the particle positions differ. The reason for the ungrammaticality of (42c) is clear. The verb position in German is clause final, the particle cannot move, hence the only stranding position is the final position. The ungrammaticality of (42b), however, indicates that the verb position precedes the second object in English. Under the current analysis, the distribution of particles in (42) follows from the assumption that the base position of the head chain is at the left branch of the most deeply embedded bifurcation of the projection line. The particle may be stranded in any position on the chain of the verbal head.²¹

This analysis receives additional support if we check the correctness of the following prediction: The ungrammatical pattern (42b) will become grammatical if there occurs an additional phrase in the projection, following the second object. The BC forces the prediction that adding a directional PP, for instance, opens an additional position for the particle, following the two object NPs. The V strands the particle in its foot position next to the PP. The data confirm this expectation.

- (43) a. We will send every stockholder a paycheck *off* to his holiday resort²²
 b. **Off* to his holiday resort, we will send every stockholder a paycheck

The ungrammaticality of (43b) rules out an analysis for (43a) that treats the particle as a specifier of the PP. In this case it would topicalize together with the PP and (43b) should be perfect. Moreover, the ungrammaticality of (43b) is a direct consequence of the stranding of the particle. Stranding leaves an empty V-position next to the particle. Hence, the topicalization of the phrase that contains the particle produces a crossing violation. The trace of the verb is not c-commanded by its antecedent in the S-structure of (43b).

There is one more property of particle constructions in need of an explanation, namely the fact, that the particle must follow the pronominal object. This contrasts with the distribution of non-pronominal objects:

- (44) a. He looked a word up in the dictionary
 b. He looked up a word in the dictionary
 c. He looked it up in the dictionary
 d. *He looked up it in the dictionary

This pattern is highly reminiscent of the pattern found with object movement in the Scandinavian languages (Vikner 1990; ch.4): If in the continental Scandinavian languages the verb leaves its base position (in the course of V-2-fronting), the pronominal objects must be fronted and thus appear in front of the negation-element or in front of adverbials (cf. 45a,b). Non-pronominal objects, however, cannot be fronted and remain in situ (cf. 45a. vs. 45f.). The following examples are taken from Danish:

- | | | |
|------|--|--|
| (45) | a. Jeg læste _i den ikke e _i
I read that not | d. at jeg ikke læste bogen
that I not read book-the |
| | b. *Jeg læste _i ikke e _i den | e. Jeg læste _i ikke e _i bogen |
| | c. *at jeg den ikke læste | f. *Jeg læste _i bogen ikke e _i |

Given that particles do not move independently, (44a,c) must be possible base orders. (44b,c) could arise if the particle is not stranded but travels along with the verb. What is wrong with (44d)? It seems to be the same insufficiently understood property of pronouns that rules out (44d), (45b) and (46b).

- (46) a. I showed him/it to Mary
 b. *I showed Mary him/it

Whatever grammatical property requires the adjacency between pronouns and their licensing head in cases like (46b) will rule out an ungrammatical sequence like (44d).

4. Independent evidence for the BC

4.1 The structure of head initial N-projections

The branching conjecture (32) imposes a general restriction on every possible projection structure. For apparent head initial structures it predicts that the initial head position is the terminus of a head chain that starts in the most deeply embedded bifurcation in a right branching structure. German has both head final and head initial projections of argument taking heads. The head initial projection is the N-projection. The evidence bearing on the c-command relations in the N-projection calls for a right-branching structure.²³ Therefore the projection for (47a) must result in a structure indicated in (47b).

- (47) a. die [Wut_i des Mannes_i auf sich_i]
 the fury the man's at himself
 the man's fury against himself
- b. die [Wut_i [des Mannes [e_j [auf sich]]]]
 c. *die Wut auf sich des Mannes_{GEN}
 the fury against himself (of) the man

It follows from the BC (32) that in a German N-projection, the head being a left-to-right governor, cannot discharge its arguments unless it moves. Hence the base position of the head-noun is not the surface position but an embedded position, as indicated in (47b). In German and unlike English, a structurally case-linked NP receives Genitive in the postnominal object position. The Spec-D-position is restricted to a sub-class of the phrases that occur in the postnominal position.²⁴

- (48) a. die Zerlegung_i [jeglicher_i Substanz [e_j [in ihre_i Bestandteile]]]
 the dismantling (of) every_i substance(-GEN) into its_i components
- b. die Auslieferung_i fast jedes_i Gefangenen e_j ans Rote Kreuz e_j an dem für ihn_i
 the extradition of almost every_i prisoner to the Red Cross at the for him_i
 vorgesehenen Ort
 arranged place
 the extradition of almost every prisoner_i to the Red Cross at the place arranged for him_i

The examples (48) confirm the existence of a c-command requirement between the Genitive and the PP on the evidence of variable binding. Evidence of a similar kind should be available for any language with head-initial N-projections. A Polish example (from B.Rozwadowska), is given in (49a), an Italian one in (49).

- (49) a. Podróż Janka_i do swoich_i rodziców
 trip John(-GEN) to self-POSS parents(-GEN)
 John_i's trip to his_i parents
- b. l'aggressività di Gianni_i contro se stesso_i
 the aggressivity of Gianni_i against himself_i

The examples in (49a,b) are structurally parallel to (47). The NP between the head noun and the PP can act as an antecedent for a reflexive in the PP. Hence there must be a c-command relationship. This c-command relationship is predictable under the BC.

4.2. Phrasal Stress

Cinque (1991, sect. 4)) argues that the position of sentence stress is predictable if boundaries of syntactic constituents are interpreted as metrical boundaries and sentence stress is assigned to the most deeply embedded phrase.

According to the BC, the depth of embedding correlates directly with the basic linearization. The most deeply embedded phrase is the rightmost phrase in the string. Thus it does not come as a surprise that both in English, being a VO-language and German, being a V-final language, the sentence stress²⁵ rests on the final phrase in the basic linearization (cf. Cinque 1991, sect.4).

- (50) a. They have been following the lecture attEntively
 b. Sie haben die Vorlesung AUfmerksam verfolgt
 c. the appeal of the president to the sEnators
 d. der Aufruf des Präsidenten an die SenatOren

In general, it is predictable, that for any basic projection the phrasal stress rests on the rightmost phrase, since this is the most deeply embedded phrase. Larson (1988,1991) indicates that adverbs are the innermost complements of V. Chomsky & Lasnik (1991, sect. 3.2) readdress this issue from a θ -theoretic vantage point.

5. Implications for functional projections

If the BC reflects a basic principle of structural organization, its effects are not be limited to projections of lexical heads. The constraints exerted by the BC will apply to functional projections such as C and I, as well. A full account of the linearization properties of C- and I-projections, however, would presuppose a cross-linguistically well-founded data base, which is not available. Some of the theoretical results of the following discussion await empirical verification.

A functional projection consist of a functional head, its complement and a specifier position. If linearization is completely open to parametrization, we expect four possible linearization patterns. The head may precede or follow its complement, and the specifier position may precede or follow the first projection of the head. If the BC applies to functional projections, we expect as an immediate consequence that every Spec-position precedes its X'-sister. If a spec-position were allowed to follow its sister, the basic projection of the head of the projection, the projection would qualify as left-branching, which is in conflict with the BC. As a result of this restriction, every movement to a Spec-position should be leftward movement only. This would entail that, irrespective of the clause-final or clause initial position of C in a given language, wh-movement to Spec-C should be movement to the left. The analogous constraint should hold for the serialization of I-specifiers: The spec-I position should be in front of the I'-projection. The available empirical evidence, however, calls for a more fine-grained account. The linearization of Spec-positions depends on the BC and the directionality of head government.

5.1 Functional specifier positions: targets of Wh-movement and subject raising

There is ample evidence for clause-initial specifier positions in languages with clause-initial C-positions. Languages with clause-final complementizers and initial spec-positions seem to be infrequent. Attested cases of this type are Vata and Quechua (according to Koopman 1984:93). Tangale (pace Kenstowicz 1987) is the rare example of a language language with clause-initial Comp and obligatory wh-movement to the clause-final position. What seems to be missing is the fourth possibility, namely a language with clause-final Comp and a clause-final position for wh-movement.

The analogous patterns seem to hold for the positioning of the subject. The most frequent structure is a VP-initial I-position in combination with a preceding subject position. The relevant examples of languages with clause-final I and initial Spec-I positions are less easy to identify. Clause-final I seems to go together with V-final V-projections. Thus in OV-languages, the linearization of the subject is per se an insufficient criterion for the identification of its structural position, unless it is clear for the given language that the subject does not remain in situ in VP-initial position. At least Dutch qualifies as an example with VP-external and VP-initial subjects. Reports on languages with clause final subjects do not provide all the information which is necessary to reach a conclusive position for our concern. In parallel with the C-projection we should expect languages with clause initial I and clause-final subject position, but there should be no language with clause final I and a clause final structural subject position.

Pullum (1977:259-69) discusses cases of alleged VOS- and OVS-languages and argues that the evidence of the specific languages under discussion does not warrant the typological conclusion. He (Pullum 1977:272) suggests a fundamental principle of linearization: „*The NP constituents of a clause are linearized in their GR hierarchy order, from left to right.*“ This description would follow directly from the narrow interpretation of the BC.

In the meantime, more information has been gathered on this issue. The survey by Derbyshire & Pullum (1986:18) lists 8 languages as certain instances of OVS and 4 languages as certain OSV languages. For the present purposes, this information is immediately relevant but not yet decisive. The BC does not exclude the existence of OVS and OSV languages, but it entails a specific analysis of the sentence structure of these languages. [[OV]S] could not be the branching structures of OVS, because it is left-branching. [O[SV]] has the right kind of branching but it does not meet the discharge condition on argument structure. Since „O“ stands for a patient θ -role, it should be discharged to an embedded position, hence O should be embedded.

There are, however, accounts for these word order patterns that meet the BC. OVS can be the predictable surface order in an ergative-absolutive head-first system. „O“ in this case stands for a theme-argument that occupies the external case position, just like the English subject occupies the external, preverbal case position and „S“, the agent-argument stays in the base position. Another possibility is the following. The language is a head-marking language (cf. Hixkaryana, Derbyshire 1977), which means that verbals affixes are crossreferenced with the nominal arguments. In this case, the arguments are likely to occupy the Spec-positions of the functional head-positions corresponding with the affixes. In an ergative system, again OVS would come out as the predicted order, with O being the external argument. The very same considerations extend to OSV if the head-first property is replaced by head-final. In addition, evidence of the kind

Barss and Lasnik adduced for English is necessary for each language in order to be able to ascertain the relevant c-command relations and to infer the branching configuration.

Let us return to the missing pattern in the C-projection system, namely the combination of clause-final C with clause final wh-position (see 51d). Can the existence of such a language be ruled out on plausible and principled grounds?

- (51) a. [wh [C [xyz]]] (e.g. English)
 b. [wh [[xyz] C]] (e.g. Quechua)
 c. [[C [xyz] wh] (e.g. Tangale)
 d. [[[xyz] C] wh] * * *

The missing pattern (51d) differs from the attested patterns in one essential property. It is *completely* left-branching. The other patterns are either completely right branching (51a,b) or right branching with the exception of the top branch (51c). If BC does not apply to the top branch of a projection, which seems to be an unavoidable conclusion at least for adjunction structures, a structure like (55c) does not violate the BC, but (55d) does. For the time being, we may take the patterning in (51) as representative for functional projections.

5.2 Extended projections

The BC seems to forbid the stacking of extended, head-final projections, since these result in left-branching structures insofar as these stacked projections form an extended projection in the sense of Grimshaw (1991). She suggests for instance to view CP as the extended projection of an IP which in turn is the extension of the V-projection. The notion of an extended projection includes the notion of an extended projection line, namely the projection line of the extended projection. Recall that the BC determines the side on which positions are projected. It requires the pattern (52a) and thereby excludes the pattern (52b):

- (52) a. ..._xm ... [_xn ... x^o]
 b. *... [_xm [_xn ... x^o] ...] ...
 c. ... [_ym [_xn ... x^o] y^o] ...

The illformed pattern (52b) would appear in an extended projection with head-final functional heads, however, as (52c) illustrates. Let us assume that *x* and *y* are heads the projections of which constitute an extended projection. If the projection of *x^o* and *y^o* form an extended projection, *y^m* and *xⁿ* are nodes on the same extended projection line, hence we may refer to them as *z^m* and *zⁿ*, that is as nodes on a single projection line. In this case (52c) becomes an instance of (52b), however: According to the BC, the recursive branch of a projection is a right branch. In (52c) it is a left branch. Since the left branch is not an independent projection but part of an extended projection, the BC is at stake. Empirical evidence for this conclusion is easy to find. Well studied cases of stacked functional projections are cases of head-initial projections, that is VPs in IPs in CPs, with heads preceding the complements. For languages like Dutch or German there is no evidence to justify the widespread assumption that the VP as a functional complement of I is *preceding* the I-position. In fact, there is massive counter-evidence: If there were a clause final I-position, the finite verb should move to this position on its way to the C-position in V-2-clause and it should stay in the I-position in V-final clauses, in which the C-position is inaccessible. Hence we predict distributional effects of this movement to I, as indicated in (53).

- (53) [_I[_{VP}...e_i] [_I V_i]]

It may suffice to discuss a single and particularly clear case: a verb that contains the target of an adverbial comparison operator.

- (54) a. The value has far **more** than merely **tripled**
 b. The value far more than merely tripled
 c. Il valore si è molto **più** che solo **triplicato**
 d.*Il valore si **triplica** molto **più** che solo
 e.*Il valore molto **più** che solo si **triplica**

If the finite verb contains the target of comparison the need to raise the finite verb to a higher functional head position as in Italian yields ungrammaticality. In English, the finite verb stay in situ, hence there is no difference between the finite verb and the participle. (54d,e) is positive evidence that V-movement cannot be undone for the purpose of getting the target of the comparative operator into its c-command domain. Targets of comparatives do not reconstruct.

If German or any other language with clause final V puts the finite verb into a clause final functional head position the prediction is clear: We must expect an effect like in Italian, since the verb with the target of comparison leaves the c-command domain of the comparative phrase. The facts do not support the expectation:

- (55) [daß [sich der Wert [weit **mehr** als bloß **verdreifachte**]]]
that the value far more than merely tripled

The facts of German support the analysis of case like (54), however. If the verb moves, the result is ungrammaticality. this is the case in V-2-clauses:

- (56) a.*Der Wert weit mehr als bloß [verdreifachte]_i sich e_i
b.*Der Wert verdreifachte_i sich weit mehr als bloß e_i

These facts receive a straightforward account if the finite verb in its clause-final is in situ. Why should the verb stay in situ and not move to the clause final I-Position if there is an I-position? There is no reasonable answer at hand, especially since the verb moves to the sentence-initial functional head position (customarily equated with the C-position) in verb-second clauses. There is a straightforward account of the above mentioned evidence, however, if we give up the idea that there exists a clause final I-position. In this case the verb cannot move to the right-hand side because there is no position to host it.

The BC leaves no room for a clause final functional head position that serves as the target of V-movement. the only possibility for a clause-final functional head is a lexical functional with its own selectional properties. In this case it heads a projection of its own rather than an extended projection. Japanese or Korean clause final C-particles are candidates of this type of functional heads.

6. Summary and conclusion

The structure of A-structure, the discharge conditions, and the structure of the resulting projections are universal. The superficial differences between OV and VO systems originate from a single option: the directionality parameter of licensing.

The organization of A-structure in the lexical entries consists in the combination of operators, whose structural order is determined by a universal CR-structure, with language specific linking devices. A-structure is uniformly discharged on a universal structural configuration (right branching projections) with one parametric option: progressive or regressive licensing.

If a progressively licensing head discharges his A-structure on a rightbranching configuration, the θ -criterion triggers the projection of a head chain. A regressively licensing head is able to project its A-structure while resting in situ.

Notes:

¹ An abridged version of this paper was presented at the Conference on Lexical Specification and Lexical Insertion at the University Utrecht (Dec. 1991). I am grateful to Manfred Bierwisch, Werner Frey, Gisbert Fanselow, Paul Kiparsky, Sue Olsen, Halldór Sigurðsson, Sten Vikner, and Dieter Wunderlich, for helpful information.

² Cf. Chomsky (1981:171) for this structure assignment. If headedness and branching were symmetric properties and (4) were correct, we might expect there to exist a mirror-image structure of (3b) in OV-systems, namely: [IO [DO [PP V]]]. This structure is equivalent to (4) with respect to the hierarchical arrangement, modulo headedness. I am not aware of any OV-language with this basic order, however.

³ These phenomena, reviewed in Larson (1988, 1990), comprise A-binding, superiority, and negative polarity items.

⁴ Of course, this is a familiar but slightly misleading way of putting it: The unidimensional representation of a complex linguistic expression, that is linear order, should be characterized with respect to its primary ordering factor, namely the time vector: Leftness means closer to the beginning and rightness closer to the end. Hence the claim of the universality of right branching basic projection is a claim concerning the embedding: Elements at the beginning of a *basic* projection are the least embedded elements. Of course this does not preclude complex embeddings in complex constructions at the left.

⁵ The assumptions sketched out amount to a certain version of a „universal base hypothesis“. The universal base is the product of mapping lexical information onto a universal structural configuration. The typological variation reduces to the headedness parameter.

⁶Relativized UTAH (Larson 1990:601):

„Identical thematic relationships are represented by identical relative hierarchical relations between items at D-structure.“

⁷Uniformity of theta assignment hypothesis (UTAH): [Baker 1988:46]

Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure. (In order to make this fully formal one would need, among other things, a more exact theory of theta-roles than we now have; I will leave it at a rather intuitive level. [Baker 1988:46f.]

⁸As shown in the following example, scrambling produces a binding configuration:

- a. ??daß genau ein Brief an ihn_i jeden_i erreichte
 ‘that exactly one letter to him everyone reached’
 that exactly one letter to him_i reached everyone_i
- b. daß jeden_i genau ein Brief an ihn_i erreichte

In (b.), the object has been scrambled to the front of the subject and it binds a pronoun embedded in the subject-phrase.

⁹Normal intonation is defined as follows: In the set of intonational variants of a sentence, a sentence has normal intonation iff there is no other intonational variant of this sentence with a more extensive focus spreading. Put briefly, normal intonation allows maximal focus spreading. This is found with the sentence focus on the preverbal position (cf. section 4 for a principled account of this fact):

- a. daß Carl seiner Frau seine Lösung erklärte
 that Carl (to) his wife his solution explained
- b. daß Carl seiner Frau seine Lösung erklärte

Stress positions other than the one in (a.) do not allow focus spreading. In sentence (b.) for instance the focus is confined to the NP *his wife*. Since spreading is possible only if the focus intonation rests on the preverbal position, this focus position is taken to be the focus position of normal intonation. If the phrase whose base position is the preverbal position is scrambled, then the normal stress position is unstressable, because it is a gap. In this case there is no way to get spreading focus.

¹⁰This is referred to by Kiparsky (Ms.) as the fusion of Cause and Theme in CR.

¹¹ Pesetsky noted that psych verbs forbid the separate instantiation of cause and target:

- a. Unicorns frighten me
- b. *They frightened me of unicorns (i.e. made me afraid of)

The target of emotion can be separated from the cause of emotion in other constellations, however, as for instance in the case of *warning* or *spoiling* (an emotion).

- c. He/Something warned me of unicorns
- d. Etwas verleidete ihr den Appetit
 ‘something spoiled her the appetite’
 something caused her to lose the appetite

¹² It should not be overlooked that these conditions are beyond the scope of grammatical theory proper. They will have to be investigated in a broader perspective of cognitive psychology, since concept formation is not restricted to linguistic concepts. This, however, does not preclude a linguist from taking advantage of the judgements relating to conceptual structure and using them heuristically.

¹³ The structural properties of CRs cannot be learned. If a learner would have to find out what a possible concept is, he would be trapped in Quine’s „indeterminacy of translation“ situation: In order to be able to find out what a lexical item means, he must find out what it is used to refer to, and in order to find out what it is used to refer to, he must find out what a lexical item means. If the possible range of meanings is not universally constrained one cannot master this task.

¹⁴ For the definition of government, I assume Chomsky’s (1981:166) version of c-command: A head c-commands every position attached to its projection line. Non-heads c-command according to the standard definition of „domination by the first branching node“: A governs B, iff A c-commands B and no barrier intervenes.

If one accepts the Bare Phrase Structure view (Chomsky 1994) a more natural account is possible: If each node on the projection line is associated with the subpart of A-structure that has not been projected, the sisterhood relation applies to the node on the projection line and its projected sister node. Due to BC, this holds for head-final projections. Head initial projections fulfill the mutual c-command relations on the head chain.

¹⁵ Recent hypotheses on the analysis of double object constructions favor a combination of base-generated NP-positions and V-chains: Falk (1990) argues for an analysis in which the order IO-DO is base generated and the verb moves from its base position to an empty V-position that subcategorizes for the lower VP. Sprouse (1989) on the other

hand suggests to take the V-initial V-position as the base position that binds an empty V-position in the embedded VP. The question why this should be so on theoretical grounds is left open. Ottòson (1991) argues for a small clause analysis, as it has been suggested by Kayne.

¹⁶ A detailed analysis of extraposition and free subject inversion of Italian supports the BC (cf. Haider to appear 1993).

¹⁷ Or, if one assumes that the external argument is discharged on the Spec-position, there must be $n-1$ head positions for a head with n arguments.

¹⁸ Teun Hoekstra in his contribution to the Seventh Germanic Syntax workshop (Stuttgart 1991) claims that the *have* vs. *be at* predicates are genuine syntactic predicates of the respective deep structures. I would prefer to lock these suspicious entities into the CR-portion of the lexical entry.

¹⁹ Sentences of the type (41) lack the „dative-passive“:

- i) *The details were kindly spared me
- ii) I was kindly spared the details

²⁰ Lexically restricted means restricted by the CR-induced ranking properties of A-structure in the lexical entry. A shift in meaning may change the ranking option if it is a shift in the CR-representation. Relevant cases are discussed by Larson (1988:376) and Speas (1990:84f.):

- a. Mary gave John a cold - * gave a cold to John
- b. Mary gave John a bath - * gave a bath to John
- c. Mary showed John the moon - * showed the moon to John

In all these cases, the CR of the verbs in the specific interpretation does not involve the notion of a *path* towards a *goal*. Hence one of the two alternative rankings is cancelled.

²¹ Jacobson (1987:32) illustrates with the following example, originally discussed by Emonds (1976), the distribution of a particle in a double object construction:

- a. The secretary sent *out* the stockholders a paycheck
- b. The secretary sent the stockholders *out* a paycheck
- c. *The secretary sent the stockholders a paycheck *out*

If the particle does not strand, the first sentence is generated.

²² A real life example is due to Scott: „Were I a caliph for a day, I would scourge me these jugglers out of the commonwealth“ (M.den Dikken 1992:164).

²³ This is an original observation of Werner Frey. I am grateful to him for communicating it to me.

²⁴ Prenominal Genitives are restricted to proper nouns and similar expressions.

²⁵ In these examples, the stress position is indicated with bold, capital letters.

References:

- Baker, M.C. 1988. *Incorporation - A Theory of Grammatical Function Changing*. Chicago: Univ. of Chicago Press
- Barss, A. & H. Lasnik 1986. A note on Anaphora and Double Objects. *Linguistic Inquiry* 17:347-354
- Bierwisch, M. 1991. *Argumenstruktur*. Arbeitsbericht des SFB 340. Projekt A1. Univ. Stuttgart
- Chomsky, N. 1981. *Lectures on Government and Binding*. Dordrecht: Foris
- Chomsky, N. & H. Lasnik 1991. Principles and Parameters Theory. (To appear) in: J. Jacobs, A. von Stechow, W. Sternefeld, & T. Vennemann (eds.) *Syntax: An International Handbook of Contemporary Research*. Berlin: W. de Gruyter
- Cinque, G. 1991. A Null Theory of Phrase and Compound Stress. *Univ. of Venice Working Papers in Linguistics* 1
- Derbyshire, D. 1977. Word order Universals and the Existence of OVS Languages. *Linguistic Inquiry* 8:590-599

- Derbyshire, D. & G. Pullum eds.
1986. *Handbook of Amazonian Languages*. Vol.1. Berlin: W. de Gruyter
- Dowty, D. 1978. Governed Transformations as Lexical Rules in a Montague Grammar. *Linguistic Inquiry* 9:393-426
- Emonds, J. 1976. *A Transformational Approach to English Syntax*. N.Y.: Academic Press
- Falk, C. 1990. On Double Object Constructions. *Working Papers in Scandinavian Syntax* 46:53-100
- Grimshaw, J. 1991. *Extended Projections*. Ms. Brandeis University
- Haider, H. (to appear 1993). Detached clauses - the later, the deeper. Arbeitsbericht #41, SFB 340, Univ. Stuttgart.
- Higginbotham, J. 1985. On Semantics. *Linguistic Inquiry* 17:547-593
- Höhle, T. 1982. Explikation für „normale Betonung“ und „normale Wortstellung.“ In: W. Abraham ed. *Satzglieder im Deutschen*. Tübingen: Narr (75- 153)
- Jacobson, P. 1987. Phrase Structure, Grammatical Relations, and Discontinuous Constituents. In: G. Huck & A. Ojeda eds. *Syntax & Semantics 20 (Discontinuous constituency)*. N.Y.: Academic Press
- Kayne, R. 1984. *Connectedness and Binary Branching*. Dordrecht: Foris
- Kenstowicz, M. 1987. The Phonology and Syntax of wh-expressions in Tagalog. *Phonology Yearbook* 4: 229-241
- Kiparsky, P. 1989. *Agreement and Linking Theory*. Ms. Stanford University
- Koster, J. 1988. The Residual SOV Structure of English. *Groningen Papers in theoretical and Applied Linguistics* 5
- Kress, B. 1982. *Isländische Grammatik*. München: Hueber
- Larson, R. 1988. On the Double Object Construction. *Linguistic Inquiry* 19:335-391
- Larson, R. 1990. Double objects Revisited: Reply to Jackendoff. *Linguistic Inquiry* 21:589-632
- Ottósson, K.G. 1991. Icelandic Double Objects as Small Clauses. *Working Papers in Scandinavian Syntax* 48:77-97
- Pesetsky, D. 1990. *Experiencer Predicates and Universal Alignment Principles*. Ms. MIT
- Pullum, G. 1977. Word order Universals and Grammatical Relations. In: P. Cole & J. Sadock eds. *Grammatical Relations (Syntax and Semantics 8)*. New York: Academic Press. (p.249-277)
- Sigurðsson, H. 1989. *Verbal Syntax and Case in Icelandic*. PhD-Diss, Univ. Lund.
- Speas, M. 1990. *Phrase Structure in Natural Language*. Dordrecht: Kluwer
- Sprouse, R. 1989. *On the Syntax of Double Object Constructions in Selected Germanic Languages*. PhD-Diss. University Princeton.
- Vikner, S. 1990. *Verb Movement and the Licensing of NP-Positions in the Germanic Languages*. PhD-Diss. Univ. de Genève
- Zaenen, A. & Maling, J. & Thrainsson, H.
1985. Case and grammatical functions: the Icelandic passive. *Natural Language and Linguistic Theory* 3: 441 - 483