II Movement

5   Head Movement

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0   Introduction

Head movement is the case of Move-α where the value of α is X°. As a case of Move-α, standard conditions on movement apply to it. These include locality, structure preservation, and the requirement that movement leave a well-formed trace. The principal locality condition on head movement is the Head Movement Constraint (HMC), originally proposed by Travis (1984) and given informally in (1):

(1)   Head movement of X to Y cannot "skip" an intervening head Z.

In section 4 I discuss the theoretical status of (1) in detail. Its empirical consequences will be illustrated in sections 1, 2, and 3. The structure preservation requirement on head movement has the consequence that the landing site of head movement must always be another head.[1] Typically (notably in Baker 1988), head movement is taken to be adjunction of the moved head X° to the target head Y°; Kayne (1991, 1994) proposes that this must always be left-adjunction. Finally, head movement must leave a well-formed trace. Since a major well-formedness condition on traces is that they must be c-commanded by their antecedents, this forces head movement always to take place in an upward direction, where "upward" is understood as defined by c-command (some possible exceptions to this idea will be briefly discussed in section 2).
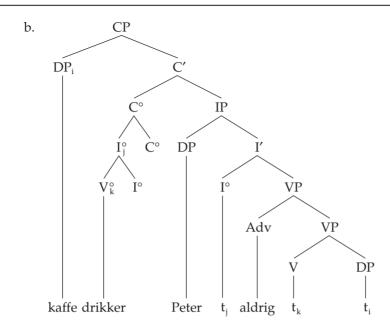
Taking these conditions together, we arrive at the following general schema for head movement of X° to Y°:

(2)   YP
        │╲
        │ Y′
        │ │╲
        │ Y°   XP
        │ │╲   │╲
        X°ᵢ Y°   X′
        ↑   │╲
        │   X°
        │   │
        └────── tᵢ

Applied to this configuration, the HMC bans movement of $X°$ directly to a head $Z°$ which asymmetrically c-commands $Y°$ (i.e., in the simplest case, which takes YP as its complement). However, since, like other kinds of movement, head movement can be iterated, $X°$ can move to $Z°$ if $Y°$ containing $X°$ moves to $Z°$. We will see a number of concrete examples of such iterated head movement below.

   The principal cases of head movement which have been discussed in the literature are instances of verb movement, i.e., cases where the moved $X°$ is a verb, and the target of movement is a position in the clausal functional structure. Such movement is frequently iterated through the functional structure, a canonical example being verb movement in verb-second clauses in the Germanic languages. Such cases were first discussed in the context of a theory of head movement in Travis (1984) (although they are discussed under rather different theoretical assumptions in Williams 1974, Emonds 1976, and den Besten 1975, 1983). Assuming that the functional structure of the clause comprises CP and IP, the structure of a simple V2 clause like (3a) in Danish, for example, would be (3b) in Travis's system (see Koopman 1984, Vikner 1994a):

(3)   a.   Kaffe   drikker Peter aldrig.
           Coffee drinks   Peter never
           "Peter never drinks coffee."

b.

```
                        CP
              ┌──────────┴──────────┐
            DPᵢ                     C′
                           ┌─────────┴─────────┐
                          C°                   IP
                      ┌────┴────┐         ┌─────┴─────┐
                    I°ⱼ         C°       DP          I′
                   ┌─┴─┐                        ┌────┴────┐
                  V°ₖ  I°                      I°        VP
                                                    ┌────┴────┐
                                                   Adv       VP
                                                         ┌────┴────┐
                                                         V        DP

          kaffe drikker        Peter   tⱼ  aldrig   tₖ        tᵢ
```

We look at Verb Second in section 2.2. Travis's theory of head movement was developed and applied to a wide range of cases, in conjunction with Case theory deriving many instances of grammatical function changing phenomena, in Baker (1988). In section 1 I summarize the main points of Baker's theory. A further area where assuming head movement has yielded interesting results is within DP; section 3 is devoted to this. Finally, as mentioned above, section 4 discusses the place of head movement in the general theory of locality.
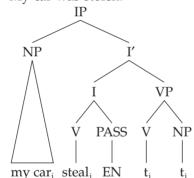
1 Baker's (1988) Theory of Incorporation

Arguably the most influential work on head movement was Baker (1988). Baker uses head movement to derive morphologically complex words from more basic elements (roots, stems, or affixes). Baker analyses noun-incorporation (N-to-V movement), applicative constructions (P-to-V movement), causatives (V-to-V movement), and passives (V-to-PASS movement) in terms of head movement. Examples and schemata of the relevant parts of the structure are given in (4)–(7):

(4) **Noun incorporation** (Mohawk: Baker 1988: 81–3):
    a. Yao-wir-aʔa ye-   nuhweʔ-s ne ka-**nuhs**-aʔ.
        Pre-baby-Suf 3SgF/3N-like-Asp the Pre-house-Suf
        "The baby likes the house."
    b. Yao-wir-aʔa ye-   **nuhs**-nuhweʔ-s ʔ.
        Pre-baby-Suf 3SgF/3N-house-like-Asp
        "The baby likes the house."

(5)   **Applicatives** (Chichewa: Baker 1988: 229ff):
    a.   Ndi-na-tumiz-a   chipanda cha mowa kwa mfumu.
        1SgSubj-Past-send-Asp calabash of beer   to   chief
        "I sent a calabash of beer to the chief."
    b.   Ndi-na-tumiz-ir-a   [$_{PP}$ t_{ir} mfumu] chipanda cha mowa.
        1SgSubj-Past-send-to-Asp chief   calabash of beer
        "I sent a calabash of beer to the chief."

(6)   **Causatives** (Chichewa: Baker 1988: 148–9):
    a.   Mtsikana ana-chit-its-a   kuti mtsuko u-gw-e.
        girl   Agr-do-make-Asp that waterpot Agr-fall-Asp
        "The girl made the waterpot fall."
    b.   Mtsikana anau-gw-ets-a [$_{VP}$ t_{gw-} mtsuko].
        girl   Agr-fall-make-Asp   waterpot
        "The girl made the waterpot fall."

(7)   **Passives** (English: Baker 1988: 307–9; see also Baker et al. 1989):
    a.   Someone stole my car.
    b.   My car was stolen.
    c.

A central aspect of Baker's theory is that the complex head retains or inherits certain properties of the incorporated head in derived structures like those in (4b)–(7b). The relevant principle is the Government Transparency Corollary (GTC):

(8)   An Y° which has an X° incorporated into it governs everything which X° governed in its original structural position.

The GTC has the effect that incorporation may "extend" government domains. From it, Baker is able to derive many of the effects of what in other theories are seen as grammatical function changing processes. Take, for example, applicative constructions. It is well known that in examples like (5b) the "applied object" (the DP which is the complement of the Preposition in the non-applied (5a) and which, on Baker's analysis, is the object of the incorporated Preposition) has all the canonical properties of a direct object: in Chichewa, it may be "pro-dropped," be passivized, and trigger object agreement. Baker argues that
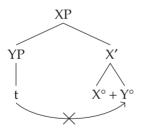
these properties result from the fact that, after P-to-V incorporation, this DP is governed by V. Direct object properties can be derived from government by V, and hence the applied object takes on direct object properties. In this way, Baker's theory of incorporation, and notably the GTC, go a very long way toward providing a fully configurational theory of grammatical function changing operations.

Another important aspect of Baker's theory is that he takes head movement to leave a trace subject, like all other traces in Government Binding theory, to the Empty Category Principle (ECP). The ECP states that all traces must be both head governed and antecedent governed. The head government requirement means that the trace of head movement must be inside the immediate X' complement of the head targeted by movement; in other words, where $X°$ moves to $Y°$ in (2) XP must be the structural complement of Y. Antecedent government amounts to Relativized Minimality (see Rizzi, this volume), and, in the case of head movement, effectively derives the Head Movement Constraint – see section 4.
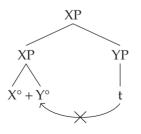
In addition to deriving the Head Movement Constraint, subjecting the trace of head movement to the ECP has three consequences: (i) it explains why head movement is impossible from subjects and adjuncts; (ii) it accounts for the impossibility of downgrading heads; (iii) "excorporation" is banned. We now consider these consequences one by one.

The head government part of the ECP rules out the possibility of head movement from a non-complement category. Thus the heads of subjects and adjuncts cannot be moved to other heads without the ensuing trace violating the ECP. Schematically, then, cases like the following are ruled out by the ECP in Baker's system:
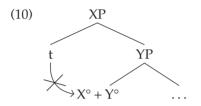
(9)   a.   **Incorporation from a subject:**

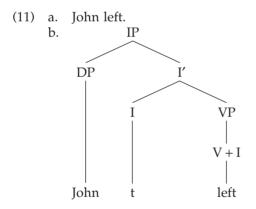   b.   **Incorporation from an adjunct:**

Baker shows in detail that there are indeed no cases of noun incorporation, causative formation, or applicative formation which move the head of a subject or adjunct to another head position. This is a significant result, and one which follows naturally from the theory of head movement combined with a well-formedness condition on traces such as the ECP.

Second, as mentioned in the introduction, downgrading to a non-c-commanding head is ruled out. The ECP prevents this since c-command is a necessary condition for both antecedent government and head government. Downgrading is schematized in (10):

(10)

```
              XP
          ╱        ╲
        t            YP
        │ ╲        ╱    ╲
        ╳  ╲
           →X° + Y°        . . .
```
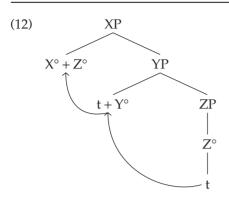
One case of head movement which may actually be an instance of this schema is an updated version of Chomsky's (1957) Affix Hopping rule. This rule arguably places Infl-material (tense and agreement features) on V in simple clauses lacking an auxiliary verb in English, as illustrated in (11):

(11)   a.   John left.
       b.

```
                    IP
               ╱         ╲
            DP             I'
            │          ╱       ╲
            │        I            VP
            │        │             │
            │        │           V + I
            │        │             │
          John       t            left
```

As Pollock (1989) points out, there are two ways of dealing with this case. On the one hand, one can postulate LF-raising of the inflected verb to I, "covering" the offending trace in I; this is proposed in Chomsky (1991), for example. Alternatively, one can propose that I-lowering is a morphological rule applying the PF-component and as such not required to leave a trace; this possibility is argued for in Bobaljik (1995).

Finally, the antecedent government requirement arguably rules out "excorporation." Excorporation is successive-cyclic head movement where one head simply moves through another, first incorporating and then moving on – hence the term excorporation. Schematically, excorporation is shown in (12):

(12)

A possible case of this type involves the interaction of Verb Raising and Verb Second in Dutch. The relevant kind of example is (13):

(13)   Gisteren   had ik [mijn vriendin op t] willen bellen.
       Yesterday had I   my   girlfriend up want call
       "Yesterday I wanted to call my girlfriend up."

A commonly held analysis of Verb Raising (see Evers 1975, den Besten and Edmonson 1983, Rutten 1991) is that the verbal cluster *willen bellen* (itself formed by head adjunction of *bellen* to *willen*) right-adjoins to I, or at any rate the clause-final position of the finite verb before the application of Verb Second. In clauses where Verb Second does not apply, the finite verb combined with the infinitives forms an uninterruptible cluster: *[[had] willen bellen]*. Where Verb Second applies, however, it appears that the finite verb excorporates from this cluster and moves to C, as shown in (13).

Baker (1988: 73) rules out excorporation by the claim that words cannot contain traces. However, it is possible that Y° blocks antecedent government of the intermediate trace in (12) (see Roberts 1991). If so, all cases of excorporation effectively reduce to the Head Movement Constraint, i.e., to Relativized Minimality (see n. 7 on this point).

To summarize, Baker's theory utilizes head movement in order to derive the properties of many grammatical function changing operations. This is achieved through the interaction of the nature of head movement itself with the Government Transparency Corollary and the ECP. In Baker's approach the advantages of assuming that head movement is exactly like all other types of movement emerge rather clearly against the background of fairly standard assumptions of Government Binding theory.

2   Verb Movement

In this section, I concentrate on verb movement to functional positions higher in the clause than VP, V-to-V movement having been briefly discussed in the previous section (see (6)).

Assuming a clause structure of the general type shown in (3b), there are two main types of verb movement to functional positions: movement into the I-system and movement into the C-system. Here I discuss each of these in turn, followed by a brief discussion of the question of whether VSO orders are derived by movement to C or by movement to I.

2.1   Verb movement to I

It was originally argued by Emonds (1978) that French has a rule moving finite verbs out of VP, while English does not. The basic form of the observation is as follows: there is a class of elements X that can be regarded as positioned approximately on the left edge of VP. These elements include VP-adverbs, clausal negation, and floated quantifiers. In French, finite main verbs must precede X, while English main verbs always follow X. The relevant paradigms are as follows:

(14)   **Adverb:**
a.   Jean **embrasse souvent** Marie.
       *Jean **souvent embrasse** Marie.
b.   *John **kisses often** Mary.
       John **often kisses** Mary.

(15)   **Negation:**
a.   Jean (ne) **mange pas** du chocolat.
       *Jean (ne) **pas mange** du chocolat.
b.   *John **eats not** chocolate.
       John does **not eat** chocolate.

(16)   **Floated quantifiers:**
a.   Les enfants **mangent tous** le chocolat.
       *Les enfants **tous mangent** le chocolat.
b.   *The children **eat all** chocolate.
       The children **all eat** chocolate.

The evidence clearly shows that finite verbs are in different positions in the two languages. The alternative is to suggest that the X-elements differ between the two languages (this approach was developed by Williams 1994). Emonds also pointed out that English auxiliaries, particularly *have* and *be* (when they are auxiliaries, usage varies across dialect and register with possessive *have*), appear to move like French main verbs in that they systematically precede X. (17) illustrates for perfect *have*:

(17)   a.   John **has often** kissed Mary.
         b.   John **has not** kissed Mary.

    c.   The kids **have all** eaten the chocolate.
    d.   **Has John** seen Mary?

These facts led Emonds to propose a special rule of *have/be* raising for English.

   Pollock (1989) observed that the same auxiliary vs. main verb split shows up in infinitival clauses in French:
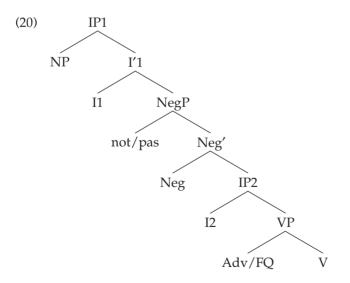
(18)   a.   N'**avoir**/***posséder pas** de voiture en banlieue crée des problèmes.
           To have/possess not a car in the suburbs creates problems.
     b.   N'**être**/***sembler pas** heureux est une condition pour écrire des romans.
           To be/seem not happy is a condition for writing novels.

A second very important empirical observation was that the class X is not unitary in this respect: main verb infinitives cannot raise over negation, as (18) shows, but may optionally precede VP-adverbs and floated quantifiers (I illustrate with adverbs):

(19)   a.   Souvent paraître triste pendant son voyage de noce, c'est rare.
           Often to-appear sad during one's honeymoon is rare.
     b.   Paraître souvent triste pendant son voyage de noce, c'est rare.
           To-appear often sad during one's honeymoon is rare.

The contrasts between (18) and (19) led Pollock to propose the "split-Infl" clause structure, illustrated in (20) (NegP is motivated primarily by facts connected to English *do*-support, which I will leave aside here):

(20)

```
                IP1
              /     \
           NP        I'1
                    /    \
                  I1      NegP
                         /    \
                   not/pas     Neg'
                              /    \
                           Neg      IP2
                                   /    \
                                 I2      VP
                                        /  \
                                   Adv/FQ   V
```
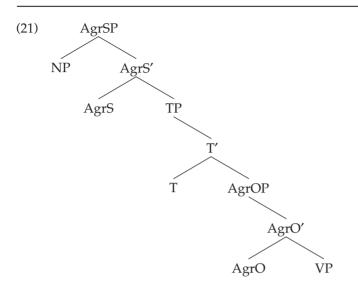
French main verb infinitives optionally move to I2, French finite main verbs obligatorily move to I1, and both French and English auxiliaries move optionally to either position. English main verbs are immobile.

Chomsky (1993, 1995b) proposes that the parameter distinguishing English and French concerns the value of an abstract morphological feature that licenses verbs, and is associated with I. This feature is called I's V-feature. In Chomsky's system, such features are generated both on V and on I, and must be cancelled out by a checking operation prior to LF since they have no semantic content and will thus violate the Principle of Full Interpretation unless eliminated. The feature varies parametrically as either strong or weak. If it is strong, it is visible to the PF component, and hence must be eliminated prior to the mapping to that level of representation, Spell-Out. Since feature checking takes place in a highly local domain (essentially Specifier-head or head-to-head adjunction, the latter being relevant in this case), V must move to I in order for feature checking to take place. Thus where the V-feature is strong, V raises overtly to I. Where the feature is weak, the Procrastinate principle, which delays movement to the covert, post-Spell-Out part of the grammar wherever possible, prevents this movement from taking place overtly. In these terms, then, French I has a strong V-feature and English I has a weak V-feature.[2]

Pollock originally identified I1 in (21) as T and I2 as Agr. Belletti (1990) proposed instead that I1 should be identified with Agr and I2 with T. There are three main reasons for this. First, the order Agr-T is consistent with Baker's (1985) Mirror principle, which requires the order of affixation in morphologically complex words to reflect the order of syntactic operations associated with those affixes; typically in many languages, including the Romance ones, tense affixes are closer to the verb stem than agreement affixes (e.g. Italian *canta-v$_{Tense}$-ano$_{Agr}$* "they were singing"), suggesting that tense features are associated with, or checked by, the verb before Agreement features are. Second, it seems more natural for the canonical subject position to be Spec, AgrP rather than Spec, TP, since the subject agrees with the verb in a Spec–head relation. Third, Belletti shows that Italian infinitives raise to the highest I-position, like finite main verbs in French. She relates this difference between Italian and French to the fact that Italian is a null-subject language with "rich" Agr, while French is not.

Chomsky (1991) adopts a combination of Pollock's proposal and Belletti's proposal, positing two AgrPs in the clause, one above and one below T. The upper one is associated with subject agreement and Nominative Case, and the lower one with object agreement and Accusative Case:

(21)

```
                    AgrSP
                   /     \
                 NP       AgrS'
                         /     \
                      AgrS      TP
                                 \
                                  T'
                                 /  \
                                T    AgrOP
                                       \
                                        AgrO'
                                       /    \
                                   AgrO      VP
```

In terms of this structure, finite main verbs in French move to AgrS. As the foregoing shows, the role of the study of verb movement in postulating this elaborated clause structure has been central.

2.2 *Verb-movement to C*

Standard assumptions about inversion (subject-aux inversion in English, subject-clitic inversion in French, and V2 inversion in Germanic languages) deriving from the seminal work of den Besten (1983) treat this operation as involving movement of I to C. Given the Head Movement Constraint in (1), V cannot move directly to C, and so inversion of main verbs depends on the prior operation of V-movement into the I-system, in fact to the highest position in the I-system, to feed it. Thus we find that French main verbs are able to undergo inversion (subject to the independent restriction that the subject be a clitic – cf. Rizzi and Roberts 1989), while English main verbs are unable to do so:

(22)   a.   **Voit-il** le cheval?
       b.   ***Sees he** the horse?

The contrast in (22) is a consequence of the fact that French main verbs move into the I-system while their English counterparts do not.[3]

There are two views on the nature of V2. The first, originally argued for by den Besten (1983), is that it always involves movement of the inflected verb into C. The second, originally argued for by Travis (1984) and more recently by Zwart (1993a, 1997), is that this is the case only where the initial XP is not the subject; in subject initial V2 clauses the verb only moves as far as the I-system.

According to the first view, then, in all the following German examples (taken from Tomaselli 1989), the initial XP is in CP and the finite verb in C:

(23) a. $[_{CP}$ Ich $[_C$ las$]$ $[_{IP}$ schon letztes Jahr diesen Roman$]]$.
         I read already last year this book.
     b. $[_{CP}$ Ich $[_C$ habe$]$ $[_{IP}$ schon letztes Jahr diesen Roman gelesen$]]$.
         I have already last year this book read.

(24) a. $[_{CP}$ Diesen Roman $[_C$ las$]$ $[_{IP}$ ich schon letztes Jahr$]]$.
         This book read I already last year.
     b. $[_{CP}$ Diesen Roman $[_C$ habe$]$ $[_{IP}$ ich schon letztes Jahr gelesen$]]$.
         This book have I already last year read.

(25) a. $[_{CP}$ Schon letztes Jahr $[_C$ las$]$ $[_{IP}$ ich diesen Roman$]]$.
         Already last year read I this book.
     b. $[_{CP}$ Schon letztes Jahr $[_C$ habe$]$ $[_{IP}$ ich diesen Roman gelesen$]]$.
         Already last year have I this book read.

There are two principal pieces of evidence that the finite verb is in C in V2 clauses. First, the finite verb is in complementary distribution with complementizers, themselves undoubtedly in C: this can be seen most clearly in German, where in certain embedded clauses the complementizer *daß* is obligatorily associated with verb final order and alternates with complementizerless clauses (prescriptively at least, in the subjunctive) showing V2 order:

(26) a. Er sagte, gestern sei er schon angekommen.   (embedded V2)
         He said, yesterday have he already arrived.
     b. Er sagte daß er gestern schon angekommen ist.
                                                   (C filled, no embedded V2)
         He said that he yesterday already arrived has.
         "He said he'd already arrived yesterday."

Second, den Besten (1983) observed that weak pronouns in Dutch are obligatorily adjacent either to a complementizer in a non-V2 clause or to the inflected verb in a V2 clause. This is illustrated in (27), where *je* and *ze* are weak pronouns:

(27) a. . . . dat je gisteren/*gisteren je ziek was.
         . . . that you yesterday/yesterday you sick were.
     b. Was ze gisteren/*gisteren ze ziek?
         Were you yesterday/yesterday you sick?

If the verb is in C in V2 clauses, the generalization regarding these weak pronouns is simply that they are dependent on C ((27b) is a yes/no question with the verb apparently first; it is standardly assumed, however, that SpecCP is occupied by a null operator in this kind of clause).

The unified approach to V2 clearly makes it possible to treat V2 as triggered by a property of C. In Minimalist terms, it is easy to state that C in a V2 language has a strong V- (or perhaps I- or T-feature); in fact, starting with den Besten's original work, it has frequently been proposed that C has some I-like property in V2 languages – cf. Platzack (1987), Holmberg and Platzack (1991, 1995), Tomaselli (1989), and Roberts and Roussou (1998) for varying proposals. This leaves open the question of what causes XP-movement to SpecCP. One idea, first proposed in Roberts (1993b: 56), is that this is the Extended Projection Principle (EPP) applying at the C-level. Applying at the I (or AgrS) level, the EPP requires that SpecIP be filled by a DP owing to the fact that I is inherently associated with agreement features; applying at the C-level, on the other hand, it arguably simply requires that the Specifier be filled by an XP of any category, since there is no inherent requirement for agreement with features of C – see Roberts and Roussou (1998) for a defence and elaboration of this idea.

Turning now to the second approach, Zwart (1993b, 1997) gives evidence that subject–verb orders in V2 languages are structurally distinct from other V2 orders (from now on I refer to the former as SV orders and the latter as VS orders). The principal evidence comes from differences in the form of agreement morphemes in Standard Dutch and various dialects which correlate with SV and VS order, and facts about the placement of subject clitics. In Standard Dutch the 2-Sg agreement form ends in *-t* in SV clauses (and in embedded clauses) while in VS clauses it is a bare stem:

(28) a. . . . dat jij naar huis **gaat**/***ga**.
         . . . that you to home go.
      b. Jij **gaat**/***ga** naar huis.
         You go to home.
      c. Vandaag **ga**/***gaat** jij naar huis.
         Today go you to home.
      d. Wanneer **ga**/***gaat** jij naar huis?
         When go you home?

In some Dutch dialects, the forms for complementizer agreement and verbal agreement differ. Strikingly, Zwart shows that in these dialects the complementizer agreement shows up on the verb in VS clauses, while the verb has the other form in SV clauses. I illustrate from East Netherlandic (although Zwart shows that the same facts hold in Brabantish and West Flemish):

(29) a. dat-**e** wij speul-**t**.
         that-1Pl we play-1Pl
      b. Wij speul-**t**/*-**e**.
         We play-1Pl.
      c. Wat speul-**e**/*-**t** wij?
         What play-1Pl we?
      d. Vandaag speul-**e**/*-**t** wij.
         Today play-1Pl we.

Also, subject clitics in Standard Dutch precede the verb only in SV main clauses but follow V in VS clauses, while they follow C in embedded clauses:

(30)   a.   **'k** eet vandaag appels.
            I(Cl) eat today apples.
       b.   Natuurlijk eet **'k** vandaag appels.
            Of course eat I(Cl) today apples.
       c.   . . . dat **'k** vandaag appels eet.
            . . . that I today apples eat.

(A similar argument was made by Travis 1984 based on weak forms of certain German pronouns, but cf. Tomaselli 1989 for an alternative.)

Zwart interprets this evidence as showing that the subject is in SpecAgrSP and the verb in AgrS° in SV clauses, while XP is in SpecCP and the verb in C in VS clauses. He proposes that AgrS has a strong V-feature, attracting V, and a strong N-feature, attracting N. In VS clauses, C has a strong V-feature and a further strong feature (*wh*, Topic, etc.) lacking in SV clauses; in this way V is attracted to C and an XP to SpecCP.

A further issue, touched on by Zwart (1997), concerns the nature of the C-system. Rizzi (1997) argues that at the left periphery of the clause, above IP, there are the separate projections ForceP, FocusP, and FiniteP, interspersed with possibly recursive TopPs. The categories I am most interested in here are Fin and Force: Fin marks the clause as finite or not and Force is the position associated with clausal typing.

Typical complementizers like English *that* mark two things: that the clause they introduce is declarative and that it is finite. In this respect, they are associated with features of two heads, Force and Fin, just as a finite verb is associated with properties of V and I. So we might expect that crosslinguistically, some complementizers are overtly realized in Force and others in Fin. Straightforward evidence from this comes from McCloskey's (1993) evidence that C apparently lowers to I in Irish. The argument is based on the observation that in general across languages sentential adverbs do not adjoin to CP:

(31)   a.   In general, he understands what's going on.
       b.   It's probable that in general he understands what's going on.
       c.   *It's probable [$_{CP}$ in general [$_{CP}$ that he understands what's going on]].
       d.   *[In general [that he understands what's going on]] is surprising.

In (31c, d) the bracketing is meant to indicate that the adverb should be interpreted as modifying the *that*-clause. These readings are impossible in English. McCloskey calls this general ban on the adjunction of adverbs to CP the Adjunction Prohibition.

Irish shows the opposite distribution of adverbs in relation to CPs:

(32)   Is doíche [faoi cheann   cúpla lá   [go   bhféadfaí imeacht]]
       is probable at-the-end-of couple day that could   leave
                         Adv   C   I

McCloskey also shows that we cannot maintain that Irish simply lacks the Adjunction Prohibition (however exactly this idea might be formulated). The evidence against this idea is that the order *adverb*–wh-*phrase* is bad:

(33) *Ní bhfuair siad amach ariamh an bhliain sin cé   a   bhí
      Neg found   they out   ever   the year   that who Prt was
      ag goid a gcuid móna
      stealing their turf
      "They never found out who was stealing their turf that year."

McCloskey proposes (i) that sentential adverbs adjoin to IP in Irish just as in English (and other languages), and (ii) that Irish has a rule which lowers C to I. The C-to-I lowering rule derives orders like that in (32). Schematically, the relevant parts of (32) have the following structure:

(34) t [$_{IP}$ Adv [$_{IP}$ C+I . . .

The split-C system provides a way of handling McCloskey's data without having recourse to a C-to-I lowering operation. The basic idea is to capitalize on the overall similarity between the structure of McCloskey's argument and the structure of Emonds's (1978) arguments for V-to-I raising in French and I-to-V lowering in English. As we saw in section 2.1, Emonds observed, *inter alia*, the following contrast between French and English:

(35) a. *French:* V+Infl Adv   direct object
      b. *English:*   Adv V+Infl direct object

Pollock (1989) concluded that V raises to Infl in French, but that Infl lowers to V in English. The Irish–English contrast that we saw in (31) vs. (32) can be handled in an analogous way, given the split-C system. Here what we have is the following:

(36) a. *Irish:*   [$_{ForceP}$ [$_{TopP}$Adv [$_{FinP}$ Comp IP . . .
      b. *English:* [$_{ForceP}$ Comp [$_{TopP}$Adv [$_{FinP}$ IP . . .

So the possibility emerges of saying that Irish complementizers occupy a different position from their English counterparts. Does Comp raise to Force in English or is it merged there? In fact, the answer may be different for different languages. "CP-recursion" examples like (37) provide a relevant indication:

(37) I said that never in my life had I seen a place like Bangor.

If V is in Foc and the negative constituent in SpecFocP here, *that* cannot have raised to Force. To account for this, we may assume that *that* is base-generated in Force and the relevant Fin-features raise to combine with Force

(see Chomsky 1995b on feature movement). Since *daß* is incompatible with CP-recursion in standard German (Vikner 1994a), we conclude that it is base-generated in Fin and moves to Force. We thus see three different parametric properties of Force: in Irish, it is inert, and complementizers occupy Fin; in English, *that* is inserted in it and it attracts Fin-features; in German, it attracts *daß*. A fourth possibility is illustrated by Welsh. In Welsh there are two particles – *fe* and *mi* – which introduce affirmative main clauses (under certain conditions). Adverbs can occur before these particles, but not in between them and the verb:

(38) a. Bore   'ma, mi glywes i 'r newyddion ar y radio.
          Morning this, Prt heard I the news   on the radio
      b. *Mi bore   'ma glywes i 'r newyddion ar y radio.
          Prt morning this heard I the news   on the radio
          "This morning, I heard the news on the radio."

Again we can apply our analysis of McCloskey's Irish data and take it that *fe/mi* are in Fin. In addition, Welsh has a focussing strategy which allows exactly one XP to be fronted over the verb, followed by *a* or *y* and the rest of the clause:

(39) a. Y   dynion a   werthodd y ci.
          The men   Prt sold   the dog
          "It's the men who have sold the dog."
      b. Ym Mangor y   siaradais i llynedd.
          In Bangor Prt spoke   I last-year
          "It was in Bangor I spoke last year."

When embedded, clauses with a fronted focussed XP like those in (39) are preceded by one of a special class of complementizers, as in (40) (examples from Tallerman 1996):

(40) Dywedais i **mai** ['r dynion **a**   werthith y   ci].
      Said   I MAI the men   Prt will-sell the dog
      "I said that it's the men who will sell the dog."

Rouveret (1994) and Tallermann (1996) treat these structures as involving "CP-recursion." Tallerman observes that adverbs can appear between *mai* and the focussed constituent, but not – with embedded scope – before *mai*:

(41) a. ??Dywedais i **mai** fel arfer y   dynion **a**   werthith y   ci.
            Said   I MAI as usual the men   Prt will-sell the dog
      b. Dywedais i **mai** 'r dynion fel arfer **a**   werthith y   ci.
            Said   I MAI the men   as usual Prt will-sell the dog

    c.   *Dywedais i fel arfer **mai** ['r dynion **a** werthith y ci].
          Said   I as usual MAI the men   Prt will-sell the dog
          "I said that it's the men as usual who will sell the dog."

The preferred order is (41b), where the adverb intervenes between the focussed XP and *a*. Thus the natural position for *a* is in Fin. It seems reasonable to situate the focussed XP in SpecFoc; this implies that the adverb in (41b) occupies a position in between Foc and Fin (possibly SpecFinP). We consider *mai* and other elements that introduce "CP-recursion" of the kind illustrated in (40) to be in Force. In Welsh, then, both Force and Fin can be simultaneously filled by different complementizers.

   These proposals point the way to an account of root-embedded asymmetries in verb movement, a typical feature of many Germanic languages. Let us make one specific hypothesis about the structural difference between root and embedded clauses:

(42)   ForceP is either absent or inert in root declaratives.

(42) is linked to the idea that root declaratives are the unmarked clause type. In embedded clauses, typical complementizers like English *that* (and German *daß*) raise from Fin to Force due to the nature of the Force head in these languages. Let us suppose further, following den Besten (1983) and the other references given above, that both full and residual V2 are the reflex of a dependency between T and Fin which holds in finite clauses: essentially, in a V2 language Fin attracts T. In embedded declarative clauses, Force attracts a complementizer from Fin. Following den Besten (1983), the presence of the complementizer in Fin blocks T-movement to Fin (although features may move, giving rise to agreeing complementizers in a number of varieties – see Zwart 1997 for an elaboration of this idea). Significantly, all the Germanic V2 languages differ from English in requiring the presence of a complementizer in finite embedded declaratives, with the notable exception of German, which requires embedded V2 exactly where the complementizer is missing; see (26) above. Since embedded V2 typically requires the presence of the equivalent of *that* in other Germanic languages (see Vikner 1994a for discussion and illustration), these elements also presumably occupy Force.

   In *wh*-complements where no overt complementizer is present something more must be said. Here we can capitalize on an observation by Stowell (1981: 422) to the effect that selection for +*wh* neutralizes selection for Fin. This can be illustrated by paradigms such as the following:

(43)   a.   I explained how to fix the sink.   [+*wh*, −Fin]
       b.   I explained how we should fix the sink.   [+*wh*, +Fin]
       c.   I explained that we should fix the sink.   [−*wh*, +Fin]
       d.   *I explained to fix the sink.   [−*wh*, −Fin]

In Rizzi's system, this is straightforwardly accounted for by the fact that both Force and Foc are structurally higher than Fin. Suppose, concretely, that if Force is selected as +Q then this activates Foc as +*wh*, but no feature of Fin is selected. More generally, we can think the presence of Foc blocks the selectional relation between Force and Fin – this follows from standard assumptions about the locality of selection which go back to Chomsky (1965). Whether Foc requires/allows Fin to be morphologically realized varies from language to language: where it does (e.g. in Dutch), *wh–that* sequences are found; where it does not, they are not.

   The above sketch of the root embedded asymmetry, which is in some ways an adaptation of den Besten's (1983) analysis to the split-C system of Rizzi, links the root embedded asymmetry in verb movement to the fact that matrix clauses cannot have complementizers (in the languages in question), since by hypothesis root ForceP is either absent or inert. It also implies that in languages in which complementizers are generated in Force but in which Force does not determine movement of Fin, T should be able to freely raise to Fin, giving rise to the absence of root embedded asymmetries. This may well be the situation in the "symmetric" V2 languages Yiddish and Icelandic. In Irish and Welsh Force also does not attract Fin, as the evidence given above shows. Given this, we can understand why there are no root embedded asymmetries in verb movement in the Celtic languages; V could be analyzed as moving to Fin, as in Yiddish and Icelandic (although then it left-adjoins to the particles, *contra* Kayne 1994). I return to the issue of the position of V in VSO languages in section 2.3.

   So we see that Force may be overtly realized by Merge (insertion of a complementizer) or Move (attraction of Fin), both (although in this case only features of Fin are moved) or neither. Welsh realizes the first option, German the second, English the third, and Irish the fourth. Combining this with (42) gives rise to an account of root embedded asymmetries.

2.3   VSO orders

Emonds (1980) was the first to propose that VSO orders are derived by verb movement. In general terms, Emonds's idea was that the existence of VSO orders is not incompatible with the postulation of an underlying VP constituent. As long as verb movement rules exist (and this is not in doubt), such a rule can move the verb out of the VP and to the left over the subject. This gives a derived VSO order from an underlying SVO or SOV order.

   I take Welsh as an example of a canonical VSO language, mentioning other Celtic languages and Semitic VSO languages (notably Classical Arabic) where relevant. In Welsh, we can very clearly see that something like what Emonds described is going on in VSO clauses. There is a general possibility of what we can think of as free "*do*-insertion." Free "*do*-insertion" is available in the future and preterite tenses, as illustrated in (44):

(44)   a.   Mi **welais** i Megan.
            Prt saw   I Megan
            "I saw Megan."
       b.   Mi **wnes** i weld Megan.
            Prt did   I see   Megan
            "I saw Megan."

It seems clear that the lexical verb *welais* in (44a) is in the same position as the auxiliary verb *wnes* in (44b). Both elements appear in between the clause initial particle *mi* and the subject *i*. Moreover, the *only* thing which can appear in between the particle and the subject is a finite verb or auxiliary. It seems natural to think that this position is the one for the finite element of the clause. If the verb is chosen as the finite element, it moves to that position; if an auxiliary is chosen, the main verb remains in VP. (44b) shows that the order of elements in the clause following the position for the finite element is SVO.

   Sproat (1985) gives a number of other arguments for the same conclusion; in particular, he argues that non-finite verbs typically appear in SVO orders, and that non-finite VPs could be fronted along with their complement, stranding the subject. The relevant facts are illustrated in (45a) and (45b), respectively:
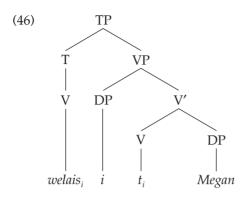
(45)   a.   [Cyn i Siôn laddu draig], y   mae rhaid   iddo   brynu
            Before to John kill   dragon, Prt is   necessary to-him buy
            llaeth i'r   gath.
            milk   for-the cat
            "Before John kills a dragon, he has to buy milk for the cat." (Sproat
            1985: 205)
       b.   [Gadael y   glwyd ar agor] a   wnaeth y   ffermwyr.
            Leave   the gate   on open Prt did   the farmer
            "Leave the gate open, the farmer did." (Rouveret 1994: 77)

We conclude with Sproat, and following the general consensus of work on Welsh (and the Celtic languages in general; see, for example, the introduction to Borsley and Roberts 1996) that VSO clauses involve an operation which moves the verb out of VP to the left over the subject.

   The above considerations are straightforward and easy to motivate. However, it is much harder to say (i) what the position that V moves to is, or (ii) what the position of the subject is. In a theory which posits the existence of one or more functional categories above VP (see section 2.1), a range of different options is available in this connection. The one thing we have to ensure is that the finite verb occupies a position higher than that of the subject at Spell-Out.

   On the basis of the above considerations, it should be clear what the simplest analysis of VSO would be. We could posit a derived structure like the following for (44a):

(46)

```
                TP
              /    \
            T        VP
            |       /   \
            V      DP     V'
            |      |     /  \
                          V    DP
                          |    |
         welaisᵢ   i    tᵢ    Megan
```

In addition to this being adopted in Chomsky (1993, 1995b), Koopmann and Sportiche (1991) also consider it as a possibility. There are, however, a number of arguments against an analysis of the type in (46).

The first argument has to do with adjacency effects. McCloskey (1991) shows that V must be adjacent to the subject in VSO clauses in Irish:

(47)   *Dúirt sí go dtabharfadh amárach a   mac turas orm.
       said   she that would-give tomorrow her son visit on-me.
                                V   X   S
       "She said that tomorrow her son would visit me."

The same observation holds for Welsh:

(48)   *Mi welith yfory   Emrys ddraig.
       Prt will-see tomorrow Emrys dragon
            V   X   S
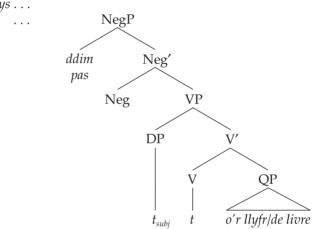   "Tomorrow Emrys will see a dragon."

It is widely assumed that the space between T and VP contains positions in which adverbs of various kinds can appear (whether adjoined to VP, to other functional categories, or to X'-level projections or in Specifier positions is a matter of debate). If so, then we expect such adverbs to intervene between the raised verb and the subject if the structure of a VSO clause is (46). The fact that these orders are impossible indicates that (46) is not the correct analysis of VSO clauses.

The second argument was noticed by Koopman and Sportiche (1991). In spoken Modern Welsh, the form of negation seems to be similar to French *ne . . . pas*, in that there are two elements, one a preverbal, clitic like element and the other a postverbal, adverb like element. The relevant observation in the present context is that the second element of negation follows the subject:

(49)   (Ni)   ddarllenodd Emrys ddim o'r   llyfr.
       (Neg) read   Emrys Neg of-the book.
       "Emrys didn't read the book."

If we assimilate *(d)dim* to French *pas*, then we take it to occupy a VP-external position lower than T and higher than the position in which the subject is merged. In that case, the order *subject–**ddim**–object* in (49) shows us that the subject is not in its merged (VP-internal) position. Concretely, let us follow Pollock (1989) in assuming that the *pas*-type negative is in SpecNegP and that NegP intervenes between TP and VP. In that case, the situation is illustrated both for Welsh and for the comparable French sentence in (50):

(50)   *(Ni)ddarllenodd Emrys . . .*
       Jean   ne   lut   . . .

NegP
ddim / pas [SpecNegP]; Neg′ → Neg, VP; VP → DP (t_subj), V′; V′ → V (t), QP (*o'r llyfr/de livre*)

We must conclude that the subject raises from VP.

Not all the Celtic languages are like Welsh as regards the relative order of the subject and the second part of negation. The Goidelic languages just have preverbal negation (Irish *ní* (present), *níor* (past); Scots Gaelic *cha*). However, McCloskey (1993: 39) shows that certain adverbs which it is plausible to think of as attached to VP intervene between the subject and the object in Irish VSO clauses (and, given the argument made above, cannot intervene between the verb and the subject):

(51)   Níor shaotaigh **Eoghan ariamh** pingin.
       Neg earned   Owen   ever   penny
       "Owen has never earned a penny."

This example indicates that the subject leaves VP in Irish.

The third argument is due to McCloskey (1996), who makes the argument for Irish, although it carries over to Welsh. McCloskey points out that the standard A-dependencies raising, passive, and unaccusative are all found in Irish; such constructions are also found in Welsh. On Minimalist assumptions, such movement must be driven exclusively by the need to check features. Features are assumed to be checked in the checking domain of functional heads. It follows from these assumptions that movement to Spec, VP – a position in the checking domain of a lexical head – is impossible; lexical heads do not offer the

possibility of feature checking. Now, if the subject position were VP-internal, A-dependencies would precisely involve movement to Spec, VP. Hence the derived subjects of raising, passive, and unaccusative verbs cannot be in Spec, VP. Since these subjects are no different in their position in their clauses from other subjects, then we have an argument that subjects in general are not VP-internal.

Finally, let us briefly consider an argument that subjects leave VP that has been made on the basis of data from Northern dialects of Irish (the construction is also found in Scots Gaelic – see Adger 1996). The argument, first made by Bobaljik and Carnie (1996) (see also Carnie 1995), is based on the existence of SOV order in infinitives in these varieties, as in:[4]
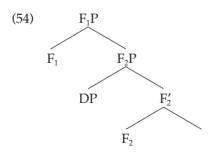
(52) Ba mhaith liom   [(é)   an teach   a   thógáil].
      is good   with-me (him) a   house-Acc Prt build
      "I would like him to build the house."

In Southern dialects, the direct object is Genitive and the order is SVO:

(53) Ba mhaith liom   [(é)   a thógáil an tí]
      is good   with-me (him) to build   Prt house-Gen
      "I would like him to build the house."

Bobaljik and Carnie propose that the Accusative form of the object is found when the object moves to SpecAgrOP. Therefore the subject must have raised out of VP, because it precedes the object. The lowest available position for the subject is SpecTP. Therefore V is higher than T. They conclude that V is in AgrS.[5]

In conclusion, we have seen several reasons to reject an analysis of the kind given in (46). All our arguments point in the same direction: the subject is raised from its base position. We now know that the subject is in the specifier of a functional category, and we can be sure that the verb is in a functional head position higher than the subject. Moreover, the adjacency evidence of McCloskey (1991), illustrated in (47) and (48) above, suggests that the subject is in the specifier position of the functional category which is the complement of the one whose head V moves to (and that further adjunction to this category is impossible). Schematically, the situation must be as follows:
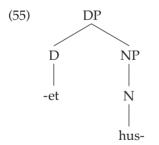
(54)

$$F_1P$$

$$F_1 \quad F_2P$$

$$DP \quad F_2'$$

$$F_2$$

A natural hypothesis is that F_1 is C and F_2 is I. We saw in the previous section that we can think of V as moving to Fin in Celtic, except for the fact that this requires to assume it right-adjoins to the particle in Fin, *contra* Kayne (1994).

Of course, this argumentation is restricted to Welsh. It may be that V does raise into the C-system in other VSO languages (although Fassi Fehri 1993 concludes that V does not raise out of the I-system in Arabic, on the basis of arguments similar to those just given for Welsh). Carnie et al. (1996) argue that V raised to C in Old Irish.

3 Head Movement in Nominals

The general tendencies seen in the development of theories of clause structure that I reviewed in the previous section are also apparent in recent work on nominals. Above all, functional categories and head movement have been shown to play a central role in this domain, too. The most important functional category in nominals is the Determiner Phrase, or DP. This was originally proposed by Abney (1987) and by Fukui and Speas (1986).

A further parallel with work on clause structure concerns the idea that N may raise to D (or to another functional head inside DP). This idea can account for two kinds of phenomenon. First, it has been used (by Taraldsen 1990, Delsing 1990) to account for postnominal articles of the type found in the Scandinavian languages. Thus, a form like *hus-et* ("house-the") is derived by N-movement adjoining *hus* to *-et* in D in a structure like the following:

(55)

```
            DP
           /  \
          D    NP
          |    |
         -et   N
               |
             hus-
```

The phenomenon of postnominal articles can then be reduced to the operation of a movement rule. Longobardi (1994) argues that this movement rule applies at LF in those languages where it does not apply overtly, in order to give referential value to the N.

Second, the Semitic construct state construction may feature N-to-D raising. This has been argued for by Mohammad (1988), Ritter (1988), Fassi Fehri (1993), and Siloni (1991, 1994, 1997) for Semitic, and the analysis carries over naturally to Celtic possessives (see below). The parallel with the way in which verb movement in clauses gives rise to VSO order is striking, especially given that

overt, productive constructs are found just in languages that are either fully or residually VSO: Celtic and Semitic (see section 2.2).

The Semitic construct state construction displays the following properties (this presentation is based on that in Longobardi 1996, which in turn relies on Siloni 1994):

(56) a. The noun heading the construction occurs first in the whole nominal phrase.
      b. A phrase semantically understood as a genitive argument always follows the head noun.
      c. The article of the head noun disappears.
      d. The preposition usually introducing genitive arguments disappears.
      e. Strict adjacency (i.e., no intervening adjective) is required between the head noun and the argument.
      f. The head noun occurs deaccented and often with vowels phonologically reduced.
      g. The definiteness value of the head noun depends on (is harmonic with) the ±definite status of the complement.

We illustrate these with Hebrew examples, unless otherwise indicated. Properties (56a, b) are illustrated by (57):

(57) beyt   ha-iʃ
      home the-man
      "the man's home"

Following (56c), the article is impossible on the head noun here:

(58) *ha-beyt ha-iʃ
      the-home the-man

There is clearly no possessive preposition in (57) (see (56d)), and (59) shows that no adjective can intervene between the head noun and the possessor:
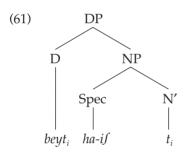
(59) *beyt ha-gadol ha-iʃ
      home the-big the-man

The word for *home* here is phonologically reduced; its usual form is *bayit* – see (56f). Definiteness harmony – (56g) – is illustrated by the fact that an adjective modifying the head noun must agree in definiteness with the possessor noun; in other words, definiteness is shared between the possessor and the head noun:

(60) a. beyt   ha-iʃ   ha-gadol
          house the-man the big
          "the big man's house/the man's big house"

b.   beyt iʃ   gadol
     house man big
     "a big man's house/a man's big house"
c.   *beyt ha-iʃ   gadol
     house the-man big
     "the big man's house/the man's big house"

Properties (56a, c, e) are immediately accounted for if the head noun raises to D, nothing can appear in SpecDP, the possessor appears in the Specifier position immediately subjacent to D (given as NP in 61)), and APs are unable to adjoin to the complement of D:

(61)

Properties (56b, d) are connected to the fact that N-to-D movement licenses Genitive Case assignment – see Longobardi (1996) for specific proposals as to how this works. Definiteness harmony is accounted for by the interaction of Spec–head agreement for definiteness in a lower projection (say, NP in (61)) and movement of the head of that projection to D; thus D and the possessor DP in the lower Specifier position must have the same value for ±definite. Finally, (56f) may be connected to the presence of a strong feature in D which triggers N-raising.

In Celtic, possessive constructions have properties very similar to those of the Semitic construct state (see in particular Guilfoyle 1988 and Duffield 1996 on Irish, and Rouveret 1994 on Welsh). Properties (56a–d) are illustrated in the following examples, and thus provide clear evidence for N-to-D movement:

(62) a.   llyfr John   (Welsh)
           book John
           "John's book"
      b.   teach an fhir   (Irish)
           house the man
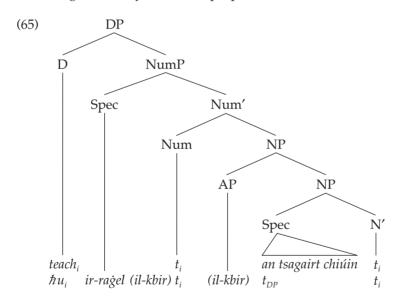   "the man's house"

On the other hand, property (62e) does *not* hold in Celtic (see Duffield 1996). If the possessed noun is modified by an AP, that AP intervenes between the noun and the possessor:

(63) a. llyfr newydd John   (Welsh)
         book new   John
         "John's new book"
     b. guth láidir an tsagairt   (Irish)
         voice strong the priest-Gen
         "the priest's powerful voice"

The order *N–Poss–A* is obligatorily interpreted such that the adjective modifies the possessor. In this respect, Celtic differs from Semitic, as pointed out by Duffield (1996) on the basis of the following contrasts:

(64) a. teach an tsagairt   chiúin   (Irish)
         house the priest-Gen quiet-Gen
         "the quiet priest's house" (*"the priest's quiet house")
     b. ħu   ir-raġel   il-kbir   (Maltese)
         brother(MSg) the-man(MSg) the-big
         "the man's big brother/the big man's brother"

Duffield analyzes this difference in terms of differential movement of the possessors; in Semitic languages, possessors appear in the immediately subjacent specifier to D, while in the Celtic languages the possessor remains in SpecNP. Following essentially Duffield's proposal, then, the structures of (64a, b) are:

(65)

Here we see a difference between the Celtic and the Semitic languages.

Property (56f) does not appear to hold in Celtic. Regarding property (56g), what is at issue here is the interpretation of the head noun as definite or indefinite in the absence of the possibility of marking this by the presence or

absence of the definite article. In Celtic, there is no overt definiteness marking on adjectives, and so purely interpretive evidence must be used:

(66)   mab brenin   (Welsh)
      son king
      "the son of a king/a son of a king" (Rouveret (1994: 184))

Definiteness harmony only holds in one direction in Welsh, in that, as (66) shows, the head noun can either be definite or "inherit" indefiniteness from the possessor. What is impossible, however, is an indefinite interpretation for the head noun where the possessor is definite. By N-to-D movement indefiniteness can be "inherited" from the possessor, but D can otherwise have a default definite value (Duffield 1996: 329–30) shows that the situation is the same in Irish.

    We see then that N-to-D movement can explain the striking properties of possessive constructions in the Celtic and Semitic languages. Longobardi (1996) shows that the same mechanism is at work, although less obviously, in possessive constructions in both Romance and Germanic.

    In Romance, overt N-to-D raising in possessive constructions is restricted to proper names and "a few singular common nouns, essentially a proper subset of the class of kinship nouns and the word for 'home'" (Longobardi 1996: 2). Thus we find DPs like the following in Italian:

(67)   a.   Il mio Gianni ha finalmente telefonato.
         The my Gianni has finally called.
     b.   Gianni mio ha finalmente telefonato.
         Gianni my has finally called.
     c.   *Mio Gianni ha finalmente telefonato.
         My Gianni has finally called.

(68)   a.   La mia case è più bella della tua.
         The my house is more beautiful than the yours.
     b.   Casa mia è più bella della tua.
         House my is more beautiful than the yours.
     c.   *Mia casa è più bella della tua.
         My house is more beautiful than the yours.

Longobardi shows in detail that all the properties of Semitic constructs given in (56) can be detected in these Romance constructions, and concludes that N-to-D raising is available in a restricted fashion in possessives in these languages.

    Finally, there is some evidence that a similar process occurs covertly with certain nouns in Germanic. In English, the noun *home* may occur without an article and with an understood possessor, just like its Romance counterparts which overtly raise to D:

(69) a. Home is always the best place to relax.
      b. John was heading home.

Since *home* always follows adjectives, there is no question of overt N-to-D movement. Longobardi thus proposes that it may move to D in LF.

More generally, Longobardi suggests that the Germanic "Saxon Genitive" may be a case of LF N-to-D movement. One argument for this is that this construction is incompatible with demonstratives, which occupy either the head or Specifier of D (Giusti 1993):

(70) *diese Ottos wunderbaren Bücher
       these Otto's wonderful books

If this is correct, then N-to-D movement is found universally, in possessive constructions and with certain types of head noun (proper names and others). Whether the movement is overt depends on the strength of the relevant features of D.

4   The Local Nature of Head Movement

In this section, I want to consider in more detail the theoretical status of the Head Movement Constraint, repeated here:

(1)   Head movement of X to Y cannot "skip" an intervening head Z.

As pointed out by Rizzi (1990, this volume), (1) can be derived from Relativized Minimality. In Rizzi (this volume), Relativized Minimality is stated in terms of the notion of Minimal Configuration (MC) and the definition of chains, as follows:
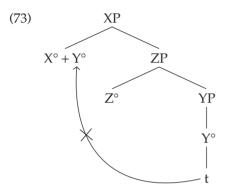
(71) Y is in a MC with X iff there is no Z such that
       (i) Z is of the same structural type as X, and
       (ii) Z intervenes between X and Y.

Intervention can be defined in terms of asymmetric c-command: Z intervenes between X and Y iff Z asymmetrically c-commands Y and does not asymmetrically c-command Z.[6]

(72) $(\alpha_1 \ldots \alpha_n)$ is a chain iff, for $1 \leq i < n$
       (i) $\alpha_i = \alpha_{i+1}$
       (ii) α_i c-commands α_{i+1}
       (iii) α_{i+1} is in an MC with α_i

Assuming the copy theory of traces, then, each chain link involves identity, c-command, and Minimality.

As Rizzi points out, the notion of "same structural type" in (71i) is crucial. Whatever the precise details here (see in particular section 6 of Rizzi's chapter, this volume, on this), it is clear that heads can naturally be viewed as being of the same structural type as other heads. In that case, applied to head chains, (71) and (72) block the formation of a head chain across an intervening head; this is of course exactly what (1) rules out. The configuration that violates (1) is thus:

(73)

This is violated in standard cases of the type discussed by Rizzi (this volume), e.g.:

(74) a. *[$_C$ Have] they [$_I$ could] [$_V$ t] left?
      b. *[$_C$ Tornato]   Mario [$_I$ essendo] [$_V$ t] a Milano.
            Come-back Mario   being   to Milan

It seems clear that XP-movement is constrained in a more fine-grained way, at least along the lines of the distinction between A- and A'-positions, probably with a further distinction among types of A'-positions (see again Rizzi this volume); the distinctions seem to relate to the feature content of the XPs. Since heads bear features, a natural question to ask is whether head movement is sensitive to the feature content of intervening heads. Evidence for this conclusion would come in the form of structure where a head moves from Y to X across a structural intervener Z, but where the structural intervener is not a *featural* intervener between X and Y (MC can be trivially defined in terms of featural interveners by substituting "featural" for "structural" in (72); in fact, though, I continue to assume that both notions are needed together – see n. 11). In such cases, we would need to show both (i) that Y-movement is genuine head movement and not disguised YP-movement, and (ii) that there are featural interveners Z which block formation of the X–Y chain. A construction which seems to have exactly these properties is long V-movement in Breton, as discussed by Borsley et al. (1996). Long V-movement is illustrated in (75):

(75)   Lennet en   deus Yann al   levr.
       Read   3SgM has   Yann the book
       "Yann has read the book."

Superficially, the order here resembles that seen in remnant topicalization con-
structions in Dutch and German (see Koster 1987, den Besten and Webelhuth
1989, and Rizzi this volume: n. 2):

(76)   Gelesen hat er das Buch nicht.
       Read   has he the book not
       "He hasn't read the book."

Examples like (76) are standardly analyzed as involving scrambling of the object
das Buch to some VP-external position, followed by topicalization to SpecCP of
the remnant VP, whose sole overt exponent is the participle *gelesen* (although
it also contains the trace of the scrambled object; for a detailed discussion of
remnant movement in German and its possible theoretical implications see
Müller 1997). However, there are two important differences between topicaliza-
tion, including VP-topicalization, and long V-movement: long V-movement is
clause bound, while topicalization is not (see 77)); and long V-movement is
blocked by negation, while topicalization is not (see 78)):

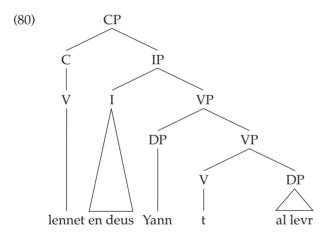(77)   a.   *Desket am eus klevet he deus Anna he c'hentelioù.
                                                 long V-movement
            learnt 1Sg have heard 3SgF have Anna 3SgF lesson
            "I have heard that Anna has learnt her lessons."
       b.   O lenn al levr a ouian emañ Yann.   VP-topicalization
            Prog read the book Prt know-1Sg is Yann
            "I know Yann is reading the book."

(78)   a.   *Lennet n'en deus ket Tom al levr.   long V-movement
            Read Neg 3SgM have Neg Tom the book
            "Tom hasn't read the book."
       b.   O lenn al levr n'emañ ket Yann.   VP-topicalization
            Prog read the book Neg is Neg Yann
            "Yann isn't reading the book."

It seems then that Breton long V-movement cannot be reduced to remnant
fronting. See Borsley et al. (1996) for further argumentation on this point.
   Borsley et al. (1996) go on to identify long V-movement with various pro-
cesses found in a range of Slavic and Romance languages moving verbs or
clitics by what appear to be long head movement (LHM) into the C-system
(see Rivero 1991, 1994, Lema and Rivero 1990, 1991, 1992, Roberts 1994). These
processes all share four important properties, also shared by long V-movement
in Breton:

(79) a. LHM is a root phenomenon:
          *Lavaret he deus Anna lennet en deus Tom al levr.
          Said 3SgF have Anna read 3SgM have Tom the book
          "Anna said Tom had read the book."
      b. LHM is blocked by negation – see (78a).
      c. LHM is incompatible with movement to SpecCP (e.g. topicalization):
          Al levr lennet en deus Tom.
          the book read 3SgM have Tom
      d. LHM is licensed only by certain auxiliaries, e.g. perfect (see (75)),
          but not progressive:
          *O lenn emañ Yann al levr.
          Prog read is Yann the book

Borsley et al. (1996) conclude that the derived structure of examples like (75) is (80):[7]

(80)

Here we can see that the participle *lennet* has undergone head movement over I. So we have a *prima facie* case of the kind of head movement which would motivate a featural, in addition to a structural, characterization of interveners for head movement. Borsley et al.'s arguments that long V-movement is distinct from remnant VP-topicalization show that this operation is genuine head movement. Moreover, the fact that this operation is blocked by negation (78a) and by certain auxiliaries (79d) shows that it is sensitive to certain kinds of intervening head.

   If we grant that Breton long V-movement provides a case for a featural definition of interveners for head movement, we then have to provide a characterization of the relevant features. On the basis of the work on other possible LHM structures referred to above, combined with what is known about the triggers for head movement generally, we could suggest as a first pass distinction between C-heads and I-heads. Suppose then that I-heads block movement of other I-heads and C-heads block movement of other C-heads. This alone

will guarantee that most cases of head-movement in the clausal domain are highly local, as is standardly observed. Moreover, since many cases of head movement into the C-system, e.g. all full and residual V2, plausibly involve the attraction of T, rather than V (see section 2.2), we can see why these cases of head movement are also strictly local. Also, canonical cases of V-movement into the I-system involve checking of Tense and Agreement features, and so V will not be able to skip the relevant positions. The residue of all of this consists essentially of movement of non-finite V into the C-system, where an auxiliary or particle realizes whatever features of the I-system require checking, and where C has some feature which requires checking which cannot be checked by I-elements. (This feature seems to be related to the EPP property which causes SpecCP to be filled in full V2 systems; see Roberts and Roussou 1998.) This is exactly what seems to be going on in Breton and in comparable cases discussed in the references given above. Note that, in these terms, the clause boundedness of long V-movement is automatically accounted for; an intervening C will block movement to a higher C (cyclic movement is ruled out since it is an instance of excorporation; C itself never overtly incorporates into a higher clause for reasons that are unclear).[8]

However, two considerations lead us to modify this first pass slightly, and to take the featural characterization of the interveners for head movement a step in the direction of the characterization given by Rizzi (this volume) for XPs. We saw above that two kinds of head appear to block long V-movement: negation and certain auxiliaries. Neither of these is in any obvious way a C-head. To take account of this, I propose the following typology of heads in place of the C-head vs. I-head distinction just adumbrated:

(81) a. Lexical vs. functional heads (cf. Baker and Hale 1990).
      b. Among functional heads, operator vs. non-operator heads.

Rivero (1991, 1994) distinguishes lexical from functional auxiliaries according to a range of criteria: in these terms the Breton progressive would be a lexical auxiliary, while the perfect is a functional auxiliary. The obvious way to construe this distinction is by saying that functional auxiliaries are Is while lexical auxiliaries are Vs (cf. the standard way of distinguishing English modals from aspectual *have* and *be*). Then lexical auxiliaries will always block V-movement; whatever attracts the lexical V will preferentially attract the lexical auxiliary.

The blocking effect of negation justifies (81b). Essentially, then, we treat T and Agr (and presumably Asp, etc.) as non-operator heads, while C-heads and Neg are operator heads. It may at first sight seem arbitrary to say that T is not an operator but Fin is, but it is plausible to think of T as a predicate giving an ordering relation on times (see Stowell 1998) while Fin is associated with quantification over times (or worlds, to the extent that its content is modal). If long V-movement in Breton is movement to Fin (see Roberts and Roussou

1998), then this movement will not be blocked by intervening non-operator heads in the I-system, but will be blocked by negation.[9]

We thus group temporal/modal quantification, *wh* (as a canonical C-feature), and negation together, in opposition to agreement positions; this bifurcation is very close to that proposed by Rizzi (1990, this volume) for XP-movement. To the extent that the relevant features can be associated both with heads and with XPs this is a natural and welcome result.[10] This kind of approach is probably consistent with Chomsky's recent formulation of the Minimal Link Condition (MLC):

(82)   L attracts α only if there is no β, β closer to K than α, such that K attracts β.

Of course, attraction has to be relativized to classes of features, not individual features, and much remains to be done in determining what these classes are.[11]

5   Conclusion

The above sections have attempted to illustrate the workings of head movement from an empirical and a theoretical point of view. The empirical evidence for head movement in underlying grammatical function changing operations, and accounting for word order differences crosslinguistically at the clausal and nominal level, is impressive. Theoretically, most, if not all, the properties of head movement can be deduced from the simple statement that we began with: head-movement is Move-α for α a head. In fact, we can now reformulate this as Move-F(eature) where the feature is morphologized on a word. This formulation forces us to a view of locality like that sketched in n. 11. This is particularly clear if heads can be shown to obey the fundamental locality constraints – of which Relativized Minimality may well be the most important – exactly as XPs do; in the last section I suggested that this was the case.

Recently, however, Chomsky has proposed (in class lectures) that head movement may not truly be part of the syntax at all, but rather part of the phonology. This proposal is certainly consistent with representational approaches to the movement phenomenon of the type espoused by Brody (1995) and Rizzi (1990, this volume). The properties of head movement reduce to those of head chains, formed subject to (71) and (72) as modified in section 4. Where a given head is spelt out in a head chain is a matter partly determined by morphology; see Brody (1995) and Roberts and Roussou (1997) for slightly different suggestions (the latter doing away at the same time with notion of checking). To the extent that the claim that head movement is "a PF-phenomenon" means anything substantive, it can be interpreted – crucially in the context of a representational theory – to mean this.

NOTES

* I would like to thank Anna Roussou for valuable comments on an earlier draft of this paper. All the errors are mine.

1 The Uniformity Condition on Chains of Chomsky (1995b: 253) has the same effect, as long as we assume that head movement forms a chain (again, a standard assumption regarding movement):

   (i) A chain is uniform with regard to phrase structure status.

   "Phrase structure status" here refers to the X^n status of the positions which make up the chain.

2 Chomsky accounts for *have/be* raising with the suggestion that these elements cannot obey Procrastinate since they lack an LF interpretation, and so must be eliminated prior to that level. For criticism of this idea, and different alternative approaches to *have/be* raising in a minimalist framework, see Lasnik (1995a) and Roberts (1998).

3 The straightforward implication that a language allows inversion only if it has the French-style orders in (14)–(16) does not hold. The mainland Scandinavian languages – Swedish, Danish, and Norwegian – are Verb Second in root clauses and pattern like English with respect to the Pollock/Emonds tests in embedded clauses (Platzack 1987, Holmberg and Platzack 1995, Vikner 1994a). If at least some V2 clauses involve V-to-I movement, as proposed by Travis (1984) and Zwart (1993a) (see below), then the generalization can be maintained.

4 The subject can always be optionally realized as an Accusative DP in non-finite clauses in Irish. See Chung and McCloskey (1987).

5 For further discussion of this issue, and a summary of a number of recent analyses of SOV order in non-finite clauses in Irish, see Carnie (1995: 81–118). For my purposes here, it is enough to show how these orders argue for the idea that the subject leaves VP in Irish.

6 Note that this formulation makes Z an intervener even if it symmetrically c-commands X. If c-command is defined in terms of branching nodes, so that segments determine c-command domains (*contra* Kayne 1994), then this can rule out excorporation – cf. Roberts (1991) and the discussion in section 1.

7 Note that Borsley et al. (1996) place the Breton subject in SpecVP and the inflected verb in I. As examples like (78b) show, Breton subjects differ from those of Welsh in following the second element of negation *ket*, hence there is no obvious bar to placing the subject here. See the discussion of VSO orders in section 2.3.

8 Chomsky (1998a) suggests that selection is a kind of attraction. Complement C is always lexically selected, and so is attracted by V. Perhaps for this reason it cannot be attracted in any other way (i.e. so as to trigger movement). Incorporation from non-selected CPs is ruled out by (the relevant updating of) Baker's account summarized in section 1.

9 Long V-movement must be adjunction to Fin as the presence of the particle *a* shows (which appears to be exactly like its Welsh counterpart discussed in section 2.3 – see Hendrick 1988) in (i):

(i) Lenn a ra Anna al levr.
    "Anna reads the book."

10 Rizzi (this volume) proposes that modifier XPs act as interveners for other modifier XPs. Whether this class of features affects head movement could be determined by a close examination of head movement relations inside APs, an issue that has been largely neglected, but see Donati (1996).

11 As Anna Roussou (personal communication) points out, we could in fact, following the proposals in Chomsky (1995b), eliminate the notion of structural intervener entirely. All movement is triggered by features of heads, and we might think XPs are attracted to the extent that they realize features that can be checked with attracting heads. For example, Agr attracts DPs (although it may be able to attract Ds, giving rise to cliticization), C attracts *wh*-XPs, but any head with a V-feature will attract a verb rather than a VP. This would be the natural extension of locality in terms of the current theory, although many details remain to be worked out. In any case, proposing a featural characterization of the intervener for head movement seems more than justified in this context.