Word order, restructuring and mirror theory

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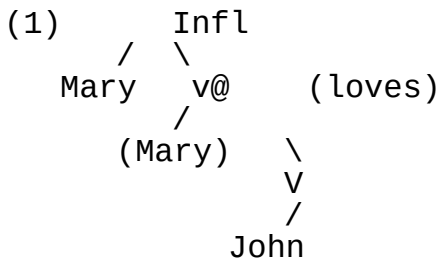
Abstract.

Sections 1 and 2 briefly outline some central features of mirror theory (Brody 1997) and discuss consequences with respect to 'basic' word order. In sections 3 and 4 I note that mirror theory is incompatible with covert roll-up head chain type relations and argue that contrary to recent claims the analysis of Romance restructuring need not involve such structures. In section 5 I note that Kayne's correlation between null subjects and clitic climbing may be better captured under the proposed analysis than it has been in earlier approaches. I argue that both phenomena involve licensing of a spec by an element of Infl. In section 6 I discuss some aspects of the behavior of Hungarian restructuring infinitives and their treatment in mirror theory. Section 7 looks at some similarities and differences between the 'climbing' options of Hungarian verbal modifiers and Romance clitics. Finally in section 8 I argue that to understand Hungarian restructuring constructions it is necessary to distinguish (strictly local) head chain and (successive step) phrasal chain type relations, -- a fact that constitutes further evidence for some core assumptions of mirror theory.

1. Mirror theory, a brief sketch.

In mirror theory (Brody 1997) the morphological structure of words is expressed syntactically as complementation structure.* The mirror principle of this theory ensures that if x is the complement of y then x is taken to be the morphological specifier of y. For a large set of morphemes (generally suffixes) it is also typically (though probably not always) true that if x is the morphological specifier of y, then x is the complement of y syntactically. As a simplified example, V is (part of the) the morphological spec of Infl and V is also typically (part of the) the syntactic complement of Infl.

In mirror theory complementation structure is taken to be the default expression of the morphological structure, --the mirror hypothesis. According to this hypothesis the syntactic head-complement relation expresses the morphological specifier-head relation in inverse topological order: complements follow while specifiers (whether syntactic or morphological) precede the head. Thus no separate X^0 internal representation needs to be assumed that matches and duplicates the complement series. Consider for example the simplified structure in (1) of say "Mary likes John". Here (*Mary*) is the trace of the subject in spec-v, so *Mary* and (*Mary*) form a chain; the object *John* is taken for the sake of presentation, probably counterfactually, not to form a chain with a position higher than spec-V; and Infl, v and V represent, again in a simplified fashion, the morphemes (some null) from which the word *loves* is composed.

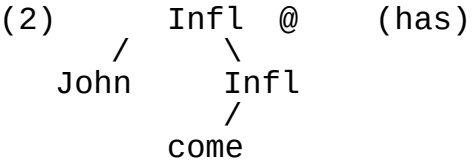


The complement series in (1), Infl+v+V serves as the syntactic representation of the morphological word (MW) V+v+Infl. Morphology spells out the syntactic representation of an MW (a) in one of the head positions, here in that of v (as indicated by "@"), from which the MW is composed and (b) in inverse order, --due to (the appropriate version of) the mirror hypothesis, an axiom of the system.

All this gives the correct morpheme order both word-internally (*love*+*s*) and also word-externally if the spec (and whatever it dominates) precedes the head, and the complement (and whatever it dominates) follows it. The order of head and complement follows from the order of spec-head given the assumption that specifiers uniformly precede the head both in syntax and in morphology and that syntactic complement relations are inverse order morphological spec-head relations, --the mirror hypothesis again. Thus in (1) *Mary* precedes Infl, Infl precedes v where *loves* is spelt out and v precedes V and whatever V dominates, ie. in particular *John*.

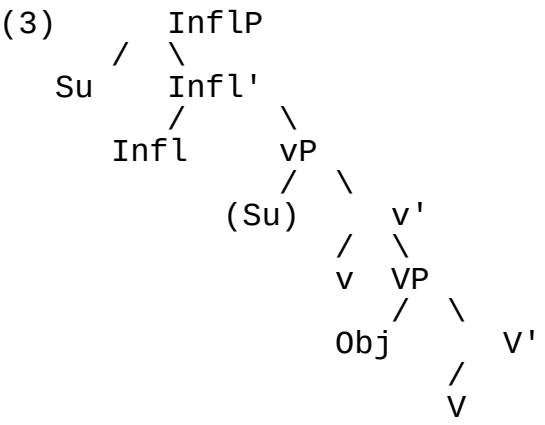
Under mirror theory the syntactic complementation relation entails morphological specifierhood: if x is the complement of y then x is the

morphological specifier of y. Thus first of all the arguments of the verb that are morphologically independent of it, --(non-incorporated, non-clitic) subject or object, or clausal complement etc-- must be specifiers. Secondly if the subparts of what in standard systems are extended projections do not form an MW then these parts must also be in the specifier-head rather than in the complement-head relation. For example in "John has come" *come* cannot be (part of) the complement of *has*. The auxiliary is an element that is part of the extended word but not of the morphological word of the main verb. It must therefore be a specifier as in (2).



To ensure the correct word order, it must be assumed that *come* is the specifier of a head that is lower than the head in which *has* is spelt out in morphology.

The representations in (1) and (2) are simplified in several ways for presentational purposes, but there is a particular simplification that is not presentational, but is meant as a substantive restrictive hypothesis. This has to do with the elimination of phrasal nodes. The structure in (3) for example that (1) replaces is obviously redundant.



Call the claim that the set of phrasal and X^0 internal projections of a head can be systematically collapsed the telescope hypothesis. X^0 internal projections are unnecessary given the treatment of MWs as (inverse order) complement lines. As for phrasal projections the telescope hypothesis embodies the expectation that given the accumulating evidence for multiple additional heads of various types in the structure, phrasal projections will invariably be unnecessary. For example the major evidence for the V' level, based on the hierarchical subject-object asymmetry, disappears when the subject is taken to be spec-v. This ensures without tbe intermediate bar level that the subject is higher than the object. Any category can be interpreted as either a phrase or a head in mirror theory, -- a head by itself and a phrase together with all categories it dominates. (Notice also a terminological point: since categorial projection is eliminated, extended projections are better referred to as extended words.)

2. Mirror theory and word order

As we have seen, under mirror theory all non-clitic arguments must be specifiers. Does mirror theory therefore entail a strict "underlying" (ie. chain-root) head final "SOV" order? While such a statement would be partly true, it would also be in part incorrect and in part misleading. There are three main reasons. First, a morphologically dependent object, like an incorporated noun for example may be the complement of the verb. Given the mirror hypothesis, it will then be spelt out preverbally as required.

Secondly, as noted above, a head like a verb for example, may form an MW with one or more higher heads like v and Infl, each of which is the syntactic complement of the next. The MW may be spelt out in any one of the complement positions that its component members (the morphemes) occupy. Now the notion of MW corresponds to the concept of head chain in standard frameworks, but it is different from this notion in that it provides no natural way of talking about "underlying" or chain root position. The set of heads, each a complement of the previous one is a decomposed representation of the MW. So there is no clear sense in which the lowest head in the series would be an "underlying" or chain root position. Thus mirror theory consistently entails head final structures in the sense that argument must be specifiers, but there is no sense in which it can be said to entail underlying or chain root SOV, because the positions in which the verb may be spelt out, and which may precede or follow the object and also the subject, form an MW and not a chain.

The standard ways of creating non chain-root word orders involve not only

V-raising but also VP shift. The third reason why mirror theory cannot be taken to entail chain root SOV is that it provides a treatment for the relevant VP shift operations in which the V-phrase's chain root position corresponds to what is taken to be its shifted, non-root position in other approaches. Recall the discussion preceding (2) above: a V-phrase that does not form an MW with the rest of what in standard terms is its extended projection (in mirror theoretical terms its extended word, EW), must be in a spec position. So in general EWs do not necessarily form a series of complements, they can also continue via specifiers. Thus we have a potential solution to the triggering problem of VP shift. When the V-phrase is in a spec position, this need not be because it forms a chain with a root position where the V-phrase is a complement, part of its extended word. The V-phrase may simply continue its EW via the spec position, a configuration that must be available in general if the mirror hypothesis is on the right track. Thus at least in some of the cases where non V-final order is achieved in standard terms by VP shift, under mirror theory the "underlying" chain root V(-phrase) final order may not exist.

3. Restructuring and (covert) roll-up

Let us refer to a series of chains as a roll-up structure if it meets the following condition: each chain (except the last) takes the top of the previous chain together with the host of this top member (where this host includes the root of the previous chain) to be the root of the next chain. The term "cascade" has sometimes been used but it I shall avoid it here, since it is often employed also in a different sense. Roberts (1997) has recently suggested analysing Romance type restructuring as (in these terms) a roll-up structure that involves covert head chains. He proposed that restructuring between two verbs V1 and V2 involves head movement of V2 up to V1. The V1 V2 order in Romance is due to a filter that prevents spelling out V2 in the higher position in its chain. This filter would distinguish between morphemes and words: V can be spelt out on the left of its Infl host since both elements are morphemes, but in restructuring V2 cannot be spelt out on the left of its host V1 because both verbs are full words. V2 therefore has to surface lower, and so the V1 V2 surface order remains. Roberts assumes (a) that head movement of V2 to V1 creates an extended projection that includes both verbs and (b) that the locality/relativized minimality requirement of XP chains makes use of a principle of equidistance (in Chomsky's 1995 sense), for which positions internal to an extended projections count as equidistant.

Following Sportiche 1992 Roberts assumes that clitic climbing involves XP chains. In the clitic climbing structure in (4) for example Roberts takes the clitic to move as XP via the lower spec-AgrO and the higher spec-AgrO. That the former position is involved is suggested by the well known participle agreement phenomenon. The involvement of the higher AgrO, as he points out, is suggested by the participial agreement in the matrix in (4).

(4) Maria li ha voluti prendere
Maria them (m.pl) has wanted (m.pl) to-take

(This evidence for phrasal chains is strong only on the assumption that the notion of 'checking domain' should be eliminated. Otherwise, as has been noted, agreement of the participle with a nonphrasal element adjoined to the head, ie. still in its checking domain, is an obvious alternative. See Sportiche 1992 and Cardinaletti and Starke 1994 for additional evidence for a phrasal clitic chain.) So for Roberts, invisible movement of the verb *prendere* to a position hosted by *voluti* creates an extended projection and thus makes the spec-AgrS of the lower head and the spec-AgrO of the higher one equidistant from the lower AgrO, --all three positions are in the same extended projection.

In mirror theory roll-up structures involving heads are analyzed in terms of MWs (as opposed to 'phrases', ie. categories taken together with their constituents). Elements of MWs are morphemes and the whole MW is word. Given this restrictive notion, it would make no sense to distinguish component elements of MWs as being either word-level or morpheme-level elements.

Another consideration that may be taken to indicate that it may be worthwhile to look for an alternative treatment of restructuring is the following. Roberts points out that his approach accounts for the possibility of (XP-)movement across restructuring predicates "without any operation deleting structure in the lower clause" (p.432). It is not clear however if a solution based on the notion of equidistance is a priori more desirable than one based on structure deletion. The hypothesis that in restructuring contexts intervening position B is deemed not to intervene between positions A and C (whether this is due to A and B being deemed equidistant from C or to some other reason) says nothing about how B will behave under conditions or processes other than movement. On the other hand the hypothesis that in the same contexts B does not intervene because B is not present (either not present at all in the structure or present but in fact occupies a non-intervening position) entails that no principle or operation can make use of B (at all or in the intervening position). These empirical consequences are missing in the weaker equidistance approach. (For

the same reason, the layered VP analyses in which AgrO is lower than the chain-root position of the subject in spec-v (eg. Koizumi 1993, Bobaljik 1995) would appear to be a priori more desirable than Chomsky's (1995) equidistance solution, where the paths of subject and object cross.)

4. Restructuring as 'I in C'

As is well known, there is direct empirical evidence that the complementizer level of the lower infinitive is present in restructuring. (5) is a case with si-passive, (6) clitic climbing and (7) an *easy to please* construction (cf. Rizzi 1982, Sportiche 1992, Kayne 1987).

(5) ? Certe riposte non si sanno mai come dare
One never knows how to give certain answers
(6) ? Mario, non lo saprei a chi affidare
Mario, I would not know to whom to entrust him
(7) ?Ce genre d'article est difficile a savoir ou classer
This kind of article is hard to know where to file

Roberts combines Sportiche's phrasal chain analysis of cliticization with the Kaynean approach to restructuring as involving movement of the lower Infl to the higher one. Apart from the suggestion already discussed that this operation creates an extended projection spanning the two clauses, he also suggests that Infl movement is coextensive here with verb movement. Following Belletti (1990) he assumes that the infinitival verb in Italian raises to Infl. If this is so, then raising of Infl will involve raising of the verb, resulting in the incorrect word order. Hence the necessity of the * V V filter he proposes, discussed above.

The evidence that Roberts quotes from Belletti (1990) for the infinitival being in Infl comes from the observation that these must precede elements like mai and piu, naturally associated with negation:

(8) Gianni ha deciso di non tornare mai/piu
Gianni has decided to not return ever/more
Gianni has decided not to come back ever/anymore

(9) *Gianni ha decisio di non mai/piu tornare

However even if the polarity elements are in spec-neg, it does not strictly follow that the verb has raised to the highest Infl position: it may still be in principle the case that Infl raising in restructuring involves a higher head in the Infl domain than the one to which the verb raises. (Cf. e.g. Cinque 1998 on multiple neg positions.)

So this evidence in fact does not necessarily prevent a return to Kayne's Infl raising analysis. Kayne (1989) assumed that in clitic climbing the clitic raised to the lower Infl, Infl+clitic to C and the whole complex then moved to the higher Infl. It is, however not clear why the infinitival Infl needs to move to the higher Infl of the restructuring V if clitics form XP-chains. For Kayne, movement to the higher Infl is necessary to carry the clitic up into the higher clause, which is now achieved via the XP-chain. Additionally questions arise concerning the fact that Infl movement to the higher clause appears to cross the higher V position.

Let us then dispense with the now apparently unnecessary and problematic part of Kayne's "I to C to I", namely with "C to I". The residue, "I to C", is motivated by Kayne primarily by the contrast between the restructuring constructions like in (5)-(7) and those with an overt C as in (10) and (11) (his example is (11):

(10) *Certe riposte non si sanno mai se dare
Certain answers neg si knows never knows if to give
One never knows whether to give certain answers
(11) *Non li so se fare
Neg them know if to do
I don't know whether to do them

As he notes it is natural to assume that "I to C", hence restructuring, is possible only where C is otherwise empty. (Currently standard assumptions about head movement as head adjunction do indeed provide a basis for expecting some correlation, although they provide no grounds for expecting exactly the observed correlation. If heads do not move through other heads, it remains accidental that only those heads to which Infl cannot adjoin happen to have overt phonological realization.)

Notice however, that the evidence pertains only to the claim that (elements of) Infl are present in C, and not to the assumption that a chain has been formed. Thus we could equally assume that restructuring involves a special type of infinitival C that is in some closer than usual relation with its Infl domain. Suppose Infl can merge with the C selected by restructuring verbs in the sense that Infl (and its spec, if any) becomes part of the C-domain and thus will not

qualify as an A-type intervener. It will thus not interfere with A-chains constructed across it. The Infl in C analysis automatically covers the case of long si-passive in restructuring. Lack of an A-type (spec-)Infl in the lower clause entails that there will be no (relativized) minimality violation in long si-passives like (5) either. (Like others, I assume that auxiliary selection phenomena in restructuring involves long movement and thus in the relevant respect also falls under the same generalization.)

5. Null subjects and clitic climbing

The correlation conjectured by Kayne between the existence of null subject and the option of clitic climbing is only weakly captured in Kayne 1989. His proposal was that an Infl strong enough to licence null subjects has the ability to void the barrierhood of VP thereby enabling clitics to escape higher. It is not clear however why these two Infl properties should go together; --there is no obvious intrinsic connection between licensing a particular type of spec and voiding the barrierhood of the complement.

Under the phrasal chain analysis of cliticization, the correlation can be captured more directly. Consider Cardinaletti and Starke's (1994) hypothesis that strong and weak pronouns systematically differ from clitics in being XPs, while clitics are heads. In mirror theory terms the only natural way to translate this is to say that non-clitic pronouns are specifiers of the verb's extended word, while clitics are heads, members of the verb's extended word. We can leave it open here, if the clitic starts out as a member of this extended word (essentially as in Sportiche 1992) or as seems more likely (thanks to Michal Starke for helpful discussion) a head in the Infl domain inherits the features of its (weak) pronominal specifier via spec-head agreement. On these approaches syntactic cliticization in the core cases would correspond to a special type of spec-head agreement, possible only where the head has the ability or expressive power to carry the referential, anaphoric etc. functions of its designated spec. Presumably the 'designated' spec is one whose every feature participates in the spec-head agreement relation. With the clitic option taken (the default case where possible, cf. Cardinaletti and Starke's "minimize structure"), the spec will be typically (apart from clitic doubling) empty or null. The corresponding heads on the other hand are typically non-null, phonologically.

The similarity of VP external, or Infl domain, cliticisation to null subjects is now conspicuous. Null subjects are also licensed by a typically non-null head in the Infl domain that is able to carry the semantic functions of the subject. Thus

both VP external high cliticization and null subjects are licensed in the same way. Both will be possible in a language where clitics exist and Infl domain heads can carry the semantic functions normally carried by spec's as in Italian. In French, as Kayne (1989) points out, even though "easy to please" constructions show restructuring effects, neither null subjects nor VP external clitics (hence no clitic climbing) is licensed **.**

The analysis outlined in the previous two sections assumes that the clitic's 'phrasal' chain (spec-to-spec constituent chain in mirror theory terms) extends to a spec-x position higher than the matrix restructuring verb V*. In mirror theory terms this entails that x (which expresses the clitic) and V* cannot form an MW. If they did, this would result in the enclitic order: V*-x. To achieve the proclitic order, x must have a complement y with the MW of V* in the spec of y. (The alternative on which x/clitic and V* in fact form an MW also seems worth exploring, although I will not do so here. If x-V* is an MW, then x must originate lower than V*. Hence the spec-to-spec constituent chain of the clitic must end lower than V*, which often (as in (5) and (6)) but not always (eg. (4) above) means lower than the restructuring head, ie. presumably within the Infl domain of the embedded clause . Such an analysis would be more in the spirit of Kayne's I-to-C-to-I rule, but it would not inherit the problem of I(+C) crossing the matrix V.)

6. Hungarian verbal clusters

Verbal clusters in Hungarian involving typical restructuring infinitives may appear in two orders: what we might call the straight order as in Romance (and elsewhere) and the inverted roll-up order:

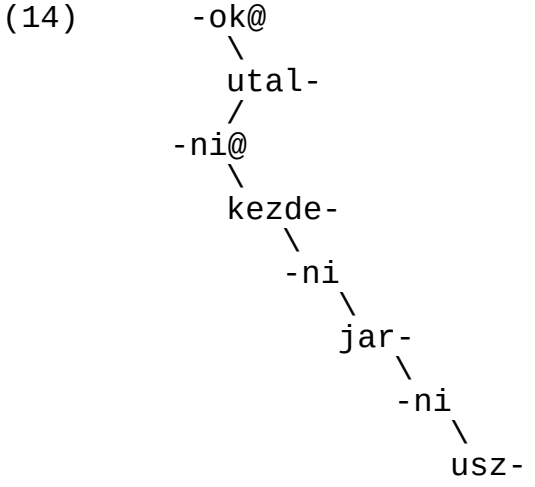
(12) Utalok [kezdeni jarni uszni]
Hate-I begin-Inf go-Inf swim-Inf
I hate to begin to go swimming (regularly)

(13) Utalok [uszni jarni kezdeni]
Hate-I swim-Inf go-Inf begin-Inf
--same

The infinitives in (13) are behaving as dependent bound morphemes while those in (12) behave as words. Adverbials (or other material like the matrix

subject for example) may intervene between the infinitivals in (12) but not between those in (13), --cf. Koopman and Szabolcsi 1998. Thus, Hungarian restructuring verbs must apparently be intrinsically underspecified (or dually specified) for wordhood/morphemehood. The infinitives in (13) in standard terms appears to form an X^0 roll-up structure and thus in mirror theory they must be analysed as constituting a single MW, --syntactically a series of complements:

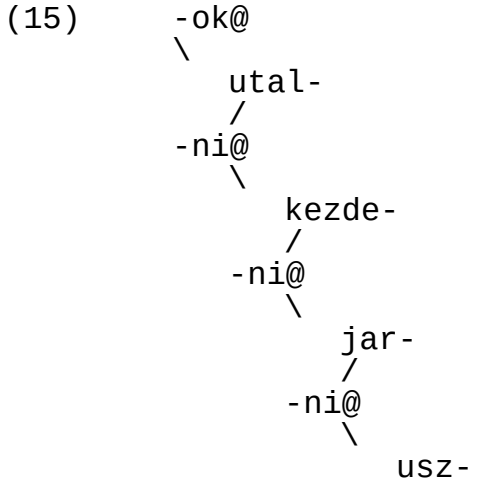
(14)



The correct word order results in (14) if the MW *utalok* is spelt out higher than the position of the verb *utal*, ie. in some head in the Infl domain represented here by Tns+Agr *-ok*. *Utalok* will then precede the (specifier of) its complement the MW "uszni jarni kezdeni", a complement series spelt "backwards".

In (12) the morphologically independent infinitives cannot be each others complements, they must therefore each be specifiers:

(15)



High spellout of each infinitive ensures the correct word order: each verb in (15) spelt out in the relevant inflectional head position IH, will precede the (specifier of the) complement of IH.

If we did not have evidence for the infinitives in (13)-(14) constituting a single MW, the word order there could also correspond to what in standard terms we could only analyze as a phrasal roll-up structure. While that can be reproduced in mirror theory, this framework appears to provide also an additional possibility. The analysis could be the same as that of (12)/(15), but with the spellout positions of the infinitives being those of the verbs instead of the higher functional heads. Then each infinitive would be preceded by (the complement of) its specifier resulting in the roll-up order. Low spellout is apparently not an option in Hungarian, a fact perhaps connected to the language allowing null subjects (cf. Roberts 1997).

(Note that in (14) and (15) '@' indicates the spellout position and not that of the strength features. These correspond to the spellout positions in (15) and may be the same in (14) on the assumption that the spellout position of an MW is its highest strong position.)

7. Verbal modifiers and Clitics

As discussed in Koopman and Szabolcsi 1998 and also in Brody 1997, E-Kiss

1998, Hungarian verbal modifiers (VMs: particles, small clause predicates bare nouns etc. that can form a single MW with the associated verb, eg. "szet-szed" = "apart-take") can apparently also form long distance chains across a set of restructuring infinitives (the trace of the VM is indicated by the copy in parentheses):

(16) Szét fogom akarni kezdeni szedni (szét) a rádiót
Apart will-I want-INF begin-INF take-INF (apart) the radio
"I will want to begin to take apart the radio"

E-Kiss (1998) argues that the VMs in structures like (16) relate the verb they semantically belong to and their spellout position via a head chain type relation on the basis of the fact that the string following the VM does not appear to form a constituent and thus cannot be co-ordinated **.**

(17) *Szét [akarom probalni valogatni a babot] es [fogom kezdeni szedni a rádiót]
Apart will-I try-INF sort-INF the beans and will-I begin-INF take-INF the radio
"I will try to sort ('apart') the beans and will begin to take apart the radio"

The co-ordination facts however can pertain only to the question of whether the spellout position of the VM is a head or a spec position, they do not tell us how the relation between the VM in the matrix and the associated embedded verb is mediated by a head-chain or phrasal chain type relation. Typically the same coordination facts obtain with clitics.

(18) *Je l'ai vu et ai aime
I him have seen and have liked

But as we have seen above there is reason to think that clitics can be involved in phrasal chain type relations. Thus Hungarian VMs can be analyzed like clitics: they involve a phrasal chain but at the top position of this phrasal chain a spec-head relation is established. The head participating in this spec-head relation is of the type that is able to express the content of its VM spec.

There is however a real difference between Romance clitics and Hungarian VMs in restructuring. While clitics can cross a filled C-spec as (6) above shows,

reproduced here as (19), VMs cannot. The infinitival with a +wh spec-C is grammatical in Hungarian as a complement of *tud* (*know*) and *van* (*is/exists*), but no VM can cross this spec .

(19) ? Mario, non lo saprei a chi affidare
Mario, I would not know to whom to entrust him

(20) Tudok mit szetszedni
know-I what apart-take
"I know what to take apart"
(21) *Szet tudok mit szedni
apart know-I what take-INF
--same as (20)

Given the assumption adopted here that the clitic in (19) forms a phrasal chain that spans the matrix and the embedded clause across spec-C), the solution that would attribute the contrast between (19) and (21) to the difference between the type of interveners to which head chain and phrasal chain type relations are sensitive to, is not available. But a different account, still in the spirit of relativized minimality could be adequate even if both the clitic and the VM form phrasal chains. The VM is an adverbial type element, hence it cannot cross a filled spec-C, --the ungrammaticality of (21) would then be on a par with that of (22):

(22) a. *How much did Mary wonder why John weighed
b. *60 kilos Mary wondered why John weighed.

The clitic in (19) on the other hand is an argument. If the top of its phrasal chain is in an A'-position then the structure is like other A'-argument extraction, like e.g. (23).

(23) ?Who did Mary wonder why John weighed

If the clitic is in an A-position, then A'-spec's must be taken to be irrelevant as A-chain interveners, just like A-spec's are irrelevant for A'-chains (cf. Rizzi 1990).

As Anna Cardinaletti points out (p.c.), the present approach in terms of an argument-adjunct contrast is supported by the complete lack of idiomatic clitic climbing across filled spec-C:

(24) a. ce la devo fare
(I) there it must do
I have to succeed

b. *non ce la so come fare
(I) not there it know how do-INF
I do not know how to succeed

8. Straight and roll-up orders again

There is also Hungarian internal evidence for the claim that the chain of the VM in straight order restructuring constructions is of the phrasal type (cf. Brody 1997). This is based on Szabolcsi's (1996) observation concerning the interpretation of the focussed infinitive in restructuring constructions with more than one layer of clausal embedding **.**

(25) a. AKARNI fogok kezdeni uszni
want -Inf will-I begin-Inf swim-Inf
b. "I will indeed want to begin to swim"
c. "I will WANT to begin to swim" (and not ,say, TRY to begin to swim)
d. "I will begin to WANT to swim" (and not, say, TRY to swim)
e. *"I will indeed begin to want to swim"

If the focussed infinitive in (25) has scope over the others, ie. if it is taken to be associated with the highest infinitival position, then the interpretation of the structure is ambiguous between an emphatic and an 'exhaustive list' reading, as indicated in (25b) and (25c). If however the focussed infinitive has lower scope, ie. a lower chain-root position, then the emphatic reading (25e) disappears and only the 'exhaustive list' reading (25d) remains.

If head-chain and phrasal chain type relations are distinguished, then this state of affairs is straightforward to explain. There are independent reasons to assume that focussing in Hungarian involves a dedicated head, F (cf. Brody 1990, 1995) and that the emphatic reading is associated directly with this head rather than with its spec. Only focussed heads but not focussed phrases can receive the emphatic reading. It is natural to complement this with the assumption that the exhaustive list reading is associated with the spec position of F. If head-chain type relations are strictly local but phrasal chains can span larger

distances (whether this involves the combination of strictly local links is not relevant here), only the exhaustive list reading (the phrasal chain construction) will be compatible with the lower scope reading.

The explanation is contingent on interpreting strictly the standard distinction between head chain and phrasal chain type relations: the former but not the latter are strictly local, head-chains cannot, (even apparently, by combining several local steps), cross nonlocal distances. Thus, if the explanation of the correlation between scope and focus interpretation is on the right track, then head chains and phrasal chains must have different locality properties. Whatever way syntax expresses the distinction between these two types of relations, the long distance chain of the VM in (16) must belong to the phrasal type.

Additional evidence for the existence of the need to distinguish within syntax the head chain and the phrasal chain relations is provided by the fact that the scope of the infinitives in the roll-up structure (13), reproduced here as (26), is fixed. Thus in (26) *kezdeni* ("*begin*") has scope over *jarni* ("*go regularly*"), the opposite interpretation is impossible:

(26) Utalok [uszni jarni kezdeni]
Hate-I swim-Inf go-Inf begin-Inf
"I hate to begin to go (regularly) swimming"

This is as expected if the roll-up structure involves head chain type relations, that is in mirror theory a series of complements expressing an (inverse order) MW, as in (14) above.

Suppose, however that the roll-up structure was created by phrasal chains, --by the lowest infinitive (here: *uszni*) moving to a spec above the next (here: *jarni*) and then a phrase that includes both this spec with the lower infinitive in it and the next higher infinitive (ie. *uszni jarni*) moved in front of the highest infinitive (*kezdeni*). Clearly there is nothing intrinsic in the concept of phrasal chain that would prevent the lowest infinitive phrase (*uszni*) from moving in front of the highest one (*kezdeni*), --either in one or in several steps. But this would result in scope relations between the crossed infinitives that correspond to their surface order. Under such an analysis *uszni* would have crossed *jarni kezdeni* and (26) would have the interpretation "I hate to go (regularly) to begin to swim" which it in fact cannot have. (Admittedly the relevant reading is slightly strange, but this is exactly what (26) would mean if the order of the last two infinitives was reversed, as in "Utalok uszni kezdeni jarni".)

The analyses reviewed in this section make it necessary to take the locality

requirement on the relevant head chains to be strict and inviolable. This provides additional evidence for a basic assumption of mirror theory according to which the head chain relation corresponds simply to a local syntactic relation, typically the head-complement relation. Since in this framework no head-chains are formed either in syntax or in morphology and head chains correspond to elements in local relations spelt out in inverse order (MWs), there are no means provided to violate HMC type locality.

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