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'That-trace effects' cross-linguistically and successive cyclic movement[1]

1. Introduction

Sentences (1) and (2) are a typical example of a 'that-trace effect' Subject/Object asymmetry.

(1) *a. Who_1 do you think [$_{CP}$ t_1' that [$_{IP}$ t_1 bought a radio]]
b. Who_1 do you think [$_{CP}$ t_1' [$_{IP}$ t_1 bought a radio]]

(2) a. $What_1$ do you think [$_{CP}$ t_1' that [$_{IP}$ Roger bought t_1]]
b. $What_1$ do you think [$_{CP}$ t_1' [$_{IP}$ Roger bought t_1]]

The different judgements in (1),(2) are considered to be reflexes of the ECP. In standard GB literature it has been assumed that the trace t_1 in (1a) somehow fails to be properly governed.[2]

This paper will be an attempt at accounting for 'that-trace effects ' cross-linguistically. It will be argued that the ECP type of approach, as well as non-ECP analyses, are insufficient to account for a variety of data.

The proposed analysis will crucially rely on a phase Spell-Out system adopted in Chomsky (1998) where the computational system C_{HL} Spells-Out material to PF and LF in phases. Chomsky (1998) assumes that these phases are the two

[1]I would like to thank Noam Chomsky for reading a previous version of this paper, Anders Holmberg, Masha Babyonyshev, Barbara Citko, and David Pesetsky for their comments and help. I would also like to thank the poster session audience of WCCFL 18. Finally, thanks to Ora Matushansky and Dorota Wojtaś for their Russian and Polish judgements. All errors are however mine.

[2] It has been commonly argued that (1a) is out because the offending subject trace is not adequately governed. The asymmetry is due to the fact that unlike object traces, subject ones are not lexically governed. This asymmetry has been exploited to give an ECP account for the contrast between (1) and (2) (see: Chomsky & Lasnik 1977, Chomsky 1981, Kayne 1984, Rizzi 1990, Lasnik & Saito 1992).

predicate sets (in Bare Phrase terms) : v_P and CP.

According to Chomsky (1998), a given phase <p> is a syntactic object <so> derived by the choice of the sub-array <Lj> of the selected array <L> from the Lexicon. The sub-array <Lj> is a relatively independent <so> in terms of interface properties. The most likely LF criteria of independence would be θ-role, as well as Force and illocutionary property assignment. The most likely candidates are CP and vP. From a PF point of view, independence is manifested by sentence fragments, pseudo-gapping, ellipsis, etc. Again the most likely candidates are CP and vP.[3] Thus <p> is a CP or vP but crucially not a TP.[4]

Chomsky (1998) proposes that the interaction between C_{HL} and the Spell-out system is such that $<p_n>$ is not visible once it has become part of a larger $<p_m>$.[5]

(3) Phase impenetrability conditions (Chomsky1998):
Given <p>=[α [H β]], where α=edge (Spec's) β= domain of H (head of <p>) then:
- The head H of <p> is inert after the phase is completed, triggering no further operations;
- In a phase <p> with a head H, only H and α are accessible to operations; outside <p>, crucially the domain of H is not accessible to these operations.

Uninterpretable material on the periphery of these phases is invisible to the PF interface unless the derivation has ended. Thus the PF component does not crash when elements with uninterpretable features are on the periphery of a phase, defined here as the SPEC-v, or SPEC-C positions. This paper will argue that phases play a role not only at the interface but also during the derivation itself. It will be proposed that cyclic wh-movement is sensitive to elements moved to the periphery of a phase and that subject/object asymmetries are a result of whether elements occupy phase positions or

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[3]Intuitively, PP also seems to be a good candidate for a phase. However, since the criteria of what is a phase are not fully understood, it is very difficult to argue for or against a given X to be a phase head (but see Chomsky 1998 for some evidence). It also not clear what role do phases play, apart from limiting the amount of units manipulated by C_{HL} at a given moment of the derivation. My own feeling is that phases are not so much required by the need to reduce complexity within the C_{HL}, but their existence is an output requirement imposed by the real-time language processor which can only handle a limited amount of linguistic information at a given time.

[4]Also, not every vP is a phase (un-accusatives, passives and other phrases lacking ϕ-features are not phases).

[5] That is if $<p_m> \supset <p_n> \Rightarrow <p_n>$ is invisible at the time when $<p_m>$ is being processed.

not. Thus XP's occupying Spec-TP, a non-phase periphery position, will not undergo successive cyclic movement, unless they have feature which they can check in CP (a phase periphery position). I will adopt a much richer CP structure along the lines in Rizzi (1990, 1999) and will argue that subject agreement can also take place in CP in certain languages. Finally, I will argue that the Impenetrability Condition (IC) has to be modified since it cannot account for multiple wh-movement in languages like Bulgarian or Polish. The new IC will allow me to propose that successive cyclic movement makes use of Phase Periphery positions as intermediate landing sites. It will be argued that only feature checking positions can be final landing sites.

The organisation of the paper is as follows: Section 2 will discuss 'that-trace effect' phenomena in various languages and analyse the Nominative Island Condition account put forward by Pesetsky (1982); Section 3 will analyse Rizzi's (1990) ECP approach as well as recent non-ECP approaches (Pesetsky and Torrego 1998, Richards 1998); in Section 4, following Rizzi (1990), I will expand the idea that there are two types of complementisers: English "that" type with no wh or agreement features and German "daß" type which contain subject agreement features and possibly wh features; Section 5 will contain the details of a new proposal involving successive cyclic movement which will be argued to be an instance of Phase Hopping; Section 6 will analyse the consequences of this new proposal; Section 7 will discuss potential problems and implications of this new approach to successive cyclic movement.

2. An NIC approach and 'that-trace effects' cross-linguistically

Pesetsky (1982) proposes an account of that-trace phenomena which does not require a filter banning complementiser +trace constructions as proposed in Chomsky & Lasnik (1997). Pesetsky's account makes use of the Nominative Island Condition (NIC) proposed in Chomsky (1980):

(4) NIC: A nominative anaphor cannot be free in S' (CP).

Following Chomsky's (1980) proposal that wh-traces behave like anaphors with respect to (4), Pesetsky (1982) argues that the ungrammaticality of (1a) as opposed to (1b) and (2) is a result of the fact that (1a) violates (4). This is because the t_1' trace has to be deleted in order for the Doubly Filled Comp filter to be satisfied.

(5) Doubly Filled Comp Filter (following Pesetsky 1982)
*[$_{COMP}$ αβ]

The filter in (5) prohibits the co-existence in a COMP of the complementiser 'that' and a wh-trace. Thus (1a) has to have the trace deleted, how ever, this in turn violates (4) and consequently the sentence is ungrammatical. Object traces are immune to NIC since non-nominative anaphors are not its input, thus examples in (2) are grammatical.

2.1 German data

Pesetsky's approach correctly predicts that in cases when (5) can be violated, there should be no 'that-trace effects'. This is the case in certain dialects of German, like Bavarian (Bayer 1984), where there are no 'that-trace effects' (6a). [6]

(6) a. Wer$_1$ meinst du [$_{CP}$ t'$_1$ daß [$_{IP}$ t$_1$ ihn geküßt hat]]
who think you that him kissed has
b. Ich weiß nicht [$_{CP}$ wer$_1$ daß [$_{IP}$ t$_1$ ihn geküßt hat]]
I know not who that him kissed has

Crucially in (6b) we can see that these dialects allow violations of the Doubly Filled COMP filter as stated in (5) (Müller 1995, Zwart 1997, Bayer 1984).

2.2 Italian data; pro-drop

Another prediction will be that in languages where a nominative NP is not an anaphor and thus not an input to the NIC there will be no 'that-trace effects'. Pesetsky (1982) argues that *pro* is not an anaphor. Thus languages which exhibit pro-drop should not have 'that-trace effects'. This correlation, observed first by Perlmutter (1971), seems to hold for languages like Italian and Spanish (examples following Pesetsky 1982):

(7) Chi$_1$ credi [$_{CP}$ t$_1$' che [$_{IP}$ t$_1$ verra a visitarci]] (IT)
who think that w ill vis it

The issue of pro-drop and the lack of 'that-trace effects' will be dealt in more detail when I discuss the ECP account proposed in Rizzi (1990) and my own proposal in Section 5.

[6]He is more sceptical about this prediction (see Pesetsky 1982:309).

2.3 Problems with a NIC account

For reasons of space I will not discuss in detail the proposals outlined in Pesetsky (1982). However, it has to be noted that 'that-trace effects' disappear in English and do not appear in German when we have a double embedded construction with the first CP lacking an overt complementiser:

(8) a. Ich weiß nicht [$_{CP}$wer$_1$ daß [$_{IP}$er gemeint hat [$_{CP}$t'$_1$ daß[$_{IP}$t$_1$ ihn geküßt hat]]
I know not who he said has that him kissed has
b. Who$_1$ do you believe [$_{CP}$ t''$_1$ that [$_{IP}$ Mary said [$_{CP}$ t'$_1$ [$_{IP}$ t$_1$ left early]]]]

This indicates that whatever causes t_1 to be an offending trace in single embedded constructions disappears in movement across more than one CP. This is problematic for the NIC approach.[7]

2.4 Russian and Polish 'that-trace effects'

A potential problem for the NIC approach is the data in Russian and Polish. Stepanov & Georgopoulos (1995) argue that Russian does not have subject/object asymmetries as far as wh-extraction across complementisers is concerned.

(9) *a. Kogo$_i$ ty dumaeš', t$_i$' čto privedët Elena t$_i$?
who you think that will-bring Elena
"Who do you think (that) Elena will bring?"

*b. Kuda$_i$, ty skazal, t$_i$' čto pojdët Elena t$_i$?
where you said that will-go Elena
"Where did you say (that) Elena would go?"

*c. Kto$_i$, ty dumaeš', t$_i$' čto t$_i$ videl Elenu?
who you think that saw Elena
"Who do you think saw Elena?"

Crucially, the examples in (9) without the complementiser ' čto' are perfectly grammatical according to Stepanov & Georgopoulos (1995).

In Polish there also no subject/object asymmetries in movement out of tensed indicative clauses.[8] However, unlike in Russian, movement of a Subject or Object does

[7]However, (8) can be fully accounted by Pesestsky & Torrego (1998) from where I took the English example.

[8]Barbara Citko and John Baylin and Maria Babyonyshev (p.c.) have pointed out to me that the Russian and Polish facts do not have to be necessarily examples of a 'that-trace effect'. The fundamental reason is that Russian and Polish exhibit subject/object

not give an ungrammaticality effect. [9]

(10) a. Kogo$_1$ myślisz, t_1' że Maria przyprowadzi t_1
who (you) think that Mary bring
"Who do you think that Mary will bring"
b. Kto$_1$ myślisz, t_1' że t_1 przyprowadzi Marię
who (you) think that bring Mary
"You think that who will bring Mary"

The Russian data seems problematic in that the object can behave like the subject as far as extraction out of 'that-clauses'. On the other hand, Polish and German show that subjects can behave like objects. Polish like Italian is a pro-drop language (see: Willim 1989) and thus does not pose a problem for a NIC type approach. However, Franks (1995) gives good evidence that Russian is argued not to be pro-drop, at least in the same sense as Italian is.[10] This data is problematic for the NIC as well as the ECP accounts (presented in Section 3).

3. ECP and Non-ECP approaches to 'that-trace effects'

Up until now we have seen that subject extraction across a lexically filled complementiser is possible in languages where the Doubly Filled Comp Filter is inactive (German) and in pro-drop languages. It also seems that NIC account of 'that-trace effects' runs into certain problems. I will now discuss an ECP account of that trace phenomena which tries to capture the facts with the Government and Binding framework. The account in Rizzi (1990) will rely on the assumption that agreement and possibly case marking can also take place in CP in certain languages.

3.1 An ECP account.

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asymmetries in extraction out of subjunctive clauses, whereas extraction out of tensed indicative ones generally is tricky (see: Bailyn 1995). Further research into the structure of subjunctives is crucial here (see: Avrutin & Babyonyshev 1997). As for Russian. I will argue later that the data can be accounted for by assuming a general ban on successive cyclic movement out of that-clauses.

[9]For some speakers of Polish, extraction out of a tensed indicative clause is very marginal (see Willim 1989). However, even for those speakers there is no asymmetry between subject and object extraction. Polish does not have the option of dropping the complementiser.

[10]It also does not allow for violations of the Doubly Filled Comp Filter.

Rizzi (1990) proposed the most comprehensive account of 'that-trace effects' within the Government and Binding framework. Utilizing the notions of antecedent and head government (Rizzi 1990:6),[11] he proposes that the contrast between (1a) and (2a) can be reduced to the fact that in (1a) the offending trace is t_1 (see the repeated examples in the paragraph below). This is because traces are subject to the ECP:

(11) **A conjunctive definition of ECP** (Rizzi 1990:32)
A non-pronominal empty category must be:
i. Properly Head Governed
ii. Antecedent Governed or Theta-Governed (identification)

The formulation of what 'properly' means in (11) is crucial here. There are two possible views. Kayne (1984) introduced a canonical notion of government. Each language has a specified 'canonical' direction of government (OV vs VO). Thus X properly governs Y if X canonically governs Y. However, Rizzi (1990) adopts a different version of proper government where X^0 governs within X'. He argues that a canonical definition of government would predict that only SVO languages will have 'that-trace effects' (since in VSO and SOV languages Infl canonically governs the subject). Whereas in the hierarchical definition, a subject trace has no privileged status in SOV languages.
Data from Northern Germanic dialects seems to support the claim that in non-V2 structures not all dialects of German are immune to 'that-trace effects' (Fanselow 1987; Rizzi 1990):[12]

(12) ?a. Was glaubt Hans, daß Fritz gestohlen hat?
What believes Hans that Fritz stolen has
"What does Hans believe that Fritz has stolen"
*b. Wer glaubt Hans, daß das Auto gestohlen hat?
Who believes Hans that the car stolen has
"Who Hans believes stole the car"

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[11]Relativised Minimality: X α-governs Y only if there is no Z such that:
(i) Z is a potential α-governor for Y
(ii) Z c-commands Y and does not c-command X
α= antecedent or Head government.
A barrier is defined as either CP, NP or INFL node. (For more details see Rizzi 1990, Chomsky 1986).

[12]The data in (12) is problematic for the NIC approach, since German allows Doubly Filled Comp violations and yet in some dialects subject extraction out of an overt complementiser is bad.

However, Rizzi (1990) argues that in languages where we have Agreement in COMP should not exhibit 'that-trace effects' since C, because of its Agr features, becomes a potential governor. This is confirmed by data in Bavarian German and West Flemish where Rizzi, following den Besten (1983), argues that there are no 'that-trace effects' in languages where C^0 is filled with appropriate morpho-syntactic features like tense and agreement.

Consequently, the difference between (1a) and (2a) (repeated below) is that t_1 in (1a) is antecedent governed but not properly head governed. [13] Whereas, in (2a) t_1 is properly head governed by the verb and is antecedent governed by t_1'.

(1) *a. Who_1 do you think [$_{CP}$ t_1' that[$_{IP}$ t_1 bought a radio]]
(2) a. $What_1$ do you think [$_{CP}$ t_1' that [$_{IP}$ Roger bought t_1]]

3.2 When C^0 is a governor.

What about cases when there is a zero complementiser in sentences like (1b) listed on the first page? The lack of a complementiser suddenly makes constructions like (1b) grammatical in English. Rizzi (1990) argues that English C^0 has two variants: COMP realised as 'that' or as Agr. An Agr C^0 has the subject agreeing via Spec-head Agreement.[14] This makes C^0 a possible proper governor, just like in certain dialects of Dutch and German. In contrast CP realised as 'that' cannot serve as a governor and hence the 'that-trace effects'. Note that this requires a modification of the definition of a proper governor.

3.3 Pro-drop

Unlike Pesestky (1982), Rizzi (1990) argues that in pro-drop languages there is a lack of 'that-trace effects' since for example in the case of Italian we have free inversion of the subject.

(13) a. Credo che abbia telefonato Gianni
think that has telephoned Gianni
"I think that Gianni has telephoned"

The fact that subjects in null-subject languages can be post-verbal indicates that the

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[13] C^0 is usually not a governor (the case of PRO) unless it is endowed with IP features.

[14] Comp has also the option to be neither realised as 'that' or AGR. Also this does not exclude the possibility of a separate AGR head, however, see Chomsky (1995).

subject trace can be properly governed and thus there are no 'that-trace effects'. Rizzi assumes that the subject in (13) is adjoined to VP and that Infl properly governs it, with pro in its Spec.

Rizzi's approach predicts that pro-drop languages which do not have subject inversion should not be exceptions to 'that-trace effects'. To the best of my knowledge there is no such language.[15] However, we must be careful in what we understand as a pro-drop language. Russian and Chinese seem to have a different type of pro-drop than Italian. [16] I will return to the question of pro-drop in section 5 when discussing my own proposal.

3.4 Expletive and adverb placement

One problem for an account like in Rizzi is that 'that-trace effects' are mitigated with XP's inserted in a pre-verbal position. In English certain adverbs (Browning 1996) and in Dutch the expletive 'er' (Bennis 1986) improve structures which otherwise would be violations of 'that-trace effects' :[17]

(14) Who$_1$ did Leslie say [t$_1$' that, for all intents and purposes, t$_1$ was the mayor of the city]?

(15) ??a. Wie$_1$ denk je dat t$_1$ komt?
Who think you that come
'You think that who came'
b. Wie$_1$ denk je dat er t$_1$ komt?
Who think you that EXPL come

It is not clear how one could account for these facilitation effects within the NIC account or with the family of ECP accounts. Finally, Rizzi's ECP approach will not easily account for the data in (8b), where subject extraction is possible in multiply embedded structures, provided the first intermediate CP is empty.

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[15]Slavic languages like Polish or Russian have post-verbal subjects, however, they are free word order languages, thus it is hard to figure out if this is the same phenomenon as in Italian (see Szczegielniak forthcoming for an account of Polish scrambling).

[16]See Franks (1995) for a discussion why Russian is not 'really' pro-drop.

[17]The Dutch data is far from clear, for example it seems that expletive insertion does not mitigate 'that-trace effects' if the lower verb is intransitive. Furthermore, it seems that there is a dialectal split in Dutch with some speakers not having any that-trace effects while others do. See: Bennis (1986) Reuland (1983) Hoekstra (1984).

I will return to this matter when discussing my proposal in section 5.

3.5 Pesetsky and Torrego (1998)

Pesetsky & Torrego (1998) (henceforth P&T) propose a radically different account of 'that trace effects' and of complementiser distribution.[18] The main tenet of their approach is that complementisers like 'that' are a manifestation of T to C raising. Subject/object asymmetries in wh-extraction arise since P&T assume that Nominative case is a manifestation of uninterpretable tense on a DP $\{T_{DP}\}$. C^0 also has an uninterpretable tense feature $\{T_C\}$. In cases when a non Nominative wh-phrase raises to C^0, T has to raise to C in order for that feature to be checked. This predicts that elements without an active (i.e. non-checked) $\{T_{DP}\}$ will trigger do support or auxiliary inversion:

(16) a. Who_1 will John marry t_1
b. Who_1 t_1 will marry Mary
*c. Who_1 John will marry t_1

'That-trace effects' are a result of a requirement that there is no T to C raising when the subjects raise to C. This is because nominative DP's have $\{T_{DP}\}$ which checks $\{T_C\}$ and is itself deleted. Thus the status of a 'that-trace effect' is similar to example (17) (with a non-emphasis reading):

(17) *Who did kill Mary

P&T also note that locative inverted subjects seem also to behave as if they had $\{T_{DP}\}$:

(18) *[In which cities]$_1$ do you think that t_1 are found the best examples of his cuisine

However, the lack of 'that-trace effects' in Bavarian German (Bayer1984) is unpredicted in P&T's system. Especially since it is widely acknowledged that German

[18]P&T's proposals concerning 'that-trace effects' are part of a much larger proposal involving A'-movement. For reasons of space, I will not give an overview of it. However, I must stress that the basis for rejecting their account of 'that-trace phenomena' does not extend to other parts of their proposal which does not crucially rely on evidence from 'that-trace phenomena'.

has T raising to C main claus es.

(19) a.Wer$_1$ meinst du [$_{CP}$ t'$_1$ hat$_2$ [$_{IP}$ t$_1$ ihn geküßt t$_2$]]
who think you has him kissed
"Who do you think kissed him"

Also, the lack of Subject/Object asymmetries in Polish and Russian is problematic since the system in P&T, like the ECP accounts, predicts that Nominative wh-phrases should behave differently from non-nominative wh-phrases when extracted across an overt complementiser.

Finally, it is not clear in this system why English 'that-trace effects' are mitigated by adverb placement, as shown in section 3.4.
Consequently, these facts pose a problem for P&T's account of 'that-trace effects'.

3.6 Richards (1998)

Another non ECP type approach is Richards (1998,1999). Assuming a copy theory of movement, Richards proposes that subject/object asymmetries arise since subjects are hard to extract because PF must receive clear instructions which copy of movement to pronounce. The proposal is that positions that check strong features are the ones that are spelled out at PF. Thus when an element moves to check more than one s trong feature and when these features occur on separate heads then PF does not receive clear instructions which copy to pronounce. The subject/object asymmetry is derived from the fact that only wh-subjects check a strong EPP feature in Spec-T on their way to Spec-C.

However, this would mean that Subjects should never extract. In order to account for the possibility of subject extraction out of claus es headed by null complementisers, Richards (1999) proposes that null complementisers are actually affixes and are required to have a host. This requirement prevents pied-piping of whole subordinate clauses to satisfy strong wh features on the matrix CP. Thus we have a situation where either the PF spell-out condition or the null complementis er stranding condition has to be violated in order to have wh-movement out of a subordinate clause with a null CP. Richards proposes that the null complementis er stranding condition outranks the PF spell-out one and we have subject movement over null complementisers.

This approach predicts that in Russian Objects check a strong EPP feature like Subjects, however, it is not clear that there is overt Object shift in Russian (King 1993). Furthermore, in order to account for the lack of subject/object asymmetries in

Polish, it would have to be argued that Polish has no strong EPP feature on Spec-T. This is possible since verb initial structures are grammatical in Polish. However, one has to remember that it is a very free word order language.

Crucially, the approach predicts that SOV languages (ones that have obligatory object shift) behave like Russian. [19] Obviously, German does not behave like Russian. Also, if one adopts the analysis of Dutch in Zwart (1997), where he argues that Dutch (see note 17) is underlyingly SVO and only because of object shift does it become SOV, then the fact that certain dialects of Dutch have no 'that-trace effects' with objects is surprising within Richards' framework.

(20) .. [$_{CP}$ wat$_1$ Jan betreurde [$_{CP}$ t$_1$'' dat hij t$_1$' zag t$_1$]] (Dutch)
'.. what John regretted that he saw'

4. Types of complementisers

Up until now I have shown that the cross-linguistic facts concerning 'that-trace effects' cannot be easily captured with any of the above mentioned approaches. NIC and ECP approaches cannot easily account for the mitigating effects of adverb and expletive insertion. Russian data is problematic for any of the above approaches. Finally, recent non-ECP approaches do not seem to be easily adaptable to Dutch or German facts. Before discussing my own proposals I will discuss two different types of complementisers. This will be an expansion of the ideas in Rizzi (1990, 1999). It will be argued that the two different types of complementisers differ in feature composition and the way they interact with successive cyclic wh-movement.

4.1 Agreement in COMP

Certain dialects of German have overt agreement in Comp (Bayer 1984):

(21) a. damid ich komm (Munich Bavarian)
sothat I come
b. damidsd kommsd
Sothat-2SG come

(22) a. da-t marie goa-t (West Flemish, Shlonsky 1994, Haegeman 1992)
that-3SG Marie go-3SG

[19]The same problem will apply to English if we assume that it has overt object shift, something which is argued by Koizumi(1995).

b. da-n Marie en Valère goa-n
That-3PL Marie and Valère go-3PL

The German, West Flemish facts seem to indicate that features like agreement can be checked in CP. This raises the possibility that some of the variation concerning 'that-trace effects' arises from the fact that we have at least two different types of complementisers. The English overt complementiser 'that' is a manifestation of C^0 without [+wh] or [ϕ] features. On the other hand, in certain dialects of German and Dutch and West Flemish complementisers are a manifestation of C^0 having [+wh] and/or [ϕ] features.

The double identity of complementisers is especially visible in Polish, where in certain constructions you have both types of complementisers in one clause:

(23) On myślał, **że** Janowi **żeś** dał książkę
he thought that John that+agr gave book
"He thought that you gave the book to John"

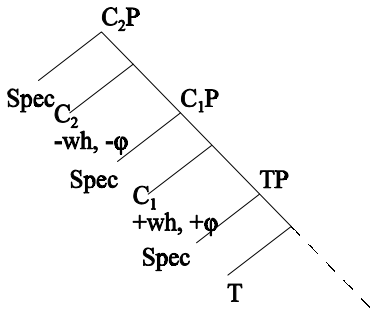
The complementiser plus agreement structure is only available in past tense and subjunctive constructions. These subject-verb agreement markers are clitics which can attach to the verb or hosts preceding it.[20] Crucially, these agreement clitics can only be hosted by the lower complementiser 'że'.

(24) *On myślał, **żeś** Janowi **że** dał książkę
he thought that+agr John that gave book
"He thought that you gave the book to John"

Expanding the approach in Rizzi (1990), I will propose that there are two complementiser positions in CP, with the agreement position lower. Adopting the proposed structure of the CP phrase in Rizzi (1999), we can propose that complementisers with subject [ϕ] features in Polish occupy the Fin head (here C_1), whereas the non-agreeing complementisers occupy C_2.

[20]For a more detailed discussion see: (Borsley & Rivero 1994, Embick 1995 and Szczegielniak 1997). The clitics are subject-verb agreement markers, they indicate person number-agreement, with the exception of third person.

(25) The structure of double complementiser constructions.



In languages like German and Dutch the complementiser is of the C_1 type and thus has agreement features which are checked when a wh-subject is moved to its Spec. On the other hand Russian and English complementisers are of the C_2 type with no feature checking allowed. Polish is a combination of both types of languages having both types of complementisers.[21]

4.2 The nature of English null complementisers.

It will be argued that English null complementisers pattern with the German and West Flemish agreeing complementisers by not inducing 'that-trace effects'. Thus I will argue that they also have subject [ϕ] features. The question arises why is there this typology of complementisers and why does the phonologically overt one have less features?[22] This problem can be resolved if we notice that only phonologically overt elements can lack any other additional features (like agreement). This is because if a phonologically null element consists of only formal uninterpretable features then when these features are checked the element should disappear together with the functional projection. This is basically the argument against a separate AGR head made in

[21]However, Sobin (1987) shows that in certain American English dialects 'that' behaves as a C_1 complementiser, indicating that the complementiser distinction is subject to language variation.

[22]For an alternate answer see Pesetsky & Torrego (1998) as well as Pesetsky (1995b) for an OT type account.

Chomsky (1995). Consequently, we may argue that empty complementisers have to have more content than overt ones. Note crucially that an empty C^0 cannot just have AGR features but also force and wh features - thus it is not subject to the same criticism as a 'pure' AGR head would be.

5. Successive cyclic movement.

In section 4 I have argued that the structure of the CP phrase involves two types of C heads. This distinction will be crucial for my proposal that successive cyclic movement involves movement from one phase periphery position to another since only in languages with an agreeing complementiser movement of the subject to a CP phase periphery position will be possible. Thus languages with a C_1 type complementiser will not exhibit 'that-trace effects'.
Furthermore, in this section I will propose that successive cyclic movement does not have to be triggered by feature checking of special features (<p> features in Chomsky 1998). I will argue instead that successive cyclic movement is movement through phase periphery positions and that these intermediate positions can only be spelled out if feature checking takes place. I will call this type of movement Phase Hopping.

5.1 Phase hopping

It is assumed that Functional heads have the ability to license SPEC positions for feature checking (Chomsky 1995), and that intermediate landing sites for movement also license SPEC positions. This allows wh-phrases undergoing long distance movement to move to the embedded SPEC-CP periphery position(s). Modifying Chomsky's proposals, I will propose that an embedded C^0 can serve as a non-feature checking landing site for a phrase XP undergoing overt movement to a higher up Attractor if that XP has moved to the periphery of a phase.

(26) = 1a *Who$_1$ do you think [$_{CP}$ t_1' that t_1 bought a radio]
(27) = 2a What$_1$ do you think [$_{CP}$ t_1' that Roger bought t_1]

I assume that the embedded C^0 in (26) and (27) cannot have a {+wh}, or subject Agr feature because of the overt complementiser. Thus in (26) the subject is 'frozen' in Spec-T. In (27) the object has moved up to Spec-v and is occupying a phase periphery position, and thus is allowed to undergo successive cyclic movement. In the case when CP is null (examples 1b and 2b on the first page), the C_1 type complementiser Attracts the subject from Spec-T, placing it in a phase periphery position. The situation of the

object in (2b) is the same as in (2a). This captures the observation made in Pesetsky (1982) that Doubly Filled Comp violations seem to pattern with no 'that-trace effects'. Only C_1 type complementisers license a Spec position and at the same time can have an overt complementiser.

Let us consider the crucial parts of the derivation of (27) shown in (28a), which is the stage when the object moves up to SPEC-v in order to check case and is ready to move further up.

(28) a. $[_{\text{Spec-T}}$ Roger$_2$ $[_{\text{Spec2 -vP}}$ what$_1$ $[_{\text{Spec1 -vP}}$ t_2 $[_{\text{v}}$ bought] ... t_1]]]
b. $[_{\text{Spec-T}}$ who$_1$ $[_{\text{Spec1 -vP}}$ t_1 $[_{\text{v P}}$ bought a radio]]]

In (28a) the when v is introduced into the derivation the subject is merged in its Spec and later the object wh is raised from within VP to the outer Spec of v. At this stage both the subject and object are at a phase periphery position. However, when T is introduced the subject must raise to Spec-T because of EPP (as shown in 28b). Thus when CP is introduced into the derivation the subject in (28b) is not in a phrase periphery position, whereas the object is (Spec-v).
If successive cyclic movement is only possible with elements at phase periphery positions, then only the object can undergo such movement provided there is nothing in CP to attract the subject, as is the case with an English CP headed by 'that'. Note that movement to a phase periphery position itself must be independently triggered by the feature composition of the C or v head, and the ultimate landing site must have a feature to check since PF spell out takes place at the last feature checking position. Thus in Bavarian German the CP has subject agreement features which have to be checked. This forces subject raising to CP, a phase periphery position. This in turn makes the subject acessible for further successive cyclic movement.

In the system proposed here, overt movement is sensitive to phase boundaries. Chomsky (1998) ties together two imperfections: uninterpretable features and movement. He argues that displacement properties in languages are not an imperfection - they are imposed on by the Bare Output Conditions (probably the need to organise the information structure of a clause). Whereas uninterpretable features are utilised by the mechanism which drives movement and thus are also not an imperfection but part of a solution. However, the role of uninterpretable features is also to limit search space for possible candidates for overt movement. In his proposal features of the probe (using MI terminology) have to match with the nearest possible occurrence of identical features of the goal. Once that happens the search algorithm

stops. Movement can take place. Note that this process is needed anyway as part of Agree, which here differs from move in that there is no EPP feature on the Probe.

Note that in the case of phase hopping movement (that is movement from one phase periphery position to another) we can also have a limited subset of positions for the probe to search in. However, this requires the Phase impenetrability condition (3) to be loosened. I propose that the domain of a given phase is invisible with the exception of the embedded phase head and their edges. Thus in a simple clause a CP phase will be able to see the vP embedded phase, but only its head and Spec positions. This change will allow us to postulate movement from one phase edge to another.

It is important to point out that the loosening of (3) is also independently required in order to account for multiple wh-movement in languages like Bulgarian or Polish:

(29) $[_{CP}$ | Kto$_2$ komu$_1$ $[_{IP}$ t$_2$ chciał | t$_1$'' $[_{CP}$ | t$_1$' żeby $[_{IP}$ Janek kupił | t$_1$ radio]]](PL)
Who whom wanted that Janek buy radio
"Who wanted that Janek buy whom a radio"

Chomsky (1998) has to propose that movement of *komu* 'whom' from the embedded clause has to go through every phase position (indicated with a line and t_1 trace). He proposes that there are special periphery features <p> that trigger this movement. However, I suggest that a much simpler way of accounting for multiple wh-movement facts is to weaken the impenetrability condition.[23]

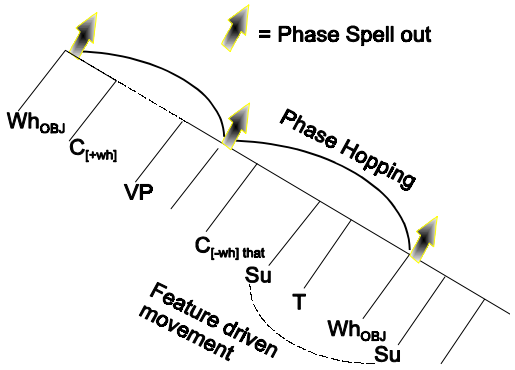
(30) Impenetrability condition Revised:
The derivation can look into phases, but can only see phase heads and their Spec's.

Phase Hopping is thus a way for elements to undergo cyclic movement even if intermediate positions are not valid ultimate landing sites. Crucially, I will assume that in order to undergo phase hopping an XP must independently move to a phase periphery position. Thus objects raise to Spec-v to check case/agreement, whereas subjects in Bavarian German and West Flemish move to Spec-CP to check subject agreement features. In English only null complementisers can attract a subject to Spec-

[23]Noam Chomsky has pointed out that possible implications of (30) for Subjacency will have to be explored. It is possible that the way phase periphery positions are made visible will be subject to language variation.

CP, C_2 complementisers with 'that' block the subject from moving to a phase periphery position and thus block it from successive cyclic movement.

(31) Phase hopping of an object wh across an overt complementiser.



Note that we predict that once an element has moved to a phase position it can undergo successive cyclic movement. Thus examples like (8), repeated as (32) in relation to the NIC account now receive a simple explanation since the subject moves to Spec-C in the most embedded clause (trace t_1) and then is free to undergo successive cyclic movement, even if the intermediate clause has a 'that' type complementiser.

(32) Who$_1$ do you believe [$_{CP}$ t''$_1$ that [$_{IP}$ Mary said [$_{CP}$ t'$_1$ [$_{IP}$ t$_1$ left early]]]

5.2 Phase Hopping is Cyclic - the case of Russian

Russian is an interesting example since it seems that the higher C_2P is not a phase at all, thus clauses with an overt complementiser block any kind of extraction. This entails that Phase Hopping passes through every phase position, and if any step on the way is blocked then the whole movement is invalid.
However, it seems that Russian examples where movement across a null complementiser is fine are not necessarily an instance of an agreeing null

complementiser which heads a phase, as is the case in English. This is due to the fact that when we control for a parenthetical reading by negating the examples in (9) or by constructing examples like (33) then the structure becomes ungrammatical.

(33) * Čto John sporil s nami (čto) krugloe?
What John argued with us (that) round
'John argue with us that what is round'

Obviously further evidence is required to confirm this. [24]

5.3 Pro-drop

As noted in previous sections it has been claimed in Pesetsky (1982) 'that-trace effects' do not occur in pro-drop languages. Bennis (1986) argues that it is no so much the existence of pro as the fact that the subject originates within VP that is crucial. In this sense his proposal is similar to the one in Rizzi (1990).

I would like to propose that pro-drop languages do not require that TP license a Spec. This allows the subject to remain in Spec-v a phase periphery position, thus allowing it to undergo successive cyclic movement in the same fashion as the object.[25] Note that I am not saying that only pro-drop language allow VP internal subjects, what I am claiming is that in pro-drop languages of the Italian type Tense does not require overt material in its Spec. [26] Thus Subjects can remain within VP.

A potential problem is the analysis in Cardinaletti (1995) where she argues that pro in Italian is always post-verbal. However, it has to be noted that she argues that this is because pro in Italian is a weak pronoun and, like clitics, must raise overtly

[24]Tests indicating whether Russian that-clauses are not phases will have to be devised. Also Marie Noonan at WCCFL 18 in Tucson has presented data from Irish indicating that successive wh-movement of an object leaves overt morpho-phonological markers at every intermediate v and C position. Where, crucially, the first v position which was feature checking is marked differently that all the others.

[25]The subject does undergo feature checking through Agree. Note that only a phase spell out system makes this possible. If we had LF movement following overt movement then we would have to reconstruct the subject to Spec-v and then allow it to undergo LF movement to T.

[26]I have very much simplified the picture here. See Jaeggli (1982) and Safir (1985) for detailed accounts of various pro-drop languages. Obviously, the details of the relation between pro-drop and the EPP requirement on Tense, as well as concerning the structure of subjunctives will have to be made more precise. For example, Franks (1995) claims that Polish pro is different from Italian on the basis of 'that-trace effects' in subjunctives, however, the facts in indicatives seem to indicate otherwise (see example:10).

to overcome its deficiency. For reasons of space I will not discuss her proposals in detail. Crucially, however, the fact that pro has to raise because of its deficiency does not exclude the possibility that the properties of T itself do not trigger any overt movement. Thus the two approaches are not incompatible.

5.4 Expletive and Adverb insertion and the EPP

If the above approach concerning pro is on the right track, then we should predict that there will be no 'that-trace effect' in constructions where something else other than the subject can satisfy the EPP requirement on T. I will assume that this is the case of expletive insertion in languages like Dutch. Also Adverb insertion in English will be considered as an instance of Spec-T being filled by the Adverb, thus allowing the subject to remain in Spec-v. This predictably means that 'that-trace effects' should disappear:

(34) Who do I think that undoubtedly killed John

(35) Wie denk ja dat er komt (Dutch Holmberg 1999) [27]
Who think you that expletive comes

Further evidence comes from the Romanish dialect Vallader described in Taraldsen (1996). Vallader has two types of complementisers, 'cha' is a regular complementiser and 'chi' is a complementiser fused phonologically with an expletive.

(36) Qualas mattas crajast chi/*cha cumpraran quel crudes ch?
Which girls think-you that+Expl/that will-buy-Pl that book
'Which girls do you think will buy that book'

Crucially, subject extraction is only possible with the 'chi' form. This suggests that there is an expletive in Spec-T allowing the subject to remain in VP and undergo successive cyclic movement. At PF the expletive is phonologically merged with the complementiser.

6. Consequences

In the above section I have argued that successive cyclic movement is an instance of movement from one phase periphery position to another (Phase Hopping) with the final and initial landing sites being feature checking positions.[28] I have also attempted

[27]It has to be noted that Dutch like German has dialects where 'that-trace effects' vary. Obviously the example given by Holmberg is from a dialect where the construction without the expletive is degraded, see also footnote 17.

[28]In the case of VP internal subjects this can also be a θ-marked position.

to give a unified account of cross-linguistic variation concerning 'that-trace effects' and their interaction with phenomena like pro-drop, CP agreement and expletive insertion. In this section I will briefly sketch possible consequences of this approach for the status of double objects and prepositional phrases. I will argue that double object constructions involve a PP which assigns case/agreement to its NP complement via a head-spec relation, thus mimicking vP in single object constructions. The lack of 'that-trace effects' for both objects in double object cons tructions will be argued to be evidence that PP's are also phases.

6. 1 PP's are also phases

In double object constructions both objects in English do not exhibit 'that-trace effects'.

(37) a. What do you think that Mary gave to John
b. Who do you think that Mary gave a book

I will argue that both objects behave as if they were moving from a phase periphery position. Following research by Riemsdijk (1978) I will assume that Objects of PP can move to Spec-P for agreement. I will also assume that in double object cons tructions one of the objects is headed by a preposition, which can be phonetically null (Pesetsky 1995a). Consequently, both objects always move from a phase periphery position. Obviously, the arguments for a PP to be a phase have to be worked out. However, consider the examples involving clitic doubling and wh-movement in Spanish. Spanish clitic doubled constructions allow wh-movement only if the clitic is in the Dative (38b). Accusative clitics do not allow wh-movement out of a clitic doubled construction (38a).

(38) *a. A quien lo condecoraron?
whom him(acc) decorate
"Who did they decorate"
b. A quien le regalaron un auto
to whom him/her(dat) gave a car
"Whom did they give a car to"

If we assume that Dative constructions involve a preposition like head assigning case whereas accusative complements receive case in SPEC-v, then we can account for this asymmetry by assuming that wh-movement in the case of dative constructions can take place because the dative wh-phrase moves to the periphery of a PP phase where it

receives dative case and then can move further. In the case of accusative wh-phrases there is no PP periphery and the wh-phrase should raise to SPEC-v to get case, however, v has already assigned case to the clitic pronoun, which in all likelihood is in v. This means that the wh-phrase probably receives case via some identity co-indexation with the clitic. This means, however, that there is no way the wh-phrase can move to a Phase periphery position. [29]

This raises the question whether movement to a periphery is necessary in order to undergo wh-movement. Obviously, the answer is no. The German examples clearly indicate that movement to a periphery of a phase is not a requirement. However, what seems to be the case is that movement out of a phase requires movement to its periphery. Thus wh-subjects can move to SPEC-CP (the nearest phase) via feature checking movement. Accusative objects raise to SPEC-v and then can undergo A'-movement. Dative objects, as well as objects of PP move to SPEC-P and then undergo further movement.

7. Problems & Conclusion

A potential problem for this analysis is that successive cyclic movement of adjuncts does not produce 'that-trace effects' (Lasnik & Saito 1992).

(39) a. How$_1$ do you think [$_{CP}$ that she left t_1]
b. How$_1$ do you think [$_{CP}$ she left t_1]

However, examples like (39) can be accounted for if we assume that adjuncts are added to the derivation counter-cyclically (Lebaux1988, Freidin 1986) in which case the wh-adjunct cannot move through the embedded CP in a Bare Phrase system adopted by Chomsky (1995, 1998). Thus any restrictions concerning successive cyclic movement cannot apply to Adjuncts in a Bare Phrase system.

Another potential problem are constructions like(18) repeated here as (40), where Pesetsky and Torrego note that locative inverted subjects trigger 'that-trace effects':

[29]There is also a specificity factor involved which I have not discussed where it seems that specific accusative wh-phrases can undergo movement in clitic doubled constructions.

(40) *[In which cities]$_1$ do you think that t_1 are found the best examples of his cuisine

Examples like (40) are a potential counter-argument that P repositions head their own phases and thus PP complement wh-phrases can undergo phase hopping movement because they move to Spec-P for case. However, note that examples like (40) involve movement of the PP to Spec-T. If we assume that there is a strict derivational cycle then a PP complement would have to raise out of the PP before it can raise to Spec-TP. However, the PP will raise to Spec-TP before the wh-word can raise out of the PP. I will assume that movement to a non-phase periphery position makes a phase head lose its phase properties and movement of its Spec is no longer movement out of a phase periphery position.

Finally, the Norwegian 'anti-that-trace effects' pose a problem for the current analysis. Norwegian exhibits the opposite effect and a complementiser is necessary in local wh-movement. This has been dubbed the 'Anti that-trace effect' (Keer 1996, Taraldsen 1986).

(41) a. Jeg vet hvem $_1$ som t_1 vant. (NO)
I know who Comp t won
b. *Jeg vet hvem$_1$ t_1 vant.
I know who won
"I know who won."

Crucially, there is a 'that-trace effect' when a subject is wh-extracted long distance from an embedded clause:

(42) a. *Jeg vet hvem $_1$ du tror som t_1 vant.
I know who you think Comp won
b. Jeg vet hvem$_1$ du tror t_1 vant.
I know who you think won
"I know who you think won."

Interestingly, the complementiser *som* is only required with Subjects: [30]

[30]There is another complementiser *at* in Norwegian which does not exhibit 'Anti that-trace effects'.

(43) *a. Jeg vet hvem som du så
I know who that you saw
"I know who you saw"
b. Jeg vet hvem du så
I know who you saw
*c. Jeg vet hvem som du tror vant
I know who that you believe won
"I know who you believe won"
d. Jeg vet hvem du tror vant
I know who you believe won
"I know who you believe won"

However, following Taraldsen (1986), I will assume that 'som' is not a complementiser, but a non-nominal expletive merged in Spec-IP. The question still remains why long distance movement of the subject wh-is impossible. This, I leave for future research.

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